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REVIEW OF THE PROGRESS OF THE MATERIA MEDICA.

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[Communicated for the Boston Medical and Surgical Journal.]

To the President and Fellows of the Maine Medical Association.

THE subject of *Materia Medica* was committed to the writer for review, a vote taken by the Association requiring the addition of two other gentlemen, members of the Association, as coadjutors. In compliance with this vote, about the last of March and first of April, the writer addressed a letter to J. McKeen, Jr., M.D., of Topsham, and Charles A. Packard, M.D., of Waldoboro', inviting their co-operation. Whether the letters were misdirected, or whether the time was ill chosen, suggesting the thought of a first-of-April *canard*, the writer cannot say; but after waiting six weeks or more, and hearing nothing from either of the above-named gentlemen, it was deemed useless to waste further time in seeking other collaborators, and the business in hand was taken up and carried on—how acceptably to the Association, let the sequel show.

In reviewing the progress of *materia medica* during the decade which has just gone by, it is worthy of remark that the positive additions to the primary list in our own Pharmacopœia, have been few and far between. We may consider the officinal list as already pretty thoroughly completed, and any new candidate for admission must have superior claims to obtain for it officinal recognition. Viewing the general subject of *materia medica* under this aspect, we arrive at the conclusion that its progress consists essentially in improvements in the forms under which standard remedies are administered, in the pharmaceutical treatment of drugs and simples, and of a better comprehension of the principles and conditions which obtain in the various processes conducted under the hand and eye of the scientific pharmacist. This may not be assented to by all, but the pharmaceutical stand-point would seem to favor this view of the subject; and being the one

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which the writer, from the nature of his business, is compelled to take, it may not be altogether devoid of interest, instruction and novelty to those who are accustomed to view the subject more exclusively in its therapeutical relations.

But the ten years past have not been altogether barren of new remedies, some of which have already become officinal, and it is to those, and those especially with which the writer has dealt practically, more or less, that your attention is now invited.

Cod-liver oil may be said to have had its day, for it is comparatively little used now, though twelve years ago it was as prominently before the profession as are the hypophosphites at the present day. It is alluded to here, as a reliable source of propylamine, in case the herring pickle should fail, as a source whence to obtain that alkaloid. As the result of an experiment in that direction, the writer took four pints of cod-liver oil, and distilled it with potash and quick lime, obtaining, as the result of the operation, thirty-two ounces of distillate containing a large proportion of pure propylamine. A quantitative experiment gave, as an approximative result, ten grains of sulphate of propylamine to the ounce, equal to five grains of pure anhydrous propylamine, which possesses all the properties of that obtained from the brine of herrings or the ergot of rye. This was the result of an examination made upon a specimen preserved in a cork-stopped bottle, which had been distilled more than a year ago. It is fair to presume that a portion of the alkaloid must have been lost by evaporation, as the bottle had been frequently opened and the cork was not very tight, so that the yield of the crystallized salt from a freshly distilled specimen might be expected to be considerably larger. If propylamine possesses the efficacy ascribed to it in rheumatic affections, the reputation possessed by cod-liver oil in similar affections must be due in great part to that element, which occupies in cod-liver oil the place that glycerine does in many other oils. The most eligible form in which to use it is undoubtedly the chloride, as it is thus rendered fixed, is soluble in water, and its disagreeable odor is thus avoided. Of its taste, the writer cannot speak from experience, as its odor has proved abundantly sufficient for him. A sample of the aqueous solution of propylamine, and also of the sulphate of propylamine, is offered for inspection, both prepared by the writer.

From propylamine, the representative of one class of oils, to glycerine, the representative of another class, the transition is easy, and practically agreeable. Like propylamine, though much longer known, it was at first only a chemical curiosity, to be found solely in extensive chemical cabinets. Some twelve or fourteen years ago, an English aurist employed it in cases of deafness, to soften and otherwise modify the secretions, and to change in some way the action of the secretory glands of the meatus. It was also found to be an excellent ingredient in ointments, and its uses

gradually extended, until some six years ago it came to be recommended as a substitute for cod-liver oil, the nauseous qualities of which rendered it impossible to reconcile sensitive stomachs to its use. But the process for obtaining it was laborious and costly, and the yield very small. The first pound that the writer ever purchased he paid four dollars for, but it was a pure article of high specific gravity, and better than he was able to obtain for several years after. And for years glycerine was offered in the market at a comparatively low price, but contaminated with foetid animal oils, which proved a bar to its use. At length Mr. R. B. Tilghman, of Philadelphia, discovered that the exposure of fat and water to a temperature above 500°, resolved them into hydrated acids and glycerine, and devised an apparatus to effect that division, which it is unnecessary to describe here, and which, once fairly brought into action, soon affected the price of glycerine, reducing it some 75 per cent. Since its price has been reduced so as to bring it within the reach of pharmacutists, we have had much discussion upon its utility, and the range of applications of which it is capable. A few of these will here be noticed.

