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*With the Compliments of*  
*the Author.*

A PRELIMINARY ANALYSIS  
OF  
TEN HUNDRED AND SIXTY CASES  
OF  
ASTHENOPIA,

OCCURRING IN THE PRACTICE OF

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[REPRINT FROM THE REPORT OF THE FIFTH INTERNATIONAL  
OPHTHALMOLOGICAL CONGRESS, SEPTEMBER, 1876.]



NEW YORK :  
D. APPLETON AND COMPANY,  
549 & 551 BROADWAY.  
1877.



## A PRELIMINARY ANALYSIS OF TEN HUNDRED AND SIXTY CASES OF ASTHENOPHIA.

WE do not propose to write a treatise upon asthenopia, but only to make a contribution to its clinical history. In order that the cases to be analyzed might be condensed into form, blanks have been prepared, ruled in columns headed as follows, viz. : Number, Sex, Single or Married, Occupation, Duration of Disease, Subjective Symptoms, Heredity, etc. Vision : *a*, without atropine or glasses ; *b*, with glasses without atropine ; *c*, with atropine, without glasses ; *d*, with atropine and glasses. Correcting Glasses, without Atropine ; Accommodation. Insufficiency : *a*, interni ; *b*, externi. External Affections ; Ophthalmoscopic Appearances ; General Condition and Diseases of other Organs ; Treatment and Results. Only such cases have been taken as had the fact of asthenopia noted in the records. More cases might have been added, in which errors of refraction and accommodation were discovered, but they are excluded, because there is no complaint of asthenopia recorded. This fact is partly due to the failure of some patients to give all the facts in their condition to the medical observer, and partly, no doubt, to the unintentional omission by the observer of such facts from the records.

We are all familiar with the varied forms of expression

used by asthenopes to describe their disability. They naturally seize upon that symptom which annoys them most, and give it prominence in the history of their case. If you, wishing to avoid leading questions, ask them to tell you in the fewest possible words why they seek advice, they will probably answer in some one of the following phrases: My eyes are weak; they burn; they blur; they give out; they water, and feel badly on reading, sewing, or writing; they have a strained feeling; they swell up or twitch; they become troublesome on use, and cause my head to ache; they make me dizzy; they give me pain in my back; they nauseate me; the eyes become dry; are sensitive to light; there are floating specks; the eyelids become red, and stick together in the mornings; I cannot use my eyes much at night, or when I feel bodily fatigue. Such expressions may be taken as the typical forms of complaint made by those whose cases are included in the records which form the basis of this communication. We regret that we cannot now publish the tables as they stand, that all might make their deductions from the statements which they contain. This is prevented, however, by the fact that the tables alone would make nearly one hundred octavo pages, and thus occupy a space in our proceedings far exceeding their value.

*always* While there is a presumption in cases of errors of refraction and accommodation that asthenopia exists, it is by no means found to be so in practice. Your relator has, for instance, a very marked degree of latent insufficiency of the interni without ever experiencing the slightest asthenopia in any one of its many forms. Pain is *always* relative, and there are many subjects who unconsciously overcome physical defects in their visual organs without experiencing any abnormal sensation, and would have remained ignorant of such defects had not some accidental occurrence called their attention to a condition different from that existing in their neighbors. There are many people possessed of such power of adaptation that the unconscious exercise of the mentality of the senses carries them along in their daily use of the visual organs without pain or even inconvenience, even though they may have a decided error of refraction or accommodation. There are others who, with a very slight error of refraction or accommo-

dition, or without any error of either, will use all the strong adjectives they can think of to describe their deplorable state. It becomes a nice question of the exercise of judgment in such cases to say how and how much the eyes may be used in fine work.

Before the great reformation in ophthalmology, led by Helmholtz, Donders, and Von Graefe, such cases were largely treated as incipient amaurosis. Blisters, mercury, low diet, tartar emetic, blood-letting, applications of irritating alkaloids, such as veratria, to the circumocular parts and setons, were freely employed. Sometimes the sufferers were so subdued or silenced by the treatment that they ceased to complain of their eyes, preferring to endure the ills they had, rather than to endure those which the attempts to relieve their asthenopia led them to. So common was this method of treating asthenopia in this country, thirty years ago, that more than one clever, irregular practitioner made his fame and fortune in putting the exhausted subjects of it under hygienic rules, and giving them new life and hope by a generous dietary and free out-of-door life, thus showing how so-called quackery is often the natural offspring of our ignorance.

