RANNEY (A. L.)

With Compliments of the Author.

Eye Strain as a Cause of Epilepsy, and the Results of Eye Treatment.

(A Reply to Dr. Frederick Peterson.)

BY

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NEW YORK CITY.

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EYE STRAIN AS A CAUSE OF EPILEPSY, AND THE RESULTS OF EYE TREATMENT.

(A REPLY TO DR. FREDERICK PETERSON.)

By AMBROSE L. RANNEY, A. M., M. D.
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During my summer vacation, the letter of Dr. Peterson in your issue of August 8, 1896, demanding that I produce a single instance of the cure of epilepsy by eye treatment, and containing the implied insinuation that I had never had such a case, has remained unanswered.

In order that the reader may appreciate the origin of this correspondence and the points at issue, before I endeavor to make my final reply, I think it wise to give the following *résumé* of the letters already published by Dr. Peterson and myself in your *Journal* relative to reflex epilepsy.

On June 20th I took issue with Dr. Peterson when he made three statements in a contribution in this *Journal* (June 6, 1896):

1. That "reflex epilepsy is so rare that the proportion of cases in which a reflex cause will be found is certainly not above one or two in a thousand."

2. That "authentic and trustworthy instances of the kind recorded in literature could easily be counted upon the fingers."

3. "That the removal of reflex irritation will seldom alter the course of the disease."

I shall to-day confine my reply to these three points only.

All side issues must be avoided, in order that the reader shall not have his mind at any time diverted from the quoted propositions of Dr. Peterson. These I believe to be incorrect and hasty.

Unfortunately for the general information of the reader, neither my engagements nor health will permit at present of an exhaustive search throughout the medical literature of the past twelve years for all cases of reflex epilepsy that have been treated by dentists; by the removal of nasal growths, scars, etc.; by the fixation of the kidney; by the removal of the ovaries and treatment of the various organs of the pelvis; by trephining of the cranial vault; by circumcision; by massage of the testicles; and by various other steps that have been employed in cases of epilepsy with reported restoration to health.

To prepare a table that would be worthy of record as an exhaustive *résumé* of the reflex causes of epilepsy to date would require (as Dr. Peterson knows) many months of research and a proportionate amount of correspondence—while it would serve no purpose to me, except to substantiate a statement made by me, viz., "that hundreds of cases of cures of epilepsy by the removal of reflex causes have been reported in medical literature."

I feel that I can (in justice to myself) employ my

personal time to far better advantage in my own line of work, and that I should not be called upon by any one to report upon the work of others, or to defend their position. The request of Dr. Peterson that I do so is one of the side issues that might be productive of interesting data; but such research is not essential to the refutation of his published deductions (as quoted), because more direct facts are attainable with less labor on my part from my own published cases.

Neither does it pertain to fair argument to ask or to answer such questions as these:

"Does he (Dr. Ranney) know how many patients with incurable epilepsy are now undergoing treatment by neurologists, who had previously undergone treatment by himself and other oculists in the hope of cure?"

Would not such a question apply equally well to any method of treatment? Has any one ever maintained that epileptics could always be cured? What point can be established by any such irrelevant inquiries? Do they not strike any candid reader rather as an attempt to cast a slur upon an antagonist than an effort to deal fairly with matters in dispute?

There has been manifested in the past by some neurologists of note an apparent desire to destroy the value of carefully kept records, by lines of fine distinction in reference to epileptic patients when treated by oculists, that do not obtain when any medicinal treatment is discussed.

This statement is not an imaginary one; nor am I the first to make it in print. It takes a fair-minded as well as logical intellect to meet distasteful facts in a kindly spirit; and quibbles over the exact type of epi-

leptic seizures that have occurred in each patient have little value clinically as a rule, and are too often but subterfuges to avoid the conclusions that most honest men would arrive at.

I think I can safely assert that it would be a difficult matter to keep a more complete and scientific record of any individual case than by the system employed by me in my office demands. The very nature of the work compels the most exact records of minute details, made at very frequent intervals, and upon printed blanks specially ruled for the purpose.

There can be no " personal equation " in the records or the published reports. The tests are mathematically correct; the instruments employed are scientifically precise, and the results of each test are recorded (in the proper column of the printed blank) when made.

In your issue of July 18, 1896, I made use of certain pertinent inquiries relating to any future analysis of my cases when I said:

" Dr. Peterson begins apparently to fear to meet the array of cases that will surely be brought sooner or later to his notice, when he says that he will exclude in his count of authentic and trustworthy cases all in which the existence of ' genuine epilepsy ' is not well established.

" I should like Dr. Peterson to put in print just what he intends to exclude as not ' genuine ' cases of epilepsy. Are all genuine cases to be those that did not get well, and is some other term applicable to those in which the patients recovered? Is this fine distinction to be hereafter exercised on all cases in Dr. Peterson's clinic and others, with proofs of the ' genuine ' type of every case, or is it to be reserved as a weapon to annihilate (with one

sweep) all reported cases of restoration to health by eye treatment?

"Would it not be sad to think of a judge on the bench giving out decisions in *ex-cathedra* fashion on questions of vital moment after he had thrown out or destroyed all the evidence that failed to establish his preconceived judgment? Is it not amusing to discuss, even for an instant, the possibility of evidence being so tampered with, suppressed, or distorted?"

These demands on my part for explicit statements as to what Dr. Peterson regards as positive indications of "genuine" epilepsy were certainly but fair to myself —yet I have thus far received no enlightenment in reply.

In this controversy, this is a very serious matter. The diagnostic symptoms of epilepsy ought to have been positively and finally stated by Dr. Peterson before any cases were brought forward by me at his demand for his critical analysis and certain rejection (if such be within the bounds of possibility). Must the "epileptic cry" be present? It seldom, if ever, is observed in cases of *petit mal* (one of the most intractable types of epilepsy); yet such attacks are classed by all authors as a form of epilepsy.

Must the patient froth at the mouth to satisfy my critic? Must the tongue be bitten? Must blood show in the saliva? Must the patient have a well-defined aura? Must the patient fall (if standing, when the seizure comes)? None of these symptoms usually occur in attacks of "*petit mal.*"

When my cases have been read and analyzed by Dr. Peterson I shall expect (as will all fair-minded readers of this controversy) not a wholesale rejection of cases that do not fit his theories; not a mere assertion on his

part that he does not think some of the records satisfactory; not a "straining at gnats," or quibbles over trivial matters; but a fair, dispassionate, judicial statement of what facts in each individual case are wanting to justify its acceptance by him and the medical fraternity at large.

To escape the facts that he meets by offering the absolutely ridiculous explanation that in any cases where eye treatment has cured "genuine" epilepsy (if such an admission is possible) he must attribute success purely to suggestion—a sort of permanent mental hypnotism of the patient—will not answer the requirements of this controversy.

I quote from my letter of July 18th a few paragraphs relating to this point, as follows:

"This explanation is not new! It was lately hashed up and dressed in attractive garb by Dr. Casey A. Wood, of Chicago (*New York Medical Journal*, August, 1894), and my letter in reply is to be found by Dr. Peterson in a later issue!

"It is really hard for me to be serious in discussing so absurd an argument. The operation of a graduated tenotomy is absolutely painless; it is often performed by me upon children while they chat with me over their dolls or toys; it does not confine the patient to the bed or prevent any reasonable amusement or occupation more than a few hours; it is not looked forward to by my patients with any dread (as a rule); and it is purposely made light of by me, both prior to and after the operative step, in order to decrease alarm or apprehension."

In my reply to Dr. Casey A. Wood, I made use of about these words:

"A good spanking or a dose of castor oil has ten

times the mental suggestion of a graduated tenotomy; yet who ever recorded a cure of epilepsy or other grave neurosis from such a method of treatment with the hope of causing mental suggestion?"

Regarding "genuine" epilepsy, the chief of the clinic in which Dr. Peterson assists says in his work on *Familiar Forms of Nervous Disease* * (page 269):

"In genuine epilepsy, on the other hand, the patient usually feels perfectly well between the attacks and presents no symptoms of nervous irritation."

To show that reflex epilepsy is to-day accepted as established, this author, in a previous paragraph, discusses the special symptoms that indicate the various forms of peripheral irritations which may exist as a cause of reflex epilepsy. He specially mentions, in this connection, the detection of scars; phimosis; vaginal irritation; uterine and ovarian disease; indigestion, flatulence, and constipation; irritations of the respiratory tract; eye strain; and impacted wax in the ears.

Although this author says, in closing, that "in his experience reflex neuroses of an epileptiform type are exceedingly rare," this is, as yet, purely a matter of opinion that further investigation may modify. It constitutes one of the most important questions in this controversy.

Let me here take up for Dr. Peterson's consideration the statement of Dr. Starr relative to the evidences of local irritation between seizures in cases of reflex epilepsies from the eyes. He says (page 269):

"If the irritation is from eye strain, the patient will complain of headache (frontal or occipital), aching in the nape of the neck, or discomfort about the eyes

* M. Allen Starr. William Wood & Co., 1890.

after using them for near or far objects as the case may be."

It must be admitted, I think, that my experience in examining the eyes of epileptic patients with special reference to defects which tend to create epileptic seizures is larger than that of Dr. Starr—especially as he states that only six cases in thirty-five hundred seen by him in his clinic belonged to the reflex class (in his opinion). Therefore, when I take issue with him on the two preceding conclusions (that I have quoted), I do so on grounds that are sustained (I think) by clinical records of the eye tests of a larger number of such cases than are easily accessible elsewhere.

In my published reply to Dr. Casey A. Wood, of Chicago (*New York Medical Journal*, September 29, 1894), after he had attempted in an article on reflex epilepsy (*New York Medical Journal*, July 7 and 14, 1894) to cast a doubt upon the existence of eye strain unless previous eye symptoms had formed an important part of the clinical history, I analyzed a number of my reported cases from this standpoint alone.

I think I showed conclusively in my reply that eye strain could exist without any eye symptoms; and I am equally sure that occipital or frontal headache and pain in the nape of the neck (while frequently present) do not exist in every case, and are not positive diagnostic points.

My reply to Dr. Wood is too lengthy to admit of reproduction here; but it is accessible to Dr. Peterson and others, should they be inclined to dispute this assertion.

Regarding the probable percentage of eye strain in epilepsy, let us see what light can be thrown upon this

undecided question by the experience of another, who has intelligently examined the eyes in a very large number of cases of epilepsy.

The essay of Dr. G. T. Stevens (which received the honor of a prize and special publication by the Royal Society of Belgium *) contains the following statement:

"Of the eighty-nine cases examined in private practice thirty-four only have been treated and observed for any length of time beyond one or two visits.

"Of this number, five have withdrawn from treatment before obtaining any relief from important ocular defects, and should not be included in calculating the results of treatment.

