

contents, then of the intestinal contents; the character of the material vomited depends on the site of the constriction, and it need not be distinctly fecal. Persistent vomiting should always lead one to examine very carefully for the other symptoms of intussusception.

Constipation must of course be present when the intestine is occluded, but the contents of the intestine which are below the occlusion come away with the enemata, and this may be misleading during the early hours of the condition.

Abdominal Tumor.—The intussusception may frequently be felt within the abdomen. It is generally described as a sausage-shaped mass, usually lying near the ileo-caecal region. The possibility of feeling it depends largely on the presence or absence of inflammation and tympanites. If there is enough inflammation to cause reflex rigidity of the abdominal muscles, it may be difficult or even impossible to feel the mass; if this rigidity is excessive and if there is tympanites, it will probably be impossible to distinguish the mass without putting the patient under the influence of an anæsthetic. Sometimes a very long piece of the ileum slides into the colon, and it may even pass through its entire length as far as the rectum; in such instances instead of a sausage-shaped tumor there would be a tumefaction throughout the entire length of the colon, which might be very indefinite to the touch. Again, in very rare instances the intussusception is in the upper part of the intestine close under the liver, where it cannot be felt. It may be under the ribs, and hence impalpable, even when it is located lower in the small intestine. Erdmann² states that in three of his nine cases no tumor could be found before operation, although the ablest of pediatric diagnosticians had carefully palpated the subjects. Operation was, however, performed on account of the symptoms, and in two of the cases the tumor was found under the ribs in the left hypochondriac region; in the third it was under the right lobe of the liver.

The Passage of Blood or Bloody Mucus from the rectum is a most important aid to diagnosis. When it occurs in conjunction with the symptoms already enumerated, it makes the diagnosis almost certain. In the cases in which operation has been done it has been among the most commonly recorded symptoms. In 150 cases studied by Gibson,⁴ in which the record of symptoms was not complete, a bloody discharge from the rectum was recorded 38 times; vomiting, 25 times; intussusception felt through the rectum, 23 times; discharge of mucus, and tenesmus, 12 times.

The Palpation of the Intussusception through the Rectum is of course proof positive of its existence; an effort should always be made to feel it there in suspected cases. Its presence is recorded in one-sixth of the cases in Gibson's table.

Shock and Exhaustion may or may not be present. Curtis states that as a rule the little patients remain in good condition until suffering and want of food lead to exhaustion. The writer's experience corresponds to this. Erdmann found shock present in the majority of his cases.

One cannot expect to find all of these symptoms in a single case, but a routine search should be made for all of them in every child who has persistent vomiting.

TREATMENT.—Success in the treatment of this condition depends largely upon promptness in diagnosis. There is hardly a condition in medicine or surgery in which an early and definite diagnosis is more important for the patient. Before adhesions have formed, the intussusception can be reduced with ease. When firm adhesions have formed, reduction is difficult. When the intussusception has become gangrenous, the condition is one of the most formidable known to surgery.

Only two methods of treatment need be considered: (1) The injection of liquids or gas by the rectum; and (2) operation. The operative method is coming more and more into prominence; the use of enemata is being made more subordinate each year. Many children have died under treatment by enemata who could have been saved by prompt operation.

The objections to enemata may be thus stated: (1) They may delay operation until it is too late; 2, they may rupture the intestine; (3) it is very difficult to determine whether the intussusception has been reduced by them; (4) if the intussusception has been reduced, it is much more likely to recur than when a fold has been made in the mesentery and stitched according to Senn's method. These objections are based upon the records of cases. Gibson, whose entire tabulation includes two hundred and thirty-eight cases in which operation has been done, gives examples to show how real they are.

The first objection is perhaps the most important. If the diagnosis is once made, relief should be obtained without delay; an intussusception should be dealt with as promptly as a strangulated hernia, and the giving of enemata and waiting to study the result is apt to cause most dangerous delay.

