AN INSTRUMENT FOR INTRA-UTERINE MEDICATION.

By J. W. MILLER, M.D., Dundee.

DR. LOMBE ATTHILL, in his communication to the JOURNAL of December 13th, on intra-uterine medication, makes an observation which induces me to send a short description of an instrument which, for some years, I have found very useful in overcoming the inconvenience to which he alludes, namely, that, in the introduction of the probe armed with cotton-wool soaked in carboic acid or other fluid, much of that fluid is wiped off before the instrument reaches the part upon which it is desired to act. To avoid this, I at first used an ordinary flexible catheter with a piece cut off its extremity, but this was not well suited for repeated use. I therefore requested Mr. Young (Edinburgh) to make this instrument for me, which is a modification of the late Sir James Simpson's porte-caustique. It is a silver cannula, eleven inches long, of the calibre of a No. 6 catheter, bent at an obtuse angle three inches from its extremity, and having a knob on its convexity two inches and three-quarters from its extremity like that on an uterine sound. It has a stylette two inches and a half longer, the projecting portion slightly roughened, terminating in a round knob, which, when the stylette is drawn in, closes the end of the cannula, facilitating its introduction, and confining the fluid with which the cotton-wool on the stylette is soaked. The stylette has also a sort of wedge-shaped collar, two inches and a half from its extremity, to enable it to be drawn back into the cannula before the instrument is withdrawn from the uterus. The wool should not be wrapped on the stylette too tightly; and in drawing the stylette with the soaked wool into the cannula, it should be guided in with the fingers, so as not to allow wool and fluid to be scraped off on the end of the cannula. The button-extremity of the stylette now completely closing the end of the cannula, the instrument can be passed up to the uterine cavity without the fluid coming into contact with any part of the passages. After reaching the fundus, the cannula is retracted on the stylette (not the latter pushed forward), and the fluid then comes into free contact with the mucous membrane. Another advantage of the instrument is that it may be employed without the aid of the speculum. It may be also used for the introduction of an ointment or powder, by drawing the button-like extremity of the stylette into the cannula so as to leave a space into which either of these may be packed. For convenience, the instrument might be named an "intra-uterine medicator".

THE THERAPEUTIC VALUE OF THE HYPOPHOSPHITES (IRON, SODA, LIME, AND MAGNESIA) COMBINED SOLUBLE TONIC FOR CHILDREN, ETC.

By FREDERICK CHURCHILL, M.D., F.R.C.S.,
Surgeon to the Victoria Hospital for Children, etc.

WITH the exception perhaps of cod-liver oil, no remedy has of late years been so largely used as "chemical food". Dr. Parrish of Philadelphia first introduced this preparation in the form of a syrup, and it is generally made in this country according to his well-known formula. I have used it both in private and in hospital practice with a certain amount of success; but we know that phosphates in the form of tricalcic phosphate (which is the base of Parrish's preparation) are only assimilable when the digestive functions are in order, and then only to a very limited extent. Moreover, the continued administration of large quantities of sugar is not conducive to the ordinary degree of gastric perfection. The phosphates at all times, from their very intractable nature, must undergo considerable metamorphosis under the action of the gastric juice before being converted into assimilable lactates. It has occurred to me that we might succeed in making a preparation somewhat similar in composition and properties, but which would be an actual solution of the salts of the hypophosphites, prepared according to a definite process of chemical manipulation, instead of being merely a suspension of salts in syrup, and having phosphorus in a higher and more active state of combination.

The delicate salts denominated *hypophosphites* have been employed separately and with success by medical men of eminence in cases to which I will presently allude. The term *hypo*, meaning less or a deficiency of oxygen, has led many to infer that on this account the therapeutic effect would be less marked than in cases where the phosphates are employed. Moreover, preparations of the hypophosphites have not been favourably received by the profession, on account of the very empirical way in which they have been flaunted before the eyes of the public, and the unwarrantably sanguine expectations concerning their therapeutic

value. Notwithstanding such objections, I find that authentic preparations of the hypophosphites are now articles of manufacture for which there is a constant and increasing demand.

