
Iodine
Historically, Physiologically and Therapeutically
considered.

James Young.

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Iodine.

Although much has been said, and written on this most important chemical element, still there is room left for making it the subject of a Thesis; more especially ~~since~~ since it is proving itself every day to be a greater boon in the treatment of many diseases which not long ago were styled incurable. Iodine seems to have been discovered by a Frenchman called Courtois, in the year 1800, but was not much used until the year 1820 when its therapeutic virtues were carefully noticed by Dr. Coindet senior of Geneva, who tried it first in practice. It seems to have been discovered as it were by mere accident during the manufacture of carbonate of soda, when Courtois observed in the residuum a brown substance, which was found to possess very corrosive properties; it was afterwards examined by a celebrated Parisian chemist, and received its name Iodine. The nature and properties of this substance were afterwards carefully examined by two celebrated chemists, Davy and Gay Lussac, who determined it to be

+ such as *Myosotis palustris*, *Mentha sativa*,
Menyanthes trifoliata, *Equisetum limosum*,
Ranunculus aquatilis, *Potamogeton densus*,
Chara vulgaris, *Iris pseudacorus*,
Phragmites communis, & fishes of coal. (Macadam)

a metalloïd, or non metallic substance, having some resemblance to chlorines. Iodine is often found in Nature combined with various metals, such as Sodiums, Potassium, Zinc Lead and others, which metallic compounds are easily recognised from all others, by the facility with which their acids are decomposed, by deoxidising agents. There are some marine plants in which Iodine is found very abundantly, and it is supposed that these plants derive what Iodine they contain from the sea water, — a supposition which is far more feasible, than to say, that the plants generate the Iodine themselves.

The plants in which Iodine is most abundantly found are sea weeds, as *Fucus Digitatus*, *Fucus Serratus*, and many others. ⁺ It is also found in some marine molluscos animals & Sponges. It is also present in the water of many lakes and Seas.

The principal source of Iodine is Kelp, which is merely a name for the impure carbonate of Soda. From Kelp the medicinal carbonate is obtained, and a black residuum is left, which contains the substance called Iodine.

but to obtain it pure, the residuum must be heated in a retort, and some acid either Sulphuric or Nitric be added, when dark fumes rise up through the tube of the retort, & sublime in the cold part of the apparatus, This then is pure Iodine; it has a dark brown colour, is shining & scaly, & has a metallic lustre, which might lead some to class it among metals, but as it is a non-conductor of electricity, that is impossible, but still according to the experiments made by Mr. Kemp, it seems that ^{it} becomes a conductor of electricity, after it is fused in a furnace, but that causes it to lose the lustre, so that neither in one way ~~nor~~ other, is Iodine a metallic body.

Iodine is generally termed soluble in Water, but as it requires 4000 times its weight for solution, it may almost be called insoluble, but by late discovery, Iodine can be dissolved in water on the addition of a little of the syrup of Orange Peel; When this was observed by the Frenchman, he was led to enquire, What was the principle in the Orange Peel, that caused the solution of the Iodine? and on examination he found it to be

Tannins, This he proved by trying the effects of a solution of Tannins on Iodine which was slowly destroyed by it, & at last the whole was held in solution, I have tried this experiment myself, and found it to be correct.

Iodine is quickly dissolved in Alcohol, forming the Tincture of the Colleges, its specific Gravity is 4.95 or according to Dr. Thomson 3.084.

Iodine is easily detected when in solution by various tests; among which starch is about the most convenient, and when added to a sol. of Iodine, it immediately strikes a blue precipitate of the Iodide of Starch, There are various other tests such as Milk of Lime, which causes the sol. of Iodine to lose its colour.

Iodine has a peculiar irritating odour, a very acrid taste, and a black shining scaly appearance by which, it can be easily detected from all other substances. It is very brittle, and easily reduced to powder; it is a very deep dye, staining the skin yellow at first, and then deep purple when long continued.

Iodine derives its name from the Greek word $\iota\omega\delta\eta\varsigma$ violet coloured, it fuses at a temperature of 224° and when heated up to 346° .

it boils, and distils over, as a deep violet vapour. When Iodine is dissolved in a solution of the Iodide of Potassium, there is formed the Iodine liquor Compositus of the Pharmacopoeias, a preparation not much used in medicine. When Iodine is triturated with Lard, it forms the Unguentum Iodini but to form the compound Iodine ointment there is Iodide of Potassium & Rectified Spirit used also, in certain proportions.

Iodine resembles Chlorine and Bromine intimately, and like them it unites feebly with Oxygen, with which it forms two compounds, Iodic, and Hydriodic acids. The compounds of Iodine are more used than the element itself; the most important compound is the Iodide of Potassium, which is now used, in the treatment of various diseases, & with marked benefit, and it will be more widely used, as medical science advances, & disclose its usefulness, but in the mean time, it must be allowed that as some think it a valuable medicine, others think it almost inert, though I must say unjustly. The Iodide of Potassium was discovered

by Courtois, about the year 1813, It is a white shining salt, the crystals having a cubical or Rhombic form; it has a faint smell of Iodine, when perfectly pure, but it is seldom obtained thus. When crystallized from water, the salt is much purer, and the crystals are much larger than those made from spirit, they are opaque and colourless. It is often of great importance to be able to detect any form of Iodine when in solution; so I shall just mention the more common tests here. The first is Starch which gives with a solution containing Iodine a blue precipitate of the Bimiodide of Starch, but not unless some acid has been previously added. The second & perhaps the best is a solution of Corrosive Sublimate, which gives first a grey, and this changes into a red precipitate. Any salt of Lead will produce a yellow precipitate of the Iodide of Lead. The best way to obtain pure, the Iodide of Potassium is, to dissolve Iodine in a hot solution of Potash, which forms the salt in question along with the Iodate of Potassa, The latter salt may be decomposed by sulphuretted Hydrogen, leaving the Iodide pure. But

The process is somewhat varied by almost every manufacturer,

The actions of this salt are very numerous so that I will consider its physiological, and therapeutic actions under one head, namely along with Iodine itself. Its actions on the body are poisonous in very large doses, and irritant. It acts as a Diuretic, Deobstruent, and alterative; a good form to prescribe it, is \mathcal{R} Jodidi. Potassii. \mathcal{Z} iii. Aquae \mathcal{Z} iii. And of this 25 drops 3 times a day. This salt is undoubtedly often adulterated with Carbonate of Potash, or as some say, a little of the Carbonate remains in it after preparation. But by whatever cause, it is important to be able to detect it, therefore it has been proposed, to rub a little of the salt in a mortar, with an equal weight of the Muriate of Ammonia, and if any impurity is present, the operator will feel an odour of ammoniacal gas given off.