The following cases⁴ show the danger of perforation: A child of five years (case recorded by Harrington) was given an enema under a hydrostatic pressure of four and one-half feet, on the fifth day of the intussusception, and the ileum was found to be perforated as a direct result of the pressure. Fenwick records a fatal perforation which occurred in a child of six months, following an enema which was given on the second day of the illness. Reduction apparently occurred, but the child died almost immediately, and the autopsy showed ulceration and perforation of the gut, the intussusception not having been reduced. Parkes cites a case in which an injection of one pint in a three-months-old child caused a perforation in the lower part of the intussusception, which was found at the autopsy.

A change in the size or location of the invagination or a partial reduction may be easily mistaken for a complete reduction. Instances of this are also recorded in Gibson's tables.

Gibson also calls attention to many instances of the return of the intussusception after it had once been reduced by enemata. Of course this may occur after operation, but if the mesentery is folded longitudinally and then stitched it is less likely to do so.

The following rules for the use of rectal injections may be given:

1. Only water or bland liquids should be used, since the pressure of air or other gases cannot be accurately measured.

2. The column of liquid should not be more than three feet high. Pick⁴ limits the height to three feet and the amount to one and one-half pints for a child under one year of age.

3. Enemata should be used only in the early stages of the intussusception. Gibson would limit their use to the first two days. He found that in at least three of the cases recorded as treated on the first day of the disease, more than a simple reduction of the intussusception was needed; in one of them the colon was beginning to slough. Erdmann considers the use of enemata justifiable in all cases of less than twenty-four hours' duration.

4. If the enema is to be given, all the preparations for operation should be made, and unless there is definite proof that the intussusception has been reduced the abdomen should be opened.

Operation.—The operation of choice is the opening of the abdomen and the reduction of the intussusception by manipulation and pressure from below without pulling on the intestine. A plait may then be stitched in the mesentery in the hope of preventing a recurrence.

The use of enemata to aid in this reduction after the abdomen has been opened may be of very great assistance. Brewer⁵ reports a case of five days' duration in which a part of the ileum, the cæcum, and nearly half of the colon had prolapsed into the remaining part of the colon so as to be palpable at the rectum; dense adhesions were present, but the patient was put in the Trendelenburg posture and the rectum distended by saline solution. By the combined use of taxis, traction, pressure of saline solution, and the manual breaking up of adhesions be-

tween the ileum and colon, the intussusception was finally reduced and the patient recovered.

There are many instances in which the reduction of the intussusception has been impossible. The intestinal wall, when deprived of its circulation and subjected to so much pressure, becomes weakened and may rupture even under very gentle manipulation; or the operator may see that further manipulation will rupture it, and hence decide to do a resection at once.

Under these conditions the following procedures are to be considered:

1. Resection of the diseased intestine and union of its ends by suture or by a Murphy button.

2. Removal of the intussusception through a longitudinal opening in the intestine which holds it, and suture of the intestinal walls where the intussusception enters the intussusciptens.

3. The formation of an artificial anus in the hope of restoring the continuity of the intestine at a later time.

Intestinal resection and union of the divided ends is the operation of choice, and will probably save more lives than any other method of dealing with the condition. It has two distinct advantages over the second method: (1) The section may be so placed that healthy parts of intestine are used for approximation; (2) there is the minimum danger of sepsis from handling of the inflamed intussusception.

There are, however, instances in which the second method is preferable. For example, in the case of an intussusception in the large intestine when the lack of mesentery makes approximation of the ends of the intestine very difficult, it may be better to take advantage of adhesions which already exist at the upper margin of the invagination.

It is generally conceded that an end-to-end union is better than a lateral anastomosis, as there is less danger of cicatricial contraction. Whether the end-to-end union should be made with a Murphy button or by suture depends on the practice of the individual surgeon. The present tendency is to use Murphy buttons. In intestinal resection after strangulated hernia they have been of great aid. Peterson,⁶ for instance, in studying the cases from Czerny's clinic in Heidelberg, reports 15 cases of primary resection with 8 deaths prior to 1898, a mortality of 60 per cent.; and 12 primary resections with 1 death since 1898, a mortality of 8 per cent. He ascribes the improvement to the use of the Murphy button and to the employment of local anæsthesia.

