more difficult to determine than in the male, for desire is more variable and excess as a rule is better borne. There should certainly be a respite, however, during menstruation, in the latter period of utero-gestation, and for several weeks after confinement.

Copulation may be incomplete from various causes; it is not infrequently so in the first experience of either party to it. The undue nervous excitement of the male sometimes ends in a loss of rigidity or in premature ejaculation. An unduly rigid hymen, an undeveloped condition of the vagina, narrowness of the orifice, or other abnormality may prevent entrance.

Various accidents occur. Lacerations and abrasions of the penis are usually of no importance except with reference to the possibility of infection. Œdema or ecchymosis of the skin occasionally follows undue violence. Urethral hemorrhage sometimes occurs, frequently from rupture of a stricture. Cases are reported in which the root of the penis has been dislocated. The so-called fracture consists in a rupture of the corpora cavernosa and may result in such deformity as to render future coitus impossible. Quite a number of cases have been recorded in which the great contraction of the vagina aided by that of the levator ani rendered separation after coitus difficult or impossible until various remedies had been applied. This result seems to have followed the application of musk to the vagina in several instances. More or less complete epileptic seizures sometimes occur during or after connection, most frequently accompanying the orgasm, particularly in the female. Death has also been reported in not a few instances, but its immediate cause has generally been cerebral hemorrhage, the rupture of an aneurism, or it was the termination of an organic disease hastened by the exertion.

The injuries to the female are sometimes serious in character; they are especially liable to occur as a result of the assumption of unnatural positions. The rupture of the hymen is generally of no consequence, but the rent occasionally extends so deeply as to involve the mucous membrane of the vagina and thus give rise to serious hemorrhage. Laceration of the perineum, the clitoris, the urethra, or the anterior vaginal wall into the bladder and similar accidents have been reported. Uterine hemorrhage is not seldom induced, especially by the first connection when it occurs soon after menstruation, and is sometimes of considerable severity.

The medico-legal aspects of this subject will be found under the title of *Rape, Medico-Legal Aspects of*.

James M. French.

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Benjamin Vaughan Abbott.

CORAL BEAN. See *Poisonous Plants*.

CORIANDER.—Coriandrum. Coriander Fruit; incorrectly, "Coriander Seed." The coriander plant is an annual European herb, also cultivated in Europe and the United States. It has been so long cultivated that it is scarcely known in an indubitably wild state. The following is the official description of the drug: Globular; about 4 mm. in diameter; crowned with the calyx-teeth and stylopod; brownish yellow, with slight longitudinal ridges; the

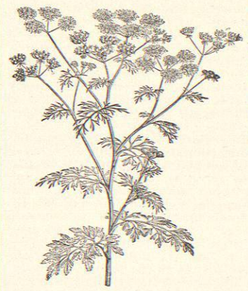


Fig. 1515.—Coriander Plant, one-tenth natural size. (Baillon.)

Fig. 1516.—Fruit of Coriander, natural size.

two mericarps cohering, enclosing a lenticular cavity, and each furnished on the face with two oil-tubes; odor and taste agreeably aromatic.

It contains about one-half per cent. of *essential oil*, eleven of *fat* (in the seeds), and fourteen of nitrogenous matters, etc. The only constituent of value is the oil (*Oleum Coriandri*, U. S. P.), a colorless or yellowish liquid, having the characteristic aromatic odor of coriander, a warm, spicy taste, and a neutral reaction, sp. gr. 0.870 to 0.885. *Linalool*, or *coriandrol*, and *pinene* are the constituents.

Coriander is a very mild and agreeable carminative, of the same properties as anise. Dose 2 to 8 gm. (ʒ ss.–ij.); of the oil, ten drops or so—on sugar or suspended in syrup or mucilage. There is no official preparation of either the fruit or the oil, though the former enters into the *Confectio sennæ* and the latter into the *Compound Spirit of Orange*.

W. P. Bolles.

CORIARIA.—A genus (fam. *Coriariaceæ*) of about ten species of shrubs inhabiting warm or tropical regions. The leaves and fruits of several of these are well-known poisons, both to man and to grazing animals. In the ripe fruit, the poison is said to be confined to the seeds. Their medicinal use has apparently not been tried, but they are of interest because the leaves of one, *C. myrtifolia* L., have been found as an adulterant of senna. They are readily distinguished by their three-nerved surface. The active principle is the glucoside *Coriomyrtin* ($C_{36}H_{36}O_{10}$), which is crystalline, tasteless, and soluble in both water and alcohol. Its action is very similar to that of picrotoxin.

