

TREATISE ON NYSTAGMUS

By

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Of all the ocular anomalies which come under our observation, the one we apparently know the least about is Nystagmus. I have even failed to find a good definition for this anomaly. The word nystagmus to nod in sleep seems to be inaccurate, the common word "dancing eyes" may express the apparent actions of the eyes, and then again how would a pair of eyes look if they were dancing?

Gould defines Nystagmus as: "An oscillatory movement of the eyeballs".

Lewis' definition is: "Short, jerky movements of the eye which are very rapidly repeated and always occur in the same direction".

Nettleship comes closer to it when he states: "Nystagmus is involuntary oscillating movements of the eyes".

Atkinson refers to Nystagmus: "Rapid, involuntary oscillations of the eyeballs".

Helmholtz states that: "Nystagmus is a restless, frequently very rapid movement of the eyes, first one and then the other".

Talbot's definition doesn't differ much from the others: "An involuntary lateral, sometimes rotary, or more rarely vertical oscillations of the eyeballs".

Hyatt-Wolf goes into more detail: "A condition characterized by involuntary lateral, sometimes rotary, or more rarely vertical oscillations of the eyeballs."

There is one thing the above definitions agree on and that is, that it is an involuntary movement.

It appears that most writers consider Nystagmus as a pathological problem. There is no doubt about the association of nystagmus in certain diseases such Locomotor Ataxia, Brain Tumor, Epilepsy, Ophthalmic Goiter and others.

Gould gives us the causes: congenital or depending on intracranial diseases, especially meningitis, or multiple sclerosis.

Cheyne-Stokes stated: "That it occurs in certain grave affections of the central nervous system, heart, and lungs, and in intoxications.

Nettleship gives as the causes: "Serious defect dating from very early life, congenital cataracts, opacity of cornea, Choroidea-retinitis, or diseases of the optic nerve. Is present in cases of infantile amblyopia without apparent cause, and constantly in albinos". He also speaks of vocational nystagmus.

The following from Duane seems to be the kernel on which to concentrate our thoughts as to the cause. Quote: "No perfectly satisfactory explanation of nystagmus has yet been given! ... Nystagmus in all probability is produced by alternate, just as normal fixation is produced by simultaneous discharges of motor energy from the two sides of the brain. That is, when we fix, the eyes are held steadily in place, because impulses are sent down at the same time from the right angular gyrus which acting alone would cause both eyes to move to the left and from the left angular gyrus which acting alone would cause both eyes to move to the right. In a person with nystagmus the impulses from rapid succession. ... Nystagmus then, may be regarded as a kind of imperfect or perverted fixation. ..."

This explanation of the nature of nystagmus holds good undoubtedly even for the rare unilateral and dissociated forms. These differ from the ordinary bilateral and symmetrical nystagmus only in the fact that either the reflex discharges from the association centers, which cause the oscillation, are in some way so altered as to affect one eye more than the other, or else there is a contributing cause, - usually some muscular anomaly, - which being mainly seated in one eye makes that eye respond more readily than its fellow to the abnormal stimuli".

Here are a few quotations from Grant's "Psychological Optics": "A few words may be devoted to a description of some fixation movements which are non-retinal in origin. If a person is turned about in a revolving chair his eyes will rotate in the opposite direction with sliding motions by quick jerks of recovery. The reflex as a whole is known as nystagmus. ... The nystagmic movements are the reaction to stimulation of the receptors in the semicircular canals. These are "True" or physical reflexes, subserved by centers below the cerebral cortices. ... These movements are involuntary. ... When involuntary control of the eyes is lost, the reflexes in nystagmus are retained; when the reflexes themselves are abolished, accurate fixation of objects while the head is in motion becomes impossible even though the normal voluntary control of head and eyes is preserved."

My opinion is that the majority of nystagmus cases which come under an optometrist's observation are not brought on by pathological conditions nor by toxemias.

Any disturbance brought on by over-indulgence of alcoholic drinks, coffee, or over-indulgence of food, physical strength at labor or athletic activities, or despondency may produce nystagmus, all of which is pseudo, that is, when the case has been removed we find no nystagmus. A greater percentage of nystagmus cases come under our observation at present than in the past, due to the fact that we have instruments at our disposal which reveals its presence.