"The remaining twenty-nine cases have been treated only by the removal of ocular defects. Of these twenty-nine cases, fourteen may be considered well; two, who are still under observation, are believed to be permanently relieved; three others, still under treatment, have received such marked relief that it is believed that an entire discontinuance of the malady may be expected. One, who had manifested some improvement, died of accident four months after his first visit. Seven have received temporary relief, while two have manifested no improvement."

It will be seen by the reader that in almost forty per cent. of these eighty-nine cases there were sufficient eye defects to justify attempts at their removal; and, in addition, the eye tests of a large percentage of the fifty-five cases that did not undertake the eye treatment were probably abnormal, although not so figured in computing the percentage.

Nearly fifty per cent. of the twenty-nine cases

* *Functional Nervous Diseases.* D. Appleton & Co., New York.

actually treated by the removal of eye strain by this author are reported as cured.

In looking over my own records of epileptic patients for the past ten years, I find an equally large percentage of cases, as Dr. Stevens reports, that have been seen but a few times by me; yet the percentage of the total number of cases that exhibited sufficient ocular defects to justify (to my mind) a hope of amelioration of the epileptic seizures is very much larger than I had reason to suspect (nearly seventy-five per cent).

By these preliminary remarks (prior to an analysis of the twenty-six cases of epilepsy that have already been reported by me in detail as treated exclusively through the eyes) I have endeavored to establish the following deductions:

1. That eye strain is to-day recognized by most of the eminent oculists and neurologists as a possible factor in the causation of epilepsy and other nervous derangements.

2. That the percentage of epileptic cases in which the eye factor is important has not yet been determined; nor will it be until more work is done by oculists and neurologists in this field.

3. That eye strain does not entail, of necessity, upon its victims any symptoms referable to the eyes themselves, the nape of the neck, or the frontal and occipital regions, even when the eye conditions are extremely faulty, and in cases that have severe chronic nervous derangements as a direct result of eye strain.

4. That "intervals of perfect health between epileptic seizures" do not preclude eye strain as a cause. This is the rule with victims to sick headaches—almost all of whom owe their attacks to eye strain.

5. That eye treatment has ameliorated and most favorably "altered the course of the disease" in chronic epilepsy when practised by others as well as myself.

Before I pass to the special consideration of my twenty-six reported cases of epilepsy treated exclusively by me through the eyes, I desire to quote for the benefit of the reader some extracts from Dr. Peterson's last letter (*New York Medical Journal*, August 8, 1896). I do so because I think these quotations will bear repetition here as evidence of the kindly spirit and fair statement of facts that have thus far been exhibited toward myself.

Dr. Peterson says:

"Does any one believe that the doctor [myself] would fail to rush into print at once with a report of a cure if he had one recorded in his books? Why such a concealment of cures, when he has already reported so many failures?"

"The fact is that the claims of Dr. Ranney regarding the efficacy of eye treatment are not and will not be substantiated."

Let us take up these statements in order, and see what are the facts!

Of my published cases (to which Dr. Peterson refers), twenty-five are to be found in the *New York Medical Journal* (January and February, 1894) and one in the *Annals of Ophthalmology and Otology* (April, 1896).

When the first set of twenty-five cases was reported, one patient (Case IV) had been seven years without an attack; four cases (V, VI, VII, and X) had passed over two years without any evidences of epilepsy; one (Case XV) had been free from fits for over eleven months; Case XIII had been well for nine months;

Case XIV had been free from attacks for six months; Case I had been perfectly well for a year; Case II had had only one attack in sixteen months; and Case XII had been perfectly well for five months.*

Is not this a somewhat startling array of "failures" that Dr. Peterson seems to have overlooked?

I am assured, moreover, by Dr. Hedges, of Plainfield, N. J. (in a letter published here), that one of the circular letters written by Dr. Peterson to him (as well as others) inquiring about my cases was immediately responded to by Dr. Hedges.

It is probable, therefore, that a report of a total absence of attacks in Case I for nearly four years was in Dr. Peterson's hands when he wrote that "I had reported nothing but failures, etc."; because the date of the letter of Dr. Hedges published here (July 7, 1897) is nearly one month prior to the date of Dr. Peterson's letter to your *Journal*, from which the last quotations are made. I trust that the mail miscarried in this particular instance.

Again, one important fact must not be lost sight of by the reader, viz., that marked and permanent amelioration of attacks in a chronic epileptic without drugs is a very decided step in advance of anything done by medication. The former proves a scientific discovery; the latter leaves both physician and patient in doubt as to when the drug may cease to control the attacks, and what the ultimate effects of the drug itself may be. Permanent cures of epilepsy are very remarkable cases and must, of necessity, attract attention and criticism.

The therapeusis of epilepsy has to-day a very dis-

* Later reports show that some of these cases have been absolutely cured of epilepsy.

couraging aspect. The bromide treatment is no longer regarded by most authors as a method of cure; but it is still employed because it controls epileptic seizures for a time better than any other form of medication. Practically, chronic epilepsy is to-day regarded as an incurable malady by most men of large experience and positive convictions.

Because of the hopelessness of cure of chronic epileptics by drugs and the importance of establishing beyond criticism the permanency of results of any new form of treatment, it may not be difficult for the reader to understand (although not apparent to Dr. Peterson) that an earnest seeker after truth is obliged to wait some years before he can himself feel sure that the beneficial effects of a treatment directed to a removal of a reflex cause are but temporary and misleading.

It therefore gives me great pleasure that I am requested by Dr. Peterson now to report upon twenty-five cases the histories of which were published by me nearly three years ago, and which he choosess to designate as "failures."

Before I do so in detail, I deem it not only wise but absolutely imperative to make some pertinent remarks relative to what causes may lead to a recurrence of epileptic seizures after eye treatment; these should in no way reflect upon the previous results obtained, nor should they be justly construed as clinical evidences derogatory to the method of treatment itself.

1. As the refraction of the eye should always be considered an important factor in epilepsy, any neglect on the part of the patient to wear the glasses prescribed or any change in the formula is apt to lead to a recurrence of the epileptic seizures.

One of the worst epileptic seizures ever encountered once occurred in a patient (who had been free from epilepsy for over a year) within an hour from the time that a strong cylindrical glass fell from the frame and was replaced with the wrong side out.

The removal of a spherical glass for a day (ordered by me for constant wear) caused an epileptic seizure. Case XI may be one of this type, also Case III (see table published later).

Patients often break their glasses or frames and unfortunately get a wrong glass put in by some inexperienced or incompetent optician. They sometimes get the proper glass improperly inserted by some local jeweler after mending the frame, etc. Such occurrences are not infrequent, and a return of epileptic seizures is particularly apt to follow.

When patients are instructed to wear strong cylindrical glasses constantly, a simple bending of the frames may throw the glasses so much off axis as to create a far greater eye strain than an actual omission to wear them. Case V in the table I believe to be an illustration of this type of accident on some occasions, although he has at times caused an epileptic seizure by excessive overloading of his stomach with wine and indigestible food.

It is needless to multiply illustrations relative to this point. The greatest care and fidelity on the part of a patient, combined with intelligence and education, can alone prevent the possibility of an occasional epileptic seizure from imperfectly corrected refraction after the case is dismissed from the care of the oculist. Among ladies, who generally insist, from vanity, in wearing eye-glasses instead of spectacles, the bending of the nose clips and spring is always apt to distort the proper

adjustment of the glasses and to cause unconsciously a new source of eye strain to the patient.

It can be easily understood by the reader that what originally induced epilepsy may tend to cause its recurrence, and that neither the oculist nor the method is responsible for accidents that he can not avoid or the patients always be aware of.

Suppose a victim of malaria should be restored to perfect health by drugs, but, after a renewed and prolonged exposure to malarial germs, some evidences should appear of a return of the old malady, would it in any way reflect upon the results obtained by drugs?

2. Many chronic epileptics unquestionably (in my opinion) are influenced (even after long intervals of relief from seizures) by their former "epileptic habit."

By this I mean that under conditions of extreme nervous weakness or disturbance, such as often follow severe indigestion, anxiety, fright, loss of sleep, excessive exertion, etc., these patients are peculiarly apt to have a convulsion, where ordinary patients would have simply a headache or some milder evidence of physical depression.

Such attacks, as a rule, mean nothing. They are not to be construed as precursors of a return of the old epileptic condition. They pass without causing much if any constitutional depression; and the patient goes on (as before) free from subsequent seizures until some similar exciting cause occurs to induce one (Cases II, XXI, and XXVI, I think illustrate this point).

3. During the treatment of heterophoria * (which in epileptics is almost universally "latent") the oculist never knows positively until a year or two has elapsed

* A term that covers all anomalies of the ocular muscles.

whether he has established an absolute and permanent "orthophoria." * So long as any latent muscular trouble remains, occasional epileptic seizures are to be expected, even with the greatest care on the part of the oculist as to the perfect correction of the refraction of the patient and the greatest fidelity on the part of the patient as to following the directions of the oculist.

In a happy way, some one may, before the millennium, discover a drug or other process that will enable the oculist to determine at one sitting all latent heterophoria that exists in any case, as we now are enabled to measure, while a patient is under the effects of atropine, all latent error of refraction at one sitting; but, until that time, we will have to allow the patient to disclose it by piecemeal (as it were), and to patiently wait until, by proper scientific aids, we can feel sure that we are interpreting the eye tests of the patient intelligently, and relieving the burdens as fast as they are disclosed by the patients.

Prior to the discovery of atropine, this was the way that "latent" hypermetropia † was treated. Glasses were given to the patient as strong as he would tolerate at first; and, gradually, their strength was increased by the oculist, as fast as the patient would tolerate the increase, until the full correction of the latent hypermetropia was apparently reached.

4. It is important in all cases of chronic epilepsy, while eye treatment is going on, to be sure, if possible, that no other reflex cause exists to keep up the epileptic seizures.

* A term that means the establishment of perfect adjustment of the ocular muscles.

† The condition known as far-sightedness.

While it is my custom to have the teeth, ears, and nose of almost all patients examined by experts, and the pelvic organs of many female patients carefully looked into by a gynæcologist, with the view of eliminating all reflex factors that may coexist with eye strain, it is not always possible to state that the removal of eye strain alone in unsuccessful cases has completed the treatment, nor is it fair to infer that the eye work has been unproductive of any benefit.

A general proposition regarding the treatment of epilepsy may be thus stated: Every reflex cause that can be detected in an epileptic ought to be removed. The amelioration of the epilepsy may not come at once, and it will not come at all in a small proportion of cases; but an effort should be made in each case to give Nature every possible chance to reassert herself by relieving the nerve centres of all sources of reflex irritation.

In concluding this article, I propose now to present, what Dr. Peterson seems particularly desirous to obtain, as full a report as I can give of each of the twenty-six cases that I have published up to this date.

