

GIFFORDS TEXT BOOK OF

Ophthalmology

ADLER

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Preface to the Sixth Edition

The continued popularity of this book has proved to me that Sanford Gifford was right in thinking a text for the medical student and general practitioner was needed, aimed at supplying practical information about diseases and injuries of the eye which they could use in their daily work. Up to this time most small texts were mere abstracts of large ones, intended for the ophthalmologist. Gifford rightly believed that it was not wise to try to "serve two masters" simultaneously, and he took the rather bold step of eliminating all the rarer conditions which interest the specialist and concentrating on the ordinary with all the minutiae and details which usually seem tedious to one who knows them too well. These are the important things, however, to the uninitiated, and to those who are called on to assume responsibilities which they would gladly share with the experts but cannot do so.

In this edition I have again combed the manuscript carefully to eliminate those phases of ophthalmology which are not of practical value for the student or general physician. I have enlarged on certain subjects which were not given sufficient space in previous editions, such as first aid in ocular injuries. This subject was dealt with in the last edition in scattered references under each anatomic heading, such as injuries to the lids, injuries to the cornea, and so on. This created a lack of unity and forced the reader to thumb through many different parts of the book to get a good picture of how he should deal with an emergency waiting in the receiving ward or his outside office. All of this material and much more has been gathered into a single chapter, where it can easily be found. The equipment which a general physician should have has been detailed, and those surgical procedures which he may safely perform himself, provided he has the proper equipment, have been added, along with plenty of warnings as to when he had best call in help.

Finally, the changing medical scene has naturally drawn emphasis from certain diseases fast disappearing, such as syphilis and tuberculosis, phlyc-

tenular keratitis, and trachoma, and turned it into the channels where lie most of our present problems, namely, the viral diseases and the degenerative diseases. In making this revision I have benefited greatly by many kind friends who have called my attention to previous errors and made valuable suggestions. In particular I wish to mention Dr. Frank C. Winters, who went through the last edition meticulously and provided me with many valuable corrections and suggestions.

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External Examination of the Eyes and Adnexa

Every physician should be able to carry out a routine examination of the anterior segments of the eyes and their adnexa without the use of any special apparatus, and derive information of value for the diagnosis and treatment of his patients. To the discerning doctor, the patient's general expression, in no small manner determined by the eyes and their adnexa, indicates his general state of health and happiness. Occasionally some abnormal finding in the lids or the anterior segment of the eyeballs may be the clue to a particular disease. Thus, one is frequently led to a diagnosis by such findings as the exophthalmos in Graves' disease, ptosis in myasthenia gravis, nystagmus in multiple sclerosis and encephalitis, and the Argyll Robertson pupil in tabes.

If a certain routine is followed in examining every patient, one will avoid overlooking signs of disease or injury which might otherwise escape notice. It is obvious that one must first learn what is normal in order to detect abnormalities, but this knowledge can soon be acquired if a routine is strictly adhered to in examining every case. Although at first such a comprehensive examination must consume time, this will rapidly be reduced to a minimum as the experienced eye learns to take in at a glance what at first required prolonged scrutiny. Such a routine examination is outlined in this chapter.

Eyelids and Palpebral Fissures

In a good diffuse light, preferably daylight, one should note the general appearance of the lids, their color, texture, swelling, position and motility (Fig. 1). Localized tumefactions may

be either seen or felt by palpation. Any signs of inflammation or the presence of noninflammatory edema should be noted. The texture of the skin should

be observed: whether this is unusually thin and redundant, or thick and scaly. The presence of a rash or vesicles should likewise be detected. The size and position of the palpebral fissures should be observed: whether they are equal, and whether they show any abnormal change in size on movement of the eyeballs (Figs. 2 and 3). Finally, the character of the involuntary blinking, whether abnormally frequent or absent, should be noted. The extent of the voluntary lid closure noted should be determined. Can the patient close both eyes tight on command? Do both lids move upward equally well when the patient is requested to look upward? When the patient looks downward, do the lid margins follow the downward movement of the globe synchronously, or is there a delay before the lids begin to descend? Are the lid borders in close apposition to the globe, or is a portion of either eyelid everted so that the conjunctival surface is exposed? Is the lid border inverted, so that