We have many pseudo nystagmus cases which show no nystagmus by any ocular information or examination, neither static or dynamic, subjective or objective, in which the ophthalmographs will show spasmodic, hysteric or fatigue nystagmus. The field charts prove this. In the vast majority of nystagmic patients the blue field is always contracted. When we realize that an impaired blue field is non-bacterial we must turn to a second class of toxins of neurogenous origin. Red and green fields will also be impaired but not as much as blue. In many cases the blue will be interlaced with red and green. Many such cases will have either monocular or binocular nystagmus appearing again after reading a few words. Surely such cases are neurasthenic, not pathologic, so we must consider Grant and Duane's statements as a guide toward removing the nystagmus or should I say the cause of the nystagmus.

Again the fields give us valuable information. As the nystagmus decreases the fields increase in size and normal ratio, which again proves that Grant, Duane, and others are correct about the cause of nystagmus. This brings us to the treatment for nystagmus.

Nettleship appears to be too pessimistic about the treatment. "Treatment Is useless". Just three words, but what a conclusion.

Duane is more encouraging. "The treatment of nystagmus must be directed to the cause. Infantile nystagmus is rarely affected by any treatment, although isolated cases have been cured by removal of a congenital cataract, by tonotomy or advancement causing relief of a squint, by exercise with a stereoscope and in reading with the aid of a perforated diaphragm, by exercises in fixation in various positions of the gaze, and by exercises with rotating prism. As a temporary help, Kugel recommends protracted bandaging of the eyes and the use of dark glasses before the better eye. Some cases of nystagmus, especially acquired nystagmus, are relieved by the correction of astigmatism or other refractive errors. In minor and other forms of occupational nystagmus change of occupation is imperative."

The above treatment is in part orthodox teaching but it gives encouragement to the ones who are willing to investigate and have patience to watch results. Personally, I think that surgery is unnecessary except in isolated cases. Likewise, we can decrease the infantile nystagmus, and in most cases to such low amount that only the closest of observance among the laity will notice it. It is true that the ophthalmographs will reveal a slight amount at various times.

If we agree that alternate discharges of motor energy from the two sides of the brain causes nystagmus, or if nystagmus is the reaction to stimulation of the receptors in the semi-circular canals, then it is reasonable to anticipate that by concentrating on and removing the nystagmic movements by certain means, the nerve and physical reflexes will be placed in normal function.

I realize that some may say that I am putting the cart before the horse, but I think not. If pathology is present the medical or other practitioners of a related healing art will be expected to cooperate. Furthermore, is it not logical and reasonable to expect that by concentrating on eliminating nystagmus we will undoubtedly assist to remove the cause remembering that without a cause there could be no nystagmus. Proper technique or method is all a practitioner needs and the syntonists have at their disposal a means to an end, a technique which is both pleasant and beneficial to the patient.

I wish to present a few cases, the first two are a sister and a brother, aged 16 and 18 respectively. I will refer to the girl as F and to the boy as M.

In studying these two cases I came to the conclusion that the young lady was a "hysterical asthenic" and the young man a "hysterical sytonic" brought on in part by the mother's desire to make the super students, pushing them too rapidly in their school work, nagging them if they were not on the honor roll at school. Also the tragic death of their father shortly before I attended them. (This was a case where it became necessary to talk to the mother for her own and the children's welfare.)

Let us state briefly a few of the findings. Both showed esophoria at distance and near, lens correction plus combined with minus, ductions low, recovery after break, amplitude of accommodation low for age, M. field chart revealed contracted fields, red the least blue the most, blue interlaced with red and green.

M Field Chart

O equal horizontal meridian to left hand side

O.S.				O.D.			
Meridian	Green	Red	Blue	Meridian	Green	Red	Blue
0	6	9	8	0	7	8	10
45	6	8	4	45	5	7	10
90	6	8	5	90	4	7	6
135	8	9	10	135	5	8	8
180	9	10	10	180	7	8	10
225	9	11	11	225	6	8	8.5
270	10	11	8	270	5	8	9
315	5	9	6	315	6	8	10

F. – O.U. blind on blue, O.D. contracted red and green; O.S. blind on green, enlarged blind spot.

F Field

O.S.				O.D.			
Meridian	Green	Red	Blue	Meridian	Green	Red	Blue
0		6		0	7	8	
45		6		45	7	8	
90		6		90	5	7	
135		5		135	8	10	
180		5		180	10	10	
225		5		225	8	10	
270		4		270	8	9	
315		4		315	6	8	

Ophthalmographs showed low reading rate, nystagmus, and esophoria. Later we examined the mother and found her to be an extreme asthenic, with a tendency to lean to one side when reading, explaining that she read more comfortably in such a position, which backs up Spittler's statement, that, an asthenic is more comfortable when assuming an uncomfortable body posture.

