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A glossary of optometric terminology

Abstract

A glossary of optometric terminology

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A GLOSSARY OF OPTOMETRIC TERMINOLOGY

A Thesis Presented to the Faculty of the College of Optometry,
Pacific University.

In Partial Fulfillment of the Requirements for the Degree:
Doctor of Optometry

BY

G.W. HO

D.M. ORLICH

MAY, 1975

*Approved,
Niles Roth*

MAY 20 1975

The following glossary is a greatly condensed survey of optometric terminology devised specifically for persons in professions affiliated with Optometry, and for others in adjacent professions such as special education teachers. These people frequently do not have access to a professional library, yet wish at times to make a superficial inquiry into a lexicon of vision science terminology.

Care has been taken to include those words which might conceivably appear in a written or verbal communication' from an optometrist to another professional in an adjacent field or to a person in some ancillary profession. Many aspects of such a communication were considered in preparing the glossary.

Definitions and explanations have been supplied for each term chosen in language that will be easily comprehensible for those employing this glossary. Our method in preparing each definition was to accumulate as much information as was necessary to adequately explain the term comprehensively, and then to condense, refine, and simplify the material into a concise and comprehensible definition. Each of the terms and accompanying definitions was then submitted to two people

completely unrelated to the field of vision science for their opinion and recommendations concerning their ability to discern what we had written.

Having completed this process for approximately one hundred ophthalmic terms, we decided to limit the length of each definition within a range of from fifty to seventy-five words each. In some few cases a term demanded only a brief definition or description, and in the interest of accuracy and brevity, we so complied. It is our contention and our hope that this project will be of genuine use to those who refer to it.

No attempt has been made to distinguish in any way between the various types of ophthalmic practitioners through implication or connotation in any of the definitions. Our bibliography was consistent with this attitude, drawing from all fields of vision science with impartiality.

It is our hope that this glossary will be considered a candidate for printing in pamphlet form. We sincerely feel it has merit as an information resource and will have utility for many people.

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ACCOMODATION

Accommodation is the ability of the eye to focus when an object is moved closer to the eye. This mechanism is achieved by changes in shape of the crystalline lens in the eye.

ABSENCE OF ACCOMMODATION

Absence of accommodation is the inability to change focus when an object is brought closer to one's eye. A person who has absence of accommodation cannot perform near tasks and the possible cause probably results from neurological dysfunction (central nervous system dysfunction). Whenever there is suspect of absence of accommodation, a neural specialist should be counsulted.

EXCESSIVE ACCOMMODATION

Excessive accommodation is mainly caused by possible overstimulation of accommodative system with prolonged visual performance at near; unstable or irritable nervous conditions or infections. A person who has excessive accommodation will experience visual discomfort associated with near work; periodic blurring of distance vision following near visual tasks; the need to hold reading materials or other near work closer than expected; headache with near work.

INSUFFICIENCY OF ACCOMMODATION

This is also known as inadequacy of accommodation and deficiency of accommodation. The probable causes for insufficiency of accommodation are excessive near work; general fatigue; exhaustion; variations in illumination; farsightedness; trauma; glaucoma and cataract. A person who has insufficiency of accommodation usually experiences visual discomfort, blurriness of distant objects and/or near vision, tearing, headache and general fatigue.

VISUAL ACUITY

Acuteness or clearness of vision (especially of form vision) is dependent on the sharpness of the focus at the back of the eye; the sensitivity of the nervous elements; and the way the brain interprets information. Factors involved in the clearness of vision are minimum visible (light sense), minimum separable (resolving power), and psychological interpretations. Visual acuity varies with which part of the retina (back of the eye) is stimulated, the state of light adaptation of the eye, general illumination, background contrast, the size and color of the object, the effect of refraction of the eye and the time of exposure. Clinically, it is measured with a Snellen Chart in terms of the Snellen fraction such as 20/20, 20/100.

20/20, 20/10 or 20/40 AND WHAT DO THEY MEAN!