Among the lessons taught by the cases of asthenopia is the impressive one that very many of the subjects need careful medical and sanitary treatment in addition to that which is ophthalmic in its nature. It becomes, therefore, of the first importance that the observer should be much more than an oculist. He must be able, it is true, to say how much in a given case glasses or a tenotomy may be expected to do; but there is a factor in the case beyond the eye, the value of which must be applied before a cure can be expected. To do what is wise in such cases, the observer must also be well posted as to his own ignorance, and know when to call in other specialists to throw new light upon the case. He must, moreover, be up in all departments of hygiene, and know how to teach his patients how to become better tissue builders. It is here that the ophthalmologist and the specialist in diseases of women or of the nervous system may have to correspond. It is here that the expert ophthalmologist may resolve, with

a pair of spectacles, a case of asthenopia in which the neuroses of sensibility had led others to suspect grave disease of the nerve-centres. It is here that a wise gynecologist may skillfully relieve some uterine or ovarian condition and thus enable the ophthalmologist to reëstablish the function of vision.

Another most important lesson is, that the ophthalmoscope cannot be trusted to unveil the actual kind or amount of ametropia in asthenopia. I have often seen cases that had seemed to myself or others to be emmetropic, or slightly ametropic, under the ophthalmoscope, reveal even high degrees of ametropia when brought under the *full influence* of atropia. I have seen the decision of the ophthalmoscope reversed by the crucial ordeal of the *full influence* of atropia. I believe that it is incumbent, in cases of asthenopia, to nullify the accommodation before making a diagnosis as to the quality or quantity of the ametropia, and to defer the selection of spectacles until the accommodation shall have been reëstablished. In some cases it may be wise to keep the accommodation under atropia for several weeks. Such procedure will be often found necessary in progressive myopia, and in other forms of neglected or painful ametropia.

Where so many have thrown light on practice in this field, it may be invidious to make distinction, but there certainly can be no harm in saying how much we owe Ezra Dyer, M. D., for his suggestions on the subject of graduated exercise in asthenopia. A constant daily use of his method, commonly substituting two reading tasks for three, has been, in our practice, of immense value.

We can recall many cases where a persistent following of the plan of graduated exercise has even, after many failures, at last brought the patient out into a condition of ability to use the eyes almost *ad libitum*. But, as such remarks of a general nature might be prolonged almost indefinitely, we hasten to give the tables which throw into a condensed form some of the facts observed. Before doing this, however, we take pleasure in saying that, without the faithful and intelligent services of David Webster, M. D., the great labor involved in preparing the tables could scarcely have been performed. Many who hear me know his painstaking accuracy.

1,060 CASES:		FEMALES:
Males .....	457	Single..... 314
Females.....	603	Married..... 289

TABLE I.—Showing the number of asthenopes at different ages.

AGE.	MALE.	FEMALE.	TOTAL.	AGE.	MALE.	FEMALE.	TOTAL.
	No.	No.	No.		No.	No.	No.
8.....	1	1	2	38.....	11	15	26
9.....	4	1	5	39.....	5	7	12
10.....	3	3	6	40.....	5	20	25
11.....	3	7	10	41.....	5	5	10
12.....	5	3	8	42.....	3	10	13
13.....	3	4	7	43.....	6	7	13
14.....	2	8	10	44.....	3	7	10
15.....	10	11	21	45.....	4	10	14
16.....	12	17	29	46.....	4	6	10
17.....	18	16	34	47.....	6	5	11
18.....	27	27	54	48.....	5	9	14
19.....	19	18	37	49.....	2	11	13
20.....	17	21	38	50.....	5	10	15
21.....	26	15	41	51.....	3	4	7
22.....	24	15	39	52.....	9	7	16
23.....	15	17	32	53.....	0	4	4
24.....	12	13	25	54.....	4	3	7
25.....	23	18	41	55.....	3	4	7
26.....	12	19	31	56.....	3	0	3
27.....	18	18	36	57.....	2	2	4
28.....	12	14	26	58.....	1	3	4
29.....	7	25	32	59.....	0	5	5
30.....	9	24	33	60.....	1	5	6
31.....	9	17	26	61.....	2	1	3
32.....	13	20	33	62.....	3	0	3
33.....	18	16	34	63.....	1	0	1
34.....	9	13	22	65.....	1	0	1
35.....	7	14	21	72.....	0	1	1
36.....	6	11	17	Not noted	..	..	34
37.....	6	12	18				1,060

TABLE II.—Showing the occupations of male asthenopes.