The conditions in intussusception are not so favorable for the Murphy button. The cases are usually in children and a button of very small size is necessary, and this may be difficult to use in the distended upper part of the intestine, unless it is inserted in the side of the gut. Again, in these operations of emergency the proper button may not be at hand.

End-to-end suture, with the first row of sutures including all the intestinal coats and carried over the intestinal margins, and the second row going to and including the submucous layer, may be relied upon as an efficacious method.

The formation of an artificial anus is not usually to be advised. It is conceivable that in a case of dire urgency the intestine may be drawn through the abdominal opening and left there, but the results from this procedure are very discouraging. Unless the opening is in the lower part of the intestine life is maintained with difficulty, and even then there is an irritating and disagreeable discharge, and the necessity still exists for a secondary operation which of itself has a high mortality rate. Peterson⁶ has recently considered with great care the relative advantages of intestinal resection and artificial anus in cases of strangulated hernia. The mortality in 22 artificial-anus cases was 67 per cent., and in 28 resection cases 33 per cent. He quotes numerous authorities, among them Zeidler,⁷ who has analyzed 213 cases treated by artificial-anus formation and 269 cases treated by intestinal resection, and concludes that the higher mortality rate of the former was not due to the nature of the cases

prior to operation. He suggests that an additional 17 per cent. of the artificial-anus cases could have been saved by intestinal resection.

Prognosis.—The mortality from intussusception is very high, but it is diminishing from year to year. In the former edition of this work Curtis stated that it was 76 per cent. in 70 patients who had been operated upon from 1873 to 1887 inclusive. In 1891⁸ he found it 70 per cent. in 105 cases. In 1897 Gibson found it 53 per cent. in 149 patients operated upon from 1888 to 1896 inclusive.

A reduction from 76 to 53 per cent. is most encouraging. Still we must look with terror on a disease which has a mortality of 53 per cent.; and when we realize that the mortality would probably be less than 10 per cent. if an early diagnosis could always be made, we must be impressed with our responsibility and the importance of considering all the elements which go to make this diagnosis; and we must realize the necessity for prompt action if the diagnosis is once made.

There is an enormous difference in the mortality of reducible and irreducible cases. Gibson found the former to be 38 per cent., the latter 82 per cent. He found only 10 cases of recovery after irreducible intussusception in his entire series of 238 cases dating back to 1869. There was no case of recovery from irreducible intussusception in a child under seven years of age. There was only one case of recovery from gangrenous intussusception; it was in a patient twenty-three years of age.

These figures, however, do not indicate the possibilities of intestinal surgery at the present time. Ludloff⁹ reports four cases of intestinal resection and end-to-end suture for intussusception, with recovery. A fifth case was treated by intestinal anastomosis and terminated fatally. In a sixth case the invagination was reduced with difficulty, and abscesses formed about it, but there was final recovery.

The writer¹⁰ has been so fortunate as to obtain a recovery from gangrenous intussusception of ten days' duration, in a boy four years old, by intestinal resection and end-to-end suture. We may confidently expect that we shall in the future know of many cases of recovery from irreducible intussusception.

The space allotted to this article does not allow of an exhaustive consideration of all the topics. For such a consideration the reader is referred to the literature to which references are made.

Charles N. Dowd.

¹ Leichtenstern: Vierteljahrschr. f. prakt. Heilk., 1873.

² Curtis: REFERENCE HANDBOOK OF THE MEDICAL SCIENCES, New York, 1889, vol. viii.

³ Erdmann: Annals of Surgery, July, 1900, p. 183.

⁴ Gibson: Medical Record, July 17th, 1897, p. 72.

⁵ Brewer: Annals of Surgery, September, 1900, p. 249.

⁶ Peterson: Deutsch. med. Woch., 1901, Nos. 8-10.

⁷ Zeidler: Cent. Chir., 1893, p. 62.