20/20, 20/10 or 20/40 are Snellen fractions used in recording one's clearness of vision. The top number indicates the testing distance in feet; the bottom number indicates the size of letter one will see at a specific distance. For instance, 20/20 means testing distance is 20 feet and one can see a letter a normal person will see at 20 feet. 20/10 means a 20 feet testing distance and a person can see the letter size which can be seen by a normal person at 10 feet; thus he will have better than 20/20 vision. For the same token, 20/40 means 20 feet testing distance and a person can see letters which can be seen by a normal person at 40 feet, therefore he will have vision worse than 20/20.

DARK ADAPTATION

This is the adjustment of the eye occurring under reduced illumination in which the sensitivity of the eye to the light is greatly increased. The process usually takes place five minutes after a person has been kept in the darkness and is due to the building up of visual purple (rhodopsin) in the retinal rod cells.

LIGHT ADAPTATION

Light Adaptation is the adjustment of the eye occurring in the sunlight or in bright illumination, with reduced concentration of the photosensitive pigments of the eye. The process usually takes place in less than one minute.

AMBLYOPIA

Amblyopia is a condition of reduced visual acuity which cannot be corrected by refractive means (e.g. lenses) and is not due to obvious structural or pathological ocular anomalies. Generally, it is detected by the measurement of visual acuity after the correction of any refractive error which may be present. Clinically, amblyopia is said to exist if vision is 20/30 or worse, or if the vision of an eye is less (or worse) than that of its fellow.

AMBLYOPIA EX ANOPSIA

Amblyopia ex anopsia is due to non-use or prolonged disuse of the eye. It is usually associated with strabismus (cross-eye) or anisometropia (difference in the refractive powers of the two eyes) and vision may be partially or totally recoverable. There are two types of amblyopia ex anopsia: 1. Amblyopia of arrest, in which case the reduced vision is a result of failure in normal development of visual acuity with maturation, and 2. Amblyopia of extinction in which case vision is reduced from that previously attained, thus being recoverable. Amblyopia ex anopsia is usually treated by eye patching and visual training.

ANISEIKONIA

Aniseikonia is the relative difference in the size of the images of the two eyes. It can be hereditary in nature or acquired. A person having aniseikonia will generally experience discomfort of vision, headache, blurring of vision or double vision. A person who suspects aniseikonia should be sent for eikonometric evaluation. In most cases, special kinds of magnifying lenses are prescribed for the specific needs.

ANISOMETROPIA

Anisometropia is the relative difference in the refractive states of the two eyes, one eye requiring a different lens correction than the other. Anisometropia will cause possible discomfort of vision, blurriness of vision, difficulty in reading, nausea, headache and double vision. Possible signs of anisometropia are head rotation or tilt especially in close work; tendency to close or cover one eye and possibly postural warps. Anisometropia is usually corrected by using lenses with different powers for different eyes.

ANOMALOUS RETINAL CORRESPONDENCE

Anomalous retinal correspondence is a type of binocular dysfunction occurring frequently in strabismus (cross-eyes) in which the foveae (the most sensitive spots of the eyes) of the two eyes do not give rise to common visual directionalization. The fovea of one eye functions directionally with an extrafoveal area of the other eye.

APHAKIA

Aphakia is the absence of the crystalline lens of the eye, due most frequently to surgical removal, occasionally due to injury or ulcer. Usually in aphakia there is loss in visual acuity, both far and near. There is absence of the ability to change focus.

OPTOMETRIC ASSISTANTS

There are three types of optometric assistants:

- A. Office Assistant - An individual who performs duties such as those of a secretary-receptionist, without formal academic training of a technical nature.
- B. Optometric Technician - An individual who has obtained formal training to the Associate of Arts level or its equivalent which is a basic course curriculum and includes training in contact lens assistance, visual training and visual field testing.
- C. Optometric Technologist - An individual who has formal education in a program designed to develop proficiency in relating the principles of physical, social, biological or behavioral sciences to optometry.

ASTIGMATISM

Astigmatism is a condition of the eye in which the rays of light are not all focused on the retina, resulting in a distorted focus rather than a sharp, point focus. Higher degrees of astigmatism cause distorted and blurred vision. Smaller degrees usually cause symptoms of eyestrain such as headache, fatigue, and loss of achievement. There are many types of astigmatism and they are corrected by wearing specially ground glasses or contact lenses.