When Iodine and Phosphorus are brought together, union takes place with light, and ending in the formation of a new compound the Iodide of Phosphorus. Iodine also unites

with various other elements, such as Chlorine, Sulphur, Nitrogen & others, I shall now consider the physiological actions of Iodine; then medicinally in large and small doses, and lastly the diseases in which it may be beneficially employed. When Iodine is applied to the healthy skin it produces a change similar to the action of the Tincture, namely corrosion of the integuments, & desquamation of the cuticle, accompanied with slight pain, itching, and a degree of warmth. When Iodine is introduced into the tissues of the body, the pain is much more severe, and acute inflammation is liable to follow. (Instance) (When a drachm of Iodine was introduced into the body of an animal, there was no immediate symptom of pain, but in about Ten days after, there was considerable swelling of the part, with diffuse suppuration of the limb, & severe pains.) The vapour of Iodine is very irritating to the nostrils, and often produces headache. The Tinct. of Iodine has been injected into the veins of an animal, without producing

any bad effects, except loss of appetite and lassitude, recovering from the symptoms a few days after.

Iodine when taken internally causes a desire for food in some persons, in others a slight disease of the mucous coat of the stomach more likely functional than organic, as generally the pain excited in the region of the stomach, soon passes off. It has been said that Iodine acts as a Diuretic, but this is very doubtful.

Sometimes it produces an eruption of the skin of the nature of acne, which disappears in from 15 to 20 days.

I shall now pass on to the consideration of the medicinal actions of this remedy and first in Large Doses.

Here there is a feeling of uncertainty among Practitioners generally, regarding the action of Iodine in large doses. In some people it produces no bad effects at all, while in other constitutions it causes severe pains, and often very alarming symptoms. From the experiments by Logswell and others, it has been proved, that when a dog was made to swallow a drachm of the Tincture, it died in great agony, about the 10th day.

The Iodide of Potassium has much the same effect in large doses, but does not act so powerfully except it is sustained for a long time. Thirty grains of Iodine have been given to some people daily for a length of time, without any serious results, while in others again smaller doses prove injurious; but this is the case with almost every medicine.

When death is produced by this medicine, the Post Mortem appearances are almost always of a uniform character, namely, redness of the mucous membrane of the stomach, with occasional yellow spots, & slight spæculation of some portions of the mucous coat. The bowels are also affected in the same way, although not to such a degree. The urine is also tinged and possesses a strong smell of the Iodine. And according to Orfila, he observed numerous ulcers in the great cul de sac.

When large doses are continued for a long time, there is observed fulness of the tongue with deep sulci running in both directions.

Small Doses.

The most important action, that Iodine possesses over the scrofulous constitution, is

that of exciting the system, and inducing the state of Iodism, similar to the action of Mercury in inducing Mercurialisms:

In order to produce this action, the remedy must be administered in small quantities, and continued regularly for some days. The symptoms of its approach are 1st Headaches, Nausea, Drowsiness, Want of energy, Lassitude and loss of appetite; the pulse becomes first weak, then frequent & full; the countenance assumes a sallow colour, and if the remedy is not stopped in time, the results may prove very serious. All such consequences from the use of Iodine, can be easily prevented, by stopping its administration, as soon as the Iodism comes on.

Under such a course of Treatment enlarged glands yield, the scrofulous tendency is diminished, the hypertrophied liver lessens in size, the various secretions of the body are corrected, such as the bile, the salivary & others. Small Doses of the Tincture of Iodine seems to act as a diuretic, and alterative, in the same way as the Iodide of Potassium does, although the former action is doubted by many.

Like many other medicines, Iodine disagrees

with some, producing immediately painful sensations in the bowels, accompanied with sickness, and diarrhoeas, also frequent eructations causing the patient to feel the taste of Iodine for days after; the nervous system, is also sometimes peculiarly affected, in some cases producing severe headaches, and in others, as has been known in the practice of Sir Benjamin Brodie, causing paralysis of the limbs.

I have already mentioned that Iodine excites the secretion of Saliva, but it is remarkable, that the state of Ptyalism is never produced completely. The most remarkable action of Iodine is causing Atrophy of the Mamma in the female, and Testicles in the male, but this does not occur until the system has been fully brought under its influence.

Iodine acts as a Sudorific, but not until large doses of it have been given; of course Iodine is never ~~taken~~ to produce this effect, which as well as that of giving the skin the appearance of being smoked are purely physiological actions. It is allowed by all, that Mercury accumulates in the system, when it is ~~is~~ taken in continued doses, but when the question is asked Does the Iodide of Potassium accumulate?

I think the answer, must be given negatively, at least it may be safely called a *Questio Nexata*, the following case may be safely adduced to prove what I have said, A Gentleman has been known to take 15 drops of the Tincture of Iodine for 48 hours together; four hours after the last dose, Iodine was detected in the urine, and also in the Saliva, by the application of the proper tests. Some recommend that a small quantity of the Chlorate of potash should be added, in testing for Iodine in the urine, but that is quite superfluous in most cases; For Iodine to find its way into the urine thirty or forty minutes, must be allowed, If a drachm of the Syrup of the Iodide of Iron be administered to a man, and his urine tested forty minutes afterwards, Iodine will be found present, the quantity of precipitate diminishing as the medicine is lessened, Dalton agrees with Prof. Christison in calling this medicine non accumulative. The time for elimination is not proportionally increased by the dose which may be given, If Iodine then does accumulate in the body, it must necessarily

be in so small a quantity, as proves innocuous. I have stated before that Iodism is produced from the effects of Iodine on the system, but it may be asked, can this physiological state be induced by the Iodide of Potassium? I answer Yes, although this must be allowed, that larger doses of it will be required, than of Iodine, and to be continued for a longer time. Some would ^{deny} this action altogether, but experiment has proved it more than once,

The doses of any preparation of Iodine ought to be duly regulated, and administered cautiously, as many cases are on record, where the lives of patients, have been placed in imminent danger from too large doses having been given. When it was first used in cases of Bronchocle, it was sometimes pushed to extremes, and then the evil effects produced, caused the medicine to fall in the estimation of the professions. When it is administered in very large doses, instead of producing benefit, it does harm.

