

Anatomical plates, illustrating the structure of the human eye, and its appendages : with accompanying descriptions / by Alexander Watson.

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ANATOMICAL PLATES,

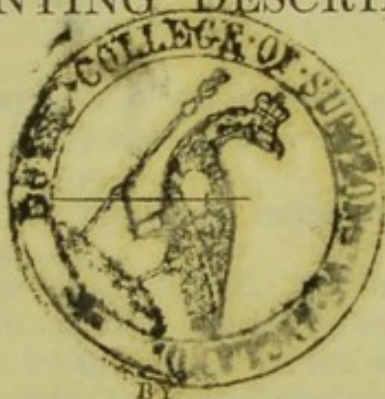
ILLUSTRATING THE

STRUCTURE OF THE HUMAN EYE,

AND ITS APPENDAGES;

WITH

ACCOMPANYING DESCRIPTIONS.



ALEXANDER WATSON, Esq

F. R. C. S. E.

EDINBURGH:

MACLACHLAN AND STEWART.

M.DCCC.XXXI.

ANATOMICAL PLATES

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MACGILLIVRAY AND STEWART.

M.DCCCXXI.

EXPLANATION
OF THE
ANATOMICAL PLATES
OF
THE HUMAN EYE.

PLATE FIRST.

THE Figures of this plate are intended to show the external parts of the eye, in its open and closed states.

FIGURE I.

Represents the natural appearance of the right eye when open. To this Figure, the letters upon Figure III. refer.

- a. b. c.* The eyebrow. *a.* The nasal extremity. *b.* The middle.
- c.* The temporal extremity.
- †. d. ** The superior or upper eyelid. *†* The more fixed part.
- ** The more moveable part. *d* The fold of the integument produced when the eyelids are open, by the action of the muscle of the upper eyelid, which draws its superior edge backwards into the orbit.
- e. * r. m.* The aperture of the eyelids.
- ** The margin of the superior eyelid, beset with hairs called the ciliae or eyelashes.
- e. f. g. h. i.* The internal, nasal, or greater canthus of the eye.
- e.* The lacrymal caruncle.
- f.* A fold of the conjunctiva—better developed in the lower animals, and called the *membrana nictitans*.
- g. h.* The orifices of the lateral lacrymal canals, called the lacrymal puncta.
- i.* The tendon of the orbicularis palpebrarum muscle, which passes over the lacrymal sac.
- l. k. a.* Horizontal line, drawn to show, that the inner canthus, is lower than the external canthus.
- m. n. p. q.* The inferior or lower eyelid.
- m. n.* The margin of the lower eyelid. At the internal edge of the margin, the dotted line marks the orifices of the sebaceous ducts.
- n.* The external edge of it, into which the eyelashes are inserted. *p.*
- o. q.* The fold of the inferior eyelid when open.
- r.* The external, temporal, or lesser canthus of the eye.
- s. t. u. v. w.* The iris and pupil as seen through the transparent cornea.
- u.* The pupil, or pupillary aperture of the iris.
- t. v.* The internal, lesser, or pupillary margin of the iris.

- s. w.* The external, greater, or ciliary margin of the iris.
v. x. The white part of the eyeball, covered by a mucous membrane called the conjunctiva. *x.* Red blood-vessels ramified upon this membrane.

FIGURE II.

Figures II. and IV. Represent the right eye closed, as in sleep or in winking.

- a. b. c.* The eyebrow—*a.* Its internal or nasal extremity—*b.* its middle—*c.* its temporal extremity.
c. d. e. f. The upper eyelid expanded over the eyeball when closed.
e. f. The aperture of the eyelids closed.
e. The inner or greater angle or canthus of the eye.
f. The exterior or lesser angle or canthus of the eye.
g. The ciliæ or eyelashes of both eyelids.
h. i. The horizontal line, showing the inner angle to be situated lower than the temporal angle.
k. l. The situation of the iris, or rather of the cornea, when the eyelids are closed.
m. n. q. The depressions at the margin of the eyeball—the folds of the eyelids having disappeared by the extension of the eyelids over the globe.

PLATE SECOND.

THE Figures of this plate are intended to illustrate the anatomy of the appendages of the eye—namely the eyelids, muscles of the eye, and lacrymal organs. They are taken partly from nature, and partly from the plates of Soëmmerring.

