

large, but at the same time thinner than normal. This thinning involves also the anterior portion of the sclerotic, which thus acquires a bluish appearance, and the anterior chamber is increased in depth and width (hydrophthalmos anterior). Diffuse or circumscribed opacities of such cornea are often present. The condition just described does not, as a rule, remain stationary, but goes on slowly increasing after birth, and the entire eyeball often becomes enormously enlarged.

Congenital faults in the curvature of the cornea, without anomalies as to size or structure of the eyeball, are of frequent occurrence, and account for a large proportion of the errors of refraction known as astigmatism.

Congenital opacity of the cornea may be partial or complete, apart from the congenital opacities of microphthalmos and megalophthalmos. A condition resembling arcus senilis is sometimes seen at birth (embryotoxon) (Manz, *loc. cit.*). A form of opacity so complete as to give the impression that the cornea is entirely absent has also been observed.

Dermoid cysts involving the cornea are always congenital (see, further on, the section relating to Tumors of the Cornea).

The progress of hydrophthalmos anterior may sometimes be arrested by the operation of iridectomy. If vision is destroyed and the enlarged eyeball is the source of disfigurement and annoyance, a staphyloma operation may be advisable or the Weeks operation of evisceration and insertion of an artificial vitreous may yield an excellent cosmetic result.

Conical cornea (transparent anterior staphyloma) (see Fig. 8, Plate XXIV.) is a somewhat rare condition, which is said to develop, as a rule, about the age of puberty, or a little later, and more often in the female than in the male sex. Nothing definite is yet known in regard to its causation. Without any other pathological manifestations the cornea gradually becomes thinner at its central part and assumes a more or less conical shape, and, though usually retaining its normal transparency, in high degrees of concavity the apex occasionally becomes clouded. In slight degrees the diagnosis is readily made by means of the modern test (skiascopy) or by the aid of Placido's disc. At first the eye may become somewhat short-sighted, but vision remains subnormal, even when the error of refraction has been as far as possible corrected with concave and cylindrical glasses. In advanced conditions a profile view of the cornea at once determines the nature of the difficulty. By mirror illumination the optic nerve and retinal blood-vessels appear distorted, rapidly changing in apparent size and shape with every movement of the mirror. Vision is commonly impaired in proportion to the corneal alteration: sometimes to such an extent that only large print can be deciphered.

Treatment. If vision can be materially improved by any combination of glasses, these may be used; not infrequently quite strong cylindrical glasses will be accepted. But if such optical means fail to improve vision, and if the latter be so defective as to justify surgical interference, the apex of the cone may be cauterized with a fine electro-cautery point, thus destroying a limited central area of corneal tissue down to Descemet's membrane. When the central ulcer thus produced has healed, under suitable treatment (see Suppurative Keratitis), the cornea will have acquired a more normal curvature. An iridectomy may be required after this operation. Lateral displacement of the pupil by iridodesis, as recommended by G. Critchett, has not met with much favor on account of the danger of sympathetic mischief which it involves.

Staphyloma of the cornea (opaque anterior staphyloma) (Fig. 5, Plate XXIV.), as already stated, results from ulceration of the cornea with perforation. The perforation must have been of considerable size to be followed by the bulging forward of new scar tissue, which constitutes staphyloma. According to Saemisch, an aperture in the cornea of less than 2 mm. is not likely to cause staphyloma. Narrow perforations are less likely to give rise to this condition than when the aperture is rounded. Corneal staphyloma may be partial or total. When a large

perforation occurs, the aqueous humor escapes, and the iris comes in contact with the opening and may protrude. Thus exposed, it speedily inflames and becomes covered with lymph which undergoes organization, and a weak cicatrix is formed which yields before the intra-ocular pressure, thus increasing the degree of protrusion.

The cornea at the circumference of the aperture, softened by the inflammatory process, also yields to the pressure from within, and becomes involved in the staphyloma, which, at first of small size, may gradually involve a large part of the cornea if measures are not taken to arrest its development.

In other cases extensive destruction of the cornea gives rise to a bulging cicatricial formation, which from the outset involves the greater part of the corneal area. Very large perforations are, however, apt to lead to extrusion of the lens and shrinking of the anterior part of the eyeball (phthisis anterior). The new-formed tissue which constitutes the front wall of the staphyloma becomes densely opaque, and is often considerably thicker than the original cornea, or thicker in some parts and thinner in others (see Fig. 1517). Its surface is covered with an irregular layer of epithelium, while the disorganized and attenuated iris, often reduced to a few shreds of pigmented tissue, imperfectly lines it internally. The lens becomes dislocated forward (Fig. 1518) and opaque, and often undergoes partial absorption. When very large the staphyloma leads to stretching of the anterior portion of the sclerotic, obliteration of the pericorneal sulcus, and elongation with thinning of the ciliary processes (see Fig. 1519). Disturbance in the normal relation between the functions of secretion and absorption of intra-ocular fluids, with a tendency to glaucomatous tension, is a constant result of staphyloma. A form of consecutive glaucoma sets in, and secondary changes in the choroid, retina, and optic nerve finally reduce vision to quantitative perception of light, or destroy it entirely. This is likely to be the result even when the staphyloma involves only a small portion of the cornea.