Iodine acts as a tonic in the form of the Iodide of Potassium, but this has not yet been fully proved. When ^{the} Iodide is given in small doses, there are many unimportant effects produced

on some of the secretions and organs of the body, which may be now noticed, sometimes patients complain of loss of appetite, nausea, giddiness, & headache, and sometimes though very rarely, convulsions have come on, but these may be ascribed to some other cause than Iodine; thirst is sometimes increased, but the actions on the uterus are more remarkable, the emmenagogue virtues having been so powerfully developed, as to cause abortion; When the symptoms arising from the use of Iodine, assume an alarming aspect, the best treatment to follow, is the application of warm poultices or fomentations to the pit of the stomach, anodyne enemata, laxative medicine, with perhaps a little opium; There are peculiar effects produced on some constitutions, during the administration of this remedy while it is altogether inert upon others; such peculiarities are called *Iodiosyncrasias*.

Majendie tells us, that he has taken a teaspoonful of the strong Tincture of Iodine, without any injury, and that a girl has taken the same quantity, but it is quite possible, that in the case of the child, she might have taken some starchy principle previously by way of food, and when the Tincture was given, it

would immediately form the inert compound Iodide of Starch. Such is my supposition, as starch forms one of the most delicate tests for its presence.

Sometimes a grain of Iodine cause alarming symptoms, such as vertigo, headaches, pain over the region of the stomach, requiring the discontinuance of the medicine, & soothing remedies to obtain relief.

I shall now proceed to consider Iodine as a Therapeutic agent, and among its most important actions over the diseased body, is that of an alterative. Other drugs have ^{been} thought as beneficial as Iodine in this respect, but none hitherto has displaced it, or I think ever will. Mercury & Sarsaparilla have their advantages, but for Second^d Syphilis, Bronchocela, disease of the bones &c. none can equal this one now in question. I have witnessed myself many hundred cases of Syphilis treated by the Iodide of Potassium with great success, by combining it with other remedies, chiefly local. Rheumatism also may be treated with the same medicine, but beneficial as it is, there seems to be a tendency to abandon it, and to employ Lemon juice, which I must say is most useful.

The forms or preparations of Iodine are the following, 1st the metallic Iodine. 2^d Iodide of Potassium 3^d Tincture of Iodine. 4th Iod. Potassii: Comp. 5th Unguentum Iodini. An old form of prescribing it was in the form of pills, but this now is abandoned; the principal form now, is the liquor, either of the simple or compound form, Liq. Iodini Comp. and the Tincture in different doses.

The Tincture is more used externally than internally, but there are 2 very common kinds of Dropsy, for the cure of which, the Tinct. is now very commonly employed, namely Ascites, and Hydrocele. With regard to the former, I have seen it cured ~~successfully~~ by the injection of Iodine in a form to be afterwards described, as for the latter, it is so common as not to require any particular notice here. The ointment is a very good form for application to glandular enlargements, as a Deobstruent,

The Diseases in which Iodine and its preparations may be beneficially used are very numerous, they are Scrophula, Syphilis Bronchiae & other glandular enlargements, Rheumatism, Hydrocele Ascites, Skin Diseases, Enlarged liver, Gonorrhoea Leucorrhoea Amenorrhoea; there are others, but these are the most important;

and as Syphilis is the most important, I shall commence by treating of it first, Syphilis.

To enter into the treatment of all the stages of this disease would take up more space than can be given to it here, I shall only speak of the treatment generally, with especial reference to the stage in which the Iodide of Potassium is useful.

Great difference ^{of opinion} at present exists among the members of the Medical Professions with regard to the treatment of Syphilis, some would treat it with Mercury, others again with Iodine or it may be Sarsaparilla. I have seen many hundred cases of Syphilis treated during my medical apprenticeship, and most of them with success. During the acute stage, lint soaked in warm water & applied to the sores, at the same time giving a little mercury and saline purgatives internally is the best treatment. In four days afterwards, the alterative remedies must be put in action, and this is to be done by administering the Iodide of Potassium in 5 grain doses 3 times a day. When the acute stage has gone by, Beed Lotion may be substituted for the warm water. The secondary type of the disease may be treated with Iodine also.

But in some cases where the eruption remains after this remedy has been tried, the solution of Donovan's will be found serviceable. The Hydriodate of Potash is very useful in cases of Tertiary Syphilis, where the constitution has been saturated with the poison of Syphilis, and Mercury, and where the bones have even become affected. I shall here mention one case of the Tubercular form of Venereal eruption, which was ultimately cured by this medicine. The patient was a young woman who complained of ulcerated throat, and ulcers on the scalp; she was treated with the Nitrate of Silver applied to the ulcerated surfaces, followed by poultices, and ʒiain doses of the Protoiodide of Mercury, which was pushed to salivation. She was sent to the country for change of air, and took now large doses of the Iodide of Potassium, under which treatment she soon recovered, save the symptoms of Iodism which came on in a few days after. Some physicians prescribe small doses of Iodine in cases of Syphilis, accompanied with immersion in a bath containing Iodine, occasionally. The bath is given in the fol-

following way, one drachm and a half of the Iodide of Potassium, with a little common salt is added to the water of the bath, and after the patient is in, one drachm of the Tincture of Iodine is added. The patient is then put to bed, and perspiration is to be produced, and kept up for some hours together; after the bath the dose of the Iodide is to be increased from 5 to 8 grains 3 times daily. Before leaving this subject, I shall mention two cases, the first which I saw personally, and the last which I received from a Friend.