FIGURE I.

Represents the exterior muscle of the eyelids of the left eye.

- a. b. d. e.* The orbicularis palpebrarum muscle.
a. b. The origin of its fibres from the frontal bone—*c. d.* from the superior maxillary and malar bones.
e. i. The aperture of the eyelids closed.
h. The fibres of the orbicularis muscle which cover the upper eyelid.
l. The fibres of the same which cover the lower eyelid.
f. The tendon into which the fibres of the muscle are concentrated, to be inserted into the superior maxillary bone.
g. h. The fibres of the muscle which cover the lacrymal sac.

FIGURE II.

Shows the anatomy of the eyelids, after the removal of the integuments and orbicularis muscle.

- a. b. c. d.* Marks the situation of the bony margin of the orbit by a dotted line.
e. g. f. h. The aperture of the eyelids open.

- g.* The inner or greater angle of the eye.
- h.* The external or lesser angle.
- e. f.* The puncta lacrymalia, or orifices of the lateral lacrymal canals, which lead to the lacrymal sac *d.*
- d. i.* The lacrymal sac and nasal duct. The part above the margin of the orbit (*n. d.*) is called the lacrymal sac; that below, or confined within the bony canal which leads to the nose, the nasal duct.
- i.* The lower orifice of the nasal duct, entering the lower and lateral part of the nose, at the fossa formed by the inferior spongy (*k*) and superior maxillary (*i*) bones.
- l.* The orifices of the sebaceous ducts leading from the Meibomian glands, shown by a dotted line round the inner margin of the eyelids.
- m.* The cartilage of the upper eyelid.
- n.* The cartilage of the lower eyelid.
- o.* The lacrymal gland.

FIGURE III.

Represents the inner surface of the eyelids of the right eye.

- a. b. c.* The external margin of the orbicularis muscle.
- d.* The lacrymal gland.
- e.* The tendon of the levator muscle of the upper eyelid.
- f. g.* The mucous membrane which lines the inner surface of the eyelids, and covers the anterior surface of the eyeball, called the *tunica conjunctiva*.
- h.* Seven points representing the orifices of the ducts leading from the lacrymal gland, by which the tears are conveyed to the inner surface of the eyelids.
- i. i.* The orifices of the puncta lacrymalia.
- k. l.* The aperture of the eyelids, a little open, by which the ciliæ or eyelashes of the upper lid are partly seen; *k.* the external angle, *l.* the inner angle of the eye.
- l.* Shows the fold at the inner angle, called the lacrymal caruncle.
- m. n.* The cartilages of the eyelids seen through the mucous membrane. The lines across these cartilages, represent the sebaceous follicles, or glands, called the glands of Meibomeus. These glands are situated between the mucous membrane, lining the eyelids, and the tarsal cartilages.
- o.* A dotted line, showing the orifices of the ducts of these glands along the margin of the eyelid.

FIGURE IV.

Represents about one half of the bony orbit, in which the eyeball and its appendages are contained. The part of the orbit here seen, is that next the nose. The eyeball and its muscles are seen in situ.

- a. b. c. d.* Part of the orbit, formed by the bones of the cranium and face—*a.* part of the sphenoid bone—*b.* part of the frontal bone—*c.* the sphenoidal; and *d.* the superior maxillary bone.
- e.* The nasal bones.
- f.* The eyeball, or globe of the eye.
- g.* The extremity of the optic nerve, where it passes from the cranium to the orbit.
- h.* The levator oculi muscle, raised from its situation at its origin,

to show the parts beneath,—its insertion into the eyeball remaining at *p*.

i. The superior oblique muscle, having its origin at the foramen opticum, *g*.—the pulley through which it passes at *h*. and its insertion into the eyeball at *q*.

l. The abductor oculi muscle.

m. The abductor oculi.

n. The depressor oculi.

o. The bony ring of the sphenoid bone, from which all these muscles take their origin.

r. The insertion of the inferior oblique muscle.

PLATE THIRD.

Represents Seven Sections to show the structure of the Eyeball.

FIGURE I.

