moist clay, decomposition is favored. The various methods of embalming all depend for their success upon the inhibition of bacterial growth by chemical means (bactericides) and, in the older methods, by the exclusion of air as well.

Freezing will postpone decomposition indefinitely, and low temperatures—above the freezing point—will prevent decomposition for a considerable length of time.

Whatever interferes with the cooling of the cadaver—as a warm, moist atmosphere, clothing, bedding, etc.—favors an earlier onset and a more rapid advance of decomposition.

The condition of the cadaver has a bearing upon decomposition. New-born and obese subjects decompose more rapidly, since fat is a poor conductor of heat. Previous pathological processes have an influence upon the condition of the cadaver and thus indirectly upon decomposition. Sudden death is followed by earlier and more rapid decomposition. Cases of asphyxia, of general œdema, of sepsis, of typhoid fever, of parturition—when death occurs during delivery or soon thereafter—and of narcotic poisoning are also more liable to undergo an early and rapid decomposition. The free use of alcohol, when death occurs during a debauch, postpones the onset of decomposition, and cadavers, after poisoning by sulphuric acid, remain fresh and odorless, while under the same external circumstances other cadavers undergo decomposition (Caspar-Liman). This statement is not confirmed by the observations of Maschka.

The bodies of individuals poisoned by carbolic acid and corrosive sublimate might be expected to decompose later and less rapidly; as a matter of fact, no pronounced effect has been noted. In the case of those dying from arsenic poisoning it has been both affirmed and denied that decomposition of the cadaver is inhibited. The weight of authority seems to be on the latter side. Although all these substances prevent decomposition when liberally applied in embalming, the amount necessary to cause death is very much less, and is not applied in the same way.

According to Tourdes, decomposition follows very rapidly upon death from lightning stroke; he found bluish spots on the integument, and gas bubbles in the liver and blood, at the end of twenty-two hours after death. On the other hand, Caspar and Liman note no unusual difference in two cases observed by them. Hot weather and exposure in the open air should be taken into account in judging the effects of this agency.

Decomposition begins in the blood. The red cells are broken up and then the serum becomes stained with blood pigment and transudes into the neighboring tissues. The external hypostases or post-mortem spots become darker and confluent, and on incision the tissue is found to be succulent and filled with stained serum. A transudation between the corium and the epidermis may lift up the latter in the form of smaller and larger blebs, or it may simply loosen it so that it is easily stripped off.

With the production of sulphuretted hydrogen and the formation of sulphide of iron (blood pigment), a greenish discoloration of the integument makes its appearance: at first in the groin, then on the abdomen and sides of the thorax, and, finally, on the neck and face.

The formation of gas first in the subcutaneous areolar tissue of the face, neck, and upper part of the thorax, and later in that of the external genitals and extremities, as well as in the abdominal cavity, gives the cadaver a deformed and gigantic appearance. By pressure of the gas which accumulates from decomposition, the contents of the stomach may be forced into the œsophagus and air passages, frothy blood may appear at the nostrils and in the mouth, and the mucosa of the rectum or external genitals (in women) may be forced outward. Through a post-mortem rupture of the mucous membrane of the posterior fornix of the vagina coils of small intestine may make their appearance in the latter cavity. The fœtus has been expelled post mortem by the pressure of gas. The abdominal and thoracic walls may undergo rupture when decomposition is advanced. The eyeballs may be pressed forward, and the cranial sutures may undergo separation.

Decomposition of the organs commences earlier in parts subjected to post-mortem hypostasis, to transudation and imbibition of serum, and to easier access of air. The facility with which decomposition takes place in an organ depends in some measure upon its structure and blood supply; it occurs earlier in those organs in which the stroma is of a loose character and the blood supply abundant. Caspar and Liman give the following order as that in which the different organs undergo decomposition: mucosa of the trachea and larynx; brain of the new-born and of infants up to one year of age; stomach, intestines, spleen (sometimes earlier than intestines); omentum and mesentery; liver; adult brain; heart, lungs, kidneys, bladder, œsophagus, and pancreas; diaphragm, aorta and larger arteries, and uterus.