⁸ Curtis: Medical Record, 1891, xl., p. 534.

⁹ Ludloff: Centralblatt für Chir., 1893, p. 46.

¹⁰ Dowd: Annals of Surgery, July, 1902.

INVERTIN.—An enzyme contained in the *succus entericus* which possesses a powerful hydrolyzing or inverting action upon cane sugar and maltose, causing in each case the taking up, by the disaccharide molecule, of the elements of a molecule of water and simultaneous cleavage into two monosaccharide molecules. There is thus formed in the case of cane sugar a mixture of equal quantities of dextrose and lævulose, *i.e.*, invert sugar, and, in the case of maltose, dextrose alone in equivalent quantity is formed. The enzyme is stated to be inactive toward lactose, although it is present in the intestinal secretion at birth.

That the action is due to an enzyme is shown by the facts that it is not inhibited by the presence of antiseptics, and is at once destroyed by boiling the *succus entericus*. Benjamin Moore.

IODANTIFEBRIN.—C₆H₄INHC₂H₅O. This is prepared from acetanilid by substituting iodine for one hydrogen atom. It was prepared by Dr. Ostermayer, who also introduced iodantipyrrin. It is a white crystalline powder insoluble in cold, but soluble in hot water

and alcohol. The experiments of Dr. Ostermayer showed that it was devoid of any therapeutic action. No effects were observed that could be attributed either to the acetanilid or to the iodine, nor could either be detected in the urine after its administration. It appears that the iodine destroys the solubility of the compound and that no absorption takes place. *Beaumont Small.*

IODANTIPYRIN; IODOPYRIN.— $C_8H_7I(CH_3)_2C_3HN_2O$. This compound, introduced in 1891 by Dr. Ostermayer, is antipyrin in which one hydrogen atom has been replaced by iodine. It forms in colorless, shining, prismatic needles, not very soluble in cold water or alcohol, but readily soluble in either when hot.

Iodopyrin was supposed to be a soluble combination of the therapeutic properties of antipyrin and iodine, but experience has shown that in the stomach it is decomposed by the hydrochloric acid, and forms antipyrin and iodide of sodium. Its antipyretic effects are those of antipyrin. In typhoid fever, pulmonary phthisis, rheumatic fever, and other febrile conditions, it lowers the temperature rapidly, and lowers the pulse and respiration; at times it produces a free perspiration. The dose is from seven and a half to twenty-two grains. The value of the iodide of sodium is uncertain, as no decided benefit has been traced to it. The iodine may be detected in the urine after fifteen to twenty-two grains have been given. *Beaumont Small.*

IODIDES.—I. GENERAL MEDICINAL PROPERTIES OF IODIDES.—Iodides whose basic radicle is sufficiently innocent to permit of the taking of the salt in decided quantity show special and marked physiological and therapeutic powers, unquestionably due to the iodine of their composition. Physiologically, they tend to produce symptoms as of catarrh, affecting sometimes the mucous membranes of the head alone, and sometimes also the gastro-intestinal mucous tract; to bring out an acneiform eruption on the face; and, when given in large doses long continued, to favor emaciation. These derangements, constituting the condition known as *iodism*, present themselves clinically as follows: The subject experiences the general feeling of discomfort preceding feverishness, and soon follow running at the nose and watering of the eyes, with frontal headache and sneezing. In sensitive persons the conjunctiva may be blood-shot, and the circumjacent tissues swollen and oedematous. A salty taste is perceived, and the salivary flow is somewhat freer than usual. From extension of the influence to the lower mucous membranes, there may develop cough; with hoarseness, from irritation of the throat, and epigastric sinking, with nausea, and a watery diarrhoea, with colic, from affection of the gastro-intestinal tract. An eruption, like acne, is apt to break out, first upon the face, where the papules are generally large and indurated, and later upon the trunk or extremities. Sometimes purpuric blotches also appear, or blebs, and sometimes the main eruption is eczematous instead of acneiform. Nervous symptoms are not so very uncommon, of the general type of listlessness and depression, and in one case of long-continued heavy dosage H. C. Wood observed the subject to be "intensely sleepy and stupid," as in the allied condition of bromism. As regards the tendency to emaciation, this certainly is insignificant, even in the very large dosage with iodides of current medical practice; and the alleged atrophy of the mammae or the testicles under the influence of the iodides, if it happens at all, is so exceedingly rare that it may be dismissed from consideration as a possible danger in the use of the medicines. An important point in connection with the phenomena of iodism is the very different susceptibility of different individuals, on the one hand, and of the same individual at different times, on the other. Thus, with some, coryza is developed by doses of only a few centigrams each (between one and two grains), and, with some, the disagreeable symptoms spontaneously subside, even during a continuance of the medication. In persons who are keenly susceptible, the necessary therapeutic dosage may be attained by begin-