Represents a perpendicular section of the right orbit and its contents.

a. b. b. c. Section of the bony orbit.

d. The optic nerve where it enters the foramen opticum.

e. The eyeball or globe of the eye.

f. g. The eyelids; represented as brought a little forward from the eyeball.

h. h. The common integument covering the anterior parts of the eyelids.

i. i. The orbicularis palpebrarum, or sphincter muscle, for closing the eyelids.

k. k. The cartilages of the upper and lower eyelids.

l. l. l. l. The tunica conjunctiva, or mucous membrane, which forms a partial covering to the eyeball anteriorly.

m. Its superior pouch or cavity.

n. Its inferior pouch or cavity.

o. o. The ciliæ or eyelashes. At their roots the orifices of the ducts of the Meibomian glands are situated.

p. The inner or nasal canthus of the eye where the lacrymal caruncle and puncta lacrymalia are situated.

q. The levator muscle of superior eyelid.

r. The levator muscle of eyeball.

s. The depressor muscle of eyeball.

t. The adductor muscle of eyeball.

u. u. Space occupied by cellular and adipose substance.

1. The sclerotica, or sclerotic coat.

2. The choroidea, or choroid coat.

3. The retina, or expansion of the optic nerve.

4. The cornea, or transparent anterior coat of the eye.

5. Anterior termination of the choroid coat and retina, where the ciliary ligament and processes commence.

6. Anterior extremity of the ciliary processes, between which and the margin of the crystalline lens there is an intermediate portion of the vitreous humour contained within its own proper tunic, forming the *zonula lucida*.

7. 7. The iris, or partial boundary, separating the anterior from the posterior chamber of the aqueous humour.

8. The crystalline humour, or lens, contained within its proper capsule, and imbedded in the anterior part of the vitreous humour. The vitreous humour occupies the whole space between the lens and the retina.

9. The anterior chamber of the aqueous humour.

× The posterior chamber of ditto situated between the posterior surface of the iris and anterior part of the crystalline lens.

10. Section of the optic nerve where it passes through the coats of the eyeball to form the retina.

FIGURE II.

Represents the Eyeball having a part of the Cornea, Sclerotica, and Iris removed from it.

a. The cornea.

b. b. The sclerotica.

c. The tunica conjunctiva.

d. The choroidea.

e. e. The ciliary ligament.

f. The iris.

g. The crystalline lens.

h. The part of the hyaloid membrane, which forms the canal of Petit, to which the pigmentum nigrum of the choroid coat and ciliary processes adheres.

i. The zonula lucida, or space between the anterior extremities of the ciliary processes, and margin of the crystalline lens.

k. The optic nerve.

l. The retina, terminating anteriorly at the ciliary ligament.

m The anterior termination of the retina.

FIGURE III.

Represents one-half of the Coats of the Eye, from which the humours have been removed.

a. The cornea.

b. b. The sclerotica.

c. c. The choroidea.

d. d. The anterior termination of the choroid coat in the ciliary ligament and processes to which the iris is attached.

f. The iris.

g. h. h. The optic nerve, which expands within the choroid coat forming the retina.

FIGURE IV.

Represents the Eye-ball, from which the Cornea and anterior part of the Sclerotica have been removed, by which the anterior part of the Choroid Coat, the Ciliary Ligament, the Iris, and the Crystalline lens are seen anteriorly.

a. a. The sclerotica.

b. b. The choroid coat, and ciliary ligament.

- c. d. The iris, a part of which is torn down from the ciliary ligament.
- e. The crystalline lens.
- f. The anterior part of the vitreous humour which occupies the space between the ciliary processes and margin of the lens. The radiating white lines are the vessels proceeding to the margin of the lens.

FIGURE V.

Represents the Anterior Half of the Coats of the Eye, seen from behind. The Crystalline Lens, and part of the Hyaloid Membrane of Vitreous Humour, in situ.

- a. a. The sclerotica.
- b. b. The choroid coat.
- c. The ciliary processes, denuded of the vitreous tunic, and terminating before arriving at the margin of the lens.
- d. A portion of the hyaloid membrane of the vitreous humour by which the lens is connected to the ciliary processes.

FIGURE VI.

Represents the Crystalline Lens, imbedded in the anterior part of the Vitreous Humour.

- a. a. The hyaloid membrane of the vitreous humour, covered by a portion of the retina, and some of the black pigment from the choroid coat and ciliary processes.
- b. The part of the hyaloid membrane, which forms the canal of Petit, to which some of the pigment of the ciliary processes and choroid coat adheres.
- c. The space between the ciliary processes and margin of the lens, occupied by the anterior part of the vitreous humour, upon the hyaloid membrane of which the vessels, for the nourishment of the lens, proceed to its capsule.
- d. The crystalline lens *in situ*.