At considerable trouble, I have endeavored to get (by correspondence and interviews) all the latest information possible from the patients and the physicians who sent them to me—much of which I shall publish here.

CASE I.—This patient has himself reported frequently to Dr. E. W. Hedges, of Plainfield, N. J.

Concerning him, Dr. Hedges writes me as follows:

July 7, 1896.

DEAR DR. RANNEY: Replying to your letter of July 6th, in which you make inquiry as to the present condi-

tion of Mr. B. and Mrs. G.,* both of whose eyes you operated on for the cure of epilepsy, I can only report fully in regard to one.

Mr. B. has been perfectly well ever since. He works every day and has not had a single convulsion nor anything like one since you discharged him.

Mrs. G. moved to Buffalo about two years ago, since which time I have heard nothing as to her condition. Just previous to leaving she called upon me and declared that she was a different woman, mentally and physically, since the operation; that it seemed to her as though she had been living in a dream for years past. She had gained about thirty pounds in weight, as I remember it, and certainly looked younger and better than I had ever seen her. At that time there had been no return whatever of the epilepsy.

Dr. Peterson has written to me in regard to "the patient," whom I referred to you. I suppose he meant Mr. B., and I have answered him in substance as I have written to you.

I watched these two cases for years and saw them grow steadily worse under various forms of treatment, both dietetic and medicinal, and I am convinced beyond doubt that at least some cases of epilepsy can be cured by proper operations done upon the eyes.

I am, yours truly, ELLIS W. HEDGES.

The clinical history of this case (like those of many others in the table) when originally published by me was very incomplete. It fails to give many essential facts about the seizures of this patient that can be now supplied. The original reports of these cases were abbreviated as much as possible by me, in order to lessen the space in the *New York Medical Journal*, that I feared was being overcrowded by me at that time.

This patient had a number of attacks in my office;

* See report on Case XII and letter.

so that both my assistant (Dr. W. R. Broughton) and myself had ample opportunity to observe and record the clinical features of several of these seizures.

Once, while walking from my reception room to my consultation room, he suddenly stopped; his face became slightly livid, with a fixed stare; his head was twisted to one side; his fingers and arms worked convulsively; saliva drooled from his mouth; he muttered incoherently as the attack was passing off; and he urinated in his trousers. He was perfectly unconscious for a period of about ten seconds. While some of his attacks were somewhat lighter than this, he almost always urinated in his clothing.

This case is one of my reported failures, according to Dr. Peterson, although the patient has passed nearly four years without an attack of any kind.

My critic may say that this case is one of *petit mal*—which is true! But is not *petit mal* regarded by most standard authors on nervous diseases as not only a type of "genuine" epilepsy, but also as one of the most intractable types of epilepsy?

Dr. M. Allen Starr (whose assistant Dr. Peterson is) says, on page 273 of his work: "The treatment of *petit mal* is less satisfactory than that of *grand mal*. The only remedy of any service is nitroglycerin."

I quote this author because it is hoped that the published opinion of the head of the clinic may have greater weight with the assistant than that of any other author.

In spite, therefore, of the unmistakable character of these attacks and the failure to employ nitroglycerin as a curative agent, this patient made a quick and permanent recovery after the correction by me of his eye strain.

The evidence is overwhelming! The letter of the patient has been given (1894); the written testimony of the doctor and my own published records are given here; and Dr. Peterson holds (presumably) a letter from Dr. Hedges to the same effect, if he has not destroyed it.

Prior to my treatment, the records show that from two to ten attacks occurred daily. This patient had so slight a refractive error (see table) that no glasses were prescribed.

CASE II.—This patient was referred to me by Dr. J. B. Bissell, of New York, after he had consulted many physicians, among whom were Professor E. G. Janeway, of New York, Dr. St. John, of Hartford, and (also) Dr. Frederick Peterson, of New York, who ought to remember the letter he personally wrote the patient after he began with me the eye treatment.

An unfavorable prognosis regarding marked amelioration or cure had been given this patient by Professor E. G. Janeway early in 1892, who referred him to an oculist and advised the continuance of bromides. He was then having typical attacks of *grand mal* on an average of one every eight weeks, in spite of the bromides.

A letter received from the patient (October 17, 1896), in answer to one of inquiry from me, states that eight attacks have occurred in five years. This is about one quarter of his average when under bromides. He also says, "My health since March 7, 1896, has never been better, and, in fact, couldn't be better."

I regard this case as one of practical cure, although occasional epileptic seizures have occurred. The patient is no longer afflicted with the severe dyspeptic troubles that persisted until I treated him, and his physical and mental condition to-day makes a marked contrast with that which existed when he was a victim to bromides.

Unfortunately, the results in this case, that might otherwise have been expected, have been delayed by his

occupation. He has to work, of late, long hours as a bookkeeper, and to wear over one eye a hypermetropic cylinder and over the other eye a combination of a myopic glass and a myopic cylinder. He has also been obliged to use his eyes almost immediately after each operative step, and systematic out-of-door exercise is often rendered impossible by his business. He has once passed eight months without a seizure; again, nine months; and again, eleven months.

I feel personally convinced that he would remain entirely free from attacks if he lived out of doors and had an occupation in which he did not have to use his eyes. He is a strong, hearty eater, and needs systematic exercise to keep him in good physical shape.

CASE III.—This case of epileptic idiocy was sent to me by Dr. A. D. Stewart, of Port Byron, N. Y. It was a desperate case, at best, to handle; and the clinical history of the immediate results that followed the use of spherical glasses and two graduated tenotomies upon the interni were startling (see published records, February, 1894).

His parents, however, on returning home, after only a few days of treatment, disregarded my instructions about keeping the glasses prescribed by me upon the boy; and, in spite of protests from Dr. Stewart and the oculist to whom I referred them, they allowed him to relapse into epileptic idiocy.

I quote the following letter from Dr. Stewart, written in answer to my letter of inquiry about this patient:

PORT BYRON, N. Y., *July 9, 1896.*

DEAR DR. RANNEY: Yours of the 7th inst., asking about the condition of R. G., is received. When I last saw him, a few months ago, he was having fits worse than ever and was fast becoming idiotic.

I received, about a week ago, a letter from Dr. Peterson desiring information regarding the results of your treatment of the case.

I gave him a full history of the case, laying particular stress upon the remarkable change in the boy after

the operations and the use of glasses; the entire freedom from spasms for six weeks; in fact, his general improvement until he lost his glasses in the river.

I told him of the parents' refusal to return for further treatment, and added that I had not the least doubt that the boy would have been cured had he continued under your care.

With kind regards, I remain respectfully yours,

A. D. STEWART.

I would call the attention of the reader to the fact that this is the second letter that I find was mailed to Dr. Peterson nearly a month prior to his last reply to me—of which no intimation from him has thus far been given to the readers of the *Journal* or myself:

In my original report of the case in the *Journal* (February, 1894) I quoted a letter from Professor F. W. Marlow (the oculist), of Syracuse, N. Y., to whom I referred this patient for the careful watching that I knew he required. The report of this remarkable case has been given quite fully by me, and my only regret is that I can not add this case to my reported cures, as I had every reason to hope I could do under further inspection and treatment.

CASE IV.—This patient had been under my personal care for epilepsy, at intervals, from 1871 to 1886, and was treated both dietetically and with every combination of bromides. Then his eyes were examined and corrected.

When I first reported his case in the *Journal* (January, 1894), he had been perfectly free from epilepsy for seven years.

Within a year I have held a conversation with him, and he then reported that "his epilepsy was a thing of the past." I am sure that I should have seen him in my office if any seizure had occurred up to this date.

He has now been nearly ten years without an attack.

I would state that the attacks of this patient were typical *grand-mal* seizures, with lividity, complete unconsciousness, frothing, biting of the tongue, and severe convulsions.

He once worked himself under a sofa while in a fit. He has been carried out of a theatre while in convulsions.

Between the attacks he was perfectly well, and was regarded as one of the brightest speculators on the street.

May I ask Dr. Peterson, for the benefit of the reader, why he overlooked this case when he wrote that I had "reported nothing but failures"? The man's clinical history meets every requirement. He had typical *grand-mal* seizures, was well between the attacks, had been treated by every bromide combination with negative results, and has been cured by eye treatment.

CASE V.—The character of the attacks of this patient can not well be questioned. He had cut his head badly in one fit and in another had knocked out a tooth. His father described his attacks, when he brought him to my office, as "frightful to witness"; and he gave in detail all the symptoms of *grand-mal* seizures.

His heredity was a bad one (see my full report of the case)! He had been for some time under the care of a leading neurologist of New York, who had given a very unfavorable prognosis, and had steadily increased the doses of bromides until the mental condition of the patient was deplorable. He was not allowed to go about without an attendant when I first saw him.

I quote a letter from this patient, in answer to my inquiries, as follows:

July 24, 1896.

My dear Dr. Ranney: I have your letter of July 22d. In reply, I would say that I have had no recurrence of my old trouble since April, 1895.

Sincerely yours, H——.

Dr. E. L. Mellus, who sent this patient to me, lately returned from a two-years' trip in Europe—which he has devoted, I understand, chiefly to the study of ophthalmology, because his interest in this case and the treatment of his own eyes by me awakened him to the importance of this field.

I have been unable as yet to get a written reply to my letters to him regarding this case, as I have not ascertained his present address.

I regard this case as one of practical if not absolute cure, from a most unfavorable beginning.

The isolated seizures that the patient has had (three in nearly six years) have all been due to a marked gastric upset—from gross imprudences * in eating, drinking, etc., combined with or due to some maladjustment of his glasses.

He is to-day in charge of one of the largest manufacturing industries in New England; nearly two years have passed since any sign of epilepsy has appeared; and, prior to the last attack, only one very slight seizure occurred in three years. He has married, and is far above the average man in intellect to-day.

This patient is wearing an extremely strong and complicated glass over one eye—and the slightest bending of his spectacle frame alone might cause an epileptic

* Two of these attacks followed excessive use of champagne with lobster salad.

seizure, and I think has caused at least one, although he had done other things to upset his stomach.

If this case only was all that I had to report I should feel that the fact that eye strain must be accepted as a cause of "genuine" epilepsy was established. It is a practical cure from a most unpropitious beginning.

I could quote, from a number of letters written me by others regarding this patient, many expressions of amazement and delight over the wonderful change that had followed the eye treatment.

His immediate family and friends regard him as cured. His eye tests are apparently normal, and his attention has been so frequently called to the importance of keeping his spectacle frames in their proper relationship to the eyes that a marked displacement of his strong cylindrical glass is not likely to occur in the future.

Case VI.—This case of terrible and dangerous epileptic seizures has been reported by me as one of the most difficult and unpromising cases that I or any one was ever called upon to treat.