RESIDUAL ASTIGMATISM

This is also called physiologic astigmatism, and represents the difference between corneal astigmatism and total astigmatism. It is the inability of the internal components of the eye to bring incident light to a point focus or a focus of rays all in one plane. See astigmatism.

BLINDNESS

Blindness is the inability to see or the absence or severe reduction of vision. Blindness can be hereditary, which might be due to malformation of the eye; or functional, which might be due to psychic disturbance or malingering; or acquired, which might be due to trauma, accident or poisoning. In the United States, a person can be classified as blind if his visual acuity is 20/200 or less in the better eye after correction, or a person's visual field is no greater than 20 degrees.

COLOR BLINDNESS

Color blindness is a misleading, but commonly used term which includes all forms of defective color vision, however mild or severe. Usually color blindness is a sex-linked hereditary defect. Color blindness occurs in about 8% of all males and 3% of all females. There is no cure for color blindness.

NIGHT BLINDNESS

Night blindness is the abnormal or complete loss of vision in dim light. It can be caused by malnutrition; vitamin A deficiency, or prolonged exposure to bright light. A person with night blindness always experiences slow dark adaptation; reduced vision in the dark, and restricted visual fields.

CATARACT

Cataract is any opacity or cloudiness of the crystalline lens of the eye. Cataract begins with small opacities and gradually becomes larger over a long course of time. People over 55 of age are most likely to develop a cataract. There are no known medicines which will dissolve cataracts. However, in the early stages of most cataracts, improved vision can be accomplished by a change in the lens prescription. Cataract surgery is usually performed when a person cannot see well enough to do the things normal in his daily life.

CHALAZION

Chalazion is a small tumor of the eyelid caused by inflammation of one of the meibomian glands of the lid. It is characterized by a gradual painless swelling of the gland without gross inflammatory signs. Chalazion might cause astigmatism..

COLOBOMA

Coloboma is any defect in which a portion of a structure of an eye is absent. It may be congenital, pathological, or operative. The majority of cases are due to incomplete closure of the fetal fissure and are located inferiorly.

CONVERGENCE

Vergence is the term applied to simultaneous ocular movements in which the eyes are directed to an object somewhere in front of the nose. The term convergence is given when the eyes rotate inward toward each other.

CONVERGENCE EXCESS

Convergence excess is also known as over-convergence. The possible causes for convergence in excess are excessive near work, disease, drug that reduces the focusing system of the eyes. A person who shows convergence excess usually experiences the inability to perform at near for extended periods. He usually holds work close, has possible discomfort of vision (eyestrain), headaches, blurred vision, far or near and occasional double vision. Convergence excess is usually treated by visual training and spectacles.

CONVERGENCE INSUFFICIENCY

Convergence insufficiency is also known as underconvergence or convergence weakness. The possible causes for this are uncorrected nearsightedness; drugs that increase eye-focusing activity. Obvious symptoms of convergence insufficiency are double vision, inability to perform at near for extended periods of time, eyestrain and blurred vision. Possible treatments are vision exercises and/or use of prism lenses.

DIOPTER

A diopter is the basic unit used to describe the refractive power (ability to bend a ray of light) of a lens. A lens of refractive power one diopter will have a focal length of one meter. The number of diopters of power is equal to the reciprocal of the focal length in meters, or the number 39.5 divided by the focal length in inches. As a unit of curvature, the diopter is equal to the reciprocal of the radius of curvature in meters. The unit was first proposed by Monoyer to designate the refractive power of a lens of optical system.

PRISM DIOPTER

A unit proposed by Prentice to quantify the amount a ray of light is deviated by an ophthalmic prism. The number is equal to 100 times the tangent of the angle of deviation. Thus a prism of one prism diopter will deviate light 1 centimeter from its original path if measured at a distance of 1 meter from the prism.

DIPLOPIA

The condition when a single object is perceived as two objects rather than one; double vision.

PHYSIOLOGICAL DIPLOPIA

The form of double vision which can be induced in a normal sighted person by altering viewing conditions such that the observer perceives a single object as two objects.