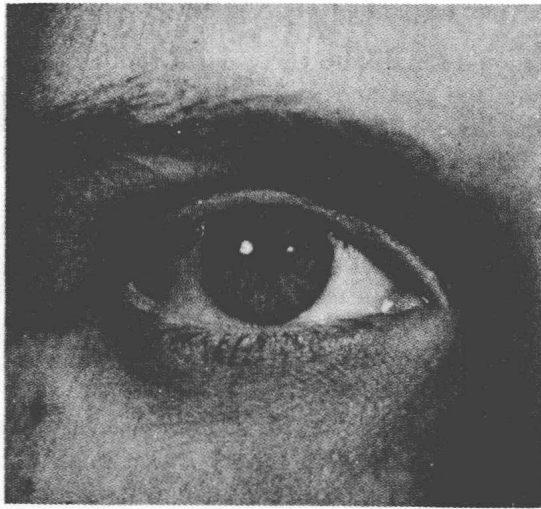


FIG. 1. Normal eyelids and adnexa. Note position of lower lid just below limbus. Also note highlights just off center of cornea.

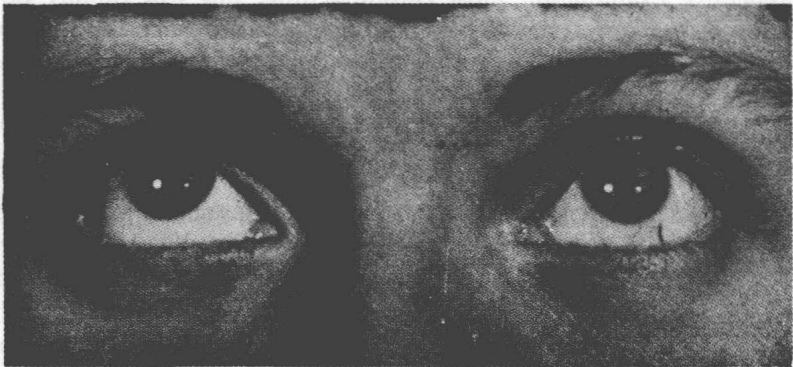


FIG. 2. Position of the lids on upward gaze. Note exposure of sclera below limbus, and amount of iris covered by upper lid.