The history given in the *Journal* (January, 1894) is very full and complete up to that date. At that time the patient had passed two years and a half without any epileptic seizures.

He departed for the West about January, 1895, and lived in a very high altitude. Soon afterward he reported that a series of three attacks had occurred after fainting from the pain caused by two enormous boils. These attacks should not be awarded any clinical significance.*

† The reader is referred to previous remarks of mine relative to causes that may induce occasional epileptic seizures in patients who have been victims to chronic epilepsy. The high altitude in which he was living appears to have acted badly upon his health.

He has had only this series of attacks in four years and six months. I attribute the relapse of his epileptic tendencies to living in a high altitude. Since his return to New York (fourteen months ago) he has never had a fit.

I regard this case as one of practical cure. Contrast the present condition of this patient with his past, when a room padded with mattresses was always kept ready for his confinement, and thirty-four days of almost continuous convulsions occurred in one year.

This patient was to have been committed to an asylum (as a hopeless and dangerous epileptic) on the sworn testimony of two medical men of repute, had the parents not consented to try the eye treatment at the solicitation of friends before taking so sad a step.

This is another of my "failures" that Dr. Peterson seems to have overlooked.

The "genuine" character of the epileptic seizures of this patient has never yet been called into question; yet, for the benefit of Dr. Peterson, it may be wise for me to state that all who have witnessed the attacks before I saw the patient concur in the description of a most horrible series of convulsions of extreme duration, with total unconsciousness, lividity of the face, frothing at the mouth, biting of the tongue, the epileptic cry, and a more or less prolonged stupor after each attack.

Between these attacks he was as well as any person drugged with bromides and chloral could be. His mother had for years terrific and frequent attacks of typical sick headaches. She was cured of them later by graduated tenotomies performed by me upon her interni.

This patient comes into my office occasionally, and has been seen by me within a week. He is perfectly

well, and for fourteen months he has had no sign of any epilepsy. In fact, not counting the three fits that occurred while he lived in an extremely high altitude, he has had no fits for over five years.

CASE VII.—This patient had an heredity of epilepsy and insanity. One brother died of epileptic idiocy in an institution for the feeble-minded; the father had dipsomania and, at times, had been regarded as insane.

The fit that this patient had in my office was a typical attack of *grand mal*. He was totally unconscious, livid, frothed at the mouth, was rigid for some seconds, twisted his head to one side, then had clonic spasms of the limbs, and was drowsy after the fit passed off. He had to be held in a chair by my assistant and myself.

He had, while at school, several similar attacks to this one prior to being placed under my care. Originally, his attacks were milder and resembled a fainting spell.

Not long ago, his mother called to have me examine another member of the family. She reported that her son was and had been entirely free from epileptic attacks.

This seems to be another case of failure (according to Dr. Peterson) that I have reported. Even in my last report (January, 1894), this patient had passed two years and a half without a fit and without medication; yet no mention of this remarkable report has yet been made by Dr. Peterson.

CASE VIII.—This case was particularly interesting to me, because of the apparent connection between the onset of the epilepsy and an attempt on the part of an oculist to establish binocular vision by glasses.

The reader is referred to the full history of this case (*New York Medical Journal*, February 17, 1894). The patient abandoned eye treatment when hardly begun

because he had a fit, and his friends urged the bromide treatment. His prospects of recovery seem quite encouraging to me, had he carried on the eye treatment as I advised.

CASE IX.—This case was that of a young girl who had so many severe epileptic seizures within twenty-four hours after I advised the withdrawal of bromides that her physician despaired of her life, used chloroform, and hastily returned to the bromides.

This fact illustrates forcibly that Dr. Peterson's published statement, which I quote here, is not always correct. He says:

"It is a fact which has not as yet received sufficient attention, that in cases of chronic epilepsy long treated with bromides relief from attacks for considerable periods of time follows diminution or cutting off of the bromides."

For nearly ten years I insisted that every epileptic patient who came under my care should pass at least one month without bromides or chloral, and keep an accurate record of the attacks (severe, medium, or light) during this period. This withdrawal of all drugs always preceded any eye treatment; and it was insisted upon by me because the basis of my records before and after eye treatment (in my office) would thus be alike—*i. e.*, the patient's condition would not be masked by the use of drugs for one month prior to the eye treatment and also while this scientific method of treatment was being tested.

Let me analyze the twenty-six cases (here discussed) from this standpoint. In only twelve cases was this point determined.

Fits were increased by withdrawal of bromides, Cases I, V, IX, XI, XVIII, XIX, and XX.

Fits were not modified or decreased by withdrawal of bromides, Cases VII, XIII, XIV, XXV, and XXVI.

In the following cases the effect of withdrawal of the bromides upon the frequency of attacks was not determined: Cases II, III, IV, VI, VIII, X, XII, XV, XVI, XVII, XXI, XXII, XXIII, and XXIV.

Of the twelve patients in whom the effects of withdrawal of the bromides were determined by me, seven experienced a marked increase of attacks and five experienced little if any modification of previous intervals between seizures. In no case were the seizures arrested for any length of time.

This would not appear to justify the implied conclusion which Dr. Peterson apparently desired the readers of this controversy to make—viz., that my cases had improved simply because I had withdrawn bromides from them.

That this inference is not unjust to Dr. Peterson is shown by another statement made by him in the letter containing the previous paragraph quoted, which reads as follows:

"The doctor [myself] therefore rightly says that 'at least ninety per cent. of chronic epileptics have been better without bromides,' but his addition of the phrase 'after a satisfactory correction of their eye defects' shows to what extent illogical reasoning may lead."

When patients have been drugged by all possible combinations of bromides, and often with chloral at the same time, until their mental faculties and physical powers have nearly reached their limit of endurance (and this is too often the case with patients sent to epileptic institutions), I do not wonder that "the reports

of hundreds of cases at Bielefeld and Craig Colony" show an improvement by the withdrawal of the drugs from these poor victims. Anything would help them if it gave Nature even a slight chance!

This is the weak spot in all tabulated statistics regarding epileptics from institutions and clinics. The patients tabulated are too poor, too weak often in intellect, too imperfectly nourished, too heavily drugged in the past, sometimes too low in the moral scale, and generally too low in intellectual power to make such reports of as much actual value as they might appear numerically. Nothing can lie so much as figures ('tis said) when manipulated with skill; and patients taken from private practice of a higher type, with wealth, good home surroundings, more culture and intelligence, and who have had the benefit of good medical counsel in the past, are certainly a better basis for clinical deduction than the previous class described.

With this pardonable digression, which the history of this case brings to the surface, I shall proceed with some interesting facts regarding the treatment of Case IX.

This girl was but a child when first seen by me. Her system had been saturated with bromides. She had not menstruated. She was very sluggish mentally; and, physically, she was extremely weak. She had an idiotic brother.

As hers was one of my earlier cases I feel sure that her eye problems were imperfectly solved by me. All tests for hyperphoria were then made with clumsy instruments, with a head rest to insure immobility and a spirit level on the frame of the prisms that rested upon the patient's nose while making the tests.

I am satisfied that the best results of eye treatment were not obtained in her case; yet she showed a wonderful physical and mental improvement. Her fits were materially lessened in frequency. She took no bromides, and grew into a bright and attractive young lady. I have some very interesting photographs of this patient (taken at different stages of my treatment) which show very clearly the physical and mental improvement.

CASE X.—This patient has been cured. No attacks of any kind have occurred for nearly five years.

His severe attacks were typical attacks of *grand mal;* and frequent *petit-mal* seizures had preceded them.

This is another case of failure that Dr. Peterson seems to have overlooked.

CASE XII.—This patient has been completely cured of attacks of *grand mal.* She has been referred to by Dr. Hedges, of Plainfield, N. J., in his letter published in connection with Case I.

The following letter from her husband is on file in my records:

July 10, 1896.

DEAR DR. RANNEY: I am very glad to say that Mrs. G. has not had any more of those dreadful attacks, nor, so far as I can see, any signs of them. The last was in August, 1893. Next month will make three years.

You wish to know how her present health compares with that before the eye treatment. I do not know how to tell you, as there is no comparison. For four or five years before I took her to you she had been having attacks or seizures at irregular intervals; sometimes one or two a month, and at others oftener. Just before she began the eye treatment she had them very frequently and violent; in consequence of which her strength was almost gone, life was a burden to her, and we had to keep a companion with her all of the time.

Since November, 1893, we have had no companion, and she has done her own housework almost continually since that time. In other words, she is a new woman, physically and mentally.

I also wish to add that before taking her to you I had consulted a number of prominent physicians, North and South, and they could do nothing for her. Their medicines apparently did more harm than good.

You made me promise to discontinue the use of all drugs, which we did, simply treating her eyes. Since that time she has used no medicines, nor called in a physician, except for scarlet fever.

It gives me great pleasure to write this letter, only I feel I can not write it strong enough.

If you can make use of me in any way I shall consider it a pleasure to serve you. If it is not necessary to use our names in this matter I should prefer that you will not. However, I shall be glad to answer any letters from any one upon this subject.

In order to make the diagnosis of the character of these attacks positive I wrote to the husband in October, 1896, propounding certain questions to him in regard to them. I publish here his reply in full:

October 21, 1896.

DEAR DOCTOR: I will take your questions in the order in which you have asked them, and try to give you replies to each:

Did Mrs. G. ever give a cry as her attacks came on? No.

Did she ever become completely unconscious? Yes; always.

Did she ever bite her tongue? Yes; several times.

Did she ever froth at the mouth? Yes; but not very much.

Was there any blood in the froth? Yes; I suppose from biting her tongue.

Was there contraction of muscles of arms, legs, and

face? Yes, always in each; and her mouth was always drawn very much to one side.

Did she ever fall? Yes, several times, and would have fallen every time, unless she was caught or was sitting or lying down.

Was there ever lividity of the face? Yes.

Did she ever have any warning of the attacks? This is one thing I could never find out. She has always had such a dread of the attacks that she will not talk of them. Many times I have asked her this question, and she would say "No"; but I have noticed that on the days that she would have the seizures she would be different than at other times; that she would have a frightened, nervous look that would lead me to suppose that she had some feelings that made her fear an attack. This is all the warning that I have ever known of.

She commenced having the attacks in February, 1889. They continued until you took her in hand in February or March, 1893, coming at intervals of a few weeks apart all of this time, except when under the strong influence of bromide.

Would Dr. Peterson call this a case of true epilepsy? Is it one more failure that he has overlooked?

Case XIII.—This patient was sent to me by Professor A. A. Smith, M. D., of New York. She has been completely cured of genuine epilepsy by the relief of eye strain through one graduated tenotomy.