ning with very small doses, such as 0.03 gm. (half a grain) of an alkaline iodide, and gradually increasing. Under any circumstances, the taking of copious draughts of fluid during the course of the medication tends to lessen both the frequency and severity of possible iodism doubtless by hastening the elimination of the iodide salt. And even when occurring, the phenomena of iodism are, with rare exceptions, distressing rather than dangerous, and disappear promptly and fully upon discontinuance of the dosing.

The therapeutic power of the iodides resides in a tendency to promote the absorption of inflammatory or hyperplastic products. This influence, however, proves to be of very different degrees of potency in the different circumstances where morbid products develop. It is, in general, most powerful where the parts involved belong to the nervous or the connective-tissue structures, and, in particular where the process is determined by the syphilitic, the rheumatic, or the scrofulous cachexia. Over purely idiopathic hyperplasia or inflammatory products the resolvent power of the iodides, though often decided, and sufficiently so to be exceedingly valuable clinically, yet is distinctly less pronounced. In affections of epithelial structures, the influence of the iodides is perhaps most marked in bronchocele, and much more so in the idiopathic variety than in that belonging to Basedow's disease; next in scrofulous enlargement of the lymphatic glands; and least in enlargement of the spleen and organic disease of the kidney. To develop the full potency of the iodides it is necessary, more often than not, to give large doses, especially in organic disease of the nerve centres, whether syphilitic or idiopathic. In such cases a marked alleviation of symptoms, or, in possible instances, even a cure, may often be wrought by bold exhibition of an iodide, where previous inadequate dosage had failed to produce any effect whatsoever. In brain disease such quantities as from 8 to 24 gm. (3 ij.-vi.) of an alkaline iodide are not unusual daily allowances. Besides the foregoing, iodides have a few special medicinal applications, as follows: In chronic poisoning by mercury or lead, the alkaline iodides, taken internally, tend to determine a reabsorption into the blood, in soluble condition, of such of the mineral as had been fixed in the tissues. Thus elimination of the poison is favored; but thus also acute poisoning may be re-established, if too much of the metallic compound is made to enter the blood at once. Hence, in this particular therapeutics of the iodides, the doses must at the beginning be small, and any increase is to be made gradually and with careful watching of the effects produced.

II. THE IODIDES USED IN MEDICINE.—The iodides official, or entering into the composition of pharmaceutical preparations official in the United States Pharmacopoeia, are, of the heavy metals, the iodides severally of iron, mercury, silver, zinc, and lead; of the metals of the alkalis and the earths, the iodides of potassium, sodium, ammonium, and strontium; and of non-metallic elements, the iodides of arsenic and of sulphur. Of these various iodides, those of the alkali metals and of strontium alone can be given in sufficient dosage to develop the full iodide therapeutic influence. In the other iodides the medicinal effects of the basic radicle practically outshine what can be gotten from the iodine, and such of the list given above as are compounds of heavy metals or of non-metals will therefore be found discussed under the several titles of the basic elements. The group of iodides medicinally important simply as iodides comprises, of the official list, only the potassium, sodium, ammonium, and strontium salts, to whose action alone the foregoing remarks concerning effects and uses apply in full.