First, As a substitute for cod-liver oil, for internal use, it has been tested by some of the leading physicians of Portland, who are so favorably impressed by its merits, that their verdict is, that but for its expense, it would be prescribed, to the entire exclusion of cod-liver oil.

Second, As an ingredient in ointments and for an emollient application in poultices, nothing has been found to compare with it. A beautiful ointment, which will well replace the ung. aquæ rosæ, may be made by the following formula:—Take of almond oil expressed, two fluid ounces; spermaceti, six drachms; glycerine, four fluid drachms; otto of roses, otto of bergamot, each two drops. Melt the spermaceti by the aid of a water bath, add the almond oil so gradually as not to recondense any of the spermaceti, remove from the bath, and stir until the mixture concretes on cooling, when the glycerine is to be added and thoroughly incorporated. The ottos are finally to be incorporated, when the ointment is finished. Another very nice emollient application, which may be termed glycerine lotion, may be made as follows:—Take of mucilage of quince seeds, glycerine, each one fluid ounce; orange-flower water, six fluid ounces; mix; make a lotion. The ointment above described has, in the writer's experience, kept perfectly sweet and free from rancidity even under very unfavorable circumstances.

Glycerine lotions have been recommended by Soubeiran, of Paris, as follows:—*Lotion of Morphia*—Take of acetate of morphia, three grains; glycerine, five drachms *troy*; dissolve. *Lotion of Strychnia*—Take of sulphate of strychnia, six grains; glycerine, five drachms *troy*; dissolve the salt in the glycerine, in a porcelain mortar. *Lotion of Veratria*—Take of veratria, fifteen grains; diluted muriatic acid, sufficient; glycerine, five drachms; dissolve

and mix. *Lotion of Atropia*—Take of atropia, six grains; diluted muriatic acid, sufficient; glycerine, two and a half drachms; dissolve and mix. The reason why diluted muriatic acid is ordered in the last two formulæ, may be found in the fact, that the *salts* of the alkaloid, not the alkaloids themselves, are soluble in glycerine. These lotions are to be applied by friction, according to the various indications, which practitioners will recognize without more particular allusion.

Charles Tilyard, of Baltimore, proposes the following as a substitute for Goulard's cerate, which so speedily grows rancid, and becomes more irritating than soothing to inflamed surfaces. Take of pure glycerine, thirteen and a half fluid ounces; solution of subacetate of lead, two and a half fluid ounces; gum camphor, half a drachm. Triturate the camphor with a few drops of alcohol, add the glycerine, heat in a water bath until the camphor is dissolved; when cool, add the solution of lead, and shake well together. This does not change, is easily washed off with water, and can be reduced to any desired extent either with rose or distilled water. The proportions cited above are for those of Goulard's cerate, substituting the oil and wax by glycerine.

In the third place, glycerine finds an extensive range of application as a solvent for various medicinal substances. Sulphur is soluble in a small proportion, and the alkaline sulphuret very much so. The salts of the alkaloids are freely soluble, while the alkaloids require adjuvants to render them equally so. Tannin is soluble one part in six, and the glycerine employed in the experiments from which these results were obtained, contained about twelve per cent. of water, and was not anhydrous, like much that has been recently furnished in the market. The writer observing a report of the solubility of kino in glycerine, determined to put this to the test. So introducing into an ounce phial two drachms of kino, and filling up with glycerine, the bottle was set in a warm situation for two or three days. At the end of that time, the glycerine had taken up a large proportion of the kino, but the mixture was allowed to stand two or three months longer, when it was strained through linen with pretty strong expression, and the residue weighed. The residue was treated with a half ounce more of glycerine, and again strained. The result was that each ounce fluid of the solution represented eighty grains of kino. This solution is miscible in all proportions with water and alcohol. It is easy at once to see that this must bring into play a very valuable astringent.