Hypothetically convinced of the superiority of these salts as compared with the phosphates, I endeavoured to obtain the most important of them in a compound form which should be palatable and yet practically free from sugar. With the assistance of the Pharmacist to the Victoria Hospital for Children (Mr. J. Laker Macmillan), I obtained a preparation meeting my expectations in every way—a permanent palatable solution suitable for children of all ages, capable of being given either alone or in combination with a light wine. I herewith subjoin a formula giving the percentage composition:

Liquor Ferri Hypophosphitis Compositus.

	Grs. in 100 Minims.
Ferrous Hypophosphite ($\text{Fe O PH}_2 \text{ O}_3 + 6\text{H}_2 \text{ O}$)	2.77
Calcium Hypophosphite ($\text{Ca}_2 \text{ PH}_2 \text{ O}_3$)	3.5
Sodium Hypophosphite ($\text{Na H}_2 \text{ PO}_2 + \text{H}_2 \text{ O}$)	3.5
Magnesium Hypophosphite ($\text{Mg PH}_2 \text{ O}_3 + 6\text{H}_2 \text{ O}$)	1.99
Hypophosphorous (Acid $\text{H}_3 \text{ PO}_2$)	1.66
Water	86.58

100.00

One fluid drachm is equal to—

Ferrous Hypophosphite	1.6	} 6.7 grs. of the mixed salts.
Calcium Hypophosphite	2.	
Sodium Hypophosphite	2.	
Magnesium Hypophosphite	1.1	

This liquor, associated with British raisin wine or Hungarian Carlowitz, as supplied by Max Greger, in the proportion of one of the liquor to three of the wine, may be given in half-ounce doses to children about ten years of age. It contains, according to the above formula, 6.7 grains. I prefer giving the solution in about ten-drop doses to young children. Carlowitz as a vehicle is more suitable for adults; its value being enhanced by the fact that it contains naturally two per mille of iron phosphate. It is therefore best adapted as a vehicle for the administration of the liquor when given as a nerve tonic in general debility, especially in cases of exhaustion from excessive strain upon the nervous system. Raisin wine is very suitable for young children. It contains just sufficient grape-sugar to favour the assimilation of the hypophosphites and to retain them in solution. It is also much cheaper, and this is of importance in hospital practice. Several other wines were experimented on during the search for a suitable menstruum. Those above mentioned were chosen as being least antagonistic to the hypophosphites, chiefly on account of the small percentage of ethylic alcohol. I find that the hypophosphites will not remain in solution when alcohol is in excess. The fact of the wines chosen being poor in alcohol is, I think, an additional recommendation.

I have purposely omitted potash from my formula for several reasons, and have given prominence to lime and soda, because these two bodies exist largely in human milk as phosphates. They are also present to a considerable extent in the albuminous and fibrinous elements of the blood and in the blood-corpuscles; and also in the secretory fluids.

Professor Church, in his recent lectures on the Chemistry of Foods, at South Kensington, says: "It is important to remember that the mineral constituents of milk are rich in phosphates. Besides the phosphates of lime and magnesia, there is also phosphate of iron, which supplies most of the iron contained in food, and the whole of that required by infants."

Magnesium hypophosphite is used instead of potash, because it is an element of vital importance in the ossification of young cartilage, and is also an important factor in the constitution of the secretory fluids. In the therapeutic application of these salts—viz., the hypophosphites—iron has not hitherto been given that prominence which its obvious importance demands. It appears to have been thought by some that the alkaline and earthy hypophosphites are superior to any of the ordinary hæmatogens. In my formula for the compound liquor, iron is one of the most important constituents. We find that iron exists as phosphate in the blood to the extent of 189 per mille of the albuminous portion, and 1,354 per mille of the blood-corpuscles (Jolly, *Comptes Rendus*, vol. lxxviii, 756-759).

I ascribe much of the benefit resulting from the use of this preparation to the presence of ferric hypophosphite, and particularly in that large class of cases constantly to be found in hospital practice, where, from poverty of blood and wasting diseases, *anæmia* is the one prominent symptom. I am permitted to say that my colleagues at the hospital and other medical friends who have made use of this preparation have found it a valuable remedy. It is much to be preferred to that unsatisfactory and imperfect preparation called steel wine. In cases of

rickets, its effects are very marked in the gradual solidification of the bones. I have employed it thus as a substitute for chemical food in several hundred trials, extending over a period of nearly two years.