Several points of great interest are illustrated by this case. In the first place, the patient had no error of focus, either prior to or after the instillation of atropine. In other words, she was absolutely emmetropic. No carping critic can, therefore, lay any stress upon the exact amount of benefit that must be attributed to the glasses prescribed.

In the second place, the esophoria was almost totally latent. Seven degrees were disclosed later by the pa-

tient, after repeated examinations. She would, therefore, have been pronounced by many oculists free from any muscular trouble.

In the third place, the eyes were brought to a state of perfect muscular adjustment by one operation made upon the right internal rectus.

In the fourth place, no further latent muscular defect in the orbit has ever been observed.

In the fifth place, the fits ceased at once after the tenotomy; and have never returned, although three years and six months have elapsed.

In the sixth place, her physical condition has been made perfect and remained so. She had been an invalid.

Finally, she had "genuine" epilepsy—as all my critics must allow upon the evidence here presented.

I quote first a letter from the husband, in answer to my written inquiry concerning the patient, as follows:

July 11, 1896.

My dear Dr. Ranney: Your kind letter of the 17th inst. came yesterday. Mrs. W. was so much pleased that she said she would answer it herself.

She has never felt better or looked better than she does at present.

The only symptom she has had was in July, 1895, on board of a steamer, the particulars of which I wrote you shortly afterward.

The food had been wretched, and for nearly ten days she had gotten along by making tea in her cabin—lunches, in fact. She could not swallow the "hash" prepared on the boat; so that one morning, while dressing, she fell over, till I caught her, helped her on the bed, and she simply kept quiet the rest of that day.

[Note.—This, in Dr. Smith's opinion and my own,

was only a slight faint. It was not convulsive, nor is any loss of consciousness reported.]

In response to a letter to Professor A. A. Smith, asking him to write me concerning the attacks of this patient, I lately received a personal call from him. He stated at that interview that unfortunately he had not actually seen the patient in any of her epileptic seizures, but had sent her to me for eye treatment because he believed them to be attacks of genuine epilepsy, and had told the family that drugs offered no prospect of any permanent benefit in his opinion.

He advised me to establish the actual type of convulsion that the patient had, by propounding to the husband by letter certain questions that he suggested. I did so; and these were the questions and answers:

1. In her attacks did she lose consciousness completely? "Yes."

2. Did she ever make any noise or give any cry as the attack came on? "Yes."

3. Did she froth at the mouth during the attacks? "Yes, a little."

4. Was there ever a tinge of blood in the froth or on the pillow? "Yes, but not always."

5. Was there any soreness of the tongue after the attack? "I can not say."

6. Was there much convulsive movement of arms and legs? "Yes."

This last report was followed by an unexpected visit from the patient herself yesterday. She is the picture of health, and has had no symptoms of her old malady.

What has Dr. Peterson to say regarding this failure of mine?

Case XIV.—This patient was having an attack of typical *grand mal* on an average of every fourteen days when I first saw him. He had taken bromides for seven years.

His eyes were perfectly normal in construction. Even under atropine he showed emmetropia. He had a high degree of latent esophoria.

If "counter-irritation" is the reason why graduated tenotomies help epileptics (as Dr. Peterson would lead others to believe) this patient had a full dose. One hand was nearly burned off by overturning a lamp while in a fit, amputations of fingers were required, and his life was in peril for some time.

His condition to-day warrants (in my opinion) the report of "decided amelioration" by eye treatment (see table). He has passed at one time over six months without a seizure, and has had about one quarter of the attacks during the past three years and half that his previous average of attacks would have aggregated in the same time.

Case XV.—This patient has been practically cured of epilepsy. He is rather hard to control, and does not follow instructions as to regularity of habits, eating, sleep, and exercise.

He keeps very late hours at times, is entered often in trial contests of skill of a violent athletic kind, eats irregularly and too heartily of rich foods, and in many other ways brings about an occasional gastric upset and a very rare epileptic seizure by his own acts. If he lived a regular life, I believe he would never have an epileptic seizure. Furthermore, he uses his eyes constantly, as a bookkeeper, during business hours.

Case XVI.—This case, in justice to myself, should be excluded from the list of reflex epilepsies, as it is one of organic brain disease. Furthermore, the patient was under treatment but a short time, and no satisfactory eye tests were ever obtained, as his mental powers were too much impaired to make tests reliable. He is reported by me as "unimproved."

CASE XVII.—This patient is also reported in the table as unimproved, although the opportunities for accurate eye work were in no way hampered for one year. I am satisfied that some other reflex causes existed in this case (possibly pelvic). Her epileptic seizures were too infrequent to enable me to tell what clinical results I was to expect from each tenotomy. She was absolutely emmetropic, but had quite a high degree of latent esophoria. This was relieved satisfactorily, yet her fits continued.

CASE XVIII.—This patient came to me with a letter from Dr. H. J. Dwinell, of Barton, Vermont. She showed both crossed and vertical diplopia, accompanied by severe attacks of *grand mal*, and marked evidences of the poisonous effects of the bromide treatment.

Her father came at the same time (with almost identical eye conditions) as a terrible sufferer from headaches. He was completely cured by tenotomies, and has remained well up to our last records of his case.

The treatment of this case was never completed to my satisfaction. It was a very difficult eye problem to handle; and long intervals of rest between the operative steps were deemed by me to be the safest way to establish a perfect adjustment.

The father seemed to fail to appreciate the time and skill required to do this work and ceased to follow up the eye treatment (after an exhibition of pique on his part).

I quoted several extracts from some of his letters in my original reports of this case (February, 1894). The patient went at one time eighteen months with only three light attacks; had resumed practice on the piano; required no attendant as she once had; went to places of amusement as did her friends, and was actively employed in housework during the day. Her general health had been almost completely restored.

The final results of eye treatment in this case I do

not regard as yet established; but enough benefit has already been gained to make an impression upon every one who had seen her often in the past.

CASE XIX.—This case was sent to me by Dr. T. J. Martin, of Buffalo, N. Y., nearly four years ago. For about two years I have not seen this child, and the eye treatment has been only partially carried out. She has passed some quite long periods without attacks since she was first seen by me, but of late has had epileptic seizures more frequently than before. Her physician and parents attribute their increase to the approach of menstruation and to overloading of her stomach.

I have reason to believe that a completion of the eye work would lead to still better results than have thus far been obtained.

CASE XX.—This case has been completely cured. The patient was sent to me by Dr. Clara E. Gary, of Boston, on June 15, 1893. She had "genuine" attacks of *grand mal*, with frothing at mouth, total loss of consciousness, and rigidity followed by clonic spasms of arms and legs. She did not always bite her tongue, and she had no special aura. She had taken various combinations of bromides for five years. In spite of large doses, she had ten severe convulsions during that period; and after stopping the bromides, she had two severe fits within the space of two months.

From the first visit to my office up to the present time she has not had a single convulsion or any symptom of one. In answer to a letter of inquiry from me, she writes as follows:

July 12, 1896.

DEAR DR. RANNEY: If all had not been well with me, I think you would have heard. I am very glad to be able to say that I have never had a return of the old trouble, and only one sick headache in all the time since you operated upon my eyes.

It is such a comfort to be free from these lesser ills, and, for the greater one that hung over me for so

long a time, no one can tell what a feeling of thankfulness there is in one who has had the trouble himself and been freed.

I have been to the physician who first had charge of my case to tell him of the success of your treatment, hoping that others might be helped who came under his care.

The time has been so long now that I feel I may call it a cure, although I hardly dare do so. Am I right?

No letter has thus far been received from Dr. Gary in reply to one sent to her former address, but the letter from the patient tells its own remarkable story in a very simple and direct way.

This patient has used her eyes constantly as a bookkeeper. Is this a case of failure in Dr. Peterson's eyes?

CASE XXI.—This patient was sent to me by Dr. Elmer Small, of Belfast, Me. The patient had already been subjected to eye treatment in the hands of a local oculist who had cut both interni; hence, as I could only record at the first visit the eye conditions disclosed after two tenotomies, I am not able to report fully on the treatment.

In actual number I do not think the attacks have been very markedly decreased since the last note (1894), although the physical condition of the patient had improved to a remarkable degree when I last saw him. Suspecting that an old injury to his head might be a cause of his epileptic seizures, I sent him to Dr. Robert F. Weir with the following note:

March 13, 1895.

MY DEAR DR. WEIR: The bearer, Mr. T., is an epileptic. The rectification of his eye muscles has done him much good, but has not arrested his seizures *in toto*. He gives a curious history of a fall upon his head prior to the epileptic attacks, and has come from Maine to see if trephining would help him. I should

appreciate a written opinion from you as to what you would advise; and, should you choose to act, I would intrust him to your care. Cordially yours,

A. L. RANNEY.

To this letter, Dr. Weir sent me the following reply:

DEAR DOCTOR: This patient can not describe his fits sufficiently in detail to attempt any localization, and the point of supposed trauma is too indefinite for action. He should in my judgment be seen in several fits and the sequence of muscular invasion noted down. I may, however, say that unless thus positively localized, trephining will do but little good; and even when localized and treated surgically the improvement is a dubious one. Yours most truly,

R. F. WEIR.

CASE XXII.—This patient had extreme nystagmus (chiefly of left eye), with daily attacks of typical *petit mal*. The left eye would at all times fly about in the orbit (especially so when the right eye was covered) in a most remarkable manner. She had been operated upon in youth by a Boston oculist for double convergent squint. Both of the interni were completely severed at that time (according to the old method), and the date when the terrible jumping of the left eye began is not known by the parents. The extreme difficulties in the treatment of such a case, when the eyes had already been operated upon years before and after nystagmus had set in, must be recognized by all who have had any experience in the treatment of eye muscles.

I saw this patient last week. She has fewer *petit-mal* attacks each month than when my work was begun upon her eyes, and an almost total arrest of the nystagmus so long as the right eye is not covered. She shows still some tendency toward esophoria and left hyperphoria. She is now wearing prisms because I have felt a hesitancy in doing any tenotomies upon

this patient without long intervals of rest between each step.

I have reported this case as one of "decided amelioration" in the following table.

CASE XXIII.—This case was sent to me by Professor A. A. Smith, M. D., of New York.

He was a young minister of the gospel who had typical attacks of "genuine" epilepsy, and had been obliged to cease his work as a pastor. While in New York city to get professional opinions regarding his case, he was advised by one eminent neurologist to have his head trephined—although he had no scar, no depression of the skull, no typical symptoms of a localized irritation in the brain, no circumscribed pain at any spot, no paralysis, and in fact no indications as to just where to trephine or for what. This the neurologist who advised operation acknowledged.

At my request, Professor Robert F. Weir, M. D., examined him to determine if he found any indication for trephining, and decided most positively that no indications existed for so dangerous a procedure.