Prescribed syntonic Rx for F: N/L- $\mu\delta$ (Mu Delta). For M: N/L- $\mu\theta$ (Mu Theta). Results after two weeks of syntonics. Reading rate increased, nystagmus eliminated, fields improved and blind spots normal. Ductions, rapid recovery after break, amplitude of accommodation increased, esophoria decreased in distance, exophoria instead of esophoria at near, lens correction, plus combined with plus, gained in weight, better attitude toward school work.

Fields after Syntonics
M Field Chart

O.S.				O.D.			
Meridian	Green	Red	Blue	Meridian	Green	Red	Blue
0	12	31	30	0	9	10	10
45	9	13	15	45	8	10	9
90	8	10	12	90	8	11	12
135	8	9	11	135	8	13	12
180	8	10	10	180	8	23	12
225	8	10	11	225	10	17	13
270	10	15	11	270	10	11	12
315	8	15	13	315	8	10	11

F Field

O.S.				O.D.			
Meridian	Green	Red	Blue	Meridian	Green	Red	Blue
0	7	10	5	0	7	9	6
45	7	9	5	45	7	9	6
90	7	8	7	90	8	10	6
135	5	6	5	135	8	10	5
180	7	8	5	180	8	10	6
225	4	7	6	225	8	9	7
270	7	8	6	270	7	8	6
315	5	7	4	315	7	9	6

These two nystagmus cases were my first experience with nystagmus in which I used Syntonic prescriptions. We have had several since, all of which have responded favorably. Of Course, we have not used the same frequency in all cases as each case must be handled according to the type, etc.

During the time we attended F and M a professional man 43 years of age came in for consultation. I have known him for several years but felt hesitant to speak to him about his ocular condition. He was acquainted with the correctopia case which I reported at the 1937 assembly, in fact he was partly responsible for that case coming to me, knowing the result I had with the correctopia he decided that probably something could be done for him, hence willingness to "have another try".

Here is a brief history. Evidently this was a congenital case of nystagmus as he could not remember the time when his "eyes were not in this shape". Native of New York, he had his first lens correction when about 8 years of age, had been examined and lenses prescribed at numerous times, from coast to coast, the last pair 13 years ago, on all examinations were under the influence of atropine or other drugs, could never use any of them, hence decided that nothing could be done for him so quit spending money for something which did him no good. Health good, teeth soft, appendectomy five years ago, glare annoyed him, asthenic. He could see fairly well by tilting his head backwards and towards the left, nystagmus in distance, none at reading if he tilted his head.

Findings: V.A., naked vision holding head straight, O.D. 10 percent, and O.S. 10 percent. By tilting the head backwards 15 degrees to the left 20 degrees, which he did habitually, O.D. 50 percent and O.S. 25 percent.

Habitual phoria, distance, 16 esophoria, near, 4 esophoria. No vertical imbalance. All movements of the eyes lateral.

Absolute convergence looking at small bulb, no diplopia, no nystagmus to 4 inches when nystagmus began and it became intolerant for him to hold his head erect or straight, upon tilting his head the nystagmus ceased and no diplopia to 3 inches. Low amplitude of accommodations. In this case the fields were very interesting.

Campimetry field No. 1, taken equals horizontal from left, 180 equals horizontal from right.

Field No. 1, monocular

O.S.				O.D.			
Meridian	Green	Red	Blue	Meridian	Green	Red	Blue
0	7	8	9	0	6.5	7.5	8
45	6	8	9	45	5	6	8
90	6	9	11	90	6	8.5	10
135	5	6	8	135	5	8.5	8
180	5.5	6.5	8	180	6	8	10
225	5	6	8	225	5	8	10
270	7	8	9	270	5	7.5	9
315	8	10	7	315	5	7	8

Blind spot in and down, slightly enlarged.

Blind spot irregular in normal location and slightly irregular in shape

Ophthalmograph revealed nystagmus and a reading rate of 100 words per minute holding head erect, by tilting the head the reading rate was slightly higher.

Temporary lenses prescribed and began syntonic treatment using L and ω (Omega) 20 syntonizations, when a progress examination and ophthalmograph was made. V.A. had increased, not much change in reading rate but better control of eye movements, tendency towards tilting head diminished, he did not have to tilt his head quite so much to see when driving a car.