Students.....	154	Engravers.....	2
Clerks.....	34	Carpenters.....	2
Lawyers.....	29	Missionaries.....	2
Merchants.....	28	Bankers.....	2
Clergymen.....	19	Traveling Agents.....	2
Physicians.....	18	Teller in Bank.....	1
Book-keepers.....	18	Stenographer.....	1
Teachers.....	6	Printer's Apprentice.....	1
Manufacturers.....	6	Type-setter.....	1
Engineers.....	5	Compositor.....	1
Cashiers.....	5	Stereotyper.....	1
Farmers.....	5	Publisher.....	1
Brokers.....	4	Naval Officer.....	1
Writers.....	3	Buyer of Goods.....	1
Traveling Salesmen.....	3	Colorer of Artificial Flowers.....	1
Editors.....	3		
Draughtsmen.....	2	Carried forward.....	362

Brought forward.....	362	Coachman.....	1
Nurse.....	1	Tax Collector.....	1
Porter.....	1	Jeweler.....	1
Restaurant Keeper.....	1	Examiner of Dry Goods.....	1
Fisherman.....	1	Purser on Ship.....	1
Wheelwright.....	1	Telegraph Operator.....	1
Architect.....	1	Tailor's Cutter.....	1
Post-Office Clerk.....	1	Grape Grower.....	1
Monk.....	1	Worker in White Lead.....	1
Treasurer.....	1	No occupation noted.....	74
Peddler.....	1		
Dentist.....	1		457
Piano Dealer.....	1		

TABLE III.—Showing the occupations of unmarried female asthenopes.

Students.....	76	Missionary.....	1
Seamstresses.....	17	Author.....	1
Teachers.....	19	Jewelry Polisher.....	1
Dressmakers.....	4	Apothecary.....	1
Domestics.....	3	Worker in Bank Note Manufactory	1
Nuns.....	3	Finishing Photographs.....	1
Writers.....	2	Physician.....	1
Milliners.....	2	Nurse.....	1
Retouching Negatives.....	2	Governess.....	1
Clerk.....	1	Fancy Work.....	1
Book-keeper.....	1	No occupation noted.....	172
Laundress.....	1		
Guardian.....	1		314

TABLE IV.—Showing the refraction of 1,060 asthenopes.

E. both.....	281	Am. both, equally.....	30
E. one, the other H.....	36	Am. both, unequally.....	21
E. one, the other M.....	14	Am. one, the other M. + Am.....	7
E. one, the other Am.....	18	Am. one, the other Ahm.....	2
E. one, the other Ah.....	7	Am. one, the other Ah.....	1
E. one, the other H. + Am.....	1	M. + Am. both, equally.....	22
E. one, the other M. + Am.....	2	M. + Am. both, unequally.....	31
E. one, the other Ahm.....	3	Ah. both, equally.....	17
E. one, the other Amblyopic.....	1	Ah. both, unequally.....	6
H. both, equally.....	265	Ah. one, the other H. + Ah.....	2
H. both, unequally.....	94	Ah. one, the other H. + Am.....	1
H. one, the other M.....	5	Ah. one, the other Ahm.....	2
H. one, the other Ah.....	5	H. + Ah. both, equally.....	8
H. one, the other Am.....	1	H. + Ah. both, unequally.....	6
H. one, the other H. + Ah.....	8	H. + Ah. one, the other H. + Am	1
H. one, the other H. + Am.....	2	H. + Ah. one, the other Ambly-	
H. one, the other Ahm.....	1	opic.....	2
H. one, the other irreg. astig.....	1	H. + Am. both, unequally.....	1
H. one, the other Amblyopic.....	6	Ahm. both, equally.....	2
M. both, equally.....	74	Ahm. both, unequally.....	1
M. both, unequally.....	47	Ahm. one, the other irreg. astig..	1
M. one, the other Am.....	5		
M. one, the other M. + Am.....	19		1,060

TABLE V.—Showing the occupations of 112 out of 281 emmetropes.

Students.....	56	Farmer.....	1
Clerks.....	10	Manufacturer.....	1
Teachers.....	8	Editor.....	1
Lawyers.....	7	Broker.....	1
Seamstresses.....	6	Banker.....	1
Merchants.....	4	Cashier.....	1
Clergymen.....	3	Telegraph Operator.....	1
Book-keepers.....	4	Touching Negatives.....	1
Writers.....	2	No occupation noted.....	169
Engineers.....	2		
Physicians.....	2		281

TABLE VI.—Showing the various local complications found in emmetropic cases.