The patient disclosed a high degree of esophoria and was treated by me at irregular periods during 1894. Since then, he has been too far away from me and too busy in his profession to follow up the eye treatment as he should have done.

He has been greatly improved in his general health and is now busy in his calling. In the frequency of his epileptic seizures he has been markedly benefited (according to last report). He has not yet been cured of his epilepsy, nor is the maladjustment of his eyes yet perfectly corrected.

CASE XXIV.—This patient was referred to me January 7, 1889, by Professor J. Williston Wright, M. D., of New York. His family history was a bad one, as epilepsy existed in both paternal and maternal ancestry. He had been circumcised as a baby for nervousness; had had epilepsy for eight years le-

fore I saw him; and for four years had had dangerous outbreaks of temper, in which he had thrown knives, forks, and other weapons at people, and was regarded as dangerous to his companions and others.

He was so excitable and uncontrollable that I operated at one sitting upon both interni under chloroform, because prior to operation he had homonymous diplopia and showed esophoria of 20° at the first tests. This practically completed all the work that I was able to do with this patient. He was soon placed in a private institution in England, and later he was removed to a private institution in America, where he now remains an incurable epileptic.

This case should in no respect be counted in this inquiry when figuring percentages of results, as the eye treatment was abandoned immediately after the first attempt to rectify his muscles.

Case XXV.—This case was referred to me April 7, 1892, by Dr. F. H. Olin, of Southbridge, Mass. The patient had had fits in infancy, and for four years before I saw her had had attacks of epilepsy in school. She had had many attacks of *petit mal* (often several during twenty-four hours) and several very severe *grand-mal* seizures at irregular intervals. Six months of bromide treatment accomplished nothing, and it was abandoned before I saw her. Her mental condition was unimpaired and she was perfectly well between the seizures.

She was withdrawn from my care before the eye treatment was completed, although I saw her at irregular intervals for a year and did some operative work on the muscles.

I have reported this case as unimproved, although I am not sure that decided amelioration or even cure is not possible in this case. I have written to Dr. Olin for a report, but have received no reply as yet regarding the condition of this patient.

Case XXVI.—This patient was referred to me by Professor A. A. Smith, M. D., of New York. Her case is reported in full in the *Annals of Ophthalmology and Otology*, April, 1896. She had been under the care of many physicians. She had been treated medicinally and dietetically for a long time with no benefit. She had also been subjected to subcutaneous injections of animal extracts for some months without benefit. She had also been seen by several surgeons, some of whom had recommended the removal of the coccyx. She was a bright, accomplished girl, who showed no signs of mental impairment from her epilepsy, and who was perfectly well between her seizures. Her attacks were commonly nocturnal—of the typical *grand-mal* variety—and accompanied by every diagnostic symptom. No reflex cause was found after examination in her pelvic organs, rectum, or teeth. She had no kidney disease. She had a slightly deflected and tender coccyx. She is unusually placid in her temperament and free from tendencies to nervous excitability. She is remarkably strong and well developed and is a very skillful athlete.

This patient presented a very complex eye problem that was extremely difficult to solve. Very complete details of the treatment of this case have already been published. Until within a few weeks past, she had been totally free from attacks for a period of sixteen months. During this summer, from causes that are somewhat obscure, she had got her digestive apparatus thoroughly upset and has had four epileptic seizures. Her eyes have been examined lately on her return to this city and a material change in them has been found. Her glasses are apparently properly focused and adjusted, but she shows some latent hyperphoria uncorrected; so that I am not at a loss to account for this return of her epilepsy, which I trust will prove temporary.

As she had been under my observation only two years and six months (more than half of which time she had been free from epileptic seizures and observed

by me at very rare intervals), I do not consider that the eye problems are yet thoroughly solved. She is to-day wearing, and has worn for over a year, a one-degree prism for left hyperphoria; and it is possible that the latent hyperphoria which still remains to be corrected in this case is a very important item in her future treatment.

I have reported her case in the table as "decidedly ameliorated," but not as cured.

In closing this lengthy reply to Dr. Peterson, I think I have proved to the satisfaction of the reader that out of the twenty-six cases whose records I have published up to this date, four have abandoned treatment almost from its beginning and should not be counted. Of the twenty-two remaining cases, ten, or forty-five per cent., may be considered as well (seven being completely cured and three being practically cured); amelioration of the attacks has been afforded by eye treatment in nine cases, or nearly forty-one per cent., and no improvement has been observed in three cases, or about fourteen per cent.

Seven cases completely cured: Nos. 1, 4, 7, 10, 12, 13, and 20 of table.

Three cases practically cured: Nos. 5, 6, and 15 of table.

Nine cases of amelioration: Nos. 2, 9, 14, 18, 19, 21, 22, 23, and 26 of table.

Three cases not improved: Nos. 16, 17, and 25 of table.

Four cases not counted: Nos. 3, 8, 11, and 24 of table.

Total, 26 cases.

Some of the cases reported as ameliorated are

still under my observation and may eventually be cured.

As this reply is to be final (so far as I am concerned), I think it wise for me to make here a general *résumé* of such points in this discussion as I wish to stand on record. Life is too short to attempt to convert those who will not see, or to wrangle over technicalities when more important matters stand idle.

General Résumé.

A. I have endeavored to confine myself to the points at issue between Dr. Peterson and myself.

B. I think I have shown that reflex epilepsy exists in a far greater proportion of cases than Dr. Peterson thinks, when he says that the "proportion is certainly not above one or two in a thousand."

C. I think I have shown that Dr. Peterson is in error when he says that "authentic and trustworthy instances of the kind recorded in literature could easily be counted upon the fingers." My own published cases and others quoted would strain two ordinary pair of hands.

D. I think I have shown that Dr. Peterson is in error when he says that "the removal of reflex irritation will seldom alter the course of the disease." Eighty-seven per cent. of this set of published cases of reflex epilepsy have either been cured completely or markedly benefited by the relief of eye strain. Other men have had and published similar results.

E. I have brought forward here some very strong written testimony from physicians of repute and the patients themselves to prove that the histories published by me were those of "genuine" epileptics; that

the results were as I stated, and that benefit followed the relief of eye strain after a failure of medicines or diet to control the seizures.

F. I think I have shown that I am not afraid (as Dr. Peterson has asserted) to rest my claims on clinical facts—suppressing nothing and endeavoring to throw all possible light upon the points at issue.

G. I think I have shown that the benefits which these patients have experienced are not due either to stopping the bromides or to simple counter-irritation (as Dr. Peterson has asserted). If this were so, why does not Dr. Peterson do the same and get the same results? He might get up counter-irritation on some of the large number of epileptics to whom he offers now but little encouragement.

H. I deny as absurd and untenable the remarkable statement of Dr. Peterson that the mental effect on a patient from a tenotomy is all that is produced. This is too weak a statement even for argument. The adversary must be in the last ditch when this is the only loophole of escape from clinical facts.

The effects of graduated tenotomies upon the relative power of the eye muscles, as well as upon the adjustment of the eyes, are too definite and positive (when done with skill) to justify any one in attempting to make the "mental effect" appear more prominent than the actual effect. The latter can be scientifically measured; the former is mere speculation.

I. I deny the implied statement of Dr. Peterson that a sort of permanent mental hypnotism is a possible factor in my results. I should be proud to possess any psychological power that could confer health and happiness upon sufferers that I meet; but I must modestly disclaim

any such happy endowment, and give to Nature alone the credit of re-establishing herself after her burdens have been removed.

J. I hope that my readers may now acquit me of being a victim to "mental blindness" (as Dr. Peterson has asserted). I dislike to cast a doubt upon the accuracy of his diagnoses and conclusions so frequently; but for the sake of my family, patrons, and friends, I am extremely anxious to be again regarded as not absolutely wanting in reasoning power.

K. I think that Dr. Peterson's assertion that "the claims of Dr. Ranney regarding the efficiency of eye treatment are not and will not be substantiated" may be regarded by the reader as rather strong in the light of the facts published here. I have no doubt that my adversary means to be courteous at all times, but his methods of showing it are sometimes unfortunate and obscure.

L. I think the total percentage of epileptics who suffer from eye strain as an important factor is very large, after first deducting from the total number the comparatively small number of cases that owe their epileptic seizures directly to some organic lesion of the brain or to a depression of the skull. Almost all chronic epileptics give a history of falls that have some time injured the head in some way. Few of them, however, have enough depression of the skull to make trephining imperative, and in every such case the injury must have preceded any epileptic seizures to make it probable that the fits were the direct result of the injury.

M. The enormous percentage of complete and practical recoveries (in this set of twenty-two cases reported here, where eye strain was relieved) is much larger, I

think, than any one can reasonably hope to obtain in any larger number of cases, even when the oculist is particularly skillful in solving the complicated eye problems of epileptics, and has had a wide experience in this field. Such a percentage as reported here is vastly greater than I have ever proclaimed or even hoped for in epileptics.*

N. I think I have shown that eye strain can exist without any eye symptoms, and that "pain in the occiput and nape of the neck" need not necessarily exist, although common in such cases.

O. I think I have explained quite fully why epileptic patients may have temporary relapses after good results from eye treatment, without in any way justifying invidious criticism upon the treatment or the permanent benefits that might have been uninterrupted if the patient had avoided new sources of reflex irritation.

P. I would impress the reader with the fact that any marked amelioration of epileptic seizures (in violence or frequency) without drugs is a great step in advance of previous methods of medication (even if the cure is not complete).

Q. I would again impress upon the medical profession the extreme difficulties of eye treatment of chronic epileptics, and the necessity of long-continued and patient watching for "latent" errors of adjustment, before operative work is discussed or attempted.

Moreover, it is important that the oculist be familiar with the new methods, and that the patient be suffi-

* Epilepsy is regarded by most authors of repute as almost an incurable disease. If any one *could positively cure all cases*, the entire hotel accommodations of New York would not be sufficient to hold the epileptics that would apply for relief.

ciently intelligent to realize the importance of details and to be persistent in the treatment until perfect adjustment of the eyes is established.

I lately received the following letter from a country practitioner that tells its own story:

"DEAR DR. RANNEY: I have read your articles on the eye treatment of epilepsy with great interest. I know little about eyes, but I have an epileptic patient that can not be cured. I am tempted to cut an eye muscle and see if it does any good."

R. I think it can be shown that many eminent medical men, who bitterly opposed in years past the views advocated here, have been forced at last to give some recognition to the eye treatment of nervous diseases. They are not yet enthusiasts perhaps, nor are they all skillful in the work; but they can not afford to longer oppose, with manifest bigotry or intolerance, the clinical facts that have been brought to their notice.

It is needless to bring others than Dr. Peterson into this controversy; but quotations can easily be made from many of the latest text-books on the eye and on nervous diseases to show how much attention has been given to eye muscles (in contrast with text-books of the past).