Treatment. To prevent the formation of staphyloma, prolapsed iris should be removed; instillations of eserine, with the use of a firm compression bandage, are then in order until cicatrization is completed. If this fails, or if healing has already taken place, with the formation of a partial staphyloma, the question of performing an iridectomy is always to be considered, and a decision in favor of the operation is to be given when there is sufficient clear cornea to permit of its performance, when there is evidence that the trouble is progressing, and when there is increased tension of the eyeball. Under these circumstances a broad iridectomy may be of great optical advantage, and will usually arrest the progressive and destructive tendencies of the disease.

In other cases of incomplete staphyloma there may be no hope of improving vision by an iridectomy, but the deformity may be so considerable as to render an operation desirable for its cosmetic effect. Under these circumstances an elliptical piece may be removed from the projection, the lens if present evacuated, and the edges of the wound brought together with two or three fine sutures. Or a compression bandage

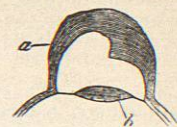


Fig. 1517.—Corneal Staphyloma, natural size. (After Saemisch) a, Cicatricial tissue; b, crystalline lens.

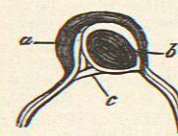


Fig. 1518.—Corneal Staphyloma, natural size. a, Cicatricial tissue; b, dislocated lens. (After Saemisch.)



Fig. 1519.—Posterior View of a Corneal Staphyloma, natural size. a, Elongated ciliary processes; b, remains of the iris; c, dislocated lens.

without sutures may be used until the wound has healed.

For total staphyloma, abscission of the entire projection, or evisceration or enucleation of the eyeball, with or without the insertion of an artificial vitreous, is the best means of doing away with the deformity, trouble, and annoyance which it causes. The first is to be recommended when the eyeball is otherwise fairly healthy. Various methods of performing the operation have been devised. In any case, the lens must not be allowed to remain in the eye after removal of the staphyloma.

Critchett's operation of carrying several curved needles armed with sutures through the ciliary region before abscinding the staphyloma, is objectionable on account of the danger of injuring some of the ciliary nerves, and thus exciting sympathetic inflammation; and also because it is liable to be followed by suppuration of the remaining portion of the eyeball.

A less objectionable method is that of Dr. H. Knapp (*Arch. f. Ophth.*, Bd. xiv., 273). Before abscission is performed, the conjunctiva is dissected back for some distance around the base of the staphyloma, and a sufficient number of sutures are inserted to bring the edges of the conjunctiva together over the opening. Evisceration or enucleation is to be recommended in old and large staphylomata with considerable distention and thinning of the adjacent sclerotic, as in such cases abscission is almost sure to be followed by hemorrhage or deep inflammation.

TUMORS OF THE CORNEA seldom, if ever, take their origin in the cornea itself, but extend to this structure from adjacent parts, usually the episcleral tissue around the cornea. Dermoid tumors, probably always congenital, are situated partly on the sclerotic and partly over the cornea. Such a growth is smooth or slightly lobulated, pale or yellowish white in color, more or less prominent, and usually, though not always, remains stationary. Its dermoid character is assured if one or more hairs are found growing from the surface. When removed, dermoid growths are not likely to recur. If large enough to cause conspicuous disfigurement, excision of the growth is advisable, care being taken not to penetrate the cornea or sclerotic.

Sarcoma, usually pigmented and consequently of a dark color, may develop from the ciliary portion of the sclerotic and extend to the cornea. The growth is more likely to extend deeply into the sclerotic than into the cornea.

Melano-carcinoma sometimes grows from the same region and covers the cornea, spreading beneath the epithelium. The mass is of a dark color, soft, and vascular.

Epithelioma, commencing at the limbus as a small nodule resembling a phlyctenula in this situation, may remain for a long time inactive, but sooner or later it begins to grow rapidly. The age of the subject and the persistence of the nodule in its early stage are of diagnostic importance. Tumors, such as these involving the cornea, should always be removed with as little delay and as thoroughly as possible. If the operation involves penetration of the eyeball, enucleation will probably have to be resorted to; and this is also necessary when the growth recurs and cannot be removed again completely.

Frank Buller.

CORNIFICATION.—The process of cornification is a physiological change by which the superficial cells of the epidermis acquire a horn-like character. It is also found normally in the corpuscles of the thymus. The albumin of the squamous cells of the deeper layers of the epidermis gradually becomes changed, as the cells approach the surface, into a resistant modified albuminous body which possesses a hyaline homogeneous composition resembling that of bone. To this horny substance the name of keratin has been given. Under normal conditions the horny change first appears in the stratum granulosum, involving first the periphery of the cells and the prickle processes. As the change advances the cell protoplasm and the nuclei shrink until the cell bodies become thin and flattened horny scales. The nuclei at the same time gradually lose their staining power, and

the entire process assumes the character of a mummification necrosis, the water of the cells being almost entirely lost. Keratin resists digestion by both stomach and pancreatic juices.

In association with the formation of keratin small bodies of a hyaline nature appear in the prickle cells. These granules stain deeply with nuclear stains. In all portions of the epidermis where the stratum corneum is well developed the cells containing these granules form a definite layer known as the stratum granulosum. The substance of the granules has received the name of keratohyaline, and is believed to be derived from the nucleus. As the nucleus disappears with the formation of the granules, the latter may be supposed to be degeneration products of the nuclear chromatin. The chemical nature of cornification and of the two substances, keratin and keratohyalin, is not as yet clearly understood. By some the change is believed to be of the nature of a reduction, and not an oxidation process; but all theories and explanations are as yet unsatisfactory.

Cornification occurs pathologically in a great variety of conditions and under many forms. A hyperplasia of the horny layer of the entire body or of smaller areas frequently takes place (hyperkeratosis). This may be the result of external influences, as mechanical injury, infection, inflammations, etc. (corns, ichthyotic warts, callosities, etc.), or the change may be of intrinsic origin due to some congenital predisposition (ichthyosis). Disturbances of the normal processes of cornification may also take place (parakeratosis), such as scaly or plate-like desquamation which may occur in connection with infections or inflammations of the skin, or rarely without any apparent cause. In such cases the formation of keratin and keratohyalin appears to be unchanged. Pathological cornification also occurs in parts of the body where under normal conditions the horny change takes place only to a very slight extent or not at all. The epithelium of the skin glands may be involved in the hyperkeratosis of ichthyosis. Also in the mucous membranes of the mouth, tongue (hairy tongue), larynx, trachea, bronchi, middle ear, mastoid cells, pelvis of kidney, ureters, bladder, urethra, vagina, and cervix uteri a pathological cornification may occasionally take place. The epithelium of the vaginal portion of the cervix may acquire a very thick horny layer in prolapse of the uterus, when the cervix protrudes beyond the external genitals.

In cholesteatomata, teratomata, and dermoid cysts pathological cornification may take place on a very large scale. The so-called "pearly bodies" are for the greater part made up of keratin. Horny change also occurs extensively in epitheliomata of the skin ("epithelial pearls"), forming large laminated masses in which calcification not infrequently takes place. Similar bodies are found in cholesteatomata of the brain and meninges, and horny change has been reported to occur very rarely in carcinomata of the internal organs. Changes similar to cornification have also been observed in endotheliomata of various organs, especially those primary in lymph glands; but the chemical identity of these changes with the cornification of epithelial structures is not settled.

Aldred Scott Warthin.

CORN-SILK.—*ZEA. Stigmata Maidis.* "The styles and stigmas of *Zea Mays* L. (fam. *Graminaceae*)" (U. S. P.). Corn-silk should be collected soon after flowering, while still green and succulent, and preparations are believed to be better when made from it without previous drying. The important constituent is believed to be *malzenic acid*, which exists in the proportion of about two per cent. and is soluble in both water and alcohol. There are also fixed oil, resin, sugar, and gum. Of the physiological action of corn-silk, nothing is definitely known except that it is a direct stimulant of the renal secretion. With this action, it commonly produces a soothing effect when irritation of the genito-urinary tract exists. This appears to be due, at least in great part, to the cleansing effected. Its use is almost exactly like that of *Triticum*

in cystitis. The official preparation is the fluid extract, of which the dose is 2 to 8 c.c. (fl. ʒ i. to ij.). The decoction or infusion is perhaps more frequently employed.
Henry H. Rusby.

CORN-SMUT. See *Ustilago*.

CORNU CUTANEUM.—DERIVATION.—Lat. *cornu*, a horn.

SYNONYMS.—Cornu humanum; cutaneous horn; horny excrescence; horny tumor; Ger., *Hauthorn*, *Hornausswuchs*; Fr., *Corne de la peau*.

DEFINITION.—Cornu cutaneum is a true horny excrescence of the skin, varying in size and shape, and resembling in its general structure that of an animal.

SYMPTOMATOLOGY.—Horns are of rare occurrence, and their favorite location is upon the face and scalp, al-

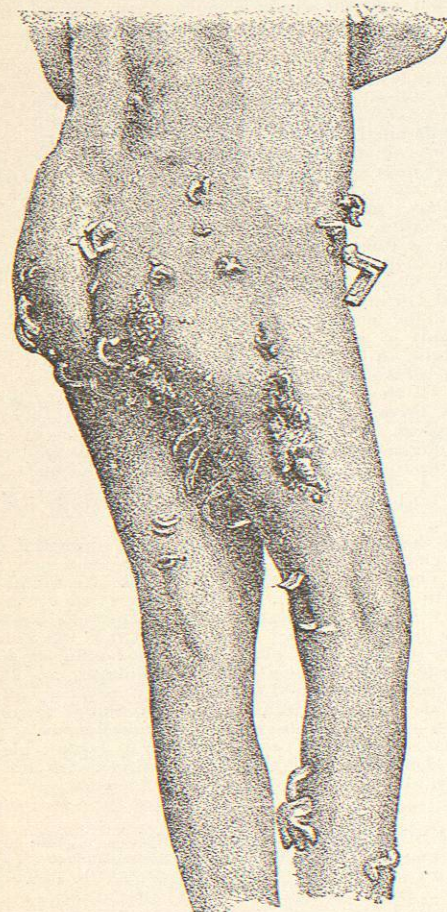


FIG. 1520.—Cornua Cutanea.

though they may occur on any part of the body. In Lebert's analysis of 109 cases they were distributed as follows: hairy scalp, 25; forehead, 11; temporal region, 4; face including eyelids, 19; upper extremities, 8; lower extremities, 11; trunk, 7; glans penis, 6; scrotum, 2. According to Lozes, of 68 cases 37 were females and 31 males, and the growths were situated as follows: head, 15; face, 8; lower extremities, 18; trunk, 8; glans, 3.

Among 90 cases of cornua cutanea (Wilson, *Med. Chir. Trans.*, 1844, vol. xxvii., p. 52, and "Diseases of the Skin," sixth edition, p. 796) 44 occurred in women and 39 in men; they were located as follows: head, 48; face, 4; nose, 4; side, 11; leg and foot, 3; back, 6; glans, 5; trunk, 9. Although usually solitary, they may be multiple and at times quite numerous. Their size and shape differ, varying from a pinhead to several inches in length, and in some instances they have reached the length of twelve inches; their diameter varies from an eighth of an inch to from four to five inches. They are solid, dry, rough, wrinkled, or laminated on their surface and may be cylindrical, pointed, conical, straight, or twisted. The base exceeds the apex in breadth, is either concave or flattened, and is situated immediately upon or in a depression of the skin, which may be normal or more or less inflamed. Their color is usually gray, but variations from light yellow to dark yellow, brown, and sometimes black shades, are observed. Although bearing a close resemblance to animal horns, they differ anatomically from them in not containing bone. They grow slowly, as a rule, and are usually painless, unless subjected to rough use or irritation or are knocked off, when an ulcerating base comes to view, upon which a new horn is apt to be reproduced. After having attained a certain size they may grow loose and drop off.

ETIOLOGY.—We possess but little definite knowledge of the underlying causes. Horns are usually observed after middle life, although they may occur in very young individuals and are more frequent in females than in males. They usually originate from sebaceous cysts, sometimes from acuminated warts, and in some instances from cicatrices.

PATHOLOGY.—Horns are to be looked upon as acuminated warts and are due to cornification and hypertrophy of the epidermic cells; they commence in the rete mucosum. The papillae are hypertrophied, and the horn is situated upon them. The base contains blood-vessels, which at times penetrate to some distance into the substance of the growth. Sometimes the base is situated in a follicle of the skin.

PROGNOSIS.—They rarely occur again after thorough removal; occasionally they undergo epitheliomatous degeneration.

TREATMENT.—The growth should be dissected out with care or torn or twisted off under anesthesia, followed by thorough cauterization of the base with caustic potash, zinc chloride, or the curette or galvano-cautery may be employed. Complete removal of the base is necessary, for if this precaution is neglected the growth tends to recur. Early removal should be insisted upon in all cases, owing to the possibility of epithelioma taking place.
Emmanuel J. Stout.

CORONADO BEACH. See *California, Southern*.

CORONADO SPRINGS.—San Diego County, California. Hotel. These springs are located on and in the vicinity of Coronado Beach. They have an elevation of thirty feet above the ocean tide, and flow 50,000 gallons per hour. The water is clear and sparkling, and pleasant to the taste, being soft, pure, and wholesome. On analysis it was found by Mr. C. Gilbert Wheeler, analyst, to contain the following mineral ingredients:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Sodium chloride	10.17
Potassium chloride	.91
Potassium sulphate	.55
Magnesium	4.73
Calcium carbonate	6.49
Calcium sulphate	1.33
Ferrous sesquioxide	.04
Silica	1.08
Organic matter	.99
Total solids	26.29
Gases not determined.	

This water is found to compare favorably with that of the Bethesda Spring at Waukesha, Wis. That well-known water contains slightly more than twenty-five grains of solid matter to the United States gallon, many of the constituents being the same as those of the Coronado waters. These waters are gently aperient, diuretic, and tonic, and useful in dyspepsia, anaemia, renal and cystic disorders.

The accommodations at the Coronado Hotel are among the finest in the world. The building is a magnificent structure, and the scenery on the beach, on the shore of the Pacific Ocean, is never to be forgotten by one fortunate enough to behold it. (See also *California, Southern*.)
James K. Crook.

CORONER.—An officer existing among English-speaking nations, whose chief duty is the investigation of cases of violent, sudden, or suspicious death.

The early history of the coroner's office is involved in obscurity. Its origin has usually been attributed to the Saxon period of English history, but some of the ancient customs connected with it would seem to indicate an earlier origin. It is believed to have existed as early as the reign of King Alfred (871-900). Both this office and that of sheriff are apparently as old as the civil division known as the county, or shire. This arbitrary division, peculiar to English-speaking nations, was evidently of earlier date than the kingdom itself, the latter being composed by the aggregation of the former, which constituted petty kingdoms in themselves, the counties being made up of subdivisions (hundreds) of still earlier origin.

The name of the office was derived a *coroná*, since the coroner was at first a royal officer. For many centuries county coroners have been elective officers. The right of the counties to elect their own coroners is confirmed by the Statute 3 Edward I., 10. Municipal boroughs also elect their own coroners. Certain franchises also have coroners of their own, within whose precincts the county coroner cannot act. In such places the coroner is appointed by the lord of the manor, and in one English franchise the coroner holds office by hereditary right. There are fifty-five franchise coroners, and one hundred and seventy-five coroners acting for counties, or parts of counties. These are very unequally distributed. Middlesex, with about four million inhabitants, including the populous part of London, has five coroners, while the small county of Huntingdon, with less than sixty thousand inhabitants, has also five, and Dorset, also a small county, has eleven.¹

Every freeholder is entitled to vote in the election of coroner. No professional qualification is required for the office, the only requisite being that the candidate should possess a freehold interest in the county.

For more than fifty years complaints with reference to ignorance, and culpable neglect in the management of the office, have been so common as to direct popular attention to the necessity of reform; and while no comprehensive statute has been enacted with reference to such reform in England, the persistent efforts of prominent medical men have been so far successful that professional men are now usually elected to vacant offices.

The elections are often hotly contested, and as much as £12,000 is said to have been expended to secure an election. By a recent act it is provided that the polls shall not remain open more than one day.

A coroner usually holds office for life, but may be removed by the Lord Chancellor for misconduct or incompetence.

The county coroner receives a salary. He may appoint a deputy to act during his absence or illness. This deputy must be either a barrister, a solicitor, or a physician. The coroner is *ex-officio* a justice of the peace, and may therefore cause any one suspected of murder to be arrested, even before the jury has found its verdict.¹

The office is regulated by common law, and also partly by fifty-five statutes, beginning with 1275 and ending with an act of 1897. The Consolidated Coroner Act of 1887 is an important act, since it embraces the amend-

ments and modifications made in the English Inquest Laws up to that date.

The principal topics treated in this statute of 1887 are the inquest, the liabilities of the coroner, his appointment, qualifications, and fees, method of procedure at inquests, medical witnesses, and post-mortems, payment of fees and expenses, the coroner of the Queen's household, franchise coroners, definitions, etc. The fee of a medical witness for attendance at an inquest is one guinea, and for a post-mortem, including such attendance, two guineas. The coroner makes an annual return of his cases to the Secretary of State.⁶

FUNCTIONS OF THE CORONER.—The powers of this magistrate were formerly much more comprehensive than at present. In addition to the duty of holding inquests upon the bodies of persons found dead from violent, sudden, suspicious, or unknown causes, he was also charged with the duty of inquiries concerning incendiary fires, shipwrecks, treasure trove upon land and sea, including whales and sturgeons cast upon the shore, and deadlands.

Any personal chattel, animal, or thing, forfeited to the King for pious uses, on account of its having caused the death of a human being, was termed a deadland (*deo dandum*). Blackstone traces the custom back to Greek and Jewish laws, which required the destruction of anything which caused a man's death, the notion of the punishment of the animal or thing being implied. Certain peculiar distinctions existed in relation to deadlands, as, for instance, between objects in motion and others standing still. If a horse or other animal in motion killed any one, either infant or adult, or if a cart ran over him, it was forfeited as a deadland. If death was caused by falling from a cart, or a horse at rest, the law made the chattel or animal a deadland, if the person killed were an adult, but not if he were a child. If death was caused by a thing not in motion, that part only which was the immediate cause of death was forfeited. If one be climbing upon the wheel of a cart, and is killed by falling off, the wheel only was a deadland. If the cart be in motion and run over some one, the whole cart and its burden also are forfeited. Similar distinctions prevailed with reference to vessels at anchor and under sail.²

The finding of a jury was necessary, not only to determine the facts, but also the value of the chattel which was thus decided to be a deadland. The nature and value of the weapon or chattel must be distinctly stated. This singular custom became deservedly unpopular, and juries interfered with the action of so unjust a measure until the act of 1846 (9 and 10 Victoria, c. 62) provided that there should be no forfeiture of any chattel for, or in respect of, the same having caused the death of a man; and no coroner's jury sworn to inquire, upon the sight of any dead body, how the deceased came to his death, shall find any forfeiture of any chattel which may have moved to, or caused the death of the deceased, or any deadland whatever; and it shall not be necessary, in any indictment or inquisition for homicide, to allege the value of the instrument which caused the death of the deceased, or to allege that the same was of no value.³

With the numerous accidents constantly occurring at the present day, on sea and on land, on railways, steamers, and other conveyances, such a law would be productive of great inconvenience and obstruction to public travel.³

Appeals of wounds, rape, and mayhem were also committed to the coroner. Many of these functions have become obsolete, and with the exception of his assumption of the powers of the sheriff, in the event of that officer's absence, or his inability to act in consequence of a criminal action against himself, the coroner's duty is mainly that of inquest upon the bodies of persons found dead. In England at the present day this duty is limited to cases of death by violence, deaths of persons in prison, and deaths by sudden or unknown causes. It is also customary to hold an inquisition in the case of a suicide or *felo-de-se*.

The term *felo-de-se* is nearly synonymous with suicide. It has, however, occasionally a more restricted significance.

tion, when applied to "any one who commits an unlawful malicious act, the consequence of which is his own death, as if, attempting to kill another, he runs upon his antagonist's sword, or shooting at another, the gun bursts and kills himself." For many centuries it was the custom in England to bury each *felo-de-se* on the highway with a stake driven through the body. This ignominious form of burial was abolished in the reign of George IV., by an act of Parliament which ordered the burial of the body of a *felo-de-se* within twenty-four hours after inquest, between the hours of nine and twelve at night, and without the rites of Christian burial² (Act of 4 George IV., 1823).

An inquest must be held with, or in presence of, a jury consisting of twelve men. It must also be held *super visum corporis*; that is to say, the body must be seen both by the coroner and by the jury. The jury is sworn by the coroner, and is then charged to inquire how the deceased came by his death. Witnesses are also examined under oath, and the coroner has power to order an autopsy, and the attendance of medical witnesses. The finding of the jury (verdict) is recorded on parchment, and is attested by the signature and seals of the jury and of the coroner. If, on such finding, any one is found guilty of murder or manslaughter, the coroner commits him to trial, and the accused may be indicted on the inquisition without any presentation before the grand jury. Practically, an independent inquiry is always held before a justice in the ordinary way.¹

OTHER MODES OF INQUIRY.—Neither the coroner nor his jury exists among the continental nations of Europe, and the modes of procedure in the case of bodies found dead by violence or unknown causes, in all continental countries, and in Scotland, agree in the absence of these officials.

In France the investigation is conducted by two officers, whose functions are entirely distinct, a legal and a medical officer. The former, the *procureur de la république*, an officer somewhat analogous to the district attorney, takes the initiative in each case, proceeds to view the dead body, summons witnesses, and takes the evidence. Liberal powers are granted to him, and he can seize articles, or papers, connected with any crime, restrain persons from leaving the premises, and employ experts and detectives, as the case may require. In the latter direction the French system is, beyond question, an unusually efficient mode of procedure.

The other officer, the medical, is selected for his superior training and knowledge, and has charge of the medical examination of the body. Sometimes two medical officers are employed. The medical officer is also still further associated with the subsequent prosecution of suspected parties, when the legal officer has decided that a crime has been committed. His report must be signed by a police official and submitted to a magistrate. If the evidence presented to the magistrate is deemed sufficient, an indictment is prepared for the *cour d'appel*, and a trial may then take place before a jury.³

In Scotland the process employed is similar to that of France. The procurator fiscal, who has the investigation in charge, has for his guidance a code of instructions drawn up by the lord advocate. This code also gives detailed directions to the medical men who have the charge of the medical examinations, two medical officers being employed in each case. The reports of these officials are sent to the office of the crown agent at Edinburgh, and by him are transmitted to the advocate député. If he decides that there is suspicion of crime, he refers the report back to the procurator fiscal for further investigation. If he is in doubt, he may bring the case before the crown officers. Beyond this, a criminal trial is much the same as in England.⁴

In Germany there is neither coroner nor any analogous officer, nor a jury, on the preliminary investigation. A judicial officer has charge of the proceedings (*Staatsanwalt*). His powers are like those of a district attorney. The police are under his control in all matters relating to the investigation of crime. They are also bound on

their own part to investigate suspected crimes, cases of sudden or violent death; and no interment is allowed in such cases till after the consent of the district attorney or a competent court is obtained. Medical officers are regularly appointed to make autopsies and medical examinations and report upon them. The German code of regulations as to the modes of procedure in examinations of bodies, both judicial and medical, is very explicit. If the district attorney believes that a crime has been committed, he institutes a trial, and if the court believes that sufficient reasons are presented, it orders a preliminary inquiry (*gerichtliche Voruntersuchung*) before a justice, the result of which is usually decisive. (Law of October 1st, 1879.)

In Russia the law is similar in its provisions to that of France.

In Denmark the system is also very efficient, a judicial officer being appointed who has charge of all cases, which he decides without the intervention of a jury. He refers all medical questions to a medical officer who is appointed for the purpose, and reports to the judge the result of his examination, and autopsy, if one is made. He also makes a similar report to the Royal Bureau of Health. The trial which follows, in case of indictment, is first before the county judge, from whom appeals may be made to higher courts.⁵

UNITED STATES.—The laws relating to inquests in the United States all bear the marks of English origin, and were evidently introduced by the early settlers, with most of the peculiarities of the English law, though stripped of some of the singular customs of early times. The coroner, the coroner's jury, and the inquest, exist in nearly all of the United States, at the present time, practically in the English form. Massachusetts made a radical change, abolishing the office of coroner, and also the jury, in 1877, since which time inquests have been conducted with greater care and economy, and to the entire satisfaction of the people and of the State (see *Examiner, Medical*).

Connecticut and Rhode Island have also recently enacted similar laws, of a less radical nature.

In the other States there are certain points of difference, chiefly of minor importance, relating to the functions of the office of coroner, the mode of his election or appointment, his fees, the number of the jury, and the employment of medical officers.

Some of the singular provisions of the English law relative to the vicarious duties of the coroner were introduced into the early colonial statute-books, and are still retained in nearly every State of the Union. Instances, however, in which the coroner officiates as a sheriff are of rare occurrence.

The chief function of the coroner in all of the United States, as in England, is the holding of inquests upon the bodies of persons found dead, from either violent, or suspicious, or unknown causes; and while there is considerable variability in the definition of this function by the statutes of different States, the intent or spirit of the law is evidently similar in all. In Massachusetts, under the old law, the coroner was authorized to hold inquests on the bodies of such persons only as were "supposed to have come to their death by violence," a special provision requiring an inquest in every case of death by railroad accident.

In California, and in several other States, it is specified that inquests may be held upon the body of "any person who has been killed, or has committed suicide, or has suddenly died under such circumstances as to afford a reasonable ground to suspect that the death has been occasioned by the act of another by criminal means."

In a few States an inquest may be held in the case of a person who is seriously wounded, and in imminent danger of death. In Indiana, the jury was abolished by an act of 1879. In Texas, the inquest is also held without a jury.

In Alabama, in addition to the usual duties, it is required that the coroner shall be keeper of the jail when the sheriff is imprisoned, and when the coroner is impris-

oned a special coroner may be appointed. He also performs the duty of sheriff when required, as provided under the English law.

In Kentucky inquests may be held in cases of house-breaking. In several of the Southern States the coroner is a conservator of the peace, and is required to suppress riots and disturbances, and may apprehend and commit felons and traitors. In Mississippi the coroner is also the county ranger, and performs the duties of that office. (It is the duty of the county ranger to take charge of stray horses, mules, jacks, cattle, sheep, or hogs.)

The modes of election in the different States are quite diverse. In Alabama, Arkansas, Colorado, Georgia, Idaho, Iowa, Kansas, Kentucky, Louisiana, Michigan, Minnesota, Nebraska, Nevada, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Washington, Wisconsin, and Wyoming, the coroner is elected by the inhabitants of the county. In Tennessee he is appointed by the county court. In Virginia a county court appoints a coroner for two years, and can appoint more if necessary. In Illinois, Indiana, Maine, and New Hampshire the governor appoints the coroner. In Texas, Vermont, and Utah, the office of coroner is unknown, a justice of peace acting in all cases in which the presence of such an official is required.^{6, 7}

The fees of coroners are also varied. In New Hampshire the fee for holding an inquest is \$1.50. In some States it is \$5, in others \$10. The fees for recording, for mileage, and other items also present a wide range of variation. In some States, by recent statutes, stenographers may be employed at inquests, payable either by a monthly salary as in Kentucky, or by stipulated fees for work performed.

In some States physicians are regularly appointed to perform the necessary examinations for coroners. In others the coroner selects any physician whom he may choose for each case requiring such assistance. The compensation of physicians thus employed ranges from \$6 in Minnesota, to \$50 in other States, for an autopsy, and \$100 in Mississippi, in cases where the body is exhumed.⁸ In Missouri the fee for a post-mortem is \$10, but if the coroner makes it himself it is \$25. In New Jersey the coroner may provide grave-clothes to the amount of \$1 each for nude bodies.

In several cities of the United States, the coroner is a salaried officer, such being the case in New York, Philadelphia, Detroit, St. Louis, Cincinnati, Cleveland, Washington, Charleston, Wilmington (Del.), and other cities, a plan which has obvious advantages.

The requisite number of jurors is usually either six or twelve. In New Hampshire it is limited to three, in Louisiana five, and seven in Tennessee. In several States it is required that a larger number of jurors be summoned than is needed to be sworn for the inquest, the number thus summoned ranging from nine to twenty-three.

The amount of the bond required of a coroner varies from as low as \$250 in Colorado to \$50,000 in the larger cities of Ohio.

The jury is usually selected from the inhabitants of the town or county. In Iowa, North and South Dakota, from the "electors." In Kentucky they must be "house-keepers." In Utah they must be "qualified residents." In Washington a jurist must be a "male inhabitant" over twenty-one years old, and of sound mind. In West Virginia he must be a "suitable resident."

In Washington a jury is thus defined: "A jury of inquest is a body of men, six in number, summoned from the qualified inhabitants of a particular district, before the coroner, or other ministerial officer, to inquire of particular facts."

In Wisconsin the coroner is *ex-officio* a deputy fish and game warden, and must assist the State warden upon due notice. He must resign to the sheriff, who transmits his resignation to the governor. The coroner must also make complaint as to violation of statutes relative to sale of liquor to Indians.

In Colorado the coroner may be tried for bribery and

for assault. He cannot practice as an attorney. He must investigate mining accidents. He must seize gambling implements, take snares, traps, nets, etc., and is liable to many penalties.⁷

(See also *Cadaver, Legal Status of*, and *Examiner, Medical*.)

¹ Chalmers, M.D.: Local Government, London, 1883.

² Encyclopedia Britannica, ninth edition, vols. vi., vii., and ix. Article Coroner, Deodand, and Felo-de-se.

³ Bell, Clark: Bulletin of the Medico-Legal Society of New York, January, 1881. Art., the Coroner's Office.

⁴ MacLagan, Douglas, M.D., F.R.S.E.: Forensic Medicine from a Scottish Point of View, Edinburgh, 1879.

⁵ Lee, John G., M.D.: Handbook for Coroners, Philadelphia, 1881.

⁶ The Coroners Act, 1887, 50 and 51 Victoria, Chap. 71, English Statutes.

⁷ Recent statutes of the different States of the Union (1890-98).

CORONILLA.—A genus (fam. *Leguminosæ*) of some twenty species, of Europe, Northern Africa, and Western Asia, some cultivated for ornament. Several of these, notably *C. scorpioides* (Medic) Koch, act powerfully upon the heart, stimulating it and, apparently through increased blood pressure, producing marked diuresis. These properties reside in the glucoside *Coronillin* (C₁₁H₁₇O₅), a yellowish powder, soluble in both water and alcohol. It possesses the same properties as the drug, which are almost identical with those of digitalis, and it is indicated and contraindicated like that drug. Coronillin has been given in doses of 0.1 to 0.15 gm. (gr. iss. to iij.) five or six times in the twenty-four hours.

Henry H. Rusby.

CORPORA AMYLACEA.—These bodies are small, round, homogeneous, or concentrically stratified concretions occurring most frequently in the prostate, nervous system, and lung. Their concentric stratification resembles very much that of starch grains, and this with the fact that with iodine, or with iodine and sulphuric acid, they frequently take on the characteristic blue color has led to their name and to their being classed with amyloid. It is, however, evident that they have an entirely different significance from that of the progressive amyloid change beginning in the walls of blood-vessels, and they should be regarded as being of different pathological origin and nature.

While these bodies frequently assume with iodine and sulphuric acid colors varying from blue, brownish red, and green to yellow, it is stated that they but rarely give the amyloid reactions with the aniline dyes, and then only to a slight degree, usually in the central portion of the concretion. The writer has been unable to obtain any reaction from these bodies with the aniline dyes which he regarded as characteristic of amyloid, and it is his opinion that they should be classed with the colloid or colloid-like bodies rather than with amyloid. In the majority of cases these concretions react to stains in a manner similar to that of colloid. With Weigert's fibrin stain they take a deep violet color. They are essentially a local product dependent upon local conditions, and are for the greater part derived from epithelial cells and represent a transformed gland secretion. In this respect their origin is the same as that of epithelial colloid. In the nervous system they arise from degeneration of either the neuroglia cells or the axis cylinders, and the chemical nature of the concretions found in the brain and spinal cord must be different from that of those formed in the prostate and lungs. This is further shown by difference in appearances, staining reaction, etc., exhibited by the concretions found in these different regions.

In the prostate the bodies lie in the lumina of the gland spaces. They vary in size from a leucocyte to large concretions visible to the naked eye. They may be so numerous as to give the cut surface of the organ a brown, granular appearance. The free concretions may be obtained for examination by scrapings taken from the cut surface of the organ and examined upon the slide. Pressure upon the cover glass produces numerous radiating fissures in the firm bodies. In unstained sections these concretions may appear colorless, brown, dark brown,