

ments show that it possesses this property in a marked degree, but it also has the irritating effects of free iodine. When employed as an internal remedy it forms combinations with the alkalis of the intestinal canal, and from the readiness with which iodine is given up, poisonous symptoms may follow the use of even small quantities.

Beaumont Small.

IODO-SALICYLIC ACID.—A compound of iodine and salicylic acid in which one atom of hydrogen is replaced by one of iodine. It contains fifty per cent. of iodine. A *di-iodo-salicylic acid* is also prepared, in which two atoms of hydrogen are replaced by iodine. It contains two parts of iodine in three of the compound. They are white, fine, crystalline powders, slightly soluble in water, soluble in alcohol, ether, fixed oils, and collodion. They possess the combined action of iodine and salicylic acid, and are said to be very serviceable antiseptics. Internally, in doses of from twenty to sixty grains daily, they have proved serviceable in rheumatism and have succeeded in relieving the fever and pain when the other salicylates have failed.

Sodium di-iodo-salicylate.—This salt occurs in white needles, and is recommended as an antithermic and anti-rheumatic. It is also said to be of great value as a local application in parasitic affections of the skin. The dose for internal administration has not been determined.

Beaumont Small.

IODOSULPHATE OF CINCHONINE.—(Synonym: Antiseptol.) This compound contains fifty per cent. of iodine. It is a very light, brownish powder, odorless, insoluble in water, alcohol, and chloroform.

It is an antiseptic and is said to prove serviceable in all conditions in which iodoform and similar compounds are employed. It may be combined with powdered talcum, one part to two; or mixed with vaselin or lanolin, one part to ten.

Beaumont Small.

IODOZEN ($C_6H_4I.COOCH_3ONa$) is an iodine derivative of methyl salicylate. It is used as an antiseptic externally and as an alterative internally.

W. A. Bastedo.

IPECAC.—**IPECACUANHA.**—The dried root of *Cephaelis Ipecacuanha* (Brot.), A. Richard. [*Uragoga Ipecacuanha* (Brotero) Baillon (fam. Rubiaceae).] U. S. P. It is doubtful if this definition, for reasons given below, should not be made to include the lower or prostrate portions of the stem also. The name of this drug, which is adopted into most European languages, is borrowed from the South American Indians, by whom it is used to designate, not only this, but several other emetic roots. *Paaya* is another Brazilian name, also rather loosely applied to other roots besides the one under consideration. "Ipecac" is a natural and convenient abbreviation.

The plant from which this drug is obtained is a low, semi-gregarious shrub, growing in the deep tropical woods of Brazil, with partly creeping stems and thickened annulated roots.

The roots, several in number, are long, tortuous, simple or slightly branching, white and filiform when young, but at maturity thickened to three or four times the diameter of their woody columns by the accumulation of starch-bearing tissue in the bark. This occurs in crowded, narrow, irregular, and generally incomplete, transverse rings, separated by deep, also incomplete, circular fissures, and is greatest in the middle portion of the root, which tapers toward each end, especially the lower. The woody column does not take part in either the rings or furrows of the bark. The stems of *Cephaelis* are of soft woody, sometimes almost herbaceous, texture; rounded, smooth, creeping, and rooting below; ascending, square, pubescent, and green above, with well-marked nodes and leaf scars. It is this lower, rounded portion, lying shaded and for the most part covered by forest debris, which has practically the same composition and properties as the root, and which might be, and commonly is, used

with it. The remaining portions of the plant are well illustrated in the accompanying cut, which, however, does not show the prostrate habit of the basal portion of the stem.

HABITAT.—The district of Matto Grosso, in western Brazil, is the principal source of ipecac; but the plant grows also in the adjoining parts of that country as well as of Bolivia. The ipecac plant has been long cultivated as an object of interest in botanical gardens, especially in that at Edinburgh. Mr. McNab made the important discovery that it could be propagated by minute fragments of its roots, or even of its leaf stalks. By means of this plan a large number of plants has been obtained and sent to India and elsewhere for experiments in regard to its practical cultivation; so far, however, because of the slowness of its growth and the smallness and consequent expensiveness of the yield, its culture has not been commercially successful, and we are still obliged to rely upon its native country for our supply. It is collected by the Indians in Brazil throughout the year, but mostly during the wet season, when the ground is soft, by simply grasping the stems in one hand and prying out the roots with a pointed stick held in the other. The gravel is then shaken out and the roots are dried in the air. When dry, they are sifted and sorted and packed in serons (bales made of hide) for transportation. It is mostly bought up by travelling traders, and suffers much exposure during their journeys, so that much of it reaches us in a mouldy and damaged condition. Ten or twelve pounds per day is said to be a good average collection. Ipecac collection is exceedingly irritating to the hands, especially the finger ends, as well as to other parts of the body, and is hence very objectionable to the laborers.

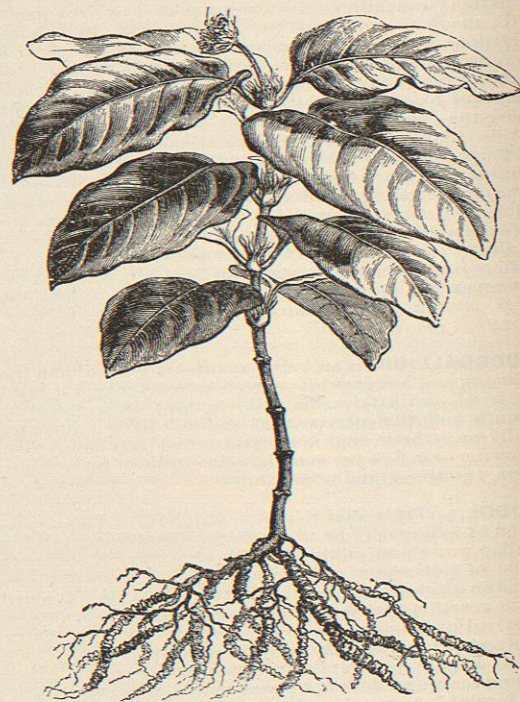


FIG. 2952.—Ipecac Plant. (Reduced about one-third.) (Baillon.)

The modern high price for rubber having afforded a profitable opening, its collection is preferred, and the price of ipecac has on this account very greatly advanced.

HISTORY.—The following paragraph is condensed from Flückiger and Hanbury. A doubtful reference to ipecac is made in an old treatise upon Brazil, published by Purchas in 1625. Piso and Marcgraf (1648) described it, and

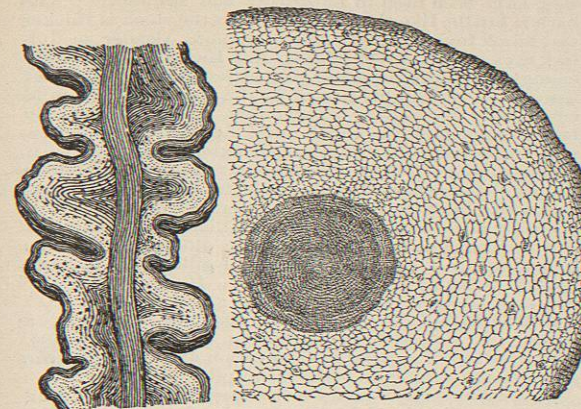


FIG. 2953.—Longitudinal and Transverse Sections of Ipecac Root.

stated that it was in common use in Brazil. It was first carried to Europe in 1672, and its usefulness established by Helvetius about 1686, who kept its identity a profound secret until he received from Louis XIV. a handsome price for publishing it to the world in 1688. This early use of ipecac was not as an emetic, but in the treatment of dysentery, which is still its principal employment in tropical countries.

OFFICIAL DESCRIPTION.—In pieces of indefinite length, rarely exceeding 15 cm. (6 in.), and 3 to 6 mm. ($\frac{1}{4}$ to $\frac{1}{2}$ in.) thick, curved and sharply tortuous, almost free from rootlets; surface red-brown or brown, occasionally blackish-brown, rarely gray-brown, closely annulated and usually exhibiting transverse fissures through the bark, their sides vertical; fracture short, the very thick, easily separable bark grayish, usually resinous, the thin wood yellowish-white, without vessels; odor very slight, peculiar; taste bitter and nauseous, somewhat acrid.

When very thick, of a dull-gray color, with thin, merging annulate and with many starch grains exceeding 12 or 14 μ it is from *Cephaelis acuminata* Karst., and should be rejected.

When ipecac is sound and free from mouldiness, its quality is proportionate to the thickness of the bark and the thinness of the ligneous portion.

The bark of ipecac consists entirely of thin-walled, polyhedral cells scarcely longer than broad, and pretty well filled with clustered and faceted starch grains, solitary grains rarely reaching a diameter of 12 or 14 μ . Liber wanting. All the medicinal activity of the drug resides in the bark, the wood being worthless and nearly tasteless.

ADULTERANTS AND SUBSTITUTES.—The adulterants of and substitutes for ipecac have been so numerous and important that works have been written upon the subject. All have now practically disappeared, so far as the American market is concerned, with the exception of *Carthagenia Ipecac*, the root of *Cephaelis acuminata* Karsten, of Colombia. This root is collected and sold, under the name of ipecac, upon a scale almost as extensive as that of the genuine drug. Although supposed to be excluded by the United States customs laws, it does enter to a very considerable extent. In its ordinary form, it is readily distinguished, being a half or more larger, of a dull brownish-gray color, less strongly annulated, and especially less deeply constricted between the annulations. The writer has seen the process in operation, in London, of selecting the pieces in which these

distinctions are the least marked, and staining them for the American market. The fractured surface is less distinctly white, being rather of a horn-grayish white, and the powder shows a similar difference. In the latter, the starch grains reach a much greater size and are more inclined to be solitary. It is very questionable if this root is inferior to the genuine, or if it should not be admitted to the Pharmacopœia. Its percentage of total alkaloid is commonly a little greater than in the genuine; but the composition of this alkaloid, or rather its physiological and therapeutical action, is so uncertain that it has been refused admission to the recent edition of the British Pharmacopœia.

COMPOSITION.—The medicinally unimportant constituents of ipecac are a large amount of starch and calcium oxalate, and small amounts of pectin, sugar, and resin. The important constituents are *ipecacuanhic acid* and the alkaloids, namely, *cephaeline*, *emetine*, and a third not yet studied, the three alkaloids together existing to the extent of about two per cent. Of this total, the emetine constitutes about three-fourths, the cephaeline about one-fourth, the third being in very small amount. In *Carthagenia Ipecac*, the cephaeline is about three-fifths, the emetine about two-fifths. The physiological and therapeutical importance of the *ipecacuanhic acid* and of the third alkaloid is not known, but there are special reasons why it is in great need of investigation, especially that of the former substance. There is nothing in the action of either emetine or cephaeline to explain the repute of ipecac in the treatment of dysentery, a repute so strong and general as to demand recognition. This effect appears to be secured, moreover, after the removal of the alkaloids, and it would appear that it must be due to the bitter acid, which is in reality a glucoside.

Cephaeline ($C_{14}H_{19}NO_2$) is separated from *Emetine* ($C_{14}H_{19}(CH_2)NO_2$) by the use of an aqueous solution of caustic alkali, the emetine being taken up from it by ether.

ACTION.—Ipecac (and still more the alkaloid) is a moderate local irritant, producing smarting, redness, and, if a long-continued application is made to the skin, finally troublesome pustulation. The powder of either, inhaled, produces sneezing, stinging, and increased secretion from the nostrils and deeper air passages; in susceptible persons a severe coryza may be simulated. In experiments upon animals, diarrhoea and even dysentery, with bloody discharges and inflamed intestinal mucous membranes, have followed large doses. It is thus evident that local stimulation, or irritation at least, forms a very characteristic part of the action of ipecac. This is also seen in the pain and inflammation, frequently abscess, at the point of hypodermic injection, on account of which this mode of use is not available. As to the systemic effects when thus introduced into the circulation, it is to be noted that in fatal cases severe inflammation of the lining of the stomach and intestine has frequently been observed, all the indications being that it has resulted from excretion of the alkaloids into these organs. Irritation of the pulmonary tissue, which is often severe, is apparently due to a similar excretion there. The emetic action of the drug, as well as the salivation and nasal discharge, could thus be readily explained on the ground of local irritation. When the alkaloid is taken, it is distinctly noted that there are two periods of gastric disturbance, one following the other at an interval of about thirty minutes. It has been thought that this second attack was due to central action, after the alkaloid had become absorbed; but it is at least possible that it follows its re-entrance into the stomach upon excretion from the circulation. Whether the emesis of ipecac is purely a local effect or partly of central origin, is the most important question concerning it. It is notable that the disturbance of emetine is less than that of cephaeline, of which latter emetine is a methyl compound; and we know that methyl compounds are often less energetic irritants, or are even sedatives, to the centres. This would seem to indicate central activity. This question is not of practical importance, as the general effects of the drug are clear and evident. When taken

into the stomach, there is salivation and perhaps coryza, followed by nausea, and accompanied by some diuresis and considerable diaphoresis. If free vomiting occurs, these effects will quickly pass away; but if not, they will be prolonged, and with one or more exacerbations. In the latter case, too, there is more apt to be a laxative or even a purging effect, as is also the case after hypodermic injections. The respiratory mucous membrane generally shares in the increased secretion. Ipecac is therefore a nauseating expectorant and an emetic, with a cathartic tendency. Its emetic action is characterized by its slowness. If cephatline is given, the nausea and salivation are more marked; if emetine, the nasal secretion is more in evidence. Very large doses are poisonous, the symptoms being those of emetico-cathartic irritants, but with great depression, which appears almost certainly due in part to central action. A cholagogue action is distinct. This cannot be explained on the theory of mechanical pressure upon the gall bladder from the retching, because it will occur when this is not present.

Use.—The expectorant and emetic uses of ipecac follow clearly from its action as above described, but not its antidiysenteric. As an emetic it is not suitable for use in poisoning, as it is not prompt enough, and is too apt to be irritating. This action is, however, often of great value when we wish to carry its relaxing effect to the extreme, as in acute bronchitis. Very small doses of ipecac will often exert an anti-emetic action, and will also promote appetite and digestion. The chief use of the drug is, however, as an expectorant, in which it both increases the secretion and stimulates its removal, yet acts as a sedative or anodyne when there is annoying cough without much secretion. This action is quite prolonged, and the effect is easily maintained by repeated small doses. The diaphoretic action is an important accompanying factor. As an antidiysenteric, ipecac is better adapted to the stomachs of savages than to those of most civilized persons, for the doses are so large (a drachm or more) that the treatment is heroic. De-emetized ipecac is for this reason preferred, but it has been claimed that it lacks efficiency. The mode of action is not known. It is not impossible that in the true dysentery of the tropics, in which cases it is far the more efficient, it acts as a specific rectal antiseptic, as it is known to have antiseptic powers.

The preparations are numerous. The drug is very largely employed in the powdered form. As an expectorant, the dose is 0.03 to 0.06 gm. (gr. ss. to i.), as an emetic 1 to 2 gm. (gr. xv. to xxx.), as an antidiysenteric 4 to 6 gm. (gr. lx. to xc.), or a full emetic dose followed by gram doses. The official fluid extract is given in corresponding doses of cubic centimetres or minims. The seven and one-half-per-cent. syrup and the ten-per-cent. wine are to be adjusted, in proportion to their strength, for the same requirements. The tincture of ipecac and opium, containing ten per cent. of each, is used when a specially sedative expectorant effect is desired, but not when we specially desire the clearing of the air passages. In the preparation of the last three the fluid extract of ipecac is employed. The same statement concerning selection applies to the powder of ipecac and opium (Dover's powder), having the same strength. The official troches contain, each, gr. ¼ of ipecac, and the troches of morphine and ipecac, each gr. ⅓ of morphine and gr. ⅓ of ipecac. The rectal injection of ipecac for the treatment of chronic constipation has been tried, and it would seem that further experiments in such use are desirable.

Henry H. Rusby.

IPECAC, NORTH AMERICAN.—FALSE IPECAC, INDIAN PHYSIC, BOWMAN'S ROOT.—The roots of *Porteranthus trifoliatius* (L.) Britton, (*Gillenia trifoliata* Moench), and *P. stipulatus* (Muhl.) Britton, (*G. stipulacea*, Nutt.) (fam. Rosaceae). These are pretty perennial herbs, with clustered, erect, or ascending stems, resembling the Geums, deeply three-parted leaves and white flowers. The former grows west to Missouri and south to Georgia; the second somewhat farther south and southwest. The roots grow from a hard, woody, and knotty crown about

an inch in diameter. They are numerous, much and very crookedly twisted, knotty, and interlacing, especially the second species. The roots are annulate and transversely fissured and of a deep reddish color, thus giving them an appearance very similar to that of ipecac, which they have been used to substitute and adulterate. The bark is brittle, like that of ipecac, but the wood is thicker and much tougher, and has conspicuous slender medullary rays, which extend slightly into the bark. Strangely enough, the drug possesses properties similar to those of ipecac. It was highly prized by the aborigines as a mild emetic and nauseating expectorant, purgative also in larger doses, and was much used by the settlers. It is still employed to a considerable extent, and somewhat by physicians. The emetic property appears to reside in the peculiar neutral substance gillenin, which is extracted as a white powder, soluble in water and alcohol. It is probably a glucosidal mixture. "Gillenin" of commerce is a resinous extract, containing the other, and is given in doses of gr. iv. to vi. The dose of gillenia is 1 to 2 gm. (gr. xv. to xxx.).

Henry H. Rusby.

IRIDECTOMY (Gr., *ἰρις*, *iris*, the iris, and *ἐκτομή*, a cutting; *ἐκ*, out, and *τομή*, a cutting, from *τέμνω*, to cut), the operation of cutting out a portion of the iris for the purpose of forming an artificial pupil.

The instruments needed for the operation are: A spring speculum. A pair of fixation forceps, for steadying the eyeball (Fig. 2954); this must be light and catch accurately, and the teeth must not be too sharp and pointed, otherwise they may tear through the conjunctiva. A broad lance-shaped knife, the shape of which varies with the direction in which the iridectomy is to be made—if

made outward (toward the temple), a straight knife may be used; if made inward or upward, the blade must be bent at an angle (Fig. 2955), according to the prominence of the nose or the upper margin of the orbit. If the anterior chamber is narrow, and the iris close upon the cornea, a very narrow von Graefe knife should be used in place of the lance-shaped one. The narrow knife represented in its actual size by Fig. 2956 has, in the hands of the present writer, almost entirely supplanted the lance knife in this operation; with it, it is possible to skirt the edge of the anterior chamber and make a large incision without risk of wounding the lens. The iris forceps, which should be lightly bent (Fig. 2957), should catch accurately, but when closed the arms of the forceps should come together only for a distance of 2 to 3 mm. from their end. The iris scissors, or curved on the flat (Fig. 2958), or curved on the flat (Fig. 2959); the blades must close tightly. Lastly, the rubber spatula, with which to replace the iris if necessary.

Before the operation, the eye and its surroundings are to be thoroughly washed with a solution of corrosive sublimate of the strength of 1 to 5,000, the lids are everted, and the conjunctiva is washed with a piece of absorbent cotton dipped in the bichloride solution.

FIG. 2954.

All instruments to be used are immersed, first in a 2.5-per-cent. solution of carbolic acid, and then in ninety-five per-cent. alcohol. The hands of the operator, as well as those of the assistant, and the parts adjacent to the eye are carefully washed with a solution of corrosive sublimate of the strength of 1 to 1,000.

OPERATION.—The patient is to be placed on a bed or operating-table, and an anæsthetic administered. In all cases of iridectomy, the patient should be brought completely under the influence of the anæsthetic before the operation is attempted. If the eye is to be operated on in the right, the surgeon places himself behind the patient; if the left, he seats himself on the bed in front of the patient, that he may make the incision with his right hand. Complete anæsthesia having been brought about, the spring speculum is introduced and locked in place. With

the fixation forceps in his left hand, the surgeon seizes the conjunctiva on the same meridian as that in which the coloboma is to be, but at the opposite side of the cornea and close to it. Care is to be taken that the forceps exerts no pressure on the eyeball—it simply holds it or rolls it. The lance knife is now taken in the right hand, and its point entered either at the limbus or 1 mm. back from the circumference of the cornea. When the point has entered the anterior chamber, and the operator recognizes this by the sudden absence of resistance, the handle of the knife is lowered and the blade is pushed forward in the direction of the plane of the iris until an incision long enough for the purpose in view has been made. We shall see that the length of this incision varies with the size of the portion of iris that is to be removed.

The position of the point of the knife is carefully watched. The handle of the knife is still more lowered, so that its point comes almost in contact with the posterior surface of the cornea, and avoids contact with the anterior surface of the lens, which comes forward when the aqueous humor flows off. As the knife is now slowly withdrawn, its cutting edge is kept close to one or the other of the angles of the incision, and by this means the inner opening of the section is made of equal extent with the outer. We have said that the knife is to be slowly withdrawn, and this is most important. A quick withdrawal of the knife, and sudden evacuation of the aqueous, may be followed by intra-ocular hemorrhage or rupture of the suspensory ligament of the lens.

The Narrow Knife.—If in place of the lance-shaped knife the narrow one of von Graefe is used, the procedure is as follows: Let us suppose an iridectomy is to be made upward, for the relief of glaucoma of the right eye. The anterior chamber is narrow, the iris and the lens system being well pushed forward; there is slight corneal haziness. The patient is to be completely anesthetized, the speculum is introduced, and, as was described above, the eye is lightly fixed by means of the forceps. The surgeon stands behind the patient, the knife is held vertically in the right hand, and at the corneal margin its point is entered in the anterior chamber; the handle is now lowered and the point of the knife directed to the point of counter puncture, kept parallel with the plane of the iris, and made to skirt the edge of the anterior chamber. The distance between the points of entrance and of counter puncture is determined by the size which it is desired to give to the pupil. In completing the section the blade of the knife is given a slight inclination upward, so that the external and internal lips of the wound are directly over each other. The counter puncture is at the corneal margin, and the wound, when completed, lies opposite the peripheral insertion of the iris.

Whether the lance-shaped or narrow knife is used, it may happen now that the iris is spontaneously prolapsed in the wound and may be excised *in situ*. Ordinarily the next step of the operation is as follows: The fixation forceps is given over to an assistant, and the bent iris forceps entered, closed, through the incision; when the point of the forceps is opposite the sphincter of the pupil the blades are opened as widely as may be, and the iris is seized and drawn out through the corneal incision. The operator, now holding the iris thus secured and drawn out of the corneal wound to the requisite extent with the forceps in the left hand, takes the scissors in the right, and, holding them parallel with the corneal wound, cuts the exposed portion of iris. After the excision it is of great importance to see that the edges of cut iris are not entangled in the wound. There are different degrees of this entanglement—the edge of the cut sphincter may be drawn into the corneo-scleral section, or the ciliary portion of the iris may be thus entangled. In either case, care should be taken to replace the iris. This may be often accomplished by simply stroking the region of the incision with



FIG. 2955.

the fixation forceps in his left hand, the surgeon seizes the conjunctiva on the same meridian as that in which the coloboma is to be, but at the opposite side of the cornea and close to it. Care is to be taken that the forceps exerts no pressure on the eyeball—it simply holds it or rolls it. The lance knife is now taken in the right hand, and its point entered either at the limbus or 1 mm. back from the circumference of the cornea. When the point has entered the anterior chamber, and the operator recognizes this by the sudden absence of resistance, the handle of the knife is lowered and the blade is pushed forward in the direction of the plane of the iris until an incision long enough for the purpose in view has been made. We shall see that the length of this incision varies with the size of the portion of iris that is to be removed. The position of the point of the knife is carefully watched. The handle of the knife is still more lowered, so that its point comes almost in contact with the posterior surface of the cornea, and avoids contact with the anterior surface of the lens, which comes forward when the aqueous humor flows off. As the knife is now slowly withdrawn, its cutting edge is kept close to one or the other of the angles of the incision, and by this means the inner opening of the section is made of equal extent with the outer. We have said that the knife is to be slowly withdrawn, and this is most important. A quick withdrawal of the knife, and sudden evacuation of the aqueous, may be followed by intra-ocular hemorrhage or rupture of the suspensory ligament of the lens. **The Narrow Knife.**—If in place of the lance-shaped knife the narrow one of von Graefe is used, the procedure is as follows: Let us suppose an iridectomy is to be made upward, for the relief of glaucoma of the right eye. The anterior chamber is narrow, the iris and the lens system being well pushed forward; there is slight corneal haziness. The patient is to be completely anesthetized, the speculum is introduced, and, as was described above, the eye is lightly fixed by means of the forceps. The surgeon stands behind the patient, the knife is held vertically in the right hand, and at the corneal margin its point is entered in the anterior chamber; the handle is now lowered and the point of the knife directed to the point of counter puncture, kept parallel with the plane of the iris, and made to skirt the edge of the anterior chamber. The distance between the points of entrance and of counter puncture is determined by the size which it is desired to give to the pupil. In completing the section the blade of the knife is given a slight inclination upward, so that the external and internal lips of the wound are directly over each other. The counter puncture is at the corneal margin, and the wound, when completed, lies opposite the peripheral insertion of the iris. Whether the lance-shaped or narrow knife is used, it may happen now that the iris is spontaneously prolapsed in the wound and may be excised *in situ*. Ordinarily the next step of the operation is as follows: The fixation forceps is given over to an assistant, and the bent iris forceps entered, closed, through the incision; when the point of the forceps is opposite the sphincter of the pupil the blades are opened as widely as may be, and the iris is seized and drawn out through the corneal incision. The operator, now holding the iris thus secured and drawn out of the corneal wound to the requisite extent with the forceps in the left hand, takes the scissors in the right, and, holding them parallel with the corneal wound, cuts the exposed portion of iris. After the excision it is of great importance to see that the edges of cut iris are not entangled in the wound. There are different degrees of this entanglement—the edge of the cut sphincter may be drawn into the corneo-scleral section, or the ciliary portion of the iris may be thus entangled. In either case, care should be taken to replace the iris. This may be often accomplished by simply stroking the region of the incision with

the rubber spatula, or it may be necessary to enter the wound again with the spatula and gently replace the iris. Should neither of these measures succeed, it may be necessary to use the iris forceps again and excise the portion thus entangled with the scissors.

After the operation it sometimes happens that hemorrhage into the anterior chamber takes place. In such an event the edges of the wound are gently separated by a Daviel spoon or by the india-rubber spatula, and the blood slowly runs out; or the eye is closed for a few minutes, and, waiting until the aqueous humor is secreted, the same attempt with the spatula is made again. If the hemorrhage is considerable and is continuous, sponges wrung out in ice water may be held for a few minutes against the eye until all sign of active bleeding has ceased. Any coagulum lying in the wound should be removed by means of the iris forceps.

A bandage is now applied to the eye as after cataract extraction (see *Cataract*), and within six hours the bandage is renewed. On the following day, if there has been no accident, the patient may be allowed to leave his bed, but he should still remain for forty-eight hours in a moderately dark room. A few drops of a two-per-cent. solution of atropine should be instilled in the eye the second day, and this may be repeated twice daily so long as the patient remains under treatment. The length of the after-treatment will depend on the circumstances under which the operation has been performed, and when the iridectomy has been made merely for optical purposes, the confinement of the patient need be very brief. It sometimes happens that after the operation the sclero-corneal wound fails to unite, and that this condition of things lasts for days and even weeks. In cases of simple glaucoma, immediately after the operation there may remain a marked increase of intra-ocular tension, and the anterior chamber is not at once restored. Indeed, the intra-ocular tension may increase, the iris and lens be pressed against the cornea, and the eye become painful and congested. In such a case as this the bandage can no longer be tolerated—indeed, it does harm. Occasional warm compresses may be used, and the pain quieted by injections of morphine, until the inflammatory symptoms have subsided. In conclusion, it is proper to consider the care that must be exercised in performing an iridectomy, both for the accomplishment of our object and that no harm may ensue to the eye from the operation. It may happen that an inexperienced operator does not succeed in the excision of a piece of the iris, that he tears the iris from the ciliary body, that he causes a rupture of the hyaloid membrane, or that he wounds the anterior capsule of the lens. More than this, the operation, when performed *secundum artem*, is not absolutely free from danger. Occasionally, if rarely, such an eye is lost by purulent iridochoroiditis. When, after the operation has been performed, there ensues cystoid cicatrization of the iris in the wound, increased intra-ocular pressure may take place, or the eye may be lost by purulent irido-cyclitis. Mooren² found among two hundred and forty iridectomies one corneal suppuration, and von Graefe³ saw two suppurations of the cornea after simple iridectomy.



FIG. 2957.

HISTORY.—Before speaking of the uses of an iridectomy a brief reference to the history of the operation is in place. As early as 1711 the operation was performed by Woolhouse, and again in 1728 by Cheselden. The method of operation was modified and improved by Beer, in 1796. The new pupil, in these earlier operations, was made to enable



FIG. 2956.