Esophoria in distance had decreased, remained the same at near

Field No. 2, monocular

O.S.				O.D.			
Meridian	Green	Red	Blue	Meridian	Green	Red	Blue
0	7	9.5	10.5	0	6	8	9
45	5	6.3	8	45	6	8	10
90	5	7	8.5	90	6.5	8.5	10
135	5	6	7	135	6	8	10
180	6	7.5	9	180	6.5	8.5	10
225	6	8	10	225	7.5	10	12
270	10	12	11	270	8	9	13
315	11	12	13	315	7	9	12

Syntonization was changed to L-N, alternated with N/L- $\delta\omega$ (Delta Omega) 14 times, then a progress examination was made. The reading rate increased to 222 words per minute and nystagmus had decreased. V.A. with lenses and holding head straight, without tilting backwards or to the left had increased to 40 percent.

Field No. 3, binocular

O.S.				O.D			
Meridian	Green	Red	Blue	Meridian	Green	Red	Blue
0	25	20	23	0	10	11	12
45	8	12	15	45	10	11	12
90	8	10	12	90	10	11	12
135	9	10	11	135	10	12	14
180	10	11	12	180	12	25	27
225	9	10	11	225	9	13	15
270	9	11	14	270	9	12	11
315	11	12	16	315	10	11	12

Blind spot moved 1 degree toward proper location

Blind spot regular in shape.

Syntonic frequency altered to L- ω N (Omega N) alternated with $\mu\delta$ (Mu Delta) for 12 syntonizations. Then a progress examination showed the reading rate had increased to 267 words per minute and very little tendency toward nystagmus. Continued this Syntonic Rx for 22 syntonizations making it a total of 34 times.

We now prescribed a pair of lenses for distance which gave him a V.A., O.D. and O.S. 50 minus percent, and O.U. 50 percent. We changed syntonizations to ω for 10 visits after which we use N/L δ ten syntonizations, after which the progress examination revealed a V.A. with the lens prescription of O.D., 50 plus percent, and O.S. 50 percent, and O.U. 60 minus percent. Case dismissed for three months.

Field 4. Campimetry field binocular

O.S.				O.D.			
Meridian	Green	Red	Blue	Meridian	Green	Red	Blue
0	24	27	29	0	10	10	10
45	17	18	19	45	10	12	14
90	13	14	15	90	10	11	13
135	11	12	13	135	15	15	18
180	10	10	10	180	20	27	29
225	12	14	10	225	17	20	22
270	11	14	16	270	14	16	19
315	17	20	22	315	12	14	14

Optic disc closer to normal position

Optic disc normal

On the return date, March 2nd, 1938 the V.S. had increased to O.D. 60 minus, O.S. 50 plus, and O.U. 60 plus percentage. Reading rate had increased to 364 words per minute, fields in normal ratio, practically the same as No.4. Optic disc normal in O.D., slightly improved in O.S., had gained weight, holds the head erect except on rare occasions when he reverts to a lifelong habit of tilting it but immediately corrects himself to an upright position. Case dismissed for four months.

July 15, 1938. No change in lens correction. Field chart in normal ratio, blind spots in proper position, still gaining weight, happy and contented, reading rate almost 400 words per minute. No nystagmus revealed in the ophthalmograph. V.A. with lens correction, O.D. 60 percent minus, O.S. 50 percent plus, and O.U. 60 percent plus.

The only technique or treatment used for these three cases was Syntonics and lens corrections. It is remarkable how the nystagmus decreased, reading rate increased and field charts gradually became normal.

F could not return to Columbia for further syntonics. Had she been able to do so I am convinced that the field would have shown greater improvements. However, if the two charts of her case are compared we must marvel at the wonderful change which took place in two weeks.

After a few years of study of light frequency and field charts, I have come to the conclusion that many of the orthodox teachings about interpreting the fields are incorrect. Take F charts. She was blind on blue in O.U., blind on green in O.S., but she was not a psychopathic unless hysteria is psychopathic, and being blind in blue backed up with the history of the case cannot be considered toxic unless we consider irregular menses under such head. I think it indicated a combination of many mental reactions and antagonistic to her studies and her home life.

Take the professional man's case. Why was the blind spot misplaced and why did it move into the proper position? Why did he have such low reading rate? Surely it was not on account of his low V.A., because when he tilted the head backwards and to the left he could see. Why was his fields below normal? Surely it was not on account of illness or toxemia. He had always been in good health. "Well, why?"

It is up to the younger generation of practitioners with all the opportunities at their disposal, with academic and scientific knowledge available to them, which we did not have, to tell us how and why of these and other subjects which confront the optometric profession.

All I know is that I have succeeded with the Syntonic treatment where others not using this technique have failed. As the fields show improvement the patient becomes more comfortable and a better eye efficiency becomes established. Where no improvement in the fields take place there is no improvement in the eye efficiency.