S. I would again raise my voice in protest against treating any form of nervous disease with drugs (especially the more intractable types, such as epilepsy, insanity, chorea, and neuralgias) until a very careful and intelligent search has been made for all reflex causes.

It may take time to do this, and it may involve some expense; but it is often the shortest and surest way to effect a cure. It is a scientific rather than an em-

pirical and purely speculative method of stopping symptoms instead of the cause.

In the accompanying table I present the original summary of the twenty-six cases of epilepsy reported by me. They were treated by me entirely through the correction of errors of refraction and anomalies of adjustment of the eyes.

I have reproduced the original records of January, 1894, in order that the reader may contrast the four right-hand columns with each other and thus see the progress of each patient during the last three years.

The other columns give the reader much valuable information respecting the history of the case, the refractive errors that existed, and the treatment of the eye muscles.

When I close this somewhat lengthy reply to Dr. Peterson, I shall have finished this controversy that arose because I wished to see justice done to a new and rapidly growing method. I do not hope in this world to see the lion and the lamb lie down in peace together; but I have not yet lost faith that, in time, careful, honest, conscientious, and painstaking work will bring the reward of appreciation and respect even of those who differ with me.

156 Madison Avenue, until May 1, 1897.
345 Madison Avenue, after May 1, 1897.

A DETAILED SUMMARY OF THE TREATMENT OF TWENTY-SIX CASES OF CHRONIC EPILEPSY BY CORRECTION OF EYE STRAIN ALONE.