Hyperæmia of the Optic Papilla and Fundus.....	82	"Ripe Peach" Choroid.....	2
Insufficiency of Interni.....	71	Paresis of Ciliary Muscle.....	2
Slight Conjunctivitis.....	68	Chalazion.....	2
Venous Pulsation.....	57	"Phantom-like" Pinkish Clouds about Macula.....	2
Presbyopia.....	52	Redness in Region of Macula.....	1
Exaggerated Physiological Excavation.....	35	Slight Choroidal Atrophy.....	1
Delicate Changes about the Macula.....	11	Dust-like Lenticular Opacities.....	1
Peripheral Lenticular Opacities.....	5	Pigment-Specks on Anterior Capsule.....	1
"Phantom-like" White Spots in Region of Macula.....	3	Mydriasis.....	1
Injection of Ciliary Vessels.....	3	Slight Pterygium.....	1
Stillicidium.....	3	Blepharitis and Styes.....	11

TABLE VII.—Showing the various remote complications in emmetropic cases.

Uterine disease.....	15	Valvular Disease of Heart.....	1
Indigestion.....	8	Hysteria.....	1
General Debility.....	6	Otitis Media Suppurativa Chronica.....	1
Tobacco Poisoning.....	5	Enlarged Tonsils.....	1
Rheumatism and Neuralgia.....	4	Spinal Disease.....	1
Naso-pharyngeal Catarrh.....	3	Chronic Pelvic Cellulitis.....	1
Phthisis Pulmonalis.....	2	Chronic Diarrhoea.....	1
Malarial Poisoning.....	2	Psoriasis Capitis.....	1
Inanition.....	2	Stricture of Urethra.....	1
Pulmonary Hæmorrhage.....	1	Alcoholic Poisoning.....	1

TABLE VIII.—Showing assigned causes of asthenopia in emmetropic cases.

Over-use of Eyes reading.....	14	Rising at 4 A. M. and studying by Bad Gas-light.....	1
Reading late at Night and before Breakfast.....	3	Studying for "Cram Quiz".....	1
Studying Nights.....	2	Preparing for College.....	1
Studying by Lamp-light.....	1	Reading during Convalescence.....	3
Reading from 7 A. M. to 7 P. M.....	1	Eyes broke down at College.....	1

Eyes <sup>7</sup> broke down at School.....	1	Severe Anxiety, Sleeplessness, and Mental Distress.....	2
Reading on the Cars.....	1	Over-use of Morphine.....	1
Studying Greek.....	1	Acting as Base-ball Catcher, facing the Sun.....	1
Strained Eyes doing Embroidery...	3	Looking at Eclipse of the Sun.....	1
Working in Worsteds.....	3	Exposure to Glare of Water.....	1
Sewing on Black.....	3	Exposure to Glare in Switzerland...	1
Sewing on Striped Goods.....	1	Fall on Back of Neck.....	1
Sewing Day and Night.....	2	Measles.....	1
Running Sewing-Machine constantly	1	Scarlatina.....	1
Picking Hair for a Switch.....	1	Typhoid Fever.....	1
Examining Books by Gas-light....	1	Fever.....	1
Copying Fine Notes by a Poor Light	1	Caught Cold in Eyes.....	1
Writing in a Basement by Gas-light.	1	Self-Abuse.....	1
Wearing a Black Crape Veil.....	1	Attack of Dizziness and Vomiting	1
Grief and Weeping for Loss of Relatives.....	2	lasting Two Days.....	1
Loss of Sleep in Care of the Sick...	2		

TABLE IX.—Showing the various local complications in hypermetropia, with its modifications.

Slight Conjunctivitis.....	113	Divergent Squint.....	5
Insufficiency of Interni.....	94	Paresis of Ciliary Muscles.....	3
Presbyopia.....	88	Stillicidium.....	2
Venous Pulsation.....	59	Slight Opacity of Posterior Capsule.	2
Hyperæmia of Optic Papilla and Fundus.....	56	Slight Specks on Anterior Capsule.	2
Exaggeration of Physiological Excavation.....	50	Chalazion.....	2
Blepharitis and Styes.....	23	Convergent Squint.....	1
Peripheral Lenticular Opacities...	9	Dust-like Lenticular Opacities..	1
Insufficiency of Externi.....	9	Cataract, one eye.....	1
Delicate Changes about Macula...	9	Opaque Nerve-Fibres.....	1
Slight Choroidal Changes.....	8	Mydriasis.....	1
Staphyloma Posticum, or <i>Conus</i> ...	5	Spasm of Ciliary Muscle.....	1
Delicate Corneal Opacities.....	5	Scotoma.....	1
		Crystals of Cholesterine in Vitreous and Retina.....	1

TABLE X.—Showing the various local complications in myopia, and its modifications.