Potassium Iodide, KI. The salt is official as *Potassii Iodidum*, Potassium Iodide. It occurs in "colorless, transparent, or translucent, cubical crystals (the white, opaque, commercial variety being crystallized from an alkaline solution, and less pure), or a white granular powder, having a peculiar, faint, iodine-like odor, and a pungent, saline, afterward bitter taste. Permanent in dry air, and but slightly deliquescent in moist air. Solu-

ble at 15° C. (59° F.), in 0.75 part of water, and in 18 parts of alcohol; in 0.5 part of boiling water, and in 6 parts of boiling alcohol; also soluble in 2.5 parts of glycerin" (U. S. P.). The salt should be kept in well-stoppered bottles. Potassium iodide is chemically incompatible with metallic mercury and the pharmaceutical preparations containing mercury in that state, and with the oxides, sulphates, and chlorides of the same metal, including mercurammonium chloride ("white precipitate"). In the case of mercuric chloride (corrosive sublimate), however, the chemical incompatibility does not impair the medicinal efficiency or pharmaceutical elegance of a mixture of the two salts in solution; for if, as must be the case in a medicinal prescription, the potassium iodide be in excess, the mercuric iodide forming upon addition of mercuric chloride immediately redissolves through the secondary forming of a double salt. And such solution produces to full degree the medicinal effects of the mercurial. Corrosive sublimate therefore may be prescribed very conveniently in a solution of potassium iodide. Potassium iodide is incompatible with alkaloids, and practically so also with potassium chlorate; for though no reaction occurs at ordinary temperatures when potassium iodide and potassium chlorate alone are mixed, yet upon the addition of a mineral acid iodine is liberated and apparently iodic acid is formed in the solution. And, according to Melsens, the giving to dogs of potassium iodide and chlorate in conjunction leads to speedy, and even possible fatal, poisoning, presumably because of the occurrence of some such reaction as just described.

Potassium iodide is the best known and most used of the alkaline iodides, and is commonly considered the most effective one of the group. Being a salt of potassium, and one given medicinally in large doses, it produces, in addition to the typical effect of the iodides, those peculiar to potassic salts as such. Accordingly, full doses may depress, generally, and in particular, may weaken heart action: may be diuretic, and, if swallowed in strong solution, be decidedly irritant to the stomach. As regards the diuretic effect, upon which much stress is often laid, this occurs to about the same degree as with other potassic salts, such as the citrate or acetate (see Potassium), a degree which, though not very pronounced, yet may lead to valuable clinical results; for the diuresis often will favor the resolvent effect of an iodide, so that, where dropsy is a feature of a case for which an iodide is to be prescribed, the potassic salt is peculiarly the one to be selected. As to the gastric irritation apt to follow large doses of potassium iodide, this is a well-recognized feature of the action of the salt if the same be given in strong solution; but by the simple device of making the solution quite dilute, this and also all other symptoms of iodism are rendered much less likely to occur. According to Seguin,¹ the tendency to stomach derangement is still further lessened by giving the iodide in a slightly alkaline and also effervescent water, such as Vichy, or, where this is not obtainable, in the same quantity of plain water alkalized by a pinch of sodium bicarbonate.

Potassium iodide is absorbed and eliminated rapidly, and is available for all the purposes of the iodides as set forth in the first section of this article. As to dosage, it is rare that any useful effect follows a smaller daily allowance than 1 gm. (gr. xv.); generally, indeed, from two to three times such quantity will be necessary; and very often—notably in organic affections of the central nervous system—the daily quantity must be pushed rapidly to a range between 8 and 24 gm. (3 ij.-vi.), else a valuable, possibly even curative effect will wholly be missed. In all cases the daily allowance should be broken up into at least three doses; and, especially where the quantities are large, the precautions of giving the salt in an abundance of fluid, and also of giving frequent draughts of water during the whole period of the medication, should carefully be observed. For a vehicle, the one described above is decidedly preferable to the syrupy mixtures so often prescribed, and what other medicines may also be indicated in a given case are best administered by them-

selves at different times from the iodide. The United States Pharmacopoeia makes official *Unguentum Potassii Iodidi*, Ointment of Potassium Iodide, containing twelve per cent. of the salt incorporated in benzoinated lard. The ointment is designed for the local treatment of surface indurations.