I might have cited at length some of the typical cases benefited by this method of treatment, and have given relative weights both before and after treatment, but I prefer to await the verdict of my professional brethren giving the result of more matured and unbiased observations.

The hypophosphite of potash was not experimented on for many reasons. Dr. Thorowgood had found it far too energetic in its action to admit of my including it in a remedy intended as an agreeable dietetic for feeble children. In his paper on this subject in the *Practitioner* for July 1869, Dr. Thorowgood considered that great mischief had resulted from the incautious administration of this drug to persons affected with tubercular disease of the lung. As a gradual tonic and restorer of failing nerve-force, he prefers the hypophosphite of soda or of lime; and either of these he considers will answer the purpose better than the administration of pure phosphorus internally. Mr. Taylor (*Lancet*, November 30th, December 7th, and December 14th, 1861) says that the soda hypophosphite is best adapted for blood-disorders; those of potash, lime, and ammonia for diseases of structure and of the secretory organs; these being the most soluble of all the oxides of phosphorus, they are consequently at once admitted into the circulation. The chemical change after absorption has not yet been determined. My impression is, that the salts become deoxidised, being converted in part into phosphates and leaving a residue of phosphorus and the basic salts. There is no doubt that we have in this preparation all the therapeutic properties of phosphorus, without the danger attending the administration of crude phosphorus.

One of my colleagues, Dr. Venn, has found the soda hypophosphite efficacious in chronic bronchitis. It seems to promote free expectoration of tenacious mucus. He generally combines with it the soda carbonate, spirit of ether, and glycerine.

Dr. Thorowgood says that, in cases of serious depression and torpor, with occasional shooting neuralgic pains, and where there are numbness and deadness of the limbs arising from feeble circulation, the salts of the hypophosphites are useful. Where anæmia is present, he recommends the addition of the citrate of iron, or of the syrup of the hypophosphite of iron. The compound wine, prepared according to the formula I have suggested, has been found particularly useful in these cases of paresis and what is called "creeping paralysis".

Dr. Hayes Jackson relates how he recovered from a severe attack of neuralgia in the back and thigh of six months' duration by taking drachm doses of soda hypophosphite in beef-tea thrice daily (*vide BRITISH MEDICAL JOURNAL*, March 4th, 1865). In the remittent fevers of childhood, Dr. Purdon employed the hypophosphites with marked success. They seem to fulfil, he says, all the required indications in causing sleep, relieving thirst, cleansing the tongue, increasing the appetite, and arresting any resisting intestinal disorder, in a much shorter time than can be obtained by any other remedies (*Glasgow Medical Journal*, November 1863).

The following formula is suitable for an infant, the dose being increased according to age. R Sodæ hypophosphitis gr. vi; calcis hypophosph., potassæ hypophosph., aa gr. iv; glycerini ʒij; aquæ ʒj. Dose, forty minims thrice daily in a little water.

This mixture would have to be made up when required, as the hypophosphites deposit after a time when suspended in glycerine. The compound liquor, prepared according to my formula, is nearly five times the strength of the above, and consequently admits of a large dose being given in a small bulk. It contains a better selection of salts, and is much enhanced in value as a general tonic by reason of containing the hypo-salt of iron. It is, moreover, a stable solution; and, with the exception of a slight chalybeate flavour, may be said to be tasteless. A few drops on a lump of sugar, dissolved in the mouth, are agreeable and refreshing. It may be administered in milk or beef-tea unknown to the patient.

In tabes mesenterica, Dr. Purdon has found that the hypophosphites act slowly, but surely. He considers that they act by dissolving the tuberculous matter deposited in the folds of the mesentery and mesenteric glands, possibly by causing disintegration of the fibrine.

Dr. Thorowgood employed the hypophosphites in two cases of psoriasis with marked benefit. At the Victoria Hospital, the compound wine has been employed in similar cases as a tonic and alterative, the local disease being overcome by the use of chrysophanic acid ointment. In debility resulting from prolonged lactation, in some forms of dyspepsia, in anæmia and leucorrhœal discharges, in leucocythæmia, in myalgia, and in muscular pains simulating inflammation, Mr. Taylor has used the hypophosphites with considerable benefit.