PATHOLOGICAL DIPLOPIA

The form of double vision which exists under normal viewing conditions, in which the observer perceives a single object as two objects when he should see only one.

CROSSED DIPLOPIA

Double vision in which the image belonging to the right eye is displaced to the left of the image belonging to the left eye. Also, heterogenous diplopia.

UNCROSSED DIPLOPIA

Double vision in which the image of the right eye appears to the right of the image belonging to the left eye. Also, homogenous diplopia.

DIVERGENCE

When the two eyes are involved, the lines of sight are represented as being outward from parallelism. That is, the lines of sight would intersect behind the eyes if extended. When one eye is considered, it is a movement of the line of sight outward from a straight ahead position. It can also refer to a bundle of light rays emanating from a point source of light. A minus lens has this property.

DIURETICS

A substance which tends to increase the flow of urine, by increasing the rate of urine formation. There are two basic forms of diuresis obtainable by drugs; one refers to the increase in urine volume void; the other to the net loss of solute and water. The most important medicinal property of these drugs is in the mobilization of edema fluid, that is, the production of a negative extra-cellular fluid balance. The drugs are used frequently to decrease intraocular pressure in attacks of acute narrow angle glaucoma.

OCULAR DOMINANCE

The superiority of one eye over the other in some perceptual or motor task. The term is usually applied to those superiorities in function which are not based on the difference in visual acuities between the two eyes, or on a possible imbalance of muscle control of one of the eyes. This is usually demonstrated in the clinic by eliciting a sighting preference from the patient, just as one would observe which eye the patient would use if he were shooting a gun or looking into a telescope. Frequently, ocular dominance is mixed, and patients show a preference of either of the two eyes according to the function demanded.

DYSLEXIA

Partial ability to perceive and understand printed words. Usually letters are understood and perceived clearly, though the word they comprise are not understood. Dysagnosia is a form of this anomaly, in which there is an inability to comprehend only certain words. Dysantigraphia is the anomaly also associated which manifests itself by the subject not being able to copy writing although words can be seen.

EDEMA

An excessive accumulation of fluid in the intercellular tissue spaces of the body. The cornea is particularly sensitive to this condition, and is frequently noted when contact lenses are worn for an excessive period of time, or when they are ill-fitting; and in various diseases of the eye such as glaucoma. It has been most recently noted that tissue swelling due to excess fluid accumulation may be the side effect of contraceptives specifically, and other drugs of various genera.

ENOPHTHALMOS

A recession of the eyeball into the orbit. One eye would appear less prominent than its fellow, and frequently the lids of this receded eye will be most nearly closed, creating a narrower fissure than is present in the other eye. There may be many causes for this change in position of the globe, and it is always a basis for medical evaluation.

ESOPHORIA

The inward turning, or the amount of inward turning, of the two eyes relative to each other as manifested in the absence of binocular fusion of a fixation target as when that fusion is made impossible through various optical devices. It represents a posture of the eyes in which the lines of sight are inward of parallelism when binocular vision has been temporarily interrupted.

ESOTROPIA

A form of strabismus in which one eye is turned inward toward the nose to a greater extent than the eye which is being employed to fixate the stimulus target. It may be unilateral, in which case one eye is always the one deviated inward; or alternating, in which case one eye is arbitrarily deviated inward at one instance, and yet is the fixing eye in another viewing situation, with its fellow eye now being the one deviated inward.

EXOPHORIA

The divergent turning (or turning of the eye outward) of the two eyes relative to each other as manifested in the absence of binocular viewing conditions (when the two eyes are aimed precisely at the same point in space) and is usually precipitated by the use of ophthalmic prisms. This represents the rest state of the eyes if they had been looking at a distant object when fusion was interrupted.

EXOTROPIA

Divergent strabismus. This is a form of strabismus in which one eye is turned away from the nose to a greater extent than its fellow eye, and often appears to the observer to be looking at a wall to one side of the subject, rather than straight ahead. It may be a unilateral condition, in which one eye would always be the one aimed farther outward from parallelism (in distance viewing); or alternating, in which either of the two eyes might be the one so erroneously aimed outward.