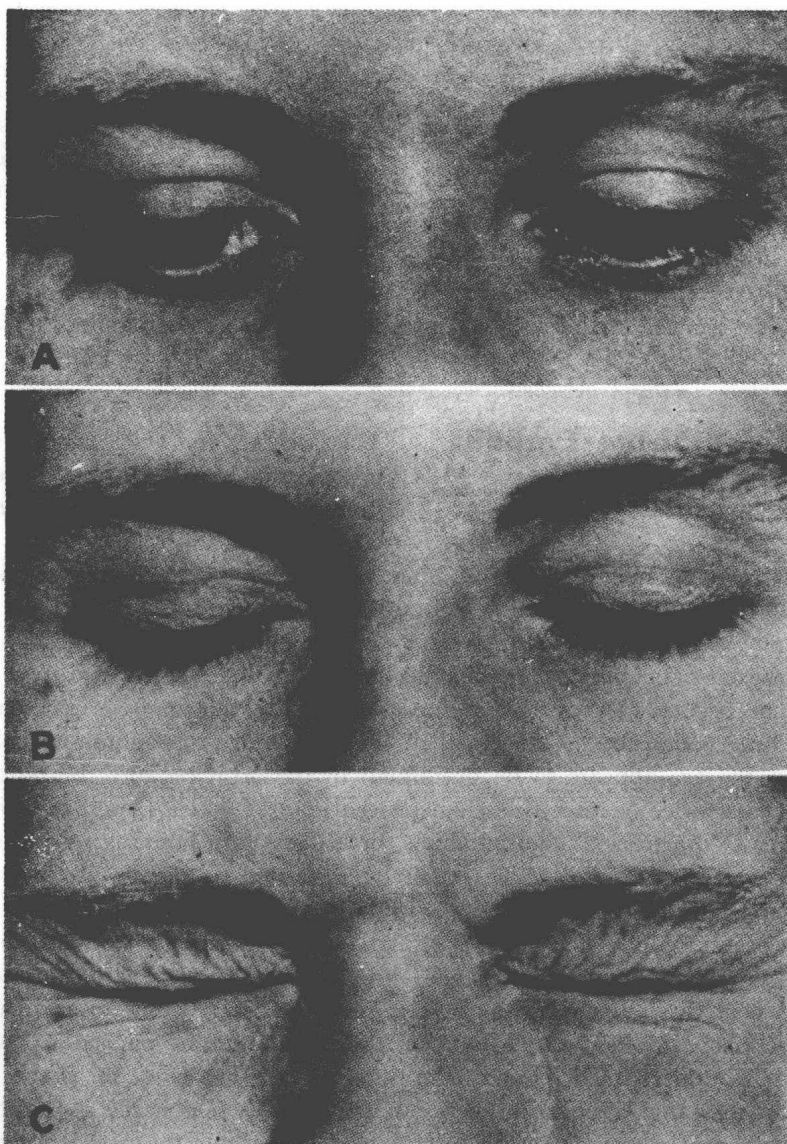


FIG. 3. A, Position of the lids on downward gaze. Note that the upper lid closely follows the movement of the globe downward. B, Position of the lids on gentle closure. C, Lids squeezed shut.

the lashes are turned in against the cornea? Is the amount of skin between the two fissures, covering the bridge of the nose, normal in amount and texture, or is it excessive?

Lashes and Eyebrows

The number, size and color of the hairs forming the brows and lashes should be observed, and the direction of the eyelashes noted particularly,

i.e., whether they are turned in or out, or misdirected. There may be a patchy loss of lashes, or some new-formed or stunted lashes, or even a localized patch of unpigmented lashes. Careful scrutiny of the lash border should be made, noting any scales due to secretion or even animal parasites.

Position of the Eyeballs

There is a very wide range in the prominence of the eyeballs in normal individuals, and caution should be observed in deciding whether both

eyes are either abnormally prominent or sunken in the orbital cavity. A displacement of more than 1.5 mm. of one eye in front of the fellow eye is definitely abnormal, but this can be determined only by instrumental measurements. Unless the difference in prominence of the two eyeballs is so marked that there is no question about it, it is safer not to rely on naked eye observation for the diagnosis of exophthalmos or enophthalmos. Many times the eye appears to be prominent in the orbit because the palpebral fissure is wider on that side than on the opposite side. This may give rise to a false diagnosis of exophthalmos, or at least to a false impression of the degree of exophthalmos. This will be discussed in greater detail in the section on exophthalmic goiter (p. 135).

When the patient is looking straight ahead toward the horizon, the two eyes should be on the same level, and the visual axes apparently parallel. In a general way this can be determined by observing the location of the reflection of a window or a light on the cornea, noting particularly where it lies in respect to the edge of the pupil of each eye (Fig. 1). If the reflex lies in the same position in each eye, one can be reasonably sure that the eyeballs are in straight alignment. A still more accurate method of determining this is to have the patient fix a distant object, and then to place a cover over the right eye while observing the left to note any movement of this eye. If the left eye shows no movement when the right is covered, one can be certain that this eye is in proper alignment. The cover is then removed from the right eye, and after allowing at least a second or two to elapse while the patient is again told to keep looking at the same distant object, the cover is placed over the left eye. The examiner now watches

the right eye for any movement. If this eye also fails to show any movement when the left eye is covered, this eye also is in proper alignment. This test is more accurate than judging the position of the eye by the corneal reflexes, because the cornea is not a perfect sphere but an ellipsoid, with its major axis frequently not corresponding with the visual line. Hence, the reflex may lie inside or outside the center of the pupil when the patient is looking straight ahead in the distance, even though the eyes are in good alignment. This may give rise to an impression that the eyes are either divergent or convergent, when in reality they are straight, or that they are straight, when in reality there is a squint present (see p. 75).