The compound wine of the hypophosphites has proved valuable as a dietetic in repairing the waste brought about by neglect, improper food,

and other well-known conditions antagonistic to health. It has also given vigour and strength to nursing mothers, imparting the necessary elements to their milk for the production of bone and sinew; besides preventing, in many cases, that draining of the system brought about by the after-effects of epidemics, bad feeding, and ill-ventilated dwellings. A very common factor in the primary causation of diseases of young life is the prevailing ignorance of mothers in bringing up "by hand". Partly from ignorance and partly from enforced poverty, mothers will endeavour to keep their children alive on bread-sop, because unable to afford them a sufficiency of cow's milk.

The importance of carefully checking any tendency to excessive lactation will be seen at once if we but roughly calculate the still large proportion of infants brought up on breast-milk. The early months of a child's life are the most critical. All its future wellbeing depends upon careful nursing and proper nourishment. If skilful analytical examination of dairy-milk be needful, all mothers prolonging the lactation period for eighteen months or two years might with advantage be compelled to submit to qualitative analysis of their breast-milk. Indeed, at all times such analysis would prove a powerful factor in enabling the physician to trace the origin of many diseases common to young life. Is it too much to ask that some method be found of unyoking the necks of these heavily burdened mothers? As with vaccination, so with lactation, let the parents be compelled to consider the interests of their children as paramount to their own convenience. To neglect all hygienic principles is only to foster disease, which saps the foundation of young life, and darkens the pages of our national history by swelling the lists of the incurable and insane.

When I notice the daily influx into our households of mythical compounds called "food for infants", "condensed milk", etc., all obviously useless and injurious, because deprived of that oleaginous character so essential for the proper assimilation and for the growth of the young infant, I am tempted to ask, How is it that such substances are allowed to creep into the market without protest—many of them being palmed on the public under the well-known sign manual of a famous analytical chemist? Is it not enough that physicians have to combat with the conflicting and complicated symptoms produced by the immoderate use of villainous soothing syrups, teething powders, and other quack nostrums, that such must be augmented by the use of vile food-stuffs? Such *laissez faire* toleration of existing evils, because to check them would be interfering with the liberty of the subject, trajects the mind of the sanitarian to the antipodes of freedom; viz., to those realms of savagery where the halt, the infirm, the diseased, and the dying are exterminated, rather than continue a burden to the State.

For the administration of phosphorus, there is not, I am certain, a more efficient or safer medium than the hypophosphites.

Sodic hypophosphite contains 29.3 per cent. of phosphorus in an assimilable form, whereas trisodic phosphate contains only 7.9 per cent. of phosphorus in a probably inert state. Calcic hypophosphite contains 21.3 per cent. of available phosphorus. Tricalcic phosphate contains 20 per cent., of which little can be available. This in itself is sufficient evidence to warrant the conclusion as to the superior therapeutic value of the combined hypophosphites.

Messrs. Savory and Moore and Mr. Squire of London prepare and keep the wine and liquor always in stock.

THERAPEUTICAL EXPERIENCES WITH THE DIGESTIVE FERMENTS.

By F. ARNOLD LEES, L.R.C.P., M.R.C.S., F.L.S.;

WITH A REPORT OF EXPERIMENTS,

By GEORGE BROWNEN, F.C.S.*

THE ailments in which I have used the three strongest preparations of pepsine and pancreatine—viz., Savory's saline essence of pepsine and of pancreatine, and Bullock's acid glycerine of pepsinaporci—with a success never previously obtained with any others, have been so various, that it may be not unsuggestive if I enumerate some of the principal.

1. In most forms of *debility*, such as we find in convalescence from febrile and inflammatory disease, the digestive organs are weak; and here, although the power to digest a small quantity of food is not wanting, the pepsine and pancreatic essences cannot fail to hasten considerably the slow laying on of tissue by improving nutrition and securing the assimilation of a much larger quantity of food than could be taken without them. For four years or more, it has been my custom to order intermediary peptonised meals, such as a breakfast-cupful of beef-tea or chicken-broth, or mock-turtle soup, with which

* Continued from page 439.