FIXATION

The process, condition, or act of directing the eye toward the object of regard, causing, in a normal eye, the image of the object of regard to be placed or centered on the fovea of the eye, which is the area of most sensitive vision of the retina, and has the best visual acuity or ability to resolve fine detail.

ECCENTRIC FIXATION

This condition exists when the subject does not fixate a target using the central foveal area of the eye, but rather with some point nasal to the fovea. It is also known as false fixation, and anomalous fixation, and pseudo macular fixation. It is frequently present in strabismus when anomalous retinal correspondence is present, and can be demonstrated to be present in binocular viewing only, in which case it is termed facultative eccentric fixation; or both under binocular conditions and when the normally fixing eye is occluded, in which case it is known as obligatory eccentric fixation.

FUNDUS

This term refers in a general sense to the inside of the eye, the curved inner surface of the globe as viewed by the instrument that allows the observer to look through the pupil of the observed eye. It is a conglomerate term and refers to the back of the eye as a whole, and represents the appearance of all various structures that exist there. A funduscope or ophthalmoscope is the instrument that is used to examine the back of the eye, or fundus.

GLAUCOMA

An ocular disease occurring for many reasons, but which basically evidences itself by an inordinate and abnormal increase in the pressure of the eyeball. This unstable or sustained increase in the intraocular pressure, left untreated, will cause damage to the eye's structures and to its visual function. The most evident visual signs of glaucoma are reduced visual acuity, seeing of colored halos around lights, disturbed dark adaptation, and a shrinking of the size of the field of vision; often accompanied by a headache.

HYPEROPIA

Hyperopia, also known as farsightedness, is the error of refraction in which rays of light entering the eye are brought to a focus behind the retina. The cause of hyperopia might be congenital or acquired. A hyperopic person usually experiences eyestrain, which will be more prevalent with prolonged near work. He also experiences blurred vision and will have difficulties in adjusting from far to near or near to far. He will also tend to avoid visual tasks and have double vision occasionally.

ILLUSION, OPTICAL

An apparent visual experience induced by optical design or optical circumstances unknown to the observer. These may include those distortions affected by trick mirrors or curved mirrors, trick projectors, or mirages. It is a visual experience misrepresenting the object of regard and created by artificial conditions.

ILLUSION, VISUAL

The visual perception of a pattern, a view or a performance which does not reflect, represent, or convey the actual physical characteristics of the object of regard or particular stimulus being viewed. Many times this form of distortion is achieved through unusual changes in perspective not ordinarily encountered in every day life, leading the observer to a mistaken assumption.

INTERPUPILLARY DISTANCE

The distance between the centers of the pupils, which is usually measured in millimeters. For convenience (and for accuracy in some ocular anomalies) the distance is often taken to be as the distance from the temporal limbus of one eye to the nasal limbus of the other when the eyes are in the primary or straight ahead position of gaze. It is usually abbreviated as P.D.

INTRA-OCULAR PRESSURE (IOP)

Intraocular pressure is the pressure inside the eye and is usually in the range of 10-22 mm. of mercury. The most frequent intraocular pressures are 15-16 mm. of mercury. The pressure inside the eye is maintained by constant flow of fluid that fills the inner eye. The disturbance in the production and/or drainage of the eye may cause an increase of intra-ocular pressure to a point that causes progressive harm to vision; the condition is then known as glaucoma.

KERATITIS

An inflammation (reddening) of the cornea usually characterized by loss of transparency and dullness, due to cellular infiltration and vascularization (proliferation of blood vessels). There is usually pain, tearing, photophobia, and loss of ability to perceive fine detail. See photophobia.

KERATOCONUS

A developmental or degenerative fault of the cornea in which it becomes deformed, leaving its normal dome-shape to become more conical. It is due to a thinning and stretching of the tissue in its central area. The condition usually occurs during puberty, is usually present in both eyes, and is more prevalent in women than men.

LEARNING DISABILITY

Children with learning disability usually have vision problems. There might be inadequate development of the sensory-motor-perceptual process, environmental deprivations, biochemical imbalance, neurological damage, or emotional problems. A learning disabled child cannot perform as well as children of the same age in a learning situation although of normal intelligence. He will also show occasional frustrations and discouragement. He will have a short attention span, be hyperactive, and have poor motor coordination. A learning disabled child is always classified as a slower learner and often fails at school. An expanded evaluation of visual perception, visual motor performance should be given whenever learning disability is suspected.