Henry H. Rusby.

CORNEA, DISEASES OF THE.—In order to recognize and understand the various pathological lesions to which the cornea is subject, an accurate knowledge of its anatomy and histology is essential. The term *keratitis* is applicable to all inflammatory processes affecting the cornea and causing certain deviations from its normal uniform transparency,—alterations which are, as a rule, easily recognized by simple inspection with the naked eye; but the method of examination known as focal illumination affords a ready means of detecting changes of slight degree which might otherwise easily escape observation. Structural changes resulting from inflammation are either transitory or permanent. Inflammatory processes in the cornea give rise to various changes in its physical condition, the most constant of which is a loss of transparency which involves the compact fibrillar arrangement of the corneal tissue, and which is caused by the imbibition of fluid material as well as of the more solid cellular elements that have migrated into the cornea from the surrounding vascular system. This subject has been very thoroughly studied by many observers, and the free migration of leucocytes into the cornea from this source is one of the pathological questions which may be regarded as definitely settled. The formation of blood-vessels in the cornea is common to several varieties of keratitis. They owe their origin to the fact that the terminal vessels surrounding the cornea send off-shoots into the corneal tissue and so give rise to a conspicuously vascular condition of this structure, which disappears wholly or in part as the inflammation subsides. The development of these blood-vessels, therefore, belongs to the process of repair. An engorgement of the blood-vessels in the tissues around the cornea is one of the most constant signs of keratitis, and is known as pericorneal congestion.

It is still an open question as to what part the fixed corneal corpuscles take in the inflammatory process. If this has been of such a character as to cause permanent alteration in any part of the cornea, both the fixed corpuscles and the fibrillar structure involved are found to have undergone more or less destruction and elimination. A transformation of the normal clear corneal tissue into white fibrous or scar tissue, which often remains permanently, is a common sequel of corneal inflammation; this is the explanation of most permanent corneal opacities.

The cornea, owing to its exposed position and non-vascularity, is particularly liable to traumatism and to inflammatory processes due to infection and to lessened vitality of the tissues. Three types of corneal inflammation are generally recognized; they are *infiltration*, *abscess*, and *ulceration*.

1. *Infiltrations* are characterized by the presence of leucocytes in such numbers as to cause loss of transparency, with more or less displacement of the fibrous parenchyma of the cornea. Crowding the lacunæ and canaliculi, they may give rise to an ill-defined, streaky opacity, or, when they are accumulated in larger masses, the cloudiness may be more uniform and circumscribed. Notwithstanding this the corneal tissue may remain so far intact as to permit of perfect restoration, when resolution takes place. If, however, the process has been of long duration and considerable intensity, some degree of permanent opacity will result; the migratory cells may indeed become transformed into fibrous tissue (sclerosed), and blood-vessels may become developed in the substance of the cornea as a part of the permanent alteration of its structure. Corneal infiltrations may be superficial or deep-seated, circumscribed or diffuse; and, although the tendency is to recovery without destruction of tissue or loss of transparency, the more unfavorable terminations in sclerosis or ulceration are quite common events, especially if the infiltration has been injudiciously treated with remedies which exaggerate the irritation already existing. Superficial infiltrations of the cornea are apt to cause more irritation than deep-seated ones, on account of the corneal nerve filaments being most abundant toward its anterior surface. This explains why we often see most intense irritation following trivial abrasions of the surface.

2. *Abscess of the cornea* occurs when an infiltration reaches such a degree of intensity that the nutrition of the part is interfered with to the extent of destroying the proper corneal tissue, while the infiltrating elements become transformed into pus cells. The distinctive gross characters of an abscess are its circumscribed appearance and yellowish color. It often gives rise to an accumulation of pus in the anterior chamber (*hypopyon*), presumably in consequence of the fact that the irritant toxins evolved in the inflamed area find their way into the anterior chamber by absorption or transudation (just, for instance, as atropine solution does when dropped into the conjunctival sac), and there excites a purulent iritis or descemetitis. The proof of this lies in the fact that although pyogenic bacteria are as a rule found in abundance in the purulent corneal lesion, there are few if any of these in the accompanying hypopyon. So much of the corneal tissue as may have been actually destroyed can only be imperfectly regenerated; for which reason, more or less of an indelible opacity remains. Then again, as already stated, an abscess near the anterior surface of the cornea is more painful than one that is deep-seated. The duration of corneal abscess is variable; sooner or later the surface is apt to give way, and the abscess becomes transformed into an ulcer. More rarely it breaks through into the anterior chamber.