Sodium Iodide, NaI. The salt is official as *Sodii Iodidum*, Sodium Iodide. It occurs as "colorless, cubical crystals, or a white, crystalline powder, odorless, and having a saline and slightly bitter taste. In moist air it deliquesces and becomes partially decomposed into sodium carbonate and free iodine, assuming thereby a reddish color. Soluble, at 15° C. (59° F.), in 0.6 part of water, and in about 3 parts of alcohol; in 0.33 part of boiling water, and in 1.4 parts of boiling alcohol" (U. S. P.). The salt should be preserved in well-stoppered bottles.

Sodium iodide bears to the potassium salt the usual relation of a sodic to a potassic chemical brother. It is less depressing, less irritating, and less diuretic, but also, though efficient enough in ordinary cases, is less reliable in those cases that test medicinal potency most severely. The salt is to be given in the same doses as potassium iodide, and with the observance of the same precautions.

Ammonium Iodide, NH₄I. The salt is official as *Ammonii Iodidum*, Ammonium Iodide. It occurs as minute, colorless, cubical crystals, or a white, granular powder, without odor when colorless, but emitting a slight odor of iodine when colored, and having a sharp, saline taste. The salt is very hygroscopic, and soon becomes yellow or yellowish-brown on exposure to the air and light, owing to the loss of ammonia and the elimination of iodine. Soluble at 15° C. (59° F.), in 1 part of water and in 9 parts of alcohol, in 0.5 part of boiling water, and in 3.7 parts of boiling alcohol. When heated on platinum foil, it evolves vapor of iodine and volatilizes completely without melting" (U. S. P.). From the proneness of this salt to deliquesce and to generate free iodine, the Pharmacopoeia enjoins that it be kept in small, well-stoppered bottles, protected from light, and that samples deeply colored be not dispensed until deprived of free iodine by proper treatment.

Ammonium iodide exhibits the usual properties of the iodides, and may be used for the usual purposes. As usual, contrasting ammoniac with potassic salts, the ammoniac is less depressing than the potassic, but is inconvenient because of its readiness to decompose with the objectionable evolution of free iodine. Ammonium iodide is generally prescribed in smaller dosage than the potassic salt, the daily average being from 1 to 2 gm. (gr. xv. to xxx.). It should be given in plenty of fluid, and the solutions should not be kept too long, and while kept should be well protected from light.

Strontium Iodide, SrI₂·6H₂O. The salt is official as *Strontii Iodidum*, Strontium Iodide. It occurs in "colorless, transparent, hexagonal plates, odorless, and having a bitterish, saline taste. Deliquescent, and colored yellow by exposure to air and light. Soluble in 0.6 part of water at 15° C. (59° F.), and in 0.27 part of boiling water. Also soluble in alcohol and slightly in ether" (U. S. P.). The salt should be kept away from the light, in dark amber-colored, glass-stoppered vials.

Strontium iodide acts like the iodides of the alkalis, but is more slowly absorbed, and is believed to have less tendency than the potassium iodide to irritate the stomach or intestines. It is given in solution, in doses ranging from 0.32 to 1 gm. (gr. v. to xv.). *Edward Curtis.*

¹ E. C. Seguin: Archives of Medicine.

IODINE.—Iodine is official in the United States Pharmacopoeia as *Iodum*, Iodine. It is described as "heavy, bluish-black, dry and friable, rhombic plates, having a metallic lustre, a distinctive odor, a sharp and an acrid taste. . . . Iodine imparts a deep-brown, slowly evanescent stain to the skin, and slowly destroys vegetable colors. Soluble in about 5,000 parts of water, and in ten parts of alcohol at 15° C. (59° F.) with a brown color; also freely soluble in ether, and in a solution of