Motility of the Eyeballs

The extent to which each globe can be turned in the various directions of gaze should be determined, and care taken to note whether the two eyes

move together. Normally, the eyes are in alignment on looking straight ahead and slightly below the horizon. They can be moved throughout a wide angular range in all directions. No involuntary movement of the eyes should occur under these conditions except in extremes of gaze, when a nystagmus (see p. 66) may be found (end position nystagmus). Special attention should be paid not to overlook fine nystagmus. Occasionally a fine rotational nystagmus will escape observation until the fundus is examined with the ophthalmoscope. Under this magnification the constant fine movements can be detected.

The convergence near point should be determined. This is the point closest to the patient on which both eyes can converge when an object is brought up toward him. As soon as one eye begins to deviate outward, the limit of the convergence has been reached. This is the convergence near point. Normally, this is from 50 to 75 mm. in front of the eyes.

Lacrimal Apparatus

The surface of the cornea and the conjunctiva is kept moist by the tears and the secretion of the glands lining the lids. It should be noted whether

there is any lack of this fluid, or whether the tears are present in excess. The latter may be caused either by excessive formation of tears, or by some obstruction of the passages which normally drain them away from the eye. The position of the lacrimal puncta and their patency should be observed, and pressure over the lacrimal sac made to determine whether this contains any secretion or pus. The presence of fluid coming from the sac is an indication that the tear duct is blocked. The character of the fluid will indicate whether the sac is infected or not.

Bulbar Conjunctiva

The bulbar conjunctiva is now examined while the lids are held gently apart and before any manipulation is made which might produce congestion of the conjunctival vessels. A few vessels are usually visible in the normal conjunctiva, and not uncommonly these are episcleral vessels, which are large and tortuous. In some people their presence is annoying, since they make the eyes look congested. One should become familiar with the common normal variations to avoid the mistake of regarding such vessels as pathologic. Except for these larger vessels and occasional depositions of pigment, the sclera should be a porcelain white color, as seen through the transparent bulbar conjunctiva (see p. 235).

Pathologic congestion of the bulbar conjunctiva should be recognized at once. Two forms of pathologic congestion occur.

1. Superficial Congestion (Fig. 4). This occurs when any irritation of the conjunctiva is present, such as the presence of a foreign body on the eyelid, or a bacterial or traumatic conjunctivitis. Only the superficial layer of vessels is involved. These vessels are tortuous, of a bright brick-red color, and are more evident at the periphery of the bulbar conjunctiva in the fornices than near the limbus. The small capillaries between the large vessels visible to the naked eye may be engorged if the congestion is marked, giving a diffuse redness to the whole conjunctiva, and petechial hemorrhages may be present. This is the form of congestion which gives rise to the lay term "pink-eye." It is generally due to an acute infection of the conjunctiva (p. 199).

2. Deep Congestion (Fig. 131, p. 187). This always indicates an involvement of the cornea or of the deeper structures of the eye. It is seen in keratitis and iritis. It may be present when a foreign body is embedded in the cornea, when it signifies that the irritation of the eye is sufficiently severe to dilate the vessels supplying the iris and ciliary body. This form of congestion is found immediately around the limbus, the junction of the cornea with the sclera. The individual normal vessels in this region are too small to be seen by the naked eye, but when dilated produce a diffuse violaceous flush. Seen with magnification they appear straight underneath the conjunctiva, and do not move when the overlying conjunctiva is moved gently with an applicator. This form of congestion is called a ciliary flush.

If one form of congestion is present alone, there is seldom any doubt as to its character. Both types of congestion may be present together, however. This is nearly always true in severe inflammatory conditions of the eye, so that it is not always easy to make a diagnosis of the underlying disease by the type of congestion alone.

The size and color of the pinguecula should be noted. This is usually visible as a slight elevation at either side of the limbus, and may be quite large and distinctly yellow in some normal persons. When they become