3. *Ulcers of the cornea*, many varieties of which have been described, all have one feature in common, that is, they are accompanied by loss of substance. They may result from an infiltration or an abscess, or the ulceration may be the primary lesion, commencing as a superficial loss of substance of irregular outline, first of the epithelium, then speedily extending through Bowman's membrane to the cornea proper. Deposits of lymph and pus in the anterior chamber are also quite common in certain types of corneal ulcers. The surface of the ulcer, in its progressive condition, is generally covered with an opaque material, the residue of broken-down tissues, while the margins are surrounded with a grayish zone of infiltration. When the healing process sets in, the base of the ulcer becomes cleaner, its margins smooth and rounded, and the peripheral opaque zone less conspicuous. As the healing progresses the ulcer becomes shallower, and its surface smooth and glistening; for at this stage it is partly covered with epithelium which has grown from the margins toward the centre. Beneath this, new tissue is developed, and the excavation due to loss of substance is gradually filled up by the process of cicatrization. There remains, finally, an opaque area of variable depth and extent, from a slight cloudiness (nebula) to a dense white cicatrix of a pearly or tendinous character (leucoma). Corneal ulcers, especially when situated near the margin, frequently become vascularized during the healing process. An ulcer may remain stationary for a long time, or the surface may not attain the level of the surrounding cornea (corneal facet). Sometimes the process of repair is arrested and renewed ulceration takes place. Perforation of the cornea, with adhesion or prolapse of iris, is a common occurrence, in which case the healing process is apt to be followed by yielding of the softer reparative material to the intraocular pressure and the development of a protrusion known as a corneal staphyloma. Extrusion of the crystalline lens is to be feared

in large ulcerations; or the ulcerative process may involve the entire cornea and result in its total destruction; or panophthalmitis may occur if suppuration extends to the internal structures of the eyeball.

Inflammation of the Cornea (Keratitis, Corneitis).—The term keratitis is now generally applied to all forms of corneal inflammation, the different varieties of which have been variously classified. All the more common varieties may conveniently be included under the headings: (1) Superficial keratitis; (2) Parenchymatous Keratitis; (3) Suppurative Keratitis.

Under the first heading are included catarrhal, phlyctenular, vascular, and traumatic keratitis.

Catarrhal ulcers belong to the non-purulent type of keratitis and are of frequent occurrence as a sequel of conjunctival catarrh, especially in elderly persons. The usual seat of the ulcer is at or near the corneal margin in the form of a shallow sulcus of variable length, or there may be several abrasion-like defects of the surface, the extent of which, owing to the absence of infiltration, can be accurately determined only by the use of fluorescine. A moderate degree of pain, circumcorneal redness, lachrymation, and photophobia are usually present. This form of ulcer tends to heal readily unless, as occasionally happens in the presence of purulent secretion from the conjunctiva, the ulcer becomes infected and gives rise to a dangerous purulent keratitis. If symptoms of undue irritation arise during the course of a catarrhal conjunctivitis a careful scrutiny of the cornea must be made with the aid of focal illumination and fluorescence. The treatment consists in the use of remedies suitable for the cure of the conjunctival catarrh, the cautious employment of atropine if irritation be at all severe, and of local disinfectants if infiltration makes its appearance. Of these an occasional application of sublimate solution is most serviceable.

Phlyctenular Keratitis is closely allied to phlyctenular conjunctivitis (see *Conjunctiva*, etc.), and is often associated with a more general conjunctivitis. It commences as one or several superficial infiltrations, of small size, perhaps not larger than the head of a pin or a millet seed, on any part of the corneal surface, from the extreme periphery to the centre. Each little infiltration, circular in outline, is surrounded by a slight zone of opacity, and causes some elevation of the epithelium covering it; if it be in the form of a vesicle this is seldom demonstrable. The epithelial covering is soon shed, leaving a small excoriation of the surface, or a tiny ulceration which occasionally extends, and may assume the more formidable characters and dimensions of a suppurative keratitis—an event usually traceable to improper treatment or to a very defective state of nutrition.