BIFOCAL LENS

Bifocal lens is a spectacle lens of two portions whose focal powers differ from each other. Usually the upper portion is larger and is for distant vision, and the lower portion is smaller and is for near vision.

CONTACT LENSES

A contact lens is a small, shell-like, bowl-shaped glass or plastic lens that rests directly on the eye. It is in contact with the cornea (front part of the eye) or the sclera (white part of the eye) or both, serving as a new front surface of the eye and/or retainer for fluid between the cornea and the contact lens. Ordinarily it is used to correct refractive errors of the eye.

LENS, OPHTHALMIC

Lens is a piece of glass or other transparent substance having two opposite regular surface, either plane or curved, and functioning as a part or all of an optical system. When a lens is used for correcting or measuring refractive errors of the eye and/or compensating for ocular muscle imbalance, they are called ophthalmic lenses. A convergence lens is always used to correct far-sightedness, while a divergent lens is always used for correcting near-sightedness.

PHOTOCHROMATIC LENSES

Photochromatic lenses are designed to darken when exposed to sunlight and then return to a relatively clear form under normal indoor illumination. The darkening process of the lens takes place only when sunlight directly hits the lens. If the patient is behind the wheel of a conventional car, for example, the sun's rays are blocked by the windshield and the lens color may remain unchanged. The reversal of the darkening process sometimes takes as long as fifteen minutes and the lens does not always become as clear as an untinted lens.

MALINGERING

Malingering is the term given to simulated blindness or simulated visual problems. Malingering usually is caused by the fear of blindness, avoidance, or even a desire for glasses. In a malingering case, there is an absence or reduction of vision without apparent refractive or pathologic cause. A malingerer usually has psychological and/or behavioral problems.

MAXWELL SPOT

Maxwell spot is a test used clinically to detect abnormal fixation of the eye or the integrity of the foveal area (the most sensitive area of the eye). Maxwell spot is seen as a circle surrounded by a blue halo when the eye is observing a diffusely illuminated blue-colored light. The spot appears at the point where the eye is aimed.

MUSCAE VOLITANTES

Muscae volitantes is also known as vitreous floaters. A person sees spots before his eyes. The cause is unknown and it is speculated that a degenerative change in the vitreous is the possible cause. The phenomenon is non-pathological in nature.

MYOPIA

Myopia, also known as nearsightedness, is that error of refraction of the eye in which rays of light entering the eye are brought to a focus in front of the retina. The causes of nearsightedness can be either hereditary or environmental in origin. A myopic person always experiences blur vision at distant objects. However, satisfactory near vision usually is attainable by proper placement of the object and there is a rule that a myopic person (not corrected) always moves objects closer to his face in order to see.

NIGHT MYOPIA

Night myopia is a type of nearsightedness which occurs when a person is under dim light, as in twilight or at night. Night myopia is a normal phenomenon experienced by almost every person to some degree. Almost everyone experiences difficulty in seeing signs or driving under conditions of reduced illumination and this is called night myopia.

PROGRESSIVE MYOPIA

Progressive myopia is a type of nearsightedness which increases at an abnormally rapid rate or increases after maturity. As a result, a person who is progressively myopic needs a change of lenses frequently in order to see well at far distances. The possible causes for this are hereditary, excessively long eyeball and possible development of an abnormally small cornea. The best therapy for progressive myopia now is using contact lenses.

NYSTAGMUS

Nystagmus is the involuntary rapid movement of the eye-ball, which may be horizontal, vertical, rotatory or mixed. The probable causes of nystagmus are reduction of vision, paresis of eye muscles, nervous system dysfunctions. A person with nystagmus often experiences double vision and reduction of vision.

OCCLUSION (EYE PATCHING)

Occlusion, known as eye patching, is a procedure often used on a person who has visual acuity worse than 20/40 in one eye. Occlusion is used to improve vision. There are several types of occlusion: the most common one used is direct (the good eye is patched), inverse (the poor eye is patched), or partial (patching of a portion of the field of vision).