The patient was a young woman who was labouring ^{under} Syphilis; she had ulcerated throat, & eruption over the body; she stated that she had been treated with Blue Pills, but had experienced no relief. She was then ordered to take 6 grain doses of Iodide of Potassium 3 times a day, and to use a gargle of sulph. of copper $\mathfrak{z}i$ ad $\mathfrak{z}i$ for her throat. In 14 days after, the eruption was gone, and in about 3 weeks, she was quite well; but as in every case the Iodide was continued for some

time afterwards, in order to prevent any return. The second case was that of a porter, who was labouring under Tertiary Syphilis; he complained a good deal of pains in the joints, and he had also a large ulcer on the arm, showing the syphilitic characters. ~~He~~ was treated with the same remedy, under which he gradually recovered. Some medical men hold that Mercury acts as a specific over this virulent disease, all I have to say on that point is, that I never saw it; when the system takes on the train of symptoms, which mark the mercurial cachexy, there is no remedy so useful as the Iodide of Potassium.

We have seen that Iodiosyncrasies happen under the use of Iodide of Potassium. As there are cases, which occur under the exhibition of Mercury, Phylism is sometimes produced very soon, & by very minute doses, while in others again, it is not produced for some time, and by much larger doses.

Bronchocele, or Goitre.

This is the first disease for which Iodine was ever

employed as a remedial agent, and since then it has been more & more used, until now it is regularly ordered in almost every case, and by almost every surgeon,

Bronchocele is more common in females, than in males, and in certain districts, than in others, such as Derbyshire, where I am told every 2 or 3 women you meet, has this enlargement, and therefore it is called the Derbyshire neck. It is very common in Switzerland Tyrol and Savoy. It seems to be caused by drinking a certain kind of water for a long time, as it often disappears upon change of the drink.

Bronchocele is an enlargement of the thyroid gland, which not only impedes the respiration and deglutition, but prevents the free return of the venous blood from the head,

The treatment of this disease consists in first (when possible) removing the patient from the locality, and prohibiting ^{rather} him from using the water, which may be supposed to have caused the disease. Sometimes the treatment alone affords great relief, but in some cases additional remedies must be tried, particular-

by, Iodines, first in the form of the Tincture, coating the swelling with it, twice or thrice a day, so as to cause corrosion, and desquamation of the cuticle, this must be repeated regularly for some length of time, in order to cause the gradual absorption of the tumour.

But advantage must also be taken of the deobstruent effects of the Iodide of Potassium, by giving it in doses of 6 or 8 grains thrice every day.

There is another method of treating this disease, namely, by the application of Blisters to the tumour successively, I saw a case in the surgical Wards last year, where an immense goitre was completely removed by this treatment.

Instead of the Tincture of Iodine, the common *Unguentum Iodini* may be used, which seems to act almost as powerfully as the Tincture. So strongly was the Iodide of Potassium recommended some time ago in cases of Goitre and other affections, that it was considered by some a specific remedy; But notwithstanding the benefits resulting from its exhibition, it is hardly entitled to be regarded, as a specific, there being few if any in the whole range of the *Materia Medica*.

In the practice of an eminent surgeon, there were 300, out of 364 cases of Bronchocele cured by this treatment.

Before the Iodide of Potassium is administered, the system should be brought into an otherwise healthy condition, as the benefit which is expected to accrue from the use of such a remedy, depends to a great extent on the state of the general health.

Before Iodine was introduced into practice, this disease, was generally treated by the exhibition of burnt sponge, and the ashes of some sea weeds, such as the various *Fuci*, which are known to contain the essential principles of Iodine.

It has sometimes happened that the Thyroid gland becomes enlarged, by the accumulation of a watery fluid like serum, thus simulating the ordinary tumour, and requiring careful manipulation in order to arrive at a proper diagnosis, and course of treatment.

Bronchocele is very generally simple in its nature, and structure, but in other cases again it may be cartilaginous, osseous, and even in some cases malignant. In any of these three

cases last mentioned, no one would ever think of removing them by the Juncture of Iodine as that would most likely ^{prove} unavailing; the only resource being excision by the knife, an operation which few surgeons are willing to undertake.

Scrofula. The necessity of a thorough knowledge of the nature of this disease, as well as its symptoms and treatment, is of the greatest importance. Since it appears from the researches of D. Alison and other eminent medical practitioners, that on an average one third of the whole children of Edin: are continually labouring it. Such being the case, there is clearly great need for instituting further investigations into its nature and treatment. Let a few words suffice here regarding the nature of the disease, before we pass on to our more immediate department, its treatment by Iodine. Scrofula is undoubtedly a constitutional malady, in which there is in many persons, particularly in early life, a tendency to the deposition of Tuberculous matter, in some of the organs of the body, most frequently in

the lungs. The primary symptoms of the disease are generally not sufficiently attended to, by the parent or guardians, otherwise the mortality would not prove so great. The disease generally commences with, loss of appetite, Diarrhoea and pallor of the countenance, but the most characteristic proof is the enlargement of the superficial cervical glands. Tuberculous matter now commences to be deposited in the more important parts of the body, Hectic fever attended with emaciation then ends the patients sufferings in ^{the} calm repose of Death.

One marked peculiarity in the progress of this disease, is that, the stomach soon becomes capricious, and generally remains so during the life of the patient.

Those are most liable to become subjects of scrofula who being predisposed to it, are in any way subjected to its causes, such as exposure to cold & moisture, insufficient and unwholesome food, imperfect clothing, and ill ventilated houses, But there are various trades also, which predispose to it, and induce the strumous habit of body, these are Glass dressing, coal heaving stone hewing, and many others, where particles

of foreign substances are inhaled during ordinary respirations.

The question may be asked, Is Scrofula contagious? a question which we would be disposed to answer on the negative, at least according to Dr. Bennett and others, but it is undoubtedly a hereditary disease, Tubercle may assume various forms, when it is deposited in the body, It may be Miliary, Infiltrated or Calcareous. When it commences in the lung, it fills up the air cells, and condenses the substance of the organ, then as the tuberculous matter softens, and breaks down, expectoration commences, and gradually large vomicas are formed, which may eventually heal up, and the patient recover, ^{Bennett,} but more usually go on, becoming larger, and ending in death.

Such is a brief account of the nature and termination of Scrofula, and now we come to the consideration of the treatment by the use of Iodide of Potassium, and other remedies.

Some would ascribe the cure of this disease to the change of air, and the removal generally of predisposing causes, but although such general treatment may be beneficial, & necessary

other means must be tried,

Owing to the great success with which Vincolet's experiments were attended in treating Bronchocle with Iodine, he was induced to try its effects in Strumous affections, and here also he found it most beneficial. It is necessary in every case of Scrofula to administer the Iodide of Potassium internally in large doses, in order to produce its effect.