FIGURE VII.

Represents the posterior surface of the Coats of the anterior half of the Eyeball, the Humours having been removed.

- a. a. The sclerotica.
- b. b. The choroidea.
- c. The ciliary ligament and processes.
- d. The posterior surface of the iris.
- e. The pupil, or circular foramen in the centre of the iris.

FIG. 1.

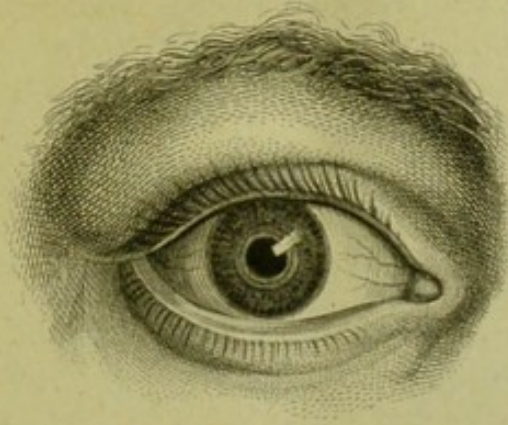


FIG. III.

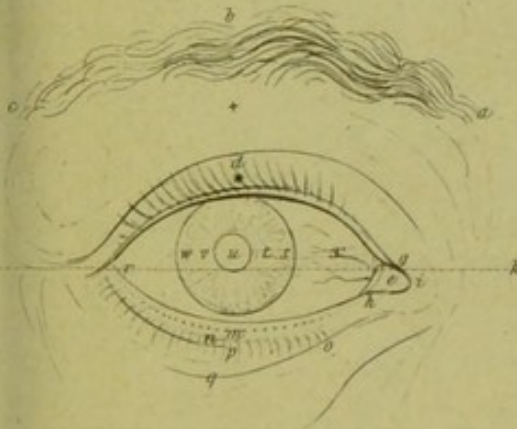


FIG. IV.