OPACITY

Opacity is a discrete or generalized portion of certain normally transparent tissues or structures of the eye which have lost their usual degree of transparency and hence has become relatively opaque. Opacity of any media of the eye will probably cause the reduction of vision. The most common opacity of the eye occurs in crystalline lens and is called cataract.

PERIMETRY

Perimetry is the determination of the extent of the visual field for various types and intensities of stimuli. It is usually for the purpose of diagnosing and localizing disturbances in the visual pathway.

PINGUECULA

Pinguecula is a benign degenerative tumor that appears as a yellowish-white, slightly elevated, oval-shaped tissue mass on either side of the cornea. It usually occurs in both eyes and causes a cosmetic defect. Treatment is usually unnecessary.

PHOTOPHOBIA

Photophobia is a case of abnormal intolerance or fear of light. The possible causes are glare, excessive illumination, cataract development and inflammation of various parts of the eye. An initial contact lens wearer will also always experience photophobia. A photophobic person always shows an abnormal rate of blinking, tearing whenever they face a bright light, and wearing dark glasses indoors or at night. Whenever a person experiences photophobia, inflammation of the different parts of the eye should be speculated.

PRESBYOPIA

When the focusing ability of an individual's eyes has decreased to the point where vision at his reading distance becomes blurry and difficult. Presbyopia usually occurs between the age of 40 and 45. Presbyopia is not a disease, a gradual loss of focusing ability is normal for everyone. There is no way to prevent presbyopia although its effects can be compensated for by the use of properly prescribed glasses.

PTERYGIUM

Pterygium is a triangular fold at the edge of the cornea and usually advances progressively over the cornea. Pterygia occur commonly in the tropics and subtropics, particularly among those whose eyes are easily irritable by wind and sunlight. There is an absence of symptoms for pterygium; however, it might cause cosmetic defect. Surgical removal is usually done on pterygium but often it will re-occur, especially on a person who lives in a tropical area.

PUPILLARY REFLEX

This is a name given when a focused beam of light is shown before the eyes, either at the midline between the eyes, or directly on the visual axis before one eye, and a bright point reflection is obtained from the cornea, indicating the direction that the eye is aimed. It is used to determine the quality and direction of fixation of the two eyes together and each of the eyes separately.

REFRACTION

Refraction is the altering of the pathway of light from its original direction as a result of passing through media with different refractive indices (the ratio of light in air to light in the medium used). Refraction is also known as the process of refracting, especially as it refers to the professional determination of the optical error of the eye and the correction of that error by the use of lenses. Refraction is performed in every visual examination.

RETINA

This is the layer of the internal eye composed of the light receptors and nervous components responsible for seeing. It is a thin, transparent membrane that is composed of ten layers of cells and their parts, and completely lines the back two-thirds of the globe. The region of greatest sensitivity is the fovea at the posterior pole of the eye, and it is this small area that is also responsible for perception of color. Only cones are present in this area, whereas rods comprise the rest of the retina.

RETINAL DETACHMENT

The very thin transparent membrane containing the visual receptors of the eye loses its attachment to the inner surface of the globe of the eye. It begins with a small area of detachment, and usually grows in the amount of area separated from the globe if left untreated. The patient will notice a sudden loss of vision in a portion of the visual field, and often will have forewarning of an impending detachment through sensations of flickering lights or color.

RETINITIS PIGMENTOSA

A primary degeneration of one of the layers of the retina which is followed by a migration of pigment into the area afflicted. It always begins in the most peripheral parts of the retina, and progresses until only a small island of retina at the posterior pole of the retina remains unafflicted. This is the area of most sensitive vision, however. The main effect of the disease is night blindness, and a progressive shrinking of the visual field until tunnel vision remains. It is a hereditary affliction, and affects both eyes.

SCLERA

The white opaque outer covering of the eyeball, covering it entirely except for the small portion on the front of the eye that is like a clear window (cornea). It has essentially no blood vessels in it, but may appear pink at times because a thin transparent membrane that covers it becomes inflamed at times.