When the cervical, or other superficial glands enlarge, the Tincture must be applied unsparingly; to cause absorption of the exuded matter.

During such treatment, the patient should be removed to a mild climate, and particular attention paid to the state of the bowels, as well as to diet and regimen.

The Iodide of Potassium is very useful in cases of Scrofulous inflammations, such as Strumous Ophthalmias, Iritis &c. especially when combined with skillful surgical treatment.

We might here cite many cases of the complete cure of Strumous affections by the use of this remedy, but the following striking examples may suffice, (which are taken from works)

A Young Lady who had suffered under Strumous enlargement of the cervical glands for many

years, was at length treated with Iodide of Potassium in ʒ grain doses three times a day for one month, also with the external application of the Tincture regularly 3 times a day for the same period, when she completely recovered.

A similar case happened once at a Parisian Hotel, where a young woman, who had suffered from a stercuous affection of the Breast for two years previous, was completely cured by the application of the Iodine ointment in six weeks.

Dr. Manson relates many cases of glandular enlargements, and scrofulous ulcers, which were cured by the same remedy, but he was accustomed to order the Tincture of Iodine along with the Iodide of Potassium, a combination, which is still followed by some physicians.

The Iodide of Potassium seems to act principally in glandular enlargements as a deobstruent, and in the scrofulous cachexy as a general Tonic and Alterative.

Cases have been recorded where Caries and Neurosis of the bones, in connection with scrofula

have been cured by this remedy, when combined with proper surgical treatment. It seems to act in such cases, by arresting the progress of the disease, and in bringing about some reparative action in the part.

The Disease most nearly allied to Scrophula is Phthisis Pulmonalis, but here Iodine or any other remedy is of little avail.

From Statistical calculations, it would seem that one third of the population of Great Britain die from consumption; hence there is great necessity for endeavouring to find out some means of curing, or at least alleviating the distressing symptoms, attendant on such an extensively prevailing malady. Hitherto for the cure of Phthisis Pulmonalis, medical aid has proved very inefficient, as the disease seems to baffle all attempts to arrest its course, and with scarcely a single exception, it is fatal in the end.

Remedies without number have been proposed for the treatment of Phthisis, and among the rest Iodine has been thought to assuage the symptoms attendant on the disease.

The best form in which it can be administered, is that of vapour, but unless it is employed

at the commencement of the disease, like all other remedies, it is useless.

Cases have been cited, where pulmonary affections, with Tubercular deposits, have been cured by counter irritation on the chest, regulation of temperature, and diet, with the administration of large doses of the Iodide of Potassium three times a day; but whether the cure ought to be ascribed to the counter irritation, the regimen, or the Iodine, it is somewhat difficult to determine.

Great caution is necessary in the administration of the vapour of Iodine, there being considerable danger attending its use, after a certain stage of the disease has passed for instead of alleviating the symptoms, it will then increase them, & hasten the progress of the disease.

Sir James Murray, by various experiments has proved that Iodine is useful in certain cases of Phthisis, while Dr. Elliotson has proved that it is of no avail whatever,

If there are any cases in which benefit has resulted, there are many more where there has been none, but if it is to be useful at all, it is only at the earliest stage of the disease.

Dr. Baron & Gairdner have arrived at this conclusion, after many experiments & researches.

Ascites.

By this term is meant, Dropsy of the abdomen, or a collection of fluid in the peritoneal cavity. The term ascites is derived from the greek word, ασκος a bottle, from the abdomen presenting that appearance.

In the treatment of ascites Iodine is pre-eminently useful. Two methods may be employed in the treatment of this disease.

The first is, by administering internally, large doses of Diuretics, along with the Sulphide of Potassium. If that should fail, (which it probably will,) the operation of Paracentesis abdominis must be performed. Great care is necessary, in performing this surgical operation.

If the patient is sitting up, the abdomen must be bound, with a broad flannel roller, & tightened by the assistants as the fluid is drawn off, in order to prevent any tendency to fainting; but according to Prof. Simpson, there is no necessity for the abdominal bandage, provided the patient lies in bed, and on the left side,

so as to favour the flow of the serous fluid. The Trocar and Canula are inserted in the line of the linea alba, midway generally between the pubes and umbilicus. If nothing more is done than the mere tapping, the fluid soon re-collects, and the disease is as bad as ever.

The radical treatment consists in the injection of a solution of the Iodide of Potassium and Iodine in water, into the cavity of the peritoneum, which is allowed to remain 3 or 4 minutes, and then drawn off through the Canula. Such a course of treatment may seem to the unexperienced a harsh and dangerous procedure, but it is not so.

The writer has personally witnessed 4 or 5 operations of this nature, where no more inflammation was produced, than what was requisite for the cure of the disease.

One case was that of an old man, who had been tapped for Ascites 10 times, about the interval of 10 days intervening between each operation. On the water collecting the eleventh time, a solution of Iodine was injected after the greater portion of the fluid was drawn off. He remained well, & was able to go about for nearly 2 years,

when the fluid recollects.

We may mention another case, which came under the observation of Monsieur Costes about two years ago, and which has since been readed to us. The Patient was a rope maker, who at the age of fifty, was seized with Ascites, after several attacks of Inflammation and Intermittent fevers. He was tapped frequently, but without any permanent benefit. At length he was treated, by the injection of Iodine, which was retained for two minutes, and then was drawn off. Soon after the operation he complained of severe pain, in the region of the left Iliac fossa, It soon subsided, but returned with greater intensity, accompanied with rigors, nausea, thirst, and depression of Spirits. But by proper and active treatment he soon recovered, and remained perfectly well.

The solution which is injected into the cavity of the Peritoneum in cases of Ascites. is prepared, by mixing together the following constituents,

R_x Iodidi Potassii ʒss.

Tincturae Iodini. ʒv

Aquae Distillatae ʒiijss solve.

Sig: For Injections. ———

The patient must be confined to bed, for a few days, after the operation, to prevent any inflammatory symptoms coming on, or if showing themselves, the usual antiphlogistic treatment must be employed, such as Bleeding, Tormentation, and Turpentine poultices &c.