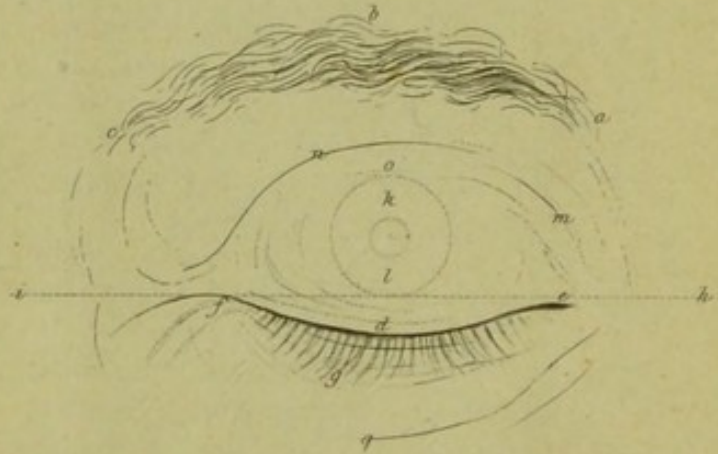
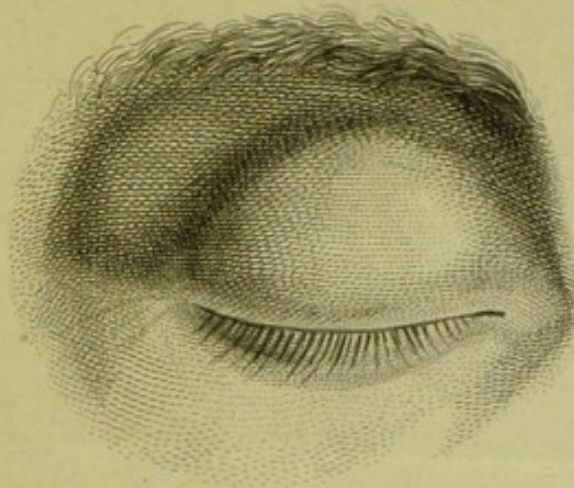
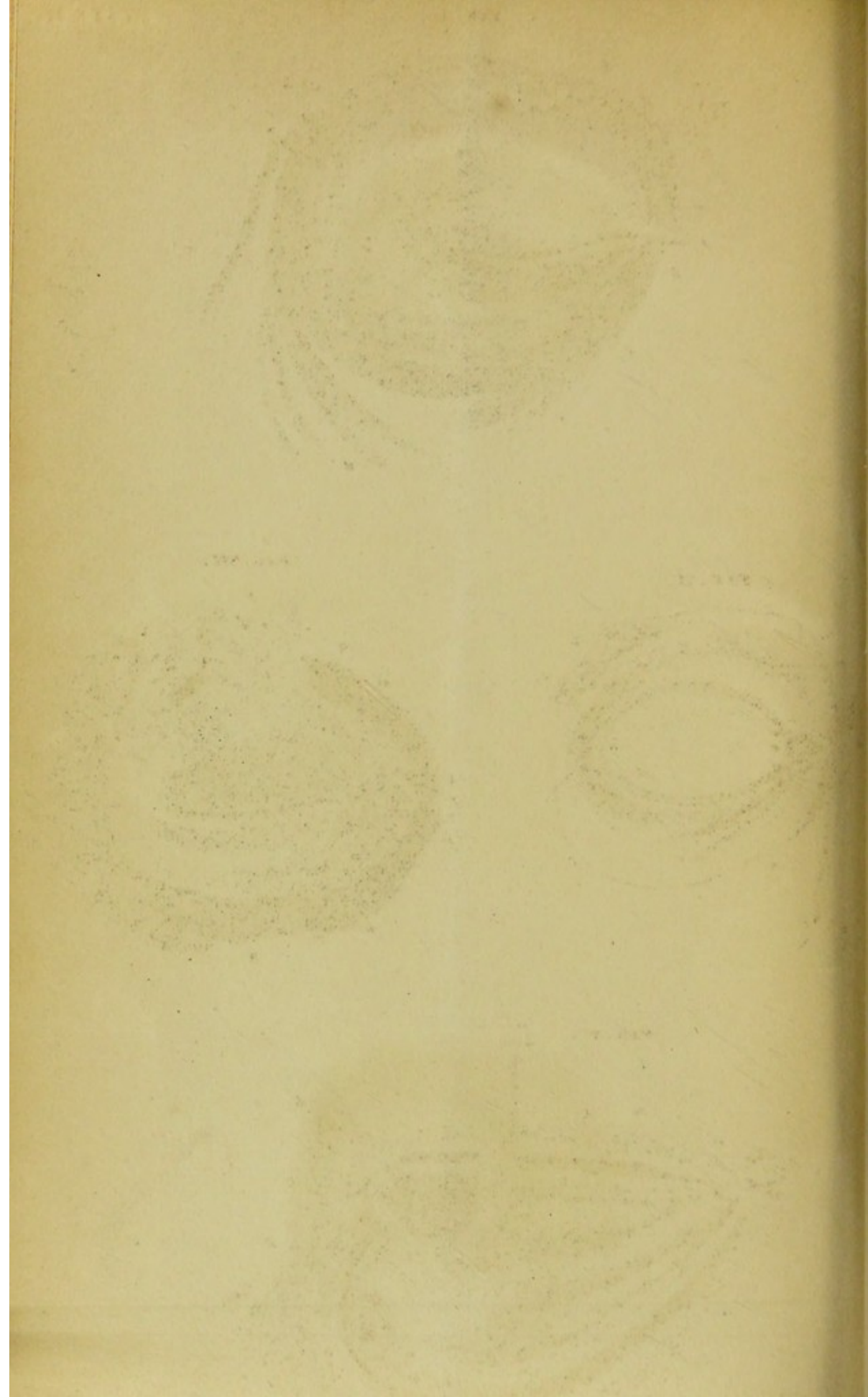


FIG. II.