Case number.	Date of first examination.	Initials.	Age and condition.	Previous treatment and results.	Refractive errors.	Muscular anomalies.	Ocular treatment employed.	Drugs administered by me.	Number of attacks while taking bromides.	Number of attacks on stopping bromides.	Results of eye treatment to Jan. 1, 1894.	Remarks on case (Jan. 1, 1894).	Results of eye treatment (December, 1896).	Remarks on case (December, 1896).
1	July 30, 1892.	Mr. B.	26 yrs., married.	Bromides for two months; negative results.	H. M. A. +0·50 .... +0·50	Eso. Exo. Hyp. 8° .. .. Additional latent esophoria discovered.	Three graduated tenotomies upon the interni.	None.	From two to ten daily.	One hundred and six attacks during the first fourteen days.	No attack for more than twelve months.	Patient has been actively engaged as a skilled workman on machinery during the period covered by eye treatment.	COMPLETE CURE. No attack of any kind since last reported attack (about four years ago).	This case seemed very unpromising to me when eye treatment was commenced. He wears no glasses.
2	Sept. 2, 1892.	Mr. F.	27 yrs., single.	Bromides for fifteen years; negative results.	.... +0·50 .... −0·50 −0·50	6° .. 1° Additional latent heterophoria discovered.	Three graduated tenotomies for relief of esophoria and hyperphoria; glasses for constant wear.	None.	Four severe seizures in seven months prior to eye treatment.	Not determined.	Only one light attack since first visit (September, 1892).	This patient has used his eyes on an average of six hours per day at bookkeeping; he has entirely recovered from chronic dyspepsia of years' standing.	GREAT AMELIORATION. Eight attacks only in four years—some very light.	The attacks have been reduced about seventy-five per cent. This patient would probably have been completely cured of epilepsy if he could have followed an out-of-door occupation. His work as a bookkeeper entails too much strain upon his eye muscles. His dyspepsia has been cured.
3	May 5, 1893.	R. G.	10 yrs.	Bromides for a time; negative results.	1·75 .... 1·75 .... More hypermetropia found later.	Double convergent strabismus.	Two graduated tenotomies upon the interni; hypermetropic glasses.	None.	Extremely frequent; often during each day.	Not determined.	As far as known, only one attack has occurred since the first visit.	This patient has made a remarkable recovery from partial idiocy.	Patient abandoned treatment after only about one week of my care. The fits have returned, and idiocy also.	This patient lost his glasses in a river. His family refused to replace them or to follow my directions. In spite of wonderful improvement, the treatment was abandoned.
4	Jan., 1886.	Mr. H.	43 yrs., married.	Bromides and other drugs for twenty-four years; negative results.	+2·50 .... +2·50	4° .. .. Additional latent esophoria discovered.	Two graduated tenotomies upon the interni; hypermetropic glasses.	None.	About four severe attacks during each year.	Not determined.	No attack for about seven years.	This patient has been using his eyes constantly for years without any asthenopia or headache.	COMPLETE CURE. No fits in nearly ten years.	This case had withstood all medicinal treatment for twenty-four years. His recovery was rapid and permanent after eye treatment.
5	Mar. 18, 1890.	Mr. H.	24 yrs., single.	Bromides in all possible combinations for three years; negative results.	.... +0·50 .... +4·00 −1·00	11° .. .. Additional latent esophoria discovered.	Two graduated tenotomies upon the interni; full correction of astigmatism by glasses.	None.	Two attacks during the year prior to eye treatment.	Several times as many as when the bromides were given.	Only one slight seizure during the past three years.	The effects of bromides upon the mental condition of this patient were alarming. He has entirely regained his mental and physical health, and has lately married.	PRACTICALLY CURED. Only three attacks in nearly six years—due to causes that might easily excite a convulsion in a healthy subject (see late record).	Every attack has been directly produced by an over-indulgence in wine or rich food. The slightest change in the axis of his cylindrical glass is apt to create serious nervous disturbance in this patient.
6	Nov. 27, 1888.	Mr. S.	19 yrs., single.	Bromides in enormous doses, with chloral, for many years.	+0·50 .... (scant) +0·50 .... (scant)	4° .. ½° Latent esophoria and hyperphoria disclosed themselves to a high degree.	Graduated tenotomies for esophoria and hyperphoria.	None.	Thirty-four days during the year prior to eye treatment had been attended with a series of convulsions.	This experiment was never deemed safe.	Two years and three months without an attack, and only one slight seizure in nearly three years.	This patient was afflicted with epileptic mania, and was at one time about to be committed as an incurable epileptic to an asylum. He required a room padded with mattresses while his seizures were active.	PRACTICALLY CURED. Only one series of attacks in past four years and six months—following a fainting attack caused by extreme pain and while living in a high altitude.	This case properly belongs, in my opinion, to the *class of complete cures*. The only attack that is reported during the long interval of four years and a half was produced by the pain of two enormous boils. He has had no attacks for fourteen months.
7	April 6, 1889.	Mr. S.	16 yrs., single.	Bromides at intervals, but in small doses.	+1·00 .... +1·00	5° .. .. Latent esophoria was disclosed to a very high degree.	Graduated tenotomies; glasses for reading.	None.	Seizures somewhat irregular; about four a year.	Not in excess of number under bromides.	No attacks for past two years and six months.	The family history of this case shows that eye defects were inherited by the patient. Serious nervous conditions had developed in the father and a brother.	COMPLETE CURE. No attacks reported in over five years, during which time he has been a student.	A brother of this patient has been an inmate for years of an institution for the education of the feeble-minded. The father has shown symptoms of insanity.
8	Oct. 28, 1892.	Mr. O.	28 yrs., single.	Bromides for three years.	.... 2·50 −0·50 0·50 .... +0·50	.. 16° 2° Crossed diplopia; hypo-exophoria.	Three graduated tenotomies; full correction of refraction by glasses.	None.	Three attacks during year while under bromides.	Not determined.	Not determined; patient returned to the bromides contrary to my advice.	This patient became alarmed because he had some seizures after stopping the bromides, and abandoned the eye treatment. The progress of the eye treatment had been more than satisfactory to me.	Patient never returned for further eye treatment, nor did he follow my instructions.	In figuring percentages of results, this case should not be counted.
9	May 28, 1888.	Miss S.	13 yrs.	Bromides for three years; negative results.	+1·50 .... +0·75 +1·75 .... +0·75	10° .. .. A high degree of latent esophoria disclosed itself later.	Three graduated tenotomies; glasses for constant wear.	None.	About two severe seizures each month.	Continuous epilepsy that endangered life, within twenty-four hours.	Epileptic seizures somewhat less than when under the influence of bromides; the physical condition of the patient is greatly improved.	This is one of the cases where the marked improvement in the patient is not as clearly shown by the numerical decrease in the epileptic seizures as by the changes in the patient herself. She is physically a different being than when taking bromides.	AMELIORATION OF ATTACKS. No late report has been obtained either from the physician or the family. I have not seen the patient for three years, and do not now know her address.	The treatment of this case was begun and finished before the instruments of precision of the present day were sufficiently perfected to enable the oculists to do creditable work upon the complex ocular problems of epileptics.
10	Oct. 22, 1890.	Mr. F.	40 yrs.	Had never taken any bromide salts.	+1·50 .... +1·50	6° .. .. Homonymous diplopia prior to tenotomies.	Four graduated tenotomies; spherical glasses for constant wear.	None.	Had never taken bromides.	Only one severe fit; uncontrollable attacks of nausea accompanied by symptoms of *petit mal*.	No convulsive seizure for over two years; only one attack of nausea during year 1893.	The paroxysms of nausea that formerly lasted a week, and were closely allied to attacks of *petit mal*, have been greatly modified, and are now very infrequent.	COMPLETE CURE. No epileptic seizure for almost five years. One attack of nausea in 1895 without loss of consciousness.	The recovery of this patient seems to be complete in spite of the failure of drugs to control either the epilepsy or the attacks of nausea. He has to use his eyes almost constantly in his vocation.
11	Mar. 27, 1891.	Mr. B.	22 yrs.	Had taken bromides for years, but had abandoned them for six months prior to eye treatment.	+0·75 .... +0·75	5° .. .. Latent esophoria existed.	Two graduated tenotomies upon the interni; glasses for his refractive error.	None.	Frequent severe seizures.	One hundred severe attacks during past six months; twenty-five attacks of *petit mal* often during twenty-four hours.	Epileptic seizures were markedly reduced in number prior to the sudden death of the patient.	This patient discarded his glasses contrary to instructions. He was found dead with a wound on the forehead, supposed to be due to falling upon a stone when seized with an epileptic attack.	Found dead *with his glasses in his pocket*.	This patient entirely disregarded my instructions as to the use of hypermetropic glasses. This may have caused the convulsion that led to his untimely end.
12	Mar. 1, 1893.	Mrs. G.	30 yrs., married.	Bromides for three or four years; no benefit derived. Serious mental and physical effects were apparent.	+1·00 .... +0·50 +1·50 .... +0·50	2° .. .. Latent esophoria disclosed itself to a marked degree.	Two graduated tenotomies upon the interni; correction of the refractive errors by glasses.	None.	Paroxysms of continuous epilepsy at intervals that would last from twenty-four to forty-eight hours.	Patient did not dare to abandon bromides until after the second tenotomy.	No attack during the past five months.	Frequent and uncontrollable hysterical attacks that occurred prior to the eye treatment are things of the past. The patient gained twenty-eight pounds in weight within three months after the withdrawal of the bromides. Her mental powers have been perfectly restored.	COMPLETE CURE. No epileptic seizures during the past three years and six months.	This case appeared to me to be almost a hopeless one when first seen. Her physical and mental condition was alarming. The letter of Dr. Hedges and the report of her husband both confirm this statement.
13	April 8, 1893.	Mrs. W.	30 yrs., married.	Bromides seemed to exert no influence upon the attacks.	Absolute emmetropia (even under atropine).	7° .. .. The esophoria was totally latent.	One graduated tenotomy upon the right internal rectus.	None.	Exact record not kept by family. Several occurred during the first week that I personally controlled the case.	Not materially altered.	No attack for past nine months.	This patient was found to be absolutely free from refractive errors. Her esophoria was also totally latent. The solution of this problem was effected by a judicious use of prismatic glasses.	COMPLETE CURE. No attack of any kind for three years and six months.	This case seemed a desperate one at the beginning of my work. She had no error of focus, and but one graduated tenotomy was required to complete the eye treatment and to restore perfect health.
14	Mar. 2, 1893.	Mr. S.	19 yrs., single.	Bromides for seven years; negative results.	Absolute emmetropia (even under atropine).	7° .. .. The esophoria was almost totally latent.	One graduated tenotomy of right internal rectus.	None.	An attack about every fourteen days.	Withdrawal of bromides for four months did not affect frequency of epileptic attacks.	Patient has passed six months without an attack since the operation; only two attacks in thirteen months.	A terrible accident occurred to this patient. While in a fit he overturned a lamp, and was burned so that his life was despaired of. Since then the eye treatment has been suspended until lately.	DECIDED AMELIORATION. This patient continues to have attacks occasionally, but has never returned to bromides.	Eighteen attacks have occurred in three years and six months, some slight. This is about one quarter of the number that his average (while under bromides) would have aggregated in the same time.
15	Sept., 1893.	Mr. P.	26 yrs., single.	Bromides for some years; negative results.	Emmetropia.	7° .. .. Additional latent esophoria.	Three graduated tenotomies upon interni.	None	Six severe convulsions during the year that preceded the eye treatment.	Not determined.	No attack for a period of eleven months during 1893.	This patient has been entirely relieved of chronic constipation of many years' standing (as a result of his improved nervous tone).	PRACTICAL CURE. Two or three light seizures have followed severe gastric upsets during the past three years.	This patient indulges in very violent forms of athletics constantly as a pastime. He is irregular in sleeping and imprudent in eating. He is a bookkeeper, and uses his eyes constantly.
16	Mar. 23, 1893.	Mr. H.	18 yrs., single.	Bromides for some years; negative results.	2·50 .... 1·00	Double divergent strabismus; apparently a right hyperphoria also.	Two graduated tenotomies upon the externi; full correction of refractive error by glasses.	None.	A severe convulsion each month; from two to fifteen attacks of *petit mal* daily.	Not determined.	Four months without a convulsion; attacks of *petit mal* much less frequent.	The eye conditions of this patient are as yet only partially solved. This case is one of the most difficult cases of heterophoria that I have ever seen.	NOT IMPROVED. The fits and mental impairment of this patient were not markedly improved when last report was received.	This patient was too sluggish mentally to give intelligent eye tests. I regard this case as one of organic brain disease. I have not seen the patient in nearly two years.
17	Dec. 28, 1891.	Miss F.	17 yrs., single.	Has never taken the bromide salts.	Absolute emmetropia (under atropine).	3° .. .. Some latent esophoria was disclosed.	One graduated tenotomy upon the right internal rectus.	None.	Had never taken bromides.	About four severe convulsions during each year.	Results negative; patient continues to have attacks every four or five months.	The improvement in the heterophoria was marked in this patient, but no material change in the frequency of the attacks followed.	NOT IMPROVED. This patient abandoned treatment about two years ago.	The probability of a reflex pelvic cause in this case seemed great. No examination was made while under my care.
18	Oct. 13, 1890.	Miss J.	22 yrs., single.	Bromides for years; attacks not arrested, but decreased in number.	1·00 .... 1·00	.. 18° 5°+ Crossed and vertical diplopia.	Graduated tenotomies upon both externi and superior rectus; full correction of refraction by glasses.	None.	About four severe attacks each year.	About one severe attack each month.	Only three attacks in eighteen months.	This patient has been enabled to dispense with a constant attendant. She goes to places of amusement, balls, etc., and is regarded as an invalid no longer by her parents or friends.	DECIDED AMELIORATION. This patient still has occasional seizures, but she requires no attendant, and is able to work. She has never completed the eye treatment.	The parents of this girl decided to abandon eye treatment before I deemed it wise. When I last saw the patient she looked like a different being than when she first came under my care.
19	Mar. 1, 1893.	Miss D.	12 yrs.	Bromides for eighteen months; physical results unsatisfactory.	2·75 .... 3·25	2° .. .. A high degree of latent esophoria disclosed itself.	Graduated tenotomies upon the interni; glasses for constant wear.	None.	Attacks arrested for eighteen months at one time.	Four severe convulsions in twelve weeks prior to eye treatment.	Five attacks during past eight months; seizures much less severe than formerly.	This patient has not yet been observed for a sufficient time to speak definitely about results. Her parents and physician regard her as very much improved by eye treatment.	SOME AMELIORATION. The patient has not had the eye treatment completed.	The slow approach of the menses has been an important factor, I think, in causing the attacks during the past two years. The eye treatment has been unfortunately postponed for two years or more.
20	June 15, 1893.	Miss D.	30 yrs., single.	Bromides for over five years.	1·50 .... 1·50	9° .. .. A high degree of latent esophoria.	Two graduated tenotomies upon internal recti; +1·00 s. glass for constant wear.	None.	Ten severe seizures in five years.	Two severe fits one month apart.	No epileptic seizure for over seven months.	This patient has steadily filled a clerical position that involved a constant use of the eyes during the period of treatment in my office.	COMPLETE CURE. No attack of any kind during past three years and six months.	This young lady has had to use her eyes constantly as a bookkeeper, yet she has been perfectly restored to health by eye treatment.
21	Feb. 17, 1892.	Mr. T.	22 yrs., married.	Bromides in heavy doses for past ten years.	0·50 .... +0·50 0·50 .... +0·50	7° .. .. This patient had shown an approach to double convergent squint prior to my tests.	Both interni had been operated upon prior to my examination of the patient. One graduated tenotomy was performed by me.	None.	An average of six severe fits each year, with some *petit-mal* attacks.	Not determined.	During the past year the patient has had six seizures.	The eye treatment seems to have accomplished as much as large doses of bromides did thus far; apparently the epileptic attacks are growing still less frequent. The physical condition of the patient is very much improved.	SOME AMELIORATION. This patient is very apt to have attacks from gastric upsets. He had an injury to his head years ago that may be a factor in his epilepsy.	This patient had had two operations done upon his interni (before I saw him) by an oculist in Maine. I was therefore embarrassed in my work from the onset from a lack of knowledge of the original conditions.
22	Oct. 24, 1893.	Miss R.	22 yrs., single.	No bromides.	1·25 .... 1·25	15° .. 9° Extreme nystagmus when either eye is covered.	Graduated tenotomy upon left superior rectus.	None.	Had never taken bromides.	Almost daily attacks of *petit mal*.	Attacks less than before operation.	The treatment of this case has not progressed far enough to justify any marked improvement in the epileptic seizures. Extreme heterophoria still remains.	DECIDED AMELIORATION. The actual number of seizures is less than before the eye treatment, and the nystagmus is totally arrested unless the right eye be covered or closed.	This case was one of *terrific nystagmus*. She had been operated upon in infancy for double cross-eye; hence the eye tests have been very unreliable, and the results even better than I at first hoped for.
23	Oct. 21, 1893.	Mr. M.	31 yrs., single.	Bromides for past twelve years.	0·50 .... (scant) 0·50 .... (scant)	7½° .. .. Unconquerable diplopia.	Three graduated tenotomies upon the interni.	None.	Four severe fits during past year.	Has never dared to abandon the bromides.	No attack since the first graduated tenotomy (nearly four months).	In spite of the sudden withdrawal of the bromides, the patient reports a very decided improvement in his general physical condition.	DECIDED AMELIORATION. Occasional seizures still occur, but the patient's physical and mental condition is greatly improved.	This patient has been enabled to return to active work as a minister of the Gospel.
24	Jan. 7, 1889.	Master R.	9 yrs.	Bromides in large doses at intervals for some years; negative results.	0·50 .... 0·50	6° .. .. Additional latent esophoria.	Two graduated tenotomies upon the interni, under chloroform.	None.	A series of convulsive seizures at irregular intervals. Very frequent attacks of *petit mal* between the convulsive outbreaks.	Not tried.	Negative.	The patient was withdrawn from my care before the results of eye treatment could be determined. Marked latent heterophoria remained uncorrected.	This patient has been confined in a private retreat for the past four or five years.	The marked mental derangement of this boy (at times) and his violent temper made it impossible to carry out a system of eye treatment with any hope of success.
25	April 7, 1892.	Miss C.	15 yrs.	Bromides for six months; results not satisfactory.	0·50 .... 0·50	6° .. 4° Considerable latent esophoria and hyperphoria existed.	Graduated tenotomies upon both internal recti and left inferior rectus.	None.	Very severe seizures at irregular intervals. *Petit-mal* attacks very frequent, often several during each day.	.....	This patient has about as many attacks as when under the influence of bromides.	The correction of the existing heterophoria in this case is probably imperfect. Further operative work will doubtless have to be done before orthophoria is established.	NOT IMPROVED. This patient was withdrawn from my care by her parents in spite of the protests of the family physician.	This was a complicated and difficult eye problem to solve, and the parents were not content to wait for results. I still feel sure that good results would have been manifested later had the eye treatment been completed.
26	Mar. 15, 1894.	Miss D.	25 yrs.	Bromides; animal extracts; negative results.	+1·50 .... +1·50	8° .. 1° Graduated tenotomies upon both interni.	Graduated tenotomies upon both interni.	None.	Very severe attacks of *grand mal* about once in each week.	Same as when under bromides.	.....	.....	DECIDED AMELIORATION. This patient *passed sixteen months without attacks of any kind*.	I have strong hopes of yet making the results of this case a permanent and complete cure.

Completely cured, Cases 1, 4, 7, 10, 12, 13, 20. Amelioration, Cases 2, 9, 14, 18, 19, 21, 22, 26. Practically cured, Cases 5, 6, 15. Not improved, Cases 16, 17, 25. Not counted, Cases 3, 8, 11, 24.

The New York Medical Journal.

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