The second form of serous effusion, which may be successfully treated with Iodine injection, is Hydrocele, which is a simple collection of fluid in the cavity of the Tunica Vaginalis Testis. The treatment here is somewhat similar, but for the radical cure the Tincture of Iodine, is generally used, instead of a solution, as in the former case, of Ascites. Here also, the lancet and female catheter may be used, instead of the Trocar and Canula, as by that means, we provide against any injury to the testicle. The Tincture of Iodine may either be allowed to remain, or be drawn off. One ounce of the pure Tincture is generally sufficient for the purpose. Formerly Port Wine was used, but all have given place to the Tincture of Iodine, which has been found more effectual and serviceable, and accordingly it is almost universally employed both in private practice,

and in public hospitals,

Rest is absolutely necessary after this operation, and the antiphlogistic remedies must be in readiness, in order to allay any inflammatory symptoms. Hydrocele of the cord in the male, or the round ligament in the female, may be treated successfully, by the application of the Tincture of Iodine externally, which speedily causes absorption of the effused serum.

Œdema of the legs, and Dropsies of the joints have been in some cases cured by the exhibition of the Iodide of Potassium internally, and the local application of the Tincture, or Iodine ointment.

The most wonderful case of recovery under the use of Iodine, is one of Hydrocephalus, which was published in a medical journal lately. The child's head had become very prominent anteriorly, from the chronic effusion, which had lasted for eight months. Iodine ointment was diligently applied to the head, and in two days, it was nearly an inch less in circumference. The same treatment was therefore continued, until a complete cure was effected at the end of three months.

If such a case is true, it is doubtless very extraordinary and uncommon.

Cases of general anasarca have been cured by the use of the Iodide of Potassium.

It would seem therefore, from what has now been said regarding the actions of Iodines in cases of dropsy, that it is of unquestionable benefit.

The class of Diseases to which we have now referred, are those over which Iodine principally possesses a very marked action. Still there are a few diseases of quite a different nature, which may be somewhat mitigated, if not altogether cured by the same remedy.

These are principally nervous diseases, such as Epilepsy, chorea Paralysis, and also Stomachic ulcers, Tumours etc.

Epilepsy.

So far as we are aware, there is only one case on record, where Iodine has benefitted the patient in this intractable malady, that case happened in New York.

It was that of a boy, who having been much subject to epileptic attacks, was treated by the internal administration of the Tincture of

Iodine, taking ultimately 300 drops daily. Under this treatment he permanently recovered. The 300 drops of Tincture seemed to produce no bad effects, as the patient complained of nothing after it, remaining quite conscious after each dose.

Paralysis and Chorea.

According to Dr. Manson these diseases have been partially cured by the administration of Iodine, but its use in these two diseases has been contra-indicated by Professor Christison.

Tumours!

These affections are best treated by the external application of the Tincture of Iodine, the action of which will be noticed hereafter.

Enlarged liver, & spleen, and tumours of the uterus have been resolved by the use of Tincture of Iodine internally, in doses of 15 drops frequently. Ovarian tumours also have been cured in the same way. A case illustrative of this fact has been published by Mr. Sewell. The woman had laboured under a tumour of the left ovary so long, that it had attained the size of a foetal head.

Her suffering was so intense, that she expressed a wish for its removal by operation, (Ovariectomy)

She was placed under the influence of the Tincture of Iodine, after every other remedy had been tried. This treatment was continued for Ten weeks, when the tumour had almost disappeared.

Cases also are on record, where malignant tumours of the Mammæ have been cured by the repeated application of the Tincture of Iodine.

A Lady of middle age, who laboured under such a tumour, was treated with this remedy before consenting to the operation of Excision. The Iodide of Potassium was continued internally, and the Tincture of Iodine externally for the space of five months, when the tumour gradually disappeared, and has never since returned.

Sloughing of the mouth.

This disease is very common among children, and has been successfully treated by the application of the Tincture of Iodine.

A case of this kind is recorded in the *Lancet* for February 1840.

A child had been labouring under this disease for some time, the mucous mem-

brance of the mouth, having become exposed, The Tincture of Iodine was applied repeatedly, which soon stopped the progress of the disease and left a healthy cicatrix, but the child died from Hooping Cough very soon after.

We have thus attempted to ascertain how far Iodine is beneficial in those diseases already adverted to. And we shall now consider some of the dangers resulting from its injudicious administration.

For this purpose we may relate ~~the~~ case of a young lady, who was treated for some time with Iodine for Bronchocle, while resident at Paris. She was ordered to use the Tincture of Iodine externally, and the Iodide of Potassium internally. Soon after commencing this treatment, the swelling rapidly subsided, leaving only a small hernia,

The medical practitioner confident of a complete cure, continued the same course of medicine to an unusual extent, when she was seized with severe pain in the stomach and great general oppressions,

Instead of looking upon such symptoms as an omen of danger, he disregarded them con-

pletely, and continued the same treatment, when she was now attacked with Vomiting, Pain in the abdomen, Thirst, Diarrhoea, and Great Emaciation; her Breasts becoming completely atrophied; and her thighs reduced to the size of ^{an} arm. And it was only by a strict tonic regimen, opiate enemata, Warm baths, and the most careful treatment that she eventually recovered.

We may now proceed to the forms in which Iodine may be prescribed, and the compounds which it forms with other elementary bodies.

The Iodide of Potassium, (called by some the Hydriodate of Potash) is the best form in which it can be administered internally, although some prefer the compound tincture or the compound solution, which are recommended by Professor Christison.

Dr. Buchanan was in the habit of prescribing it with starch; he dissolved 30 grains of Iodine in a pound of starch solution, and of this he ordered an ounce three times a day.

Another useful preparation is, the solution of the Iodide of Potassium and Iodine in

water. Sargol called this, the Iodurated Mineral Water. It is made by dissolving 1 grain of Iodine, and 2 grains of the Iodide of Potassium in eight ounces of Distilled water, and of this, the dose was a tablespoonful every hour.

The Iodine ointment is a very useful preparation, and is made in the proportion of one drachm of Iodine to two drachms of the Iodide of Potassium in four ounces of Ointment.

Sargol advocated the use of the Iodine Bath especially in cases of Phthisis Pulmonalis and other affections of the chest; also Stimulated lotions for various kinds of ulcers, the strength varying according to the character of the ulcer to be treated.