Phlyctenulæ often become vascularized, and, after repeated attacks of this kind, a form of pannus, known as eczematous or scrofulous, may become developed (see section of this article relating to Vascular Keratitis).

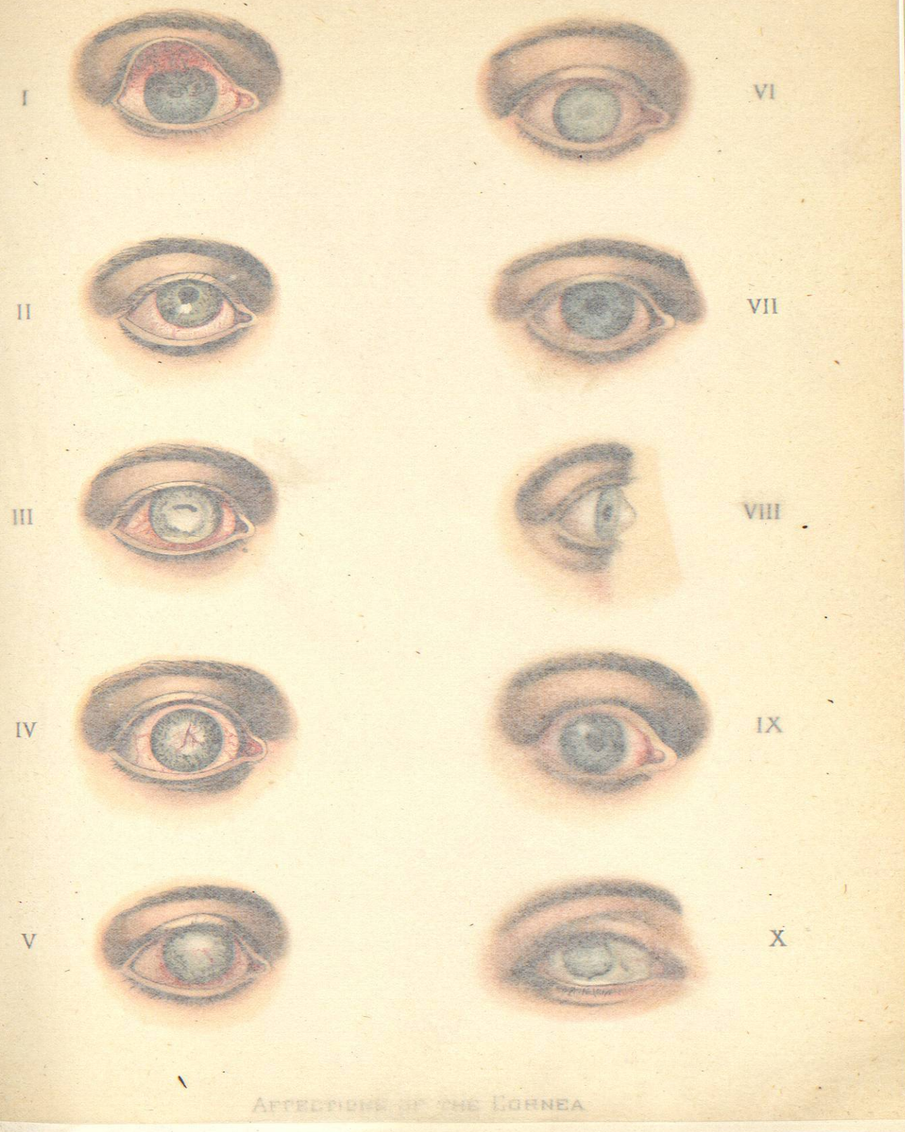
More or less pericorneal injection, with other irritative phenomena, sometimes very pronounced, is always present, and is probably due to the fact that the infiltration tends to follow the course of certain nerve filaments (Iwanoff) which then become embedded in exudation corpuscles and other products of inflammation. Intolerance of light, lachrymation, and spasmodic closure of the eyelids are the most conspicuous signs of irritation. Restlessness and pain at night are quite common. Often the eyelids are more or less swollen, and the overflow of acrid secretions causes excoriation of the integument. In this way an eczematous or impetiginous eruption may spread over the integument of the face and head. The subjects of phlyctenular keratitis are usually children, sometimes in apparently good general health: but, as a rule, they are of strumous habit and show other signs of faulty nutrition. In many cases there are obvious signs of nasal catarrh with or without adenoid vegetations in the vault of the pharynx. The relapsing character of the affection is often due to the presence of these complications. An inquiry into the mode of life of these children will usually reveal grave errors in the matter of diet and general hygiene. Any of the ordinary diseases of childhood are apt to be followed by this form of ophthalmia, presumably only in subjects otherwise predisposed to its occurrence. In slight cases, the disease may quickly pass off, leaving little or no trace of its existence; but far more frequently circumscribed opacities remain for a long period, and sometimes for life, as a permanent blemish. When situated over the centre of the cornea such permanent opacities, though apparently slight in degree, may cause serious impairment of vision. The affection tends to relapse and is consequently apt to be of long duration, especially when the infiltrations are remote from the corneal margin. Many young persons are subject to repeated attacks, at intervals, until adult age is reached.