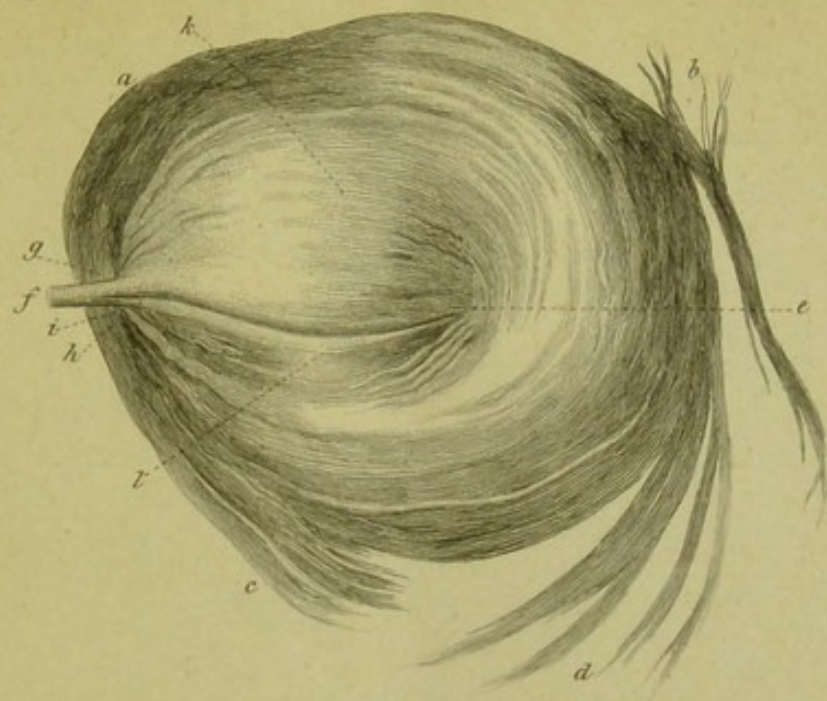


FIG. II.

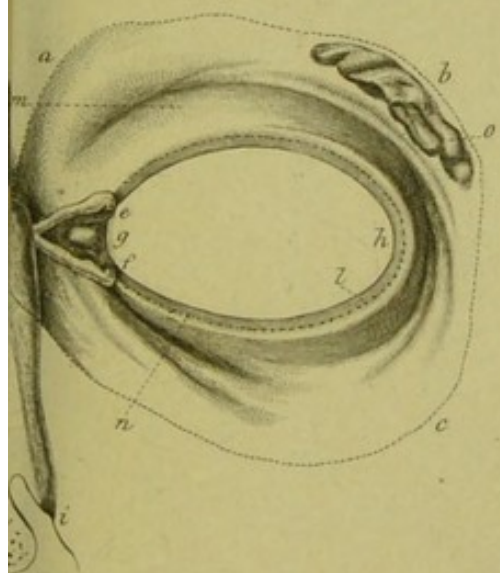


FIG. III.