Sincture of Iodine

This is a most valuable preparation, especially for external use, but it may be given internally in small doses.

The Tincture is made by causing proof spirit to act on the metallic Iodine (by percolation) in the proportion of Two ounces, and a half of Iodine to two pints of Spirit.

This is the strength generally used in surgical practice, for reducing enlargements, exciting absorption,

absorption, and for the radical cure of Hydrocele,

The Tincture of Iodine when injected into the cavity of the Tunica Vaginalis, excites that degree of inflammation, which is necessary to prevent the reaccumulation of the serous fluid.

In the *Lancet* of June 1840, Dr. Langen relates several cases where benefit, and in some cases complete relief resulted from the use of the Tincture of Iodine, some of which we mention by way of illustration,

Case I. The Patient was an old gentleman who was affected with pain and tumefaction of the right cheek, the surface was pencilled over with the Tincture, and continued for three days, after which he was completely cured.

Case II. The Patient was a young lady, of rather delicate constitution, who was cured of an attack of Erysipelas of the Face, after two applications of the Tincture of Iodine.

Case III. A Labourer was attacked with an erysipelatous inflammation of the Face, and was cured after two applications of the same remedy;

Case IV. A middle aged man who laboured under inflammations of the right shoulder, and an ulcer on the back, was cured by the application of the same remedy for 3 days successively. We might take many more cases from the same paper, but let these suffice.

Synovitis.

The Tincture of Iodine is only useful in the chronic form of this disease, after the acute inflammation has passed away from actual antiphlogistic treatment. Besides Synovitis it may be used in other affections of the joints, such as disease of cartilage, dropsical effusions, and such like.

Hypopion and Ophthalmias.

The Tincture of Iodine has been used in the form of a collyrium for such diseases of the eye. The collyrium is made by adding 12 drops of the Tincture to 2 ounces of Distilled Water, and with this to bathe the eye three times a day.

This has been highly spoken of in Paris, and is regularly and successfully employed in the treatment of such diseases in the Hospitals there. -

Ganglia of the Wrist.

We have seen several cases of this disease treated successfully by the repeated application of the Tincture of Iodine, although it must be allowed that compression or puncture may be employed as well, if the Tincture fails in producing a cure.

Malignant Tumours,

Carcinoma and Gungus Haematodes of the Mamma have been cured by the use of the Tincture of Iodine, Mr. Fahnstock has published cases of this nature as having been cured by the internal use, and external application of Iodine, but it does not come under our province to vouch for their authenticity.

Leucorrhoea. Gonorrhoea. Fistula in ano, and Non united fractures.

Cases have been recorded where each of those diseases have been cured by the use of Tincture of Iodine internally, and in some cases externally.

Ovarian Dropsy.

This disease has been cured repeatedly, in some cases by excision, and in others by Paracentesis, We cannot understand why the solution

of Iodine, is not injected into the ovarian cyst, as well as into the cavity of the peritoneum, We should like to ask, why should inflammation be produced in the one and not in the other? Cases have not yet been recorded of this kind, but there can be no doubt, of the efficacy of Iodine in ovarian dropsy, as well as in Ascites, Erysipelas, and Puerperal Fever.

We extract a few remarks on these diseases, which appeared in a late number of the Medical Times and Gazette.

Erysipelas.

The Tincture of Iodine is called by some physicians, a specific in the treatment of this disease, but to obtain a perfect cure, it must be used at an early stage of the disease, and frequently applied.

It is equally beneficial in the sthenic as in the asthenic form,

Puerperal Fever.

It has been stated that the Tincture of Iodine acts more beneficially in this disease, when applied to the surface of the abdomen, than either

X
The Tincture of Iodine is useful in cases of contraction of the Palmar Fascias, but the Iodide of Potassium must be exhibited at the same time.

Mustard, Turpentine, or Nitrate of Silver. But it is useful only in the true adynamic form of the disease, Many medical practitioners however think it quite inferior to the common Mustard or Turpentine, So that it would appear, Time must be allowed for further proof on this subject. X

Next in consideration or order come the various compounds of Iodine with metals, and first of the Iodide of Iron.

This may be classed in the more important compounds of Iodine and the metals. It is generally used in medicine as a Tonic. It is prepared by rubbing in a mortar the following materials, 200 grains of metallic Iodine, 100 grains of fine iron wire and four ounces, and a half of white sugar, and dissolved in six fluid ounces of Distilled Water.

The usual tests for its presence in any solution are 1st Its imparting to the fluid

a pale greenish tint, 2^d It is perfectly soluble in water, 3^d When heated it gives off violet coloured vapours, and becomes the sesquioxide.

It may be prescribed in the form of syrup, as it maintains its properties best in that form.

The principal property of the Sodide of Iron is that it rapidly deliquesces when exposed to the open air, and so great is its attraction for water, that it cannot be preserved in the perfect anhydrous form.

Physiological Action of the Sodide of Iron
 This subject has been carefully examined by Dr. A. Thomson, who by way of experiment took 10 grains of the drug himself, Some time after, he took an uneasy sensation at the pit of the stomach, which was accompanied with nausea and headaches, which continued for some time, and gradually left. The alvine and urinary secretions are thickened by the use of iron in any form, but in the case of the Sodide

of Iron, the secretions become pregnant with both of the compounds,

Therapeutically, the Iodide of Iron seems to act as a Tonic and Deobstruent in cases of Scrofula Rheumatism and Dyspepsias,

Some practitioners however maintain that the benefit arising from the exhibition of the drug, is due to the Iron, and not to the Iodine at all,

The Iron acts as a Tonic and the Iodine as a Stimulant, by combining with the alkali of the blood,

Another form of the Iodide of Iron can be obtained by drying up the syrup, till it becomes solid, when we obtain the saccharine Iodide of Iron.

The syrup may be administered in doses of 15 drops to half a drachm, and the Saccharine Iodide of Iron in 2 to 6 grains twice a day,

Two drachms of the Iodide of Iron has proved fatal in the case of a rabbit or other small animal, producing prostration, with dark and frequent urine

evacuations, and death.)

When the syrup is injected into the veins of an animal, the effects are similar. In order to come to some conclusive idea, respecting the actions of the Tonic of Iron, I administered two drachms of the syrup to a tame rabbit, and on watching the results, nothing was observed, but apparent depression and nausea, the animal refused to take any kind of food for 30 hours after, it ultimately rallied.