The solvent power of glycerine makes it a very valuable excipient in pill masses, as it communicates plasticity to the mass, without, if properly used, increasing the bulk of the pill. More experience is required to enable the writer to speak definitely upon this point, but, as a general rule, from the eighth of a drop up to half a drop to a pill, will be found sufficient. The proportions will

vary according to the materials and their bulk, and the glycerine, if cautiously added, will impart plasticity, without converting the mass into a muddy magma; but the exercise of some discretion is necessary. Its stability at ordinary temperatures confers another advantage, namely, that of keeping pills soft, and readily soluble in the secretions of the stomach; instead of, like syrup and gum, permitting them to dry up as hard as shot.

A word upon the various kinds of glycerine in the market. Some are quoted at a low price, and have no makers' names on the labels. They may be good, but unless they are entirely destitute of offensive odor, and are of a high specific gravity, it is best to be shy of them. In good specimens of glycerine, if there is any odor at all, it is inappreciable by olfactories of ordinary sensitiveness; but bad glycerine is worse than none—if not positively poisonous, it is abominably offensive. Price's glycerine has had the top of the market for a long time, but in Philadelphia there are makers who produce an article in no wise inferior. Messrs. Powers & Weightman put theirs up in packages of seven pounds each, and a young man by the name of Bowers manufactures an article and puts it up in the same style as Price, which will compare most favorably with the English article. It is hardly necessary to mention the Western makers, as their productions rarely if ever find their way into this market.

The hypophosphites now invite our attention. These salts were proposed by Dr. J. F. Churchill, in a Report made to the French Academy of Medicine in July, 1857, as a cure for phthisis, on the ground that they were the most eligible vehicles to supply a deficiency of phosphorus in the circulation and nervous system. We shall only discuss some few of the forms in which they have been offered to the profession for use. These are the neutral salts, crystallized or amorphous, most commonly the latter; simple solutions, saccharine or otherwise; and solutions of a more composite character, containing several bases. Of the comparative merits of these different preparations, therapeutically, the writer cannot undertake to speak; but reasoning *a priori*, the solution would seem to be the most eligible form, whether aqueous or saccharine, simple or composite.

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The writer, in the few gallons of hypophosphite syrup manufactured by him, has followed the formula of Prof. Procter, of Philadelphia, as modified by Mr. Wm. S. Thompson, of Baltimore. The formula is as follows:—Take of

Hypophosphite of lime,	256 grains
Hypophosphite of soda,	192 “
Hypophosphite of potassa,	128 “
Protosulphate of iron (crystallized),	185 “
Carbonate of soda,	240 “
Hypophosphorous acid (sp. gr. 1.036),	3½ fluid oz.
Sugar,	12 oz.

Dissolve the protosulphate of iron and the carbonate of soda each separately in four fluid ounces of hot water, and mix the solutions. Wash the precipitated carbonate of lime thoroughly with sweetened water, and drain it on a muslin filter. Having placed the salt of lime, soda and potassa in a suitable porcelain dish, add about two fluid ounces of water, and one fluid ounce of hypophosphorous acid ; heat the mixture gently, and add the moist proto-carbonate of iron, in small portions, from time to time, alternately with the hypophosphorous acid, until the solution is complete. Add water enough to make the whole measure ten fluid ounces ; pour into a bottle containing the sugar, and dissolve by agitation. This syrup contains about five grains of the combined hypophosphites in each fluid drachm, three fourths of a grain of which is the hypophosphite of the protoxide of iron.

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The hydrocyanate of iron has lately been lauded as a remedy in epilepsy. An ounce bottle of this substance has been submitted to an analysis by Mr. Ferdinand F. Mayer, of New York, the details of which may be found in the *American Journal of Pharmacy*, 1859, September No. The result at which he arrived in the examination of a specimen bearing Tilden & Co.'s label was, that it was a mixture of pure Prussian blue with peroxide of iron and prussiate of potash. The true proto-cyanide of iron is still a chemical desideratum, and so far as the preparation in question is concerned, soluble Prussian blue might as well be used.

The oxalate and nitrate of cerium, and the sulphate and carbonate of nickel, have been introduced into practice on the recommendation of Dr. J. Y. Simpson, of Edinburgh. The writer has nothing special to offer as respects their preparation, but would submit specimens for examination.