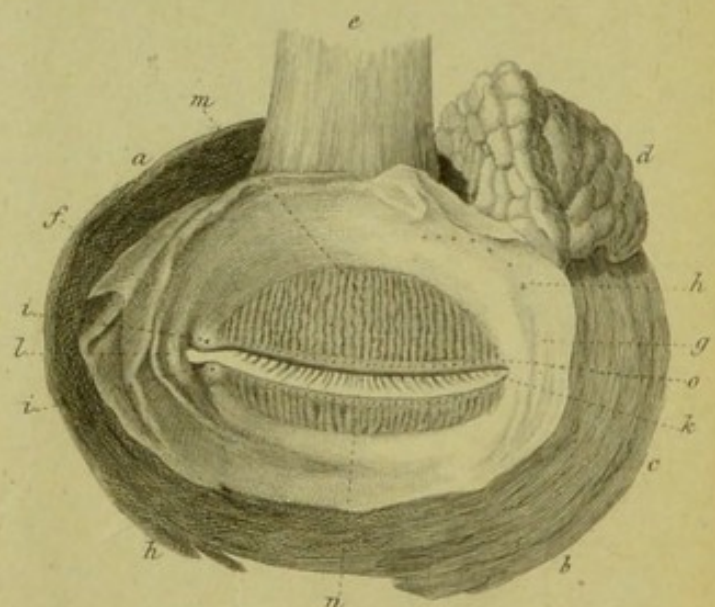
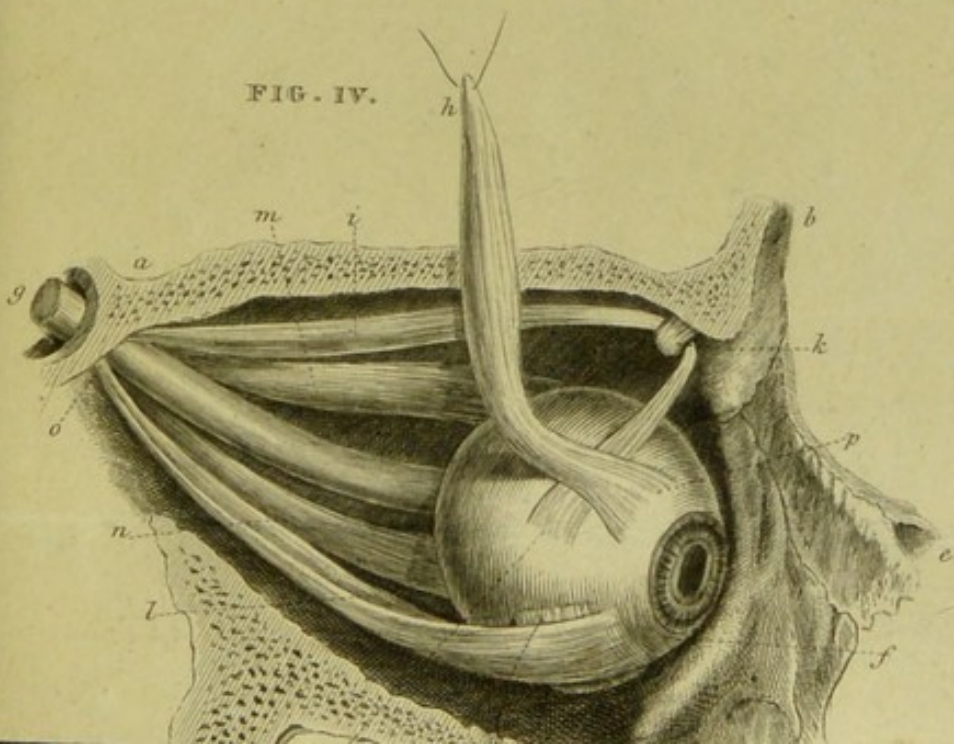


FIG. IV.





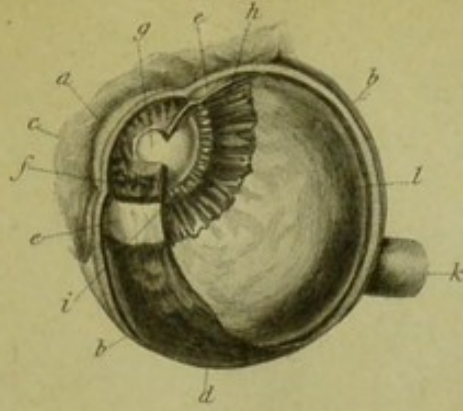


FIG. III.

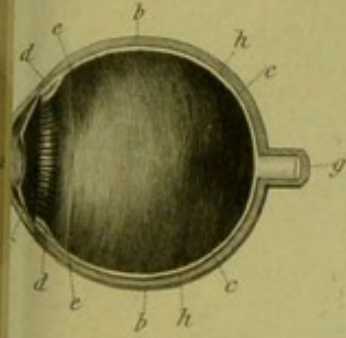


FIG. IV.

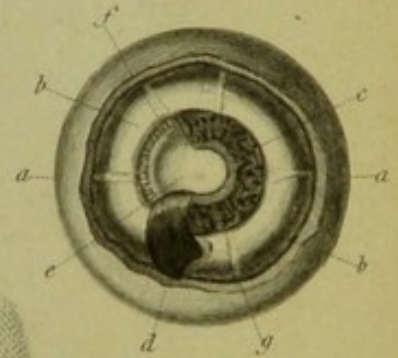


FIG. I.