Treatment. So long as there is active irritation, soothing measures are indicated. Solution of sulphate of atropine, gr. ij.–iv. ad ʒ i. in solution of hydrarg. perchlorid. (1 to 5,000), may be instilled two or three times daily. Heat, applied either in a dry or a moist form, for fifteen minutes or half an hour at a time, and several times daily, is a remedy of great value. A warm solution of boric acid, one or two per cent., may also be used freely as a wash, if there is increased conjunctival secretion. Careful cleansing is of importance also in preventing excoriation of the lids. The latter condition may require the use of local astringents, such as the mitigated nitrate of silver crayon, or of ointments containing oxide of zinc, boric acid, and a small quantity of salicylic acid; or the employment of some form of drying powder may be preferred. When there is swelling of the conjunctiva, with hypersecretion, it will be well to touch the everted lids, once every two or three days, with a solution of nitrate of silver, gr. iij.–v. ad ʒ i.; and in doing this the precaution should be taken to wash off the excess of the solution before replacing the lids:

When the irritability of the eye has subsided somewhat, applications of yellow oxide of mercury ointment, gr. x. to xv. ad ʒ i., (a small portion to be placed under the upper eye-lid), or calomel insufflations, may be resorted to once daily, care being taken not to use these remedies in the presence of augmenting irritation. With this precaution their use is likely to be remarkably beneficial. To prevent relapses the ointment may be used once every other day for several weeks after apparent recovery has taken place. Counter-irritants, such as iodine painted over the brow or touching the skin of the upper lid lightly with solid nitrate of silver, are sometimes very beneficial: but the use of blisters cannot be too strongly condemned. Solution of eserine sulphate (gr. ij. ad ʒ i.) is occasionally more efficacious than atropine in relieving pain, blepharospasm, and intolerance of light.

Intense blepharospasm may require canthotomy, and protracted photophobia may often be greatly relieved by forcible exposure of the eyes to strong light for ten or fifteen minutes, by dropping iced water upon the cornea (Oppenheimer), or by dipping the face in cold water. A four-per-cent. solution of cocaine dropped into the eye often affords temporary relief, and seems to assist the action of other remedies. Faulty condition of the naso-pharynx must be remedied by suitable measures, and until this is done a permanent cure is hardly to be expected.

Treatment which has for its object an improvement in the general health is of primary importance. The diet should be simple and wholesome, with strict avoidance of dainties between meals. Occasional small doses of hydrargyrum cum cretâ ("gray powder") with rhubarb at night are often beneficial. Cod-liver oil and syrup of the iodide of iron are favorite remedies in strumous subjects. The employment of quinine is advocated by some authorities: in full doses, at the outset, by de Wecker and others; in small tonic doses during the course of the disease, by Noyes. Tepid or cold salt-water baths, followed by friction of the skin, and clothing suitable for the climate and season, are means which must not be neglected for promoting recovery and for preventing fresh attacks. A change of air, especially a sojourn at the seaside, will often promptly cure when other remedies fail. Plenty of



Affections of the Cornea

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INFLAMMATION OF THE CORNEA (KERATITIS, CORNEITIS).—The term keratitis is now generally applied to all forms of corneal inflammation, the different varieties of which have been variously classified. All the more common varieties may conveniently be included under the headings: (1) Superficial Keratitis; (2) Parenchymatous Keratitis; (3) Suppurative Keratitis.

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