Slight Conjunctivitis.....	89	Mapping out of Staphyloma Posticum	3
Staphyloma Posticum.....	72	Minute Floating Bodies in Vitreous.	3
Insufficiency of Interni.....	64	Insufficiency of Externi.....	3
Hyperæmia of Optic Papilla and Fundus.....	45	Opaque Nerve-Fibres.....	2
Venous Pulsation.....	38	Spasm of Ciliary Muscle.....	2
Exaggeration of Physiological Excavation.....	38	Delicate Corneal Opacities.....	2
Presbyopia.....	26	Paresis of Internus.....	1
Progressive Myopia.....	24	Mydriasis.....	1
Blepharitis and Styes.....	13	Opacity of Anterior Capsule.....	1
Delicate Changes about the Macula.	9	Chalazion.....	1
Slight Choroidal Changes.....	6	Divergent Squint.....	1
Peripheral Lenticular Opacities...	4	Occasional Divergent Squint.....	1
Scotomata.....	4	Slight Opacity of Posterior Capsule.	1
		Color Scotoma.....	1
		Occasional Diplopia.....	1

TABLE XI.—Showing the remote complications in ametropic cases.

Uterine Disease.....	19	Hæmorrhoids.....	1
General Debility.....	19	Strangury.....	1
Indigestion.....	6	Neuralgia.....	1
Tobacco and Alcohol Poisoning....	8	Chronic Bronchitis.....	1
Malarial Poisoning.....	5	Spinal Irritation.....	1
Rheumatism.....	5	Spinal Curvature.....	1
Hay-Fever.....	3	Hypochondriasis.....	1
Nervousness and Hysteria.....	2	Pulmonary Hæmorrhages.....	1
Facial Paralysis.....	2	Paralysis Agitans.....	1
Liver-Disease.....	2	Melancholia.....	1
Disease of Heart.....	1	Diabetes.....	1
Naso-pharyngeal Catarrh.....	3	Cancer.....	1

TABLE XII.—Showing the various assigned causes of asthenopia in ametropic cases.

Reading during Convalescence from Child-birth.....	13	Painting Days and reading Nights..	1
Eyes broke down at College.....	9	Eyes broke down from reading an Old Book with Yellow Leaves by Kerosene.....	1
Measles.....	9	Eyes broke down while studying Law.....	1
Eyes broke down at School.....	7	Psoas Abscess.....	1
Writing by Gas-light.....	6	Looking at Eclipse of Sun.....	1
Studying by Gas-light.....	5	Injury of Spine from Fall.....	1
Reading on the Cars.....	5	Congestion of Brain.....	1
Blow upon One Eye.....	5	Rheumatic Inflammation of Eyes..	1
Caught Cold in Eyes.....	4	Reading during Confinement with Uterine Disease.....	1
Glare of Snow.....	3	Wearing dotted Black Veil while traveling.....	1
Glare of Sun and Sand.....	3	Shock from a Fall.....	1
Watching with the Sick.....	3	Studying Greek.....	1
Grief and Weeping for Loss of Relatives.....	3	Asthenopia followed a Severe Attack of Vertigo.....	1
Scarlatina.....	3	Analyzing Flowers.....	1
Studying Hebrew.....	2	Studying German.....	1
Reading by Insufficient Light.....	2	Use of Black Crape Veil.....	1
Typhoid Fever.....	2	Studying by Tallow Candle.....	1
Reading during Convalescence from Miscarriage.....	1	Looking at the Sun.....	1
Peritonitis.....	1	Cerebro-spinal Meningitis.....	1
Strained Eyes doing Embroidery...	1	Sewing and Weeping.....	1
Strained Eyes doing Fine Work...	1	Got Cofetti into Eyes at Carnival at Florence.....	1
Small-pox.....	2	Allowing Infant to suck Eye while weaning.....	1
Reading by Kitchen Fire before Day-light.....	1	Commenced to study late in Life...	2
Fall from Trapeze on Back of Head.	1	Nervousness and Sleeplessness....	3
Facial Neuralgia.....	1		
Eyes broke down while preparing for College.....	1		
Loss of Sleep with Sick Child.....	1		
Weeping and Nostalgia.....	1		

TABLE XIII.—Showing the duration of asthenopia in 746 cases.

Recent (less than 1 year).....	226	17 years.....	2
1 year.....	88	18 ".....	2
2 years.....	70	19 ".....	2
3 ".....	56	20 ".....	5
4 ".....	42	21 ".....	1
5 ".....	27	22 ".....	2
6 ".....	34	23 ".....	1
7 ".....	14	24 ".....	1
8 ".....	12	25 ".....	2
9 ".....	6	27 ".....	1
10 ".....	20	28 ".....	1
11 ".....	3	29 ".....	1
12 ".....	7	34 ".....	1
13 ".....	5	From childhood and early school	
14 ".....	2	life.....	107
15 ".....	2		
16 ".....	3		746