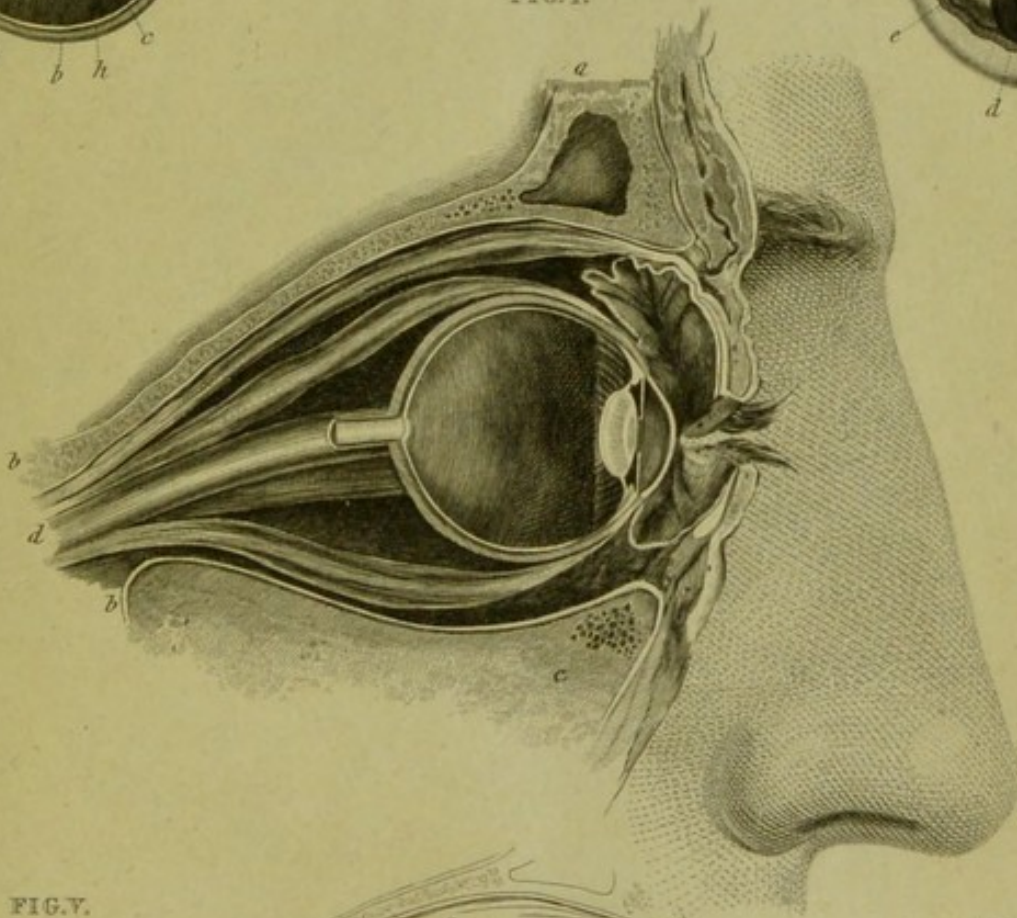


FIG. V.

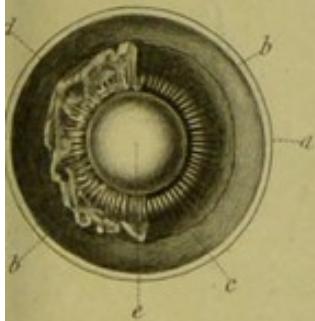


FIG. VI.

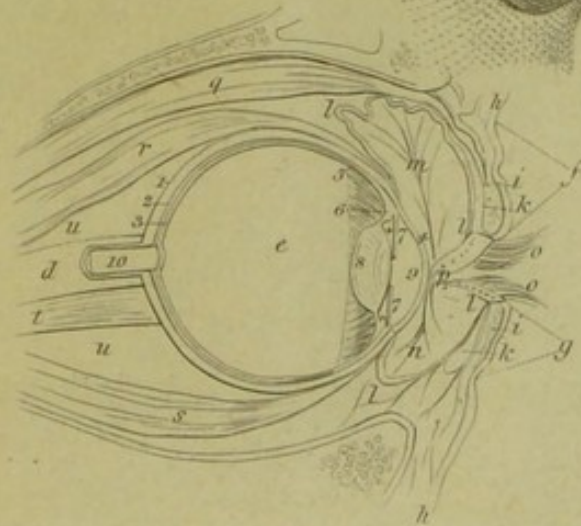
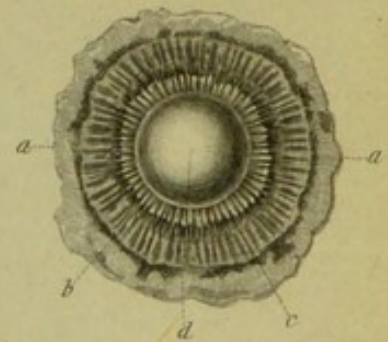


FIG. VII.