To the same animal I administered a drachm of the Tincture of Iodine, some time after, The results of this experiment were unsatisfactory as the animal vomited it in a few minutes, I again gave it nearly a drachm of the same Tincture, and the effects this time were more decided, The animal seemed to suffer great uneasiness and pain, complete prostration as it lay in one position for many hours, with complete loss of all appetite: refusing milk or other food for a whole day, however it completely recovered, and was apparently nothing worse of it.

Iodides of Mercury.

These are principally two in number, First: The Proto iodide, and secondly the Bimiodide of Mercury. The former is prepared by mixing together, the solutions of the Nitrate of the Protoide of Mercury, and the Iodide of Potassium, in certain proportions, when a green precipitate will fall to the bottom, which is found to be insoluble in water. But the Iodide or Proto-iodide of Mercury may be prepared in various ^{other} ways. The action of this compound of Mercury seems to be an irritant poison, when given in large doses, in fact all the compounds of Mercury and Iodine seem to act much alike.

(When a drachm of the Iodide of Mercury was administered to a dog, it caused vomiting, prostration, with black fluid above evacuations, and death at the end of the fifth day). Cogswell.)

Its therapeutic actions on the body are well marked. In the form of Pill, it is a useful remedy in Secondary and Tertiary Syphilis, as well as in

strenuous affections as an alterative. It is sometimes prescribed instead of the Iodide of Potassium, especially where preparations of Mercury are necessary. I have seen several cases of Tertiary Syphilis cured by its exhibition. It ought to be given in doses of 3 grains frequently.

The second compound is the Biniodide of Mercury, which may be prepared by mixing together solutions of the Bichloride of Mercury; and the Iodide of Potassium; which causes a beautiful red vermilion precipitate, but if it is exposed to the action of the atmosphere for any length of time, the red powder changes into crystals of a yellow hue.

The actions of this medicine are not so well marked, (medicinally) as those of the Iodide. It is very seldom used in medicine, but when given in doses of a few grains, it acts as a poison and irritant, producing violent inflammation of the stomach.

It contains 2 parts of Iodine and one of Mercury.

The Biniodide of Mercury proves fatal when injected into the veins of an animal. Its medicinal actions are much the same as those of the Iodide, which have been already cited under that compound. It is seldom given internally, but when it is administered for stercoraceous affections, its best vehicle is some vegetable extract. We may here give the recipe for the pills,

Rj Hydragyri Biniodidi ℥j
 Pulveris, Zingiberis ℥ij
 balsamæ Rosæ q. S. ~~℥ij~~

Tere bene, dein dividatur in pilulas XXXVI.

Sig: Una bis in dies.

Iodide of Lead

This compound is of far less practical importance, than any of those already mentioned,

It was by the exertions of Leger, that it was first added to the *Materia Medica*.

Preparation. Take half an ounce of the Nitrate of Lead, and of Iodide of Potassium, dissolve each in nearly a pint of water, mix them together, and collect, wash and

dry the precipitate,

The Iodide of Lead is soluble in Polygenous acids in the proportion of five grains to the fluid drachm,

The acetate of Lead may be employed instead of the Nitrate, as it is a matter of no moment, the resulting compound being the same, in both cases,

The Iodide of Lead is a fine yellow powder, soluble in boiling water,

It is principally used for making the ointment, which is a useful remedy in cases of strumous ulcerations, tumours and enlargement of the lymphatic glands of the neck and other parts of the body, also in affections of the mesenteric glands,

The Iodide of Lead was first tried in practice by Lergol of Paris, but doubts are still entertained whether any benefit arises from its exhibition at all,

When the Iodide of Lead is administered in large doses, it acts as a powerful irritant, causing severe pain in the bowels, attended with constipation, and ending in death if persisted in.

Iodide of Sulphur.

This compound is prepared by heating together four parts of Iodine, and one of Sulphur, the product being a dark brown mass, having a radiating appearance somewhat resembling Antimony. It possesses corrosive properties like the pure metallic Iodine, staining the skin, or any organic matter, with which it is brought in contact.

Its physiological action as observed on the lower animals, is that of producing exhaustion and prostration, with hard abrine dejections.

Its most useful form is that of ointment which may be safely, and beneficially used in many cutaneous affections, such as Psoriasis. Pityriasis, &c.

Iodide of Zinc.

This is a comparatively unimportant preparation of Iodine. It may be prepared by digesting Iodine in water along with an excess of Zinc filings. The solution must then be evaporated,

and the compound in question will be obtained. Like the Iodide of Sulphur it acts as an irritant causing death, when given in doses of a drachm.

The Iodide of Zinc causes severe pain, when applied to a raw surface, and even erodes the healthy skin.

When a drachm is administered to a rabbit, it causes severe prostration for a whole day, ending in death.

The ointment is the only officinal form of the Iodide of Zinc.

Iodine forms compounds with many of the other metals, none of which are used in medicine, consequently they are of no great practical importance to the physician. Those already mentioned are of the greatest importance, what remains such as the Iodides of Copper Gold Magnesium, Platinum, Tin, Silver, are seldom if ever used, and therefore require no comment here.

Although at the same time they may be useful in other branches of science - than medicine.

In drawing this Thesis to a close, we may remark that the article of the *Materia Medica*, on the nature, uses, and advantages of which, we have been expatiating, is one of those medicines, of the *Pharmacopias*; which is extensively, and very beneficially employed in practice.

By stimulating the activity of the Lymphatics, it has been almost regarded as a specific in all enlargements of the glandular system; whether these enlargements may be of a strumous, or syphilitic, character. There are no doubt peculiar circumstances, in which its deobstruent action, may be retarded, or even for the time, neutralized, still as a general observation, it may be held as an established fact, that the discovery of Iodine has done very much to relieve glandular enlargements of all kinds, which have arisen from, or been connected with a sluggish action of the absorbents.

In this the value of Iodine as a therapeutic agent specially consists, and were medicines discovered, acting upon each, and every part of the human constitution with as marked, and powerful

an effect, as Iodine exercises upon the absorbent system, human misery would be relieved to an incalculable extent, and the Art of Healing would assume a much greater certainty of operation, which it can scarcely be said at present to possess.

James Young.
60 George Square
March 1853.