The ammonio-ferric alum has been found, by Dr. Tyler Smith, to be a more powerful astringent than common alum, and not liable to produce the stimulating effect of other salts of iron. This has been used to some extent in Portland, but with what effect the writer has not learned.

Manganese and its preparations, especially the crystallized sulphate and the syrup of the iodide of manganese, have been used more or less during the last ten years.

Citrate of iron and strychnia has also been employed as a tonic. The difference of strychnine strength in different samples, is a source of regret, as some manufacturers employ but one per cent. of strychnine in the salt they prepare, while others double that dose. This is a source of trouble and annoyance, both to the pharmacutists and physicians, which should be obviated in the use of so potent an agent as strychnine.

Santonine, the crystallizable principle of the *artemisia santonica*, or European wormseed, has been employed with good effect against intestinal parasites. Quacks have seized upon it, and Hol-

loway's Worm Confections are supposed to contain it. Edward Parrish, of Philadelphia, puts up Dragees de Santonine, which we may regard as reliable, and also Messrs. Fougere, of New York.

The fluid extract of veratrum viride, which, as prepared by Tilden & Co., of New York, professes to represent Norwood's Original Tincture, has been introduced into practice within the last seven years, and certainly possesses powers which entitle it to the attention of the profession.

We are reminded by the title of the last preparation noticed, of a large and apparently increasing class of preparations known under the title of "Fluid Extracts." The writer can do no better, in criticizing this class of preparations, than to quote from the editorial remarks of Prof. Procter, in the *American Journal of Pharmacy*: "If there is any manufacturing house in the country which owes its success to the countenance of the medical profession, it is Tilden & Co.; though to their own enterprise in bringing their preparations to the notice of physicians this recognition is mainly due; hence none should be more conscientiously careful to keep to the well-defined path of pharmaceutical rectitude in making their products. We wonder that they should be willing to run the risk incurred by engaging in so many petty items, when the regularly recognized preparations of the Pharmacopœia and dispensaries afford them so wide a scope. They have had, and still have, an admirable opportunity to take a firm and unflinching stand in upholding the purity and perfection of pharmaceutical products and manipulations, and on their true assumption of this position will depend their future success."

"It seems now pretty well established, that fluid extracts, as a class, meet the favorable opinion of physicians, and it becomes a matter of grave importance to the medical profession, that some efficient action be taken by the pharmacutists of the United States to adopt a set of formulæ—that is, one for each class—which shall govern the manufacturer, whether he be apothecary, druggist, or manufacturing pharmacist, as regards the proportion of the drug and the menstrua to be used in extraction, and the agent for their preservation. With these points established, it is clear, that any marked differences in these preparations could be readily detected, and their differences would be attributed to inferiority of material or unskilful manipulation."

At the meeting of the American Pharmaceutical Association, in 1859, Prof. Procter made an admirable report on the subject of fluid extracts, which covered the whole ground, leaving little if any room for improvement. All fluid extracts may be referred to one or the other of the classes into which he has divided this school of preparations, and the principles which should govern the treatment of these was succinctly yet clearly laid down, so that no apothecary need be at a loss how to go to work to prepare them. The paper was accompanied with specimens of fluid extracts made

after the Professor's formula, and better ones they were than are ever seen in the market, proving what can be done by a skilful and conscientious pharmacist in the way of manipulation.

A new invention, no less admirable in its way than some other things already named, are the patent epithems devised by Mr. Alfred Markwick, of London, and named the Piline, Spongio-Piline, and Water Dressing, to each of which the inventor adds the adjective "impermeable." These severally consist of a species of felt, differing in each, but all coated on one side with gutta-percha, the object of which is to obviate evaporation. The piline consists of a fine, white woollen felt of homogeneous texture; the spongio-piline of a mixture of sponge and wool; and the water dressing of something not so fine and even as the piline, probably wool before it is completely dressed. They all subserve an excellent purpose, as substitutes for the filthy poultices formerly and at the present time more or less in vogue—after having been used can be washed out and reapplied more than once if necessary—can be saturated with any kind of lotion, and in fact act as vehicles for epidermic medication, which supplies a want long felt by the profession.

The extract of *nux vomica* has been much used of late years as an ingredient in pills, communicating, as it does, tone and contractility to the torpid muscular fibre of the intestines; but possibly some may have met with disappointment in its use. Let one precept remain impressed on your minds whenever you order the extract of *nux vomