

potassium iodide with a brown color, and in chloroform or carbon disulphide with a violet color" (U. S. P.). Iodine volatilizes slowly, even at ordinary temperatures, and, upon heating, melts and is dissipated, without residue, in violet-colored fumes. With starch paste it produces a characteristic dark blue color. Iodine must be kept in glass-stoppered bottles, in a cool place. The commercial sources of iodine, at the present time, are mainly the native beds of sodium nitrate in South America, where sodium iodate occurs in association with the nitrate salt. Some iodine, however, is still prepared from kelp—the ashes of burnt sea-weeds.

Iodine, like its chemical congeners, chlorine and bromine, has an affinity for hydrogen, but its action, because of this affinity, in decomposing compounds containing hydrogen is not so pronounced as in the case of chlorine or of bromine. Probably, mainly because of this affinity for hydrogen, vapor of iodine is deodorant, and iodine solutions applied directly to foul and infectious matter prove both deodorant and disinfectant. Sternberg,¹ experimenting with the micrococcus of gonorrhoeal pus, found iodine to be antiseptic (*i. e.*, inhibiting development) in solutions of the strength of one part to four thousand (one-fortieth per cent.), and permanently germicidal in solutions representing one part to five hundred (one-fifth per cent.)—percentages which, as compared with those of other so-called antiseptics similarly studied, show for iodine a high germicidal potency. As regards the effects of the element upon the living animal system, iodine is locally irritant and even caustic; and taken into the stomach, is readily absorbed and produces constitutional effects similar to those of the alkaline iodides (see *Iodides*). Many consider, indeed, that the greater part of a dose of iodine finds entrance into the blood in the condition of sodium iodide. Others hold that probably some, at least, of the iodine enters into combination with albumin, and is absorbed in the state of the compound so formed. The local effects of iodine, which medically are of more importance than the constitutional, are in detail as follows: Applied to the skin, iodine solutions stain the cuticle a yellowish-brown and excite some tingling, pricking, or, if strong, even smarting. The stain tends spontaneously to disappear, and, if the application has not been too strong, some desquamation of the epidermis is the only physiological after-effect. If, however, a strong solution is used, or if repeated applications are made upon the same spot, the skin may inflame and blister, with the production of a very painful sore, or even may be destroyed. In all cases the healing action following the direct effects of the iodine is rapid and kindly. Upon serous membranes iodine easily induces an active inflammation, which, if the application has not been too severe, is almost certainly of the adhesive character, leading to permanent agglutination of the opposing surfaces. Upon mucous membranes, also, iodine solutions produce considerable irritation, and, if swallowed, may cause dangerous, and even fatal, irritant poisoning. But from the pronounced color and taste of such solutions, accidental or criminal poisoning is unlikely, and iodine is not well enough known as a poison to be selected for purpose of suicide. In case of poisoning, substances containing starch should freely be given as the best antidote, and the symptoms treated upon general medical principles.

An important question is the possibility of absorption of iodine from local surface applications of its solutions. That it can be absorbed by serous surfaces is beyond doubt, since a case has been reported in which fatal poisoning, with constitutional symptoms, followed an injection of an iodine solution into an ovarian cyst. When applied to the unbroken skin, it is possible that, if the solution contain also an alkaline iodide (by whose presence iodine becomes soluble in aqueous fluids), a little iodine may be absorbed; but if a simple alcoholic solution of iodine be employed, theoretical considerations are certainly against the probability of absorption, and, so far as the writer knows, absorption under these circumstances has never been demonstrated by the chemical detection of iodine in the secretions. It is most probable,

therefore, that what therapeutic effects follow from painting the skin with tincture of iodine occur simply as reflexes of the local irritation.

The constitutional effects of iodine are substantially similar to those of the alkaline iodides. The main point of difference is, as might be inferred, that iodine will cause more gastro-intestinal irritation than will the iodides. The alleged occasional atrophy of the breasts or of the testicles following prolonged iodizing, in the case of Swiss *crétins*, is also more commonly averred of administration of iodine than of iodides. As used in America, however, the writer does not know of any authenticated case of such atrophy fairly attributable to iodine. The therapeutic effects of constitutional iodizing are also similar in kind to those obtained by the giving of iodides (see *Iodides*); but, perhaps more from habit than from any demonstrated advantage, iodine is often preferred to iodides for the treatment of scrofulous affections and of goitre.

Therapeutically, iodine is a possible disinfectant and deodorant for privies and drains, but unfortunately is too costly for any use requiring considerable quantities. Applied to the skin, solutions of iodine may be used to destroy life or arrest development of the organisms in parasitic skin disease, such as ringworm, although they are not so powerful for the purpose as mercurials; to set up healthy action in sluggish sores; and, painted in repeated coatings over the sound skin, to operate by ordinary counter-irritation for the allaying of pains or for the resolution of engorgements, reabsorption of hyperplasia, or abatement of chronic and sluggish inflammations in underlying parts. For the purposes of the latter general category, however, iodine is certainly no better than other agents of equal irritant power; and its selection, because of an assumed specific iodine influence, constitutionally, is futile. To serous surfaces iodine solutions are applied in order to excite adhesive inflammation for the purpose of obliterating a serous tract, as, for instance, in cases of hydrocele, or of spina bifida, or of knee-joint effusion, or even in cases of pleurisy with effusion, or of empyema. But in the case of serous cavities of considerable extent and importance, iodine injections, even when the solutions are fairly dilute, are risky, and many cases are on record of undue irritation, of serious constitutional reaction, and even of death, following such procedures. Internally, iodine is given almost exclusively for its constitutional effects, namely, for the determining of healthier nutritive ways in chronic diseases of nutrition, particularly those of so-called strumous character, and in goitre. Because of the gastric irritation it so easily excites, iodine is not so available for full iodizing as are the alkaline iodides. In the treatment of syphilis, rheumatism, organic affections of the central nervous system, etc.—conditions calling for heavy dosage—the iodides are nowadays quite generally, and quite properly, preferred to iodine.

For use, iodine may be dissolved in alcohol, or, by the addition of potassium iodide, in water or glycerin. "Morton's solution," employed by Dr. Morton, of Glasgow, and others, for injection in cases of spina bifida, consists of ten grains of iodine and thirty of potassium iodide to an ounce of glycerin. Of this, from twenty-five to thirty minims have been injected into the sac in the affection in question. In this country the official preparations are almost exclusively employed, and are as follows:

Tinctura Iodii, Tincture of Iodine. This preparation is a simple seven-per-cent. alcoholic solution of iodine. It should be kept in well-stoppered bottles. Tincture of iodine is a dark-brown, limpid fluid, of a strong odor and taste of iodine. It stains skin and fabrics a rusty brown, and is strong enough of iodine to blister the skin if repeatedly applied to the same area, to inflame serous surfaces, and, swallowed clear, dangerously to irritate the gastro-intestinal tract. It precipitates with water, from the very feeble solubility of iodine in that fluid. Because of this fact the tincture is not eligible for internal giving, and its use is limited to local application. For the treat-

ment of skin disease, or for counter-irritation, the tincture may be used without dilution, lightly painted upon the part with a camel's-hair brush. If the skin be not too sensitive two coats may be laid on, the second as soon as the first has dried—which result happens in a few seconds, from the speedy evaporation of the alcohol. Such paintings may be renewed in the course of two or three days, but must not be made too often over the same area, else blistering and a painful sore will result. For injection into serous cavities tincture of iodine must be diluted, the degree depending upon the area and importance of the tract to be affected, but ranging from twofold to tenfold. The fluid for the dilution is water, to which, to prevent the precipitation of the iodine, potassium iodide must be added in proportion about equal to sixteen per cent. of the quantity of tincture taken for the mixture. In some cases, as of spina bifida, and even empyema, some practitioners have injected small quantities (from 2 to 4 gm. [m xxx. to lx.]) of undiluted tincture of iodine.

Under the title of *decolorized* or *colorless tincture of iodine*, preparations are made in various ways, in all of which the addition of water of ammonia to tincture of iodine is an essential feature. Such preparations are indeed colorless, but they are no longer tinctures of iodine in the sense of containing iodine uncombined, since most of the iodine in these solutions exists in combination with the ammonia as ammonium iodide. The preparation of this character of the German Pharmacopoeia is compounded of iodine, sodium "hyposulphite," spirit of ammonia, water, and alcohol. The resulting composition is complex, but the essential ingredient is ammonium iodide.

Liquor Iodii Compositus, Compound Solution of Iodine; Lugol's Solution. This preparation is a joint aqueous solution of iodine and potassium iodide, containing five per cent. of the element and ten of the salt. It must be kept in glass-stoppered bottles. This solution is dark-colored and stains like the tincture, but, unlike that preparation, does not precipitate on admixture of aqueous fluids. It is intended for internal taking, and is indeed the only preparation of free iodine ordinarily so administered. The dose is about 0.30 gm. (m v.) several times a day, largely diluted with water.

Unguentum Iodii, Iodine Ointment. This ointment consists of four per cent. of iodine and one of potassium iodide, smoothly incorporated with benzoated lard. The iodine and iodide are first rubbed with a little water, whereby the iodine is more ready to mix with the lard. Iodine ointment should always be made fresh when wanted, since it suffers spontaneous change upon keeping. It is of a deep-brownish color, stains the skin yellow, and exerts thereupon a moderate iodine effect.

Under the name of *iodized starch* there was formerly official the peculiar substance that results from treating starch with free iodine in the presence of water. The compound so forming is dried, powdered, and put up in glass-stoppered vials. This powder readily yields free iodine, while being itself locally quite bland, and has been used as an internal medicine from which to get the constitutional effects of iodine without local irritation. It has been advised in heaped-teaspoonful doses, given in water gruel several times a day.

Iodine Trichloride, ICl_3 , is a compound of the two sister substances iodine and chlorine, possessing properties due to both elements. It occurs in yellow or orange-yellow needles, which fume on exposure to air, melt at $33^\circ C.$ ($91.4^\circ F.$) and, on further heating, decompose into iodine monochloride and free chlorine. In contact with organic matter the substance rapidly decomposes, yielding free iodine and chlorine. It is freely soluble in both alcohol and water, and, in an excess of water, again decomposes. Mainly by virtue of its yield of chlorine, iodine trichloride is strongly antiseptic and disinfectant, and may be used for local antiseptic purposes in solution of from one to five per cent. strength. It is not official in the United States Pharmacopoeia (1890).

Iodantifebrin, or *iodacetanilid*, $C_8H_7I.NH(C_2H_5O)$. This compound forms a flaky crystalline powder, melting at $181.5^\circ C.$, almost insoluble in water, but soluble in

alcohol. Physiologically it appears to be nearly, if not quite, inert, probably because its insolubility in water prevents its absorption. It is not official.

Edward Curtis.

¹ Sternberg: American Jour. of the Med. Sciences, April, 1883, p. 323.

IODINE TRICHLORIDE, ICl_3 . A compound introduced by Langenbuch, of iodine and chlorine, made by passing chlorine gas over iodine. A solution may be prepared by dissolving 5.5 parts of iodine in distilled water and passing in chlorine gas as long as it is absorbed. It forms a reddish crystalline powder, hygroscopic, very soluble in water, alcohol, and glycerin, and has a pungent and disagreeable odor. It is a stable compound, and will keep for a long time in powder or in solution; it must be dissolved in distilled water, as any organic matter decomposes it at once. When brought in contact with the pus and secretions of the tissues, it is at once decomposed and its constituents are eliminated. It is a powerful antiseptic and bactericide; a one-per-cent. solution sterilizes cultures of the ordinary pus-producers—staphylococcus and streptococcus.

Belfield (*Medical Record*, vol. xiii., No. 3) has used it extensively in surgical practice. He considers that it combines the valuable properties of iodoform and hydrogen peroxide. It is a more active antiseptic than iodoform, and is more stable than the peroxide, remains longer in contact with the parts, and sterilizes all moist animal tissues as well as pus. Its disadvantages are its caustic properties when used in strong solutions, and its injurious action on instruments and clothing. It must be kept from the light and air. It has been used in various tuberculous diseases and all forms of suppuration, and in all it has proved of decided value. Internally the dose is one-fifth grain; it is also used by hypodermic injection, in one-tenth to one-half-per-cent. solution, and the same solution is used for washing out the bladder, the urethra, and other sensitive mucous membranes. For irrigating wounds, a one- to five-per-cent. solution, either alone or with glycerin, may be employed; for putrid surfaces, a five- to twenty-per-cent. solution in equal parts of water, glycerin, and alcohol. Gauze may also be prepared by medicating with the solution. In eye affections, a one to five thousand solution is used as an ordinary antiseptic wash. *Beaumont Small.*

IODIPIN is an addition product of sesame oil and iodine, and appears in two strengths of the latter, viz., ten and twenty-five per cent. It is yellowish with a bland oily taste, the stronger compound being for hypodermic use only. Frieser considers it superior to the iodides, as it is quickly absorbed and slowly excreted, yet does not produce iodism or gastric disturbances. If objection is made to the oily taste it may be given in emulsion, or by rectum or subcutaneously. Its ordinary dose is one teaspoonful. It does not set free its iodine in the stomach, therefore saves this organ from the irritation of free iodine. It is, however, split up and quickly absorbed in the intestines. Sternberg finds the iodine reaction in the saliva in sixty-five minutes after ingestion by persons with normal stomachs; he therefore uses iodipin as a test for the motor function of the stomach. A delay in the reaction would indicate that the motility of the stomach is impaired.

G. Nobl used iodipin by injection in twenty cases of tertiary syphilis with excellent results. Even three ounces (90 c.c.) of the twenty-five-per-cent. compound injected within a short time gave no symptoms of iodism.

W. A. Bastedo.

IODISM.—This term has been applied to intoxication brought about by the persistent use of iodine in any form. As a rule the name is not given to acute poisoning, though occasionally latitude is exercised in this direction; as, for example, when iodine poisoning results from external applications such as iodoform which causes a poisoning by decomposition and absorption of the contained iodine.

When acute symptoms of poisoning result from the presence of iodine in the gastro-intestinal tract, the term iodism is less appropriate.

The usual mode of intoxication is through the continued use of some iodine compound like potassium or sodium iodide. Occasionally the internal or even local use of iodine itself has been the cause of the poisoning. As has been pointed out above, the decomposition of iodoform with consequent absorption of iodine sometimes occasions general as well as local symptoms.

The amount of iodine necessary to produce symptoms of poisoning varies in individual cases according to personal peculiarities, the pre-existence of certain diseases, and the manner of administration of the drug itself. By gradually increasing the dose of the drug, considerable quantities of an iodide or of iodine may be tolerated by normal persons, and the tolerance of syphilitics for this drug is so well known that many clinicians believe the therapeutic test of administering iodides to ascertain the patient's tolerance is of value in the diagnosis of a syphilitic taint. It is claimed by those who advocate the value of the therapeutic test that the tolerance of large doses without the development of symptoms of iodism is an evidence of syphilis; and, on the other hand, the development of symptoms is an evidence of freedom from that disease. There is no doubt but that those who have been infected with this disease often bear very large doses of iodide in most instances, but the value of the test is frequently exaggerated. It has decided limitations. The same tolerance seems to occur in persons affected with actinomycosis, against which disease iodine and the iodides appear to be almost specific. Sometimes it is noted that small doses of an iodide provoke symptoms of intoxication after the lapse of some days and that these milder symptoms subside when the drug is pushed and larger doses are given. The severer symptoms are rarely met with excepting after more prolonged use of the drug and its administration in comparatively large doses. In a case reported by Robinson the patient suffered with mild symptoms after six doses of one grain each of iodide of potassium, and a few days later, the same doses being continued, purpura developed. In another case reported by Fox, violent symptoms appeared after the administration of ten grains of potassium iodide. On the whole, however, the statement made above that severe symptoms rarely develop until larger amounts of the drug have been ingested is borne out by experience.

In acute poisoning by iodine, symptoms indicative of a violent toxic gastro-enteritis are met with. Among the peculiar accompanying symptoms are a metallic taste in the mouth and an increased flow of saliva, rapidity of the pulse out of proportion to the gastro-enteric disease, and partial or complete suppression of urine. In chronic poisoning or iodism there may be some of these symptoms in milder form. A peculiar metallic taste in the mouth, slight swelling and redness of the gums, and later a well-marked gingivitis, increased flow of saliva and disturbances of the stomach and bowels are met with. On examination of the mouth there may be found a brilliant red line on the gums at their junction with the teeth, or, in later stages, a necrotic or ulcerated appearance of the gums. The breath in these cases is apt to be heavy, though not nearly so offensive as in mercurialization. Slight swelling of the parotid gland and less frequently of the other salivary glands and of the submaxillary lymphatic glands may be met with. Coryza and irritation of the eyes are frequent early symptoms and an acneiform eruption of the skin is quite characteristic. This acne generally presents a more inflammatory appearance than ordinary acne and is in my experience apt to occur in a clustered form, several spots being closely grouped together. This arrangement, however, is by no means invariable. The eruption comes on gradually or, less frequently, abruptly. It may persist for some time without other symptoms of iodism, but as a rule soon ushers in more serious symptoms. Later, pharyngitis and bronchial irritation and various forms of eruptions on the skin occur. Among the last named, vesicles, bullae,

and purpuric spots are of most interest. In many cases reported in the literature a well-marked purpura hemorrhagica occurred. Sometimes this developed after small doses of iodine; in most cases, however, the amount ingested was considerable. The petechiae generally occur on the lower extremities first, but later involve all parts of the body; and hemorrhages from the mouth, nose, stomach, or other mucous membranes frequently accompany the eruption. The hemorrhagic eruption may consist of merely small petechiae or may in other cases take the form of hemorrhagic vesicles or considerable suffusions. Sometimes the lesions are confined to the parts of the extremities near the joints and may, as in a case re-



Fig. 2951.—Iodic Purpura Simulating Purpura Rheumatica. (Stengel, in *Therapeutic Gazette*, 1902.)

ported by myself, be attended with swelling of the joints, giving the whole case the appearance of the disease known as purpura rheumatica. In these cases pain in the extremities may occur, but as a rule the eruption of iodism is entirely painless and free from all other sensations.

In some instances there is a special tendency to this form of iodism, and cases have been reported of patients who repeatedly suffered symptoms of this kind on every attempt to renew the administration of iodides. Occasionally iodism is attended with fever; in most cases this symptom appears to be wanting.

Nervous and vascular symptoms sometimes predominate; thus headaches and neuralgic pains, tremor or twitchings of the muscles, and a state of profound asthenia may be met with. It is reported also that loss of vision and paralysis occur in some cases. A peculiar syndrome has been discussed by recent authors as being the occasional result of medication with iodine; it suggests the symptoms of exophthalmic goitre.

In these cases the patient has great rapidity of the heart's action with a sense of intense palpitation. There are muscular tremor, more or less pronounced dyspnoea, and a relaxed condition of the skin, and sometimes the clinical picture is completed by the development of exophthalmos. These cases are especially interesting from the fact that according to many, Graves' disease is due to excessive thyroidal secretion, and the latter is known to contain notable proportions of iodine.

In cases of iodism following the local use of iodoform, in addition to a dermatitis, there are marked rapidity and

weakness of the heart's action and great constitutional depression. The temperature is sometimes quite high. When the erythema or dermatitis is extensive, there may be difficulty in distinguishing the symptoms from those of scarlet fever, particularly if, as sometimes happens, vomiting and gastro-intestinal symptoms mark the beginning of the attack. In certain cases when the poisoning has developed slowly, the disease takes on a cachectic form and is marked by gradual wasting with loss of subcutaneous fat causing a wrinkled, withered appearance of the skin. Combined with this there are great muscular weakness and nervous depression, a tendency to dyspnoea, and rapidity of action of the heart. The appearance of the patients suggests a profound anæmia or cachexia.

Among late results of iodine intoxication, atrophy of the mammary glands and testicles has been noted.

Alfred Stengel.

IODOFORM.—Iodoform, chemically *triiodomethane*, or *methenyl iodide*, CHI_3 , is official in the United States Pharmacopoeia as *Iodoformum*, Iodoform. It is prepared in a variety of ways, in which the essential reaction is between alcohol and free iodine with the resulting formation of iodoform. Iodoform occurs in "small, lemon-yellow, lustrous crystals of the hexagonal system, having a peculiar, very penetrating, and persistent odor, somewhat resembling that of saffron and iodine, and an unpleasant, slightly sweetish, and iodine-like taste. Specific gravity, 2.000 at 15° C. (59° F.). Very slightly soluble in water, to which it, however, imparts its odor and taste. Soluble in about 52 parts of alcohol at 15° C. (59° F.), in about 12 parts of boiling alcohol, and in 5.2 parts of ether. Very soluble in chloroform, benzin, and fixed and volatile oils" (U. S. P.). Iodoform volatilizes somewhat even at ordinary temperatures, and on heating first melts to a brown liquid, and then gives off iodine vapors, with a residual carbonaceous mass, which finally is wholly dissipated. Iodoform should be kept in well-stoppered bottles in a cool place. The odor is peculiar not only in quality, but also in the fact that it is very penetrating and persistent, and that a very little of the substance will develop the smell in full strength. To many persons the odor is positively offensive, while to others it is quite unobjectionable. Concerning the solubilities of iodoform, it should be noted that a very common text-book error is the unqualified statement that the substance is "soluble in alcohol," leading to the inference that it is freely so, whereas, as a matter of fact, it is but sparingly soluble in cold, and only moderately soluble in boiling, alcohol (see above).

Locally, iodoform tends to benumb, to repress suppuration and other unhealthy action, and to promote healing. In tuberculous disease, as in cases of tuberculous abscess, the latter effect is marked. This healing virtue of iodoform probably results partly from absorption by the powder of the juices of the exposed part, and from mechanical protection, and partly from the action of free iodine liberated through decomposition of the iodoform. Such decomposition readily occurs when iodoform meets with alkaloidal or albuminous fluids. Formerly the virtues were thought to be due to a germicidal action, but it is now shown that iodoform as such has little or no direct power either to kill pathogenic micro-organisms or to hinder their development.

Iodoform can be absorbed into the system, not very readily from the stomach, but quite so from fresh wound surfaces, and in such cases a certain amount, at least, enters the blood unchanged. It is excreted mainly by the kidneys and in the form of iodides, but also is to be found in the saliva, the bronchial mucus, and the perspiration. Swallowed in quantities of from 0.30 to 0.40 gm. (gr. v. or vi.), it is harmless, but when extensively applied to absorbent wound surfaces it is capable of producing serious and even fatal constitutional poisoning (see *Iodoform*, [Toxicological].)

Iodoform has been tried as an internal medicine in the place of the alkaline iodides, especially in syphilis, but

without striking results. The dose is from 0.06 to 0.20 gm. (gr. i. to iij.) three times a day, preferably in pill, in order that the odor may be concealed. Externally, iodoform is a good anodyne application to painful surface affections of all kinds, and is specifically healing, especially in syphilitic lesions and in local tuberculous affections. Also it makes an excellent dressing for wound surfaces, and is accordingly extensively used by the operating surgeon. It may be applied dry (finely pulverized, so as to obviate the mechanical irritation by the edges of the crystals), by dusting from a dredger, and then covering the dressed surface with cheese-cloth, lint, or absorbent cotton; or an iodoformized gauze may be used. Such gauze may be prepared by rubbing powdered iodoform into the meshes of the material, or the latter may be soaked in an ethereal solution of iodoform which, by drying, leaves a fine powder of the drug evenly diffused through the texture of the fabric. Care should be taken not to risk poisoning by packing considerable quantities in tightly closed wound or abscess cavities. As a healing dressing, the official preparation may be used, entitled *Unguentum Iodoformi*, Iodoform Ointment, which consists of iodoform, ten per cent., thoroughly incorporated with benzoated lard. In the local treatment of tuberculous abscesses a ten-per-cent. emulsion in sterilized oil or in glycerin has been much used. The abscess is first properly evacuated, then cleansed by a weak carbolic or boric-acid wash, and then injected with a few fluidrachms of the iodoform emulsion, and the cavity closed. Such treatment may be repeated every few days. These same emulsions have also been injected into the substance of tuberculous glands which have not undergone suppuration. To mask the diffusive and persistent smell of iodoform, the addition of a great many substances has been proposed, of which substances some, such as the Tonka bean and the more powerfully odorous of the volatile oils, simply overwhelm the smell of iodoform with their own odor, and are hence unobjectionable. A bit of Tonka bean may be kept in the iodoform bottle, or one part of oil of bergamot, peppermint, spearmint, or gaultheria may be added to twenty parts of iodoform (Hager). Tannic acid and balsam of tolu, two substances suggested for the present purpose, act by chemical attack upon the iodoform, and hence are not to be recommended.

Because of the offensive smell of iodoform and the occasional poisoning by the medicine, many substitutes have been sought in related compounds. Of these the following deserve mention:

Iodol, tetraiodopyrrol, $\text{C}_4\text{I}_4\text{NH}$. This compound forms by the action of iodine on pyrrol, and occurs as a yellowish-brown, crystalline powder, without taste or smell, insoluble in water, but soluble in alcohol and, though less readily, in ether, chloroform, and the fixed oils. It contains 88.9 per cent. of iodine.

Iodol, though insoluble in water, is capable of absorption by the living animal tissues, and so produces constitutional effects on administration by the mouth. In experiments on animals it has caused emaciation and albuminuria, with muscular weakness and lowering of temperature, and, finally, death from fatty degeneration of the kidneys and liver. Constitutional effects have followed also the local use of the compound in surgery, but, owing to the comparative slowness of absorption of iodol, it is less apt to produce untoward effects than is the case with iodoform.

Iodol is available for all the uses of iodoform. It may be applied locally in powder or in alcoholic solution. A colloid preparation of iodol may be made by dissolving one part of iodol and five of guncotton in ten parts of ether.

Iodol has been given internally in diabetes and in tertiary syphilis, in doses of from 0.13 to 0.19 gm. (gr. ij. to iij.). It is not official in the United States Pharmacopoeia (1890).

Losophan, triiodometacresol, $\text{C}_6\text{H}_3(\text{OH})(\text{CH}_3)$. This substance, a compound of iodine and cresol, occurs in colorless needles, odorless, insoluble in water and nearly so in alcohol, but freely soluble in ether, chloroform, and