SCOTOMA

An isolated area or island of blindness or reduced visual sensitivity in the visual field which is surrounded by an area of normal vision or of less depressed sensitivity. The normal blind spot of the eye is an absolute scotoma, i.e. an area absolutely insensitive to light (absolutely blind). Such an area, except for the normal blind spot, is indicative of disease and should be examined by a physician.

STEREOPSIS

Visual perception of depth in space. The recognition of three dimensional space based on a slight non-correspondence of image points on the retinas of the two eyes. It is necessary that both eyes be working together in order to see depth, one eye alone will not perceive space as three dimensional, though it is still possible to tell the relative distance of objects.

STRABISMUS

The condition of the two eyeballs in which both eyes are not working together as a unit under normal viewing conditions. Frequently one of the eyes is noticed to be pointed in a noticeably different direction, such as in toward the nose, or out toward the wall. Less commonly there may be a deviation up or down. See exotropia and/or esotropia.

SYMPTOM

An incidental or accompanying subjective indication of a disease, a disorder, or an anomaly (abnormal condition). A complaint of particular note related to the doctor by his patient to which he may attach professional significance. Not all symptoms suggest something wrong.

SYNDROME

An accumulation of more than two signs or characteristics that suggest the presence of a particular disease, or lesion, an anomaly (abnormal condition), a type, or a classification. A list of predisposing factors that allow a doctor to diagnose a known malady.

TANGENT SCREEN

Tangent screen is a device used to test the central 30° of the visual field. Tangent screen is usually consisted of a large plane surface of black cloth or other material mounted so as to be perpendicular to the strightforward direction of view of the subject and at a convenient distance, usually one meter. Physiological blindspot and/or any restriction in the central visual field can always be plotted out on a tangent screen.

TONOMETRY

The measurement of the pressure within the eyeball. The pressure within the eye may be quantified exactly by the use of a tonometer, or may be estimated by lightly touching the globe through the upper eyelid with the fingers. The significance of this pressure measurement is the possibility of glaucoma, which seriously and insidiously elevates the pressure within the eyes.

TRANSLUCENT

Pertaining to a substance which transmits light diffusely so that objects viewed through it are not clearly distinguished. A partially transparent medium through which light passes but which scatters part of the light to yield an unclear image of an object on the opposite side of the observer.

COLOR VISION

Color vision is a sensory or perceptual component of visual experience, characterized by the sensation of hue, brightness, and saturation, and usually arising from, or in response to, the stimulation of the retina by radiation of light of different parts of the visual spectrum.

LOW VISION

A condition where the visual acuity of neither eye can be corrected to 20/40 or better, or the visual field of the eyes is reduced severely. The most distinguishing characteristic of the patient in this classification is limitation to subnormal vision through all conventional methods of correction, and for some cases, through any method conceivable.

VISUAL EVOKED RESPONSES

Visual evoked responses is a new technique now under development to quickly and accurately diagnose all functions normally examined in clinical tests of vision. This is an objective method of telling whether a person is able to see. There is no subjective responses necessary and the test usually only takes a very brief period. By using visual evoked responses technique, we can test children, malingerers, or persons with speech deficiencies. However, the technique is still under the development stage and is not available for private offices as it is relatively expensive and it also needs very special trainings in order to interpret the results.

VISUAL FIELD

Visual field is the area or extent of space visible to an eye in a given position. The average extent is approximately 60° inward and 95° outward, when the eye is in the straight forward position. Therefore, a normal person will have a visual field of about 180° when both of his eyes are opened; so when he is driving or looking straight ahead, he will have "side vision" to enable him to be aware of what is going on to his right or to his left.

VISUAL TRAINING

The teaching and drilling process for the improvement of visual perception and/or for the coordination of the two eyes for more efficient and comfortable vision. It frequently involves the strengthening of the muscles of the eye, and also teaching the patient to recognize things in visual world of which he was previously unaware. See orthoptics.

XEROSIS (OF THE CONJUNCTIVA)

A dry, thickened degeneration of the thin membrane that covers the white part of the eye due to a failure of its own process of secreting fluids to lubricate it. It begins with isolated dry patches which may increase in size and number and become rough and wrinkled as the condition worsens.

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