

23d.—Restless nights. Had cramp in limbs, but did not complain of any particular part of dressing.

25th.—Patient tranquil. Dressing in good order. From this time to the first of April, I visited once or twice a week—but having had little or nothing to do, have nothing to record.

At the end of six weeks, the dressing was removed; limb of full length, no turning out of the foot. At the end of sixty days she was able to bear a little weight upon the limb, and convalescence gradually progressing.

I have not the means of determining at what period the dressing may be safely removed. I never try the limb until I suppose the bone has had time to unite.

Mrs. Johnson, of Billerica, fractured the bone at the neck, in January, 1831, at the age of 63. The dressing was removed at the end of fifty-five days.

In December, 1834, she met with a similar accident upon the opposite side—in both instances by falls upon the ice. In this case I also removed the apparatus at the end of fifty-five days. It probably might have been removed sooner, for she kept very still. Mrs. Johnson is now 76 years old—is not lame, occasionally walks two miles to meeting, and last year received a dollar a week for nursing the sick.

In surgery, as in everything else, great allowance is to be made for the medium through which a man views his own improvements. In doing this, he is apt to shut one eye, and apply the magnifying glass to the other; precisely as the fond parent views his own children; he always imagines that his daughters are beautiful, and that his sons are fine fellows, and is astonished when he finds that they are not so regarded by others. But upon such matters the community will always decide for themselves, and from their decision there is no appeal. Yours truly,

Billerica, April, 1844.

Z. HOWE.

ON MYOPIA.

By W. Olney Wallace, M.D.

[Communicated for the Boston Medical and Surgical Journal.]

Definition.—DISTINCT vision only at less than the usual point.

Causes.—Myopia may be occasioned by—1, too great convexity of the cornea; 2, too great convexity of the crystalline; 3, malposition of the crystalline.

1. *Too great convexity of the cornea.*—"While it is undeniable," observes Dr. Mackenzie, "that in aggravated instances of myopia, the cornea, natural in diameter, may be observed to project considerably above its average altitude, it is also certain, that this conformation is by no means a common, nor even a frequent attendant on the disease."

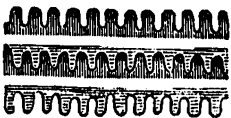

2. *Too great convexity of the crystalline.*—Although unusual convexity of the crystalline probably occurs, Percy and Reveillé-Parise ex-

amined the eyes of subjects who were short-sighted when alive, without being able to observe it. Myopia and presbyopia are sometimes suddenly produced, or suddenly removed—effects which would not probably take place, if the complaints arose from altered configuration of the refractive media.

3. *Malposition of the crystalline.*—For a clear understanding of this, which is the most frequent cause of myopia, it will be proper to inquire into the method by which the eye is adjusted to different distances.

ACCOMMODATION OF THE EYE TO DISTANCES.—This has been referred, 1, by some to alteration of the diameter of the pupil; 2, by a few to muscularity of the crystalline; 3, by a greater number to pressure of the external muscles changing the convexity of the cornea; and, 4, to alteration of the position of the crystalline.

1. *Alteration of the diameter of the pupil.*—As the eye is constructed on the same principle as the camera obscura, it is evident that alteration of the diameter of the pupil can have no greater effect in producing in the eye a distinct image of objects at different distances, than alteration of the diameter of a camera obscura in its adjustment. In the latter instrument the lens is slid, or the screen is shifted backward or forward until the representation becomes distinct. When a person endowed with the usual powers of vision looks at a near object, the pupil is observed to contract; whereas, in a myope, it is almost always expanded.

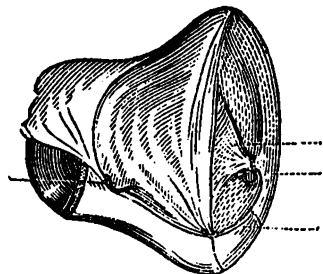
2. *Muscularity of the crystalline.*—The fibres of the crystalline, prismatic in form and brittle in consistence, are totally different from muscular structure; and if they really did possess contractility, there is no point of attachment from which the fibres could act. In a certain species of hawk, the crystalline is a plano-convex, and it is in all animals so exquisitely cut, if I may use the expression, that the irregular corrugation of muscles would produce irregular refraction. In aquatic animals, where the crystalline is dense, the fibres are separated from each other with so much difficulty, that it is not probable they could slide over each other, in such a manner as to produce the supposed effect. Sir D. Brewster has ascertained that in these animals the fibres of the crystalline are hooked or dovetailed into each other by a species of teeth,  which would of course prevent any change in the configuration of the refractory medium. In the mammalia, Arnold has ascertained that the fibres  are tubular.

3. *Pressure of the external muscles.*—The external muscles of the eye are solely adapted to move the organ in different directions. If adjustment depended on them, the focus would be disturbed with every motion; but we can look steadily at an object and roll the orbit round the eye, without moving the image on the retina. After the operation for cataract, the muscles and cornea are as perfect as ever, yet the power of adjustment is lost; glasses of different powers being necessary to view near and distant objects. After the operation for strabismus, the eye can be adjusted as well as before it, even when one of the obliqui has

been divided. Operations for the cure of myopia by dividing the external muscles, should be therefore condemned.

It is admitted that the eyes of all animals are constructed in adaptation to the known laws of the refraction of light ; that rays will deviate from straight lines and be collected in a focus only when they pass from rarer media to denser. Now granting that pressure of the external muscles produced increased convexity of the cornea, rays of light proceeding from an object under water, to the eye of an animal immersed in the same fluid, would not by that means pass to a medium materially denser, and would not undergo sufficient refraction. Increased convexity of the cornea could not be produced in the eyes of some animals, for the sclerotica is sometimes so firm, that no pressure of the external muscles could alter the form of the cornea. In the sturgeon the sclerotica consists of firm cartilage ; and firmness is given to the sclerotica of the sword-fish by a covering of bone.

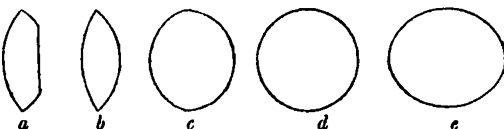
It is generally asserted that the bony ring at the anterior portion of the sclerotica in birds, can be so compressed by the external muscles that the cornea may be made more convex, and that they are thus endowed with their extraordinary powers of near and distant vision. We would accordingly expect that where the ring is largest and strongest the muscles would be strong in proportion. The bony ring in the owl is, compared with the size of the organ, perhaps larger than in any other bird ; yet there is not a single muscle by which it can be moved. It cannot be drawn against the posterior part of the eye to occasion convexity of the cornea when there is nothing to draw it. Indeed it is difficult to conceive in what manner muscles for moving the eye could be adapted to an organ of such extraordinary power. They would require to be of very unusual size to operate with such a disadvantageous lever. The most probable use of the bony ring is to give firm attachment to the ciliary body.



4. *Change of position of the crystalline.*—This theory was advanced by Kepler, and was supported by Potesfield and afterwards by Knox, yet none of them have fully detailed the method by which it is accomplished.

Varieties of lenses.—The form of the crystalline in animated beings

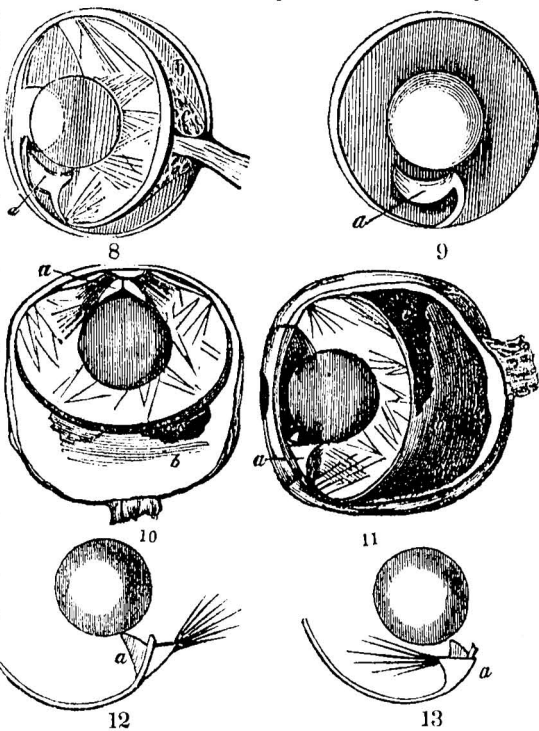
is either—*a*, a plano-convex ; *b*, a double convex ; *c*, an oblate spheroid ; *d*, a sphere ; or *e*, a prolate spheroid. When the crystalline is a perfect sphere, there is no aqueous humor ; there is no canal of Petit ; there are no ciliary processes ; nor is there anything like a ciliary body. The sphere is suspended, and kept in position by the membranes of the vitreous humor, some of which pass through the retina,



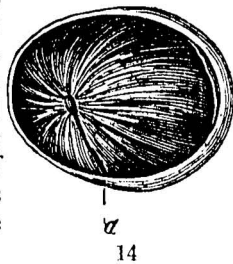
at the line which in these animals divides the lower portion of the tunic, and they are firmly fixed to the choroid.

Adjustment of spherical lenses.—Beneath the spherical crystalline

there is a muscle, which though it varies in shape and size, is very conspicuous in the halibut, the dolphin, and the striped bass. In the halibut, lying diagonally across the eye, it is hatchet-shaped (figs. 8, 9, *a*), arising from the lower portion of the capsule to be attached slightly to the uvea, but firmly to the anterior and lateral portion of the membranes of the vitreous humor. In the dolphin (where it is best seen) and in the striped bass (figs. 10, 11, 12, 13) it is triangular, and passes through a loop at the back of the iris, to be attached to some of the membranes of the vitreous humor. This muscle is supplied by

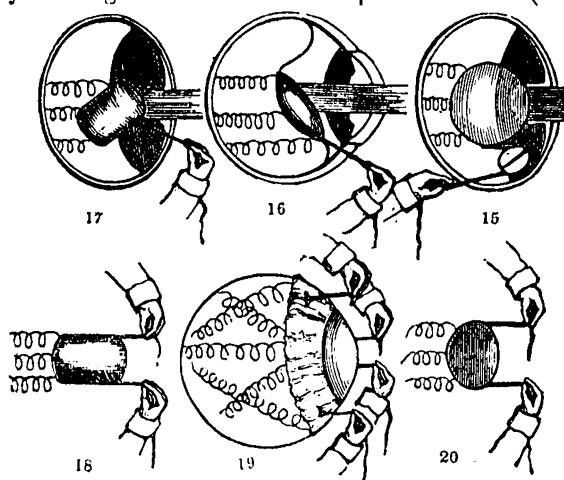


third pair of nerves, which in fishes is acknowledged to be analogous to the fifth pair of the mammalia. When the muscle contracts, the crystalline approaches the cornea and is adjusted to near objects; while it is drawn back, or adjusted to distant objects, by the elasticity of the membranes of the vitreous humor, the firmest of which pass through the slit in the retina before mentioned (fig. 14, *a*). The rotation effected by drawing forward such a crystalline from only one point of attachment will not produce an irregular image, as the diameters of a sphere are always the same (fig. 15).



Adjustment of double convex lenses.—As the diameters of lenses of any other shape than spheres would be altered by drawing them forward from only one point of attachment (e. g., figs. 16, 17), there must, when the crystalline is not a perfect sphere, be some other arrangement for ad-

justment, by drawing it forward from more points than one (e. g., figs. 18,



19, 20). This arrangement is found in the ciliary body which does not exist in animals with spherical lenses.

[To be continued.]

VARICOSE VEINS.

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THE variety of modes of treatment and the numerous operations which have been devised for the cure of this troublesome complaint, show the difficulty of the subject, and the unsettled plans as to which is the most safe, judicious and effectual method of procedure. Some surgeons condemn any surgical operation as dangerous in the extreme, while others confidently assert that the operation does no good; while among those who believe an operation of some kind feasible and useful, the diversity of opinion is such that out of six or eight different plans, each individual thinks his the most safe, simple and effectual.

That operations on veins are not in some constitutions attended with dangerous phlebitis and severe constitutional disturbance, I am not prepared to deny; but that it is *necessarily* so in subjects judiciously selected, or in a majority of cases which present themselves to the surgeon, I have yet to learn. It is not my intention to discuss the variety of methods of operating, or of their relative merits, but to relate what I conceive to be the most safe and simple. For the suggestion I am indebted to Ricord; although mine differs in some respects from his operation, yet the principle is essentially the same. It is by the subcutaneous ligature. A curved lancet-pointed needle, armed with a strong ligature, is passed *beneath* the vein after pinching it up with the thumb and fore finger; the vein is now let go, but the fold of skin retained, and the point of the needle