With advancing decomposition the organs become softer and more succulent from imbibition of transuded serum; their color becomes darker; and the markings on section grow more and more indistinct. From progressive liquefaction the tissues become mushy or pasty in consistency, and finally indistinguishable.

Microscopical examination of decomposing tissue—especially the epithelial cells of the liver and kidney and the muscle fibres of the heart—shows in the earlier stages a loss in distinctness of structure and the presence of highly refractile granules in the protoplasm; a condition upon which an erroneous diagnosis of ante-mortem parenchymatous degeneration might be made. The granules are, however, much coarser, and the nuclei, although altered, usually do not show a degenerative change apparently more advanced than that of the protoplasm. Later, the tissue becomes more indistinct and cloudy, but the parenchyma and stroma can still be made out. Finally, no structure can be identified. In decomposition of the liver, fat may find its way into the blood of the veins, and, by the pressure of the gas of decomposition, may pass into the vena cava and right heart. These facts have an important medico-legal bearing.

Since decomposition, in onset and rapidity, is influenced by so many factors, no absolute rules can be formulated for determining therefrom the time of death. We can, however, after taking all circumstances into account, state the minimum and the maximum period that must have elapsed—the former more accurately than the latter.

The following chronology of the signs of decomposition, taken from Caspar and Liman, applies to cadavers exposed to air in mean temperatures, and is subject to variation by the different influences already discussed:

Green discoloration of the groin and abdomen appears at the end of from 24 to 36 hours after death, and with it the odor of putrefaction. At this time the eyeball is soft, the cornea cloudy and wrinkled. In summer the green color may appear as early as at the end of 15 or 18 hours; in winter it may be absent even after the lapse of 4 or 5 days, when the cadaver is exposed to air. When the cadaver is submerged, this discoloration may not appear, in summer, until after the lapse of from 40 to 48 hours, and in winter it may be absent even at the end of 8 weeks (Maschka). The green color spreads in such a manner that, at the end of from 3 to 5 days, the entire abdomen and the external genitals may be involved. An irregular distribution of smaller and larger greenish spots appears upon the back, sides of thorax, neck, and lower extremities. Frothy blood may appear at the mouth and nose, especially in cases of asphyxia. At the end of from 8 to 12 days the whole body is reddish-green and darker; the spots become confluent; and on the neck, chest, and extremities, the superficial venous trunks are marked out, through imbibition, by dark red, purple, or bluish streaks. The abdomen is distended with gas. The cornea is relaxed and concave, and although very cloudy, the color of the iris may still be made out. In the fœtus the cornea is opaque. The sphincter ani is patent. The nails are still adherent. At the end of from 14 to 20 days it will be found that the discoloration is still going on. Blebs containing

murky red or black serum (methæmoglobin) appear, or the skin may be denuded of epidermis in places. Post-mortem emphysema appears and increases in the subcutaneous cellular tissue of the neck, chest, and face. The penis and scrotum are increased in size thereby. The entire body presents a puffed-up appearance, and the features are so deformed that recognition is almost impossible. The cornea is opaque and the sclera of a dirty red hue from imbibition. The nails are loosened and can easily be pulled off. Maggots are present in abundance, especially at orifices and folds (as the eyelids, mouth, nose, and anus).

The rapidity with which these changes take place is markedly influenced by the surrounding temperature. At from 16° to 20° R. (68° to 77° F.) a cadaver will, in 8 or 10 days, reach a stage of decomposition that would require a period of from 20 to 30 days if the temperature were at 0° to 8° R. (32° to 50° F.).

After the lapse of from 1 to 3 or more months the greenish, putrid, and emphysematous cadavers cannot, with any degree of certainty, be distinguished from one another.

After the lapse of from 4 to 6 months—or at a still earlier period if warmth and moisture are present—putrid liquefaction of the soft parts sets in. The pressure of gas may cause rupture of the putrid abdominal and thoracic parietes, and even diastasis of the cranial bones. Entire bones, especially of the head and extremities, may be laid bare. The optic cavities may be empty. The soft parts become progressively changed into a mushy, pasty, dark mass in which their identification becomes more and more difficult, and finally impossible. Joints may be opened and loosened by beginning destruction of fasciæ and ligaments. Determination of sex by the breasts or external genitals may be impossible on account of their disappearance. The uterus, however, and probably the prostate, may still be identified, and the measurements of the pelvis will aid in determining the sex.

The entire disappearance of the soft parts, in adult cadavers, requires a period of from 2 to 3 years. Ligaments and cartilage are destroyed after the lapse of 5 years. Loss of fat from the bones and complete drying require 10 years, or even longer (Hofmann).

Adipocere.—Under certain circumstances, as exposure in water or in moist soil, without any or with only a slight access of air, the soft parts, instead of undergoing putrid liquefaction, become changed into the substance called adipocere. Recent investigations show that its formation is due to the saponification of fat. (For further information on this subject the reader is referred to the article on this topic in Vol. I.)

Identification of the Cadaver.—The strictest attention should be given to every detail, even though it may appear to be trivial, since there is a sufficient number of cases on record in which the identification made by relatives and friends in good faith, upon view of a well-preserved cadaver, has proven to be erroneous. The clothing and effects found upon the cadaver often lead to identification. They should be accurately described and preserved, yet they should not be relied upon to the exclusion of other means, since clothing and effects may be, and have been, substituted to mislead in identification. A good photograph should be taken of an unknown cadaver as early as possible and before the head has been opened. In addition, an accurate description should be recorded, embracing such data as height, weight, and build, race, sex, apparent age, shape of head and face, complexion, color of hair and iris, condition of hands and finger nails, deformities, and special marks and peculiar features.

In the great majority of cases such a description can be well made by a layman. When, however, decomposition is advanced, or the cadaver mutilated, or burned, or only portions thereof are at hand, anatomical knowledge is necessary and by means of it many of the above points may be cleared up or approximately judged that would otherwise remain unknown.

Race and nationality are determined by well-known characteristics, for which the reader must be referred to works on anthropology.

Sex.—In well-preserved cadavers the determination of sex, except in cases of hermaphroditism, is readily made. Where, however, the body is not well preserved, or where parts of the cadaver only are at hand, there are various points which may aid in determining the sex. The growth and distribution of the hair are usually characteristic of sex, and yet in exceptional cases they may fail to enlighten us upon this question. The long hair of the scalp and its arrangement, the absence of hair (except fine, downy hair) on the face, the sharp line of demarcation of the hair upon the mons veneris, and its fine, downy character upon the extremities, are characteristic of the female. The presence of coarse hair upon the face, chest, and extremities, and the prolongation of hair from the mons veneris along the median line to the umbilicus, or its more abundant distribution over the belly as well, are characteristic of the male. With progressive maceration the epidermis, and together with it the hair and nails, become separated from the cutis and fall off, leaving a smooth surface, especially in cadavers that have been exposed in the water. Beard and moustache may be lost after four or five days of such exposure in hot weather, after two weeks in cool weather, and after the lapse of a month or more in cold weather. Exposure to flame may cause complete disappearance of hair. If the hair is thicker, more oily, or arranged in a braid, it is more likely to be partially preserved.

The general external form of the cadaver, or parts thereof, may be distinctly of feminine or masculine type, yet dependence upon this alone may lead to error. Before puberty the male and the female forms are very much alike. As regards the breasts, they may be undeveloped or atrophic in the female, and from abundance of subcutaneous fat the male breasts may simulate those of the female. The presence, at birth, of a mammary gland, and of a secretion that can be expressed, is common to both sexes.

The genital apparatus (or characteristic parts thereof) is of course the most certain proof of sex. The external genitals may have been lost or rendered indistinguishable by putrefaction, by maggots or rats, by incineration, or by mutilation or removal. The uterus, from its firm consistence and protected situation, has been recognized in cadavers that were far advanced in putrefaction—even as late as at the end of nine months after death (Caspar and Liman). According to the authority of Hofmann, there have been instances in which the cadaver was considerably charred, with ruptured abdominal walls and external charring of the uterus, and yet upon section this organ was easily identified through the intact condition of the endometrium and arbor vitæ. The ovaries have also been identified after considerable charring of the cadaver. The deep urethra, with its caput gallinaginis and the deep parts of the corpora cavernosa (crura penis), may be distinguishable even when there has been extensive destruction of other parts of the body.

Examination of the skeleton or of parts thereof may lead to a decision. In the female, the skeleton is smaller and the bones are lighter in weight. The thorax is proportionally shorter and wider, especially in its upper part. The curvature of the ribs on the flat in the posterior part is more pronounced, the curvature on the edge (downward) less pronounced, than in the male (Henle). The first and second ribs are longer relatively and absolutely than in the male (Meckel). The sternum is shorter and broader, the difference depending upon the body (gladiolus) of the bone. The xipho-sternal articulation is on a higher level (that of the curve of the fourth rib), while in the male it is on a line with the curve of the fifth rib. The clavicle is less markedly curved, and the entire thorax, in proportion to the size of the pelvis, is much smaller. The chief difference is to be found in the pelves of the two sexes, and this difference is greatest at and after puberty. In the female the transverse dimensions are greater than the vertical; the ilium is more inclined outward toward the horizontal plane; the promontory

of the sacrum encroaches less upon the pelvic inlet; the true pelvis is shorter but more roomy, and its outlet is absolutely as well as relatively wider; the sacrum is wider and shorter, and its curvature less marked; the ischiac spines encroach less upon the cavity; the pubic arch is wider and less angular, and its edges are everted; and the tuberosities of the ischia and the acetabula are wider apart. In the male, the entire pelvis is more massive, the eminences and depressions for muscular attachments are more marked, the pelvic cavity is deeper and narrower, and the obturator foramina are larger and more oval (less triangular) in shape.

The following average measurements of the true pelvis are taken from Toldt, and, in the determination of sex, are to be regarded relatively, since individual measurements may vary markedly in the same sex:

Part.	Diameter.	Female.	Male.
Inlet	Antero-posterior.	118 mm. = 4.72 in.	113 mm. = 4.52 in.
	Transverse	135 " = 5.4 "	127 " = 5.08 "
	Oblique	124 " = 4.96 "	120 " = 4.8 "
Cavity	Antero-posterior.	126 " = 5.04 "	114 " = 4.56 "
	Transverse	120 " = 4.8 "	109 " = 4.36 "
Outlet	Antero-posterior.	90–110 " = 3.6–4.4 "	75–95 " = 3–3.8 "
	Transverse	110 " = 4.4 "	82 " = 3.28 "

Height.—The relaxation of the ligaments and other tissues following death, more especially after rigor mortis has ceased and decomposition has commenced, taken in connection with swelling or emphysema of the scalp, might be responsible for a slight increase in height post mortem. The mode of measuring the height is as follows: The cadaver is laid out straight upon a flat surface, and the measurement is made between the perpendicular line dropped from the top of the vertex and the plantar surface of the heel, the foot being at right angles with the leg. In certain cases it is desirable to estimate the total height of a body of which only isolated parts are available. The following proportions will be found useful as a basis for making such a calculation: The distance between the tips of the middle fingers, the upper extremities being extended at right angles to the trunk, equals the height. If an upper extremity alone is at hand, its length doubled plus the distance between the two glenoid surfaces would give the height. How much should be allowed for this latter distance is difficult to estimate. The length of the two clavicles plus that of the interclavicular notch—a total which would average twelve inches—would be too much, and consequently the total height of the body, estimated according to this formula, would also be too great.

Other formulæ are the following: The length of the middle finger is one-nineteenth of the height; the length of the forearm, from the tip of the olecranon to the tip of the middle finger, is five-nineteenths of the height; the upper border of the symphysis pubis is about the middle point of the total length of the body, after full growth; the length of the lower extremity, from the head of the femur to the plantar surface of the heel, is about one-half the height (according to Orfila, the lower part, measuring from the symphysis, is shorter, by an average of two and one-third inches, than the upper, especially in women); the length of the femur is about one-fourth of the total height, after full growth.

Tables of the relative proportions of the dimensions of single bones to the total height are given by Orfila, Toldt, and others. For the determination of the total height from single bones the age must be known. In exceptional cases the age may be determined from single bones, and in such cases comparison of measurements with standard tables may be found very useful in estimating total height. However, the proportions given above are practically as reliable as the data furnished in these tables.

Age.—The most important points upon which estimates in regard to age—at least up to the time of complete growth—may be based, are the appearance of the centres of ossification, the progress which they have made toward complete ossification, and their final union with neighboring centres. In young subjects the examination of the teeth warrants important conclusions. The results of anatomical investigation are too extensive to be included in the present article.

Conclusions based upon the height of the cadaver are less reliable. If we take 50 cm. as the average height at birth, in five years this height will be doubled (100 cm.). In the first year the increase amounts to from 1 to 2 cm. a month, or from 12 to 24 cm. for the year. After the first year the increase varies from 7 to 8 cm. for each year. During the ten years following the first five the height increases to thrice that at birth (*i.e.*, to 150 cm.), averaging 5 cm. for each year in the ten. At puberty, growth is again more rapid, up to the eighteenth year, and then again it proceeds more slowly up to the time of complete growth; the usual height attained by males being from 157 to 180 cm., while that attained by females amounts to from 153 to 166 cm. (Hofmann).

Care should be taken lest premature loss of hair, grayness, loss of teeth, or marasmus lead one into error in estimating age. The senile increase in the angle between the body and the ramus of the inferior maxilla, the atrophy of the alveolar processes, and the decrease in the angle between neck and shaft of the femur are important indications of advanced age.

The general condition of the cadaver—whether obese, well, or poorly nourished, or thin or marantic—may afford important aid in the work of identification.

The appearances produced by putrefaction should not be confused with obesity, or those due to mummification with marasmus or with advanced age. The appearance of nutrition may be completely changed in cadavers after exposure to flame, and due allowance should be made therefor.

In regard to the color of the hair in exhumed cadavers, it has been found that it changes to a reddish brown, the effect of exposure to putrefactive substances or to the soil. Time alone will change the color of dead hair, as may be seen in wigs and in the hair of Egyptian mummies. Heat causes a change of color toward a reddish tint.

Special marks for identification—teeth, moles, warts, scars, and tattoo marks—should be accurately described. Tattoo marks may disappear. According to Caspar, this happens once in nine cases; according to Hutin, once in ten and a half cases; and according to Tardieu, once in twenty-five cases. Soluble pigments are more likely to disappear. Even insoluble pigments may be carried through the lymphatics and lodge in the peripheral parts of neighboring lymph nodes.

The appearance of the hands and finger nails, or the presence of callosities, stains, etc., may warrant a shrewd guess as to occupation. *Otto H. Schultze.*

CADE, OIL OF.—Oleum Cadinum. *Oleum Juniperi Empyreumaticum.* "A product of the dry distillation of the wood of *Juniperus Oxycedrus* L. (fam. *Coniferæ*)" (U. S. P.). The British Pharmacopœia includes "some other species" in the source.

J. Oxycedrus resembles in general the common juniper of Europe, but has larger, reddish-brown, shining fruits (1.25 cm. in diameter—0.5 in.). It is an inhabitant of the Mediterranean basin, growing in waste places and upon stony hillsides.

Its tar has been used for centuries by the peasants of Southern France for the "sheep itch" and other cutaneous affections of their cattle, but its employment in medicine, although occasional and also of old date, has only been extensive since its recommendation by the German school of dermatologists in the treatment of eczemas. It is prepared by a method similar to that used in the manufacture of ordinary tar; that is, by distillation *per descensum*, in rude stills or ovens, from the bottom of which it is collected and then sold without further purification. The principal centre of its production is Nîmes.

It is a thin tar, often black in mass, but brown or brownish yellow and transparent, in thin layers; and is more fragrant and pleasant in odor than common wood tar, which it otherwise resembles. The taste is acrid and empyreumatic. Its composition is not notably different from that of the tars of other conifers. *Cadinene* ($C_{15}H_{24}$) is its important odorous constituent. The principal use to which it is put in medicine is that mentioned above—for the local treatment of eczema in the scaly stage. It is also used in other chronic inflammatory and exfoliating skin diseases. It may be applied by rubbing in with the fingers or a cloth, or, what is better, with a stiff-haired brush. If desirable to dilute it, some bland oil may be mixed with it, or it may be made into an ointment with lard or tallow, or with vaseline. Soaps containing it are also considerably used. Stockings, gloves, and bandages saturated with it are sometimes worn. Besides its stimulating properties, oil of cade is a good parasiticide, an efficient antiseptic, and a local anæsthetic—properties which it undoubtedly owes to the creosote and similar substances which it contains. It is never used internally. *W. P. Bolles.*

CADMIUM.—*Cadmium Sulphate* is the only salt of this metal that merits notice in medicinal relation. It was official in the United States Pharmacopœia of 1870, and, though dropped in the revision of 1880, it is still considerably employed. The salt, formula $CdSO_4,4H_2O$, occurs in small colorless, rhomboidal crystals, efflorescent on exposure. It is freely soluble in water, and has a subacid and astringent and metallic taste. In properties it most closely resembles zinc sulphate, being an irritant astringent. Taken internally, it will determine vomiting, after the manner of zinc sulphate, and in overdose will prove poisonous. Its claim for recognition in medicine rests on an alleged peculiar potency in determining the absorption of such corneal opacities as are capable of undergoing that process—a potency certainly not much, if at all, greater than that possessed by the commoner salts, silver nitrate or zinc sulphate.

Cadmium sulphate is generally used in solution of from one-half to one per-cent. strength. *Edward Curtis.*

CADMIUM, POISONING BY.—Cadmium and its salts are comparatively unimportant from a medico-legal point of view. Their uses are limited, and they are seldom met with outside of the chemical laboratory. The metal is employed occasionally in alloys to reduce their fusing point, and an amalgam has been used by dentists for filling teeth. The most important compounds are the iodide and bromide, which are used in photography for iodizing and bromizing collodion. The sulphate of cadmium has been recommended, used internally, in the treatment of syphilis, rheumatism, and gout (Grimaud). It has been chiefly used externally, however, as an astringent and stimulant, in the treatment of conjunctivitis, and ulcers and opacities of the cornea. The iodide of cadmium, in the form of an ointment, has been recommended for external use, particularly in the treatment of scrofulous enlargement of the glands (Garrod, Guibert). The sulphide of cadmium has been used, to a limited extent, as a yellow pigment. Excepting the sulphide, the compounds mentioned are colorless, soluble in water, and possess a disagreeable metallic taste.

Symptoms.—Preparations of cadmium have given rise, occasionally, to accidental poisoning. They appear to act as irritants, resembling in general the salts of zinc. Sixty milligrams (0.9 grain) of the sulphate, taken internally, caused in one hour salivation, colic, and diarrhœa; and after four hours, vomiting accompanied by intense gastralgia and tenesmus (Burdach). Vomiting, diarrhœa, vertigo, labored respiration, loss of strength, and cramps followed the inhalation of the dust arising from a polishing powder containing carbonate of cadmium (Sovet). Two ladies took an uncertain but small dose of bromide of cadmium by mistake for bromide of ammonium. It caused severe pain and a burning sensation in the stomach, accompanied by vomiting and purging which lasted for five hours. During a part of this time the pulse was imperceptible. There were no cerebral symptoms. Both patients were confined to their beds for several days, during which time their stomachs continued irritable (Wheeler). There is only one fatal case of cadmium poisoning recorded, so far as the writer has been able to learn. The patient, a lad fourteen years of age, took an unknown but probably large dose of chloride of cadmium, which had been sold for Epsom salts. It caused immediate vomiting. On admission to the hospital a short time after, he was in a state of collapse, with cold, clammy skin; radial pulse scarcely perceptible; respiration feeble, slow, and sighing. There was no stertor. The mucous membrane of the mouth was pale and sodden, the tongue greatly swollen. He was apparently unconscious, though when shaken and aroused by dashing cold water upon the face, he replied rationally, in a hoarse whisper, to any questions put to him. There was extreme restlessness. Deglutition was impeded. Death took place in about an hour and a half after the ingestion of the poison. At the post-mortem examination the vessels of the brain were found filled with blood; the left lung congested (Mr. J. Hinder, *Indian Medical Gazette*, Calcutta, 1866, i., 156).

Experiments on Animals.—Marmé has studied the action of the salts of cadmium by experiments on animals. He concludes that the sulphide is non-poisonous. Administered to animals with their food for a week, in doses of many drachms, it caused no inconvenience. Its insolubility in water, weak acids, alkaline salts, and oil renders its use as a pigment free from danger. All compounds of cadmium which are soluble in water or weak acids at the temperature of the body are poisonous. Taken into the stomach they cause, in small doses, vomiting; in large doses, all the symptoms of gastro-enteritis. If quantities sufficiently large to be poisonous, without causing death rapidly, are injected beneath the skin or into the blood-vessels, they produce inflammation of the stomach and intestines, and frequently hemorrhages, erosions, and ulcerations. Small doses injected into the blood-vessels are fatal to animals. Thirty milligrams (0.5 grain) killed a dog; 16 mgm., a cat; 10 to 20 mgm., a rabbit; 30 to 60 mgm. (0.5 to 0.9 gr.), administered by the mouth, killed a rabbit weighing 1,500 to 1,800 gm. (3.3 to 3.9 lbs. avoir.). The repeated absorption of small doses may give rise to chronic poisoning, which, in animals, is characterized by disturbed digestion, emaciation, and death. The post-mortem appearances observed were: a more or less extensive gastro-enteritis, sometimes subpleural hemorrhages, infarctions of the lungs, frequently fatty degeneration of the liver and heart, and diffuse nephritis. Elimination commences very soon and takes place chiefly through the kidneys. After death, cadmium can be detected in the blood, heart, liver, and kidneys.

Treatment.—This should be much the same as in cases of poisoning by salts of zinc. Vomiting should be assisted, if necessary, by the free administration of warm water, with milk or mucilaginous liquids; or the stomach may be emptied by means of the stomach pump. The subsequent irritation may be allayed by the use of opium. Marmé recommends, in cases of acute poisoning, the alkaline carbonates with white of eggs. The subcutaneous injection of dilute solutions of soda, when employed early, was found, in the case of animals, completely to arrest the poisonous action of the cadmium salts. *William B. Hills.*

CÆCUM, DISEASES OF. See *Appendicitis; Colitis;* and *Colon, Surgery of the.*

CÆSAREAN SECTION.—Cæsarean section is a term used for operations which remove a fœtus from the uterus through the abdominal wall, the peritoneal cavity being opened in all cases. Historically it is one of the oldest of obstetrical operations recorded.

It is generally supposed to have received its name from Cæsar, who was believed to have been born by abdominal section. But, whether this be true or not, it was performed many years before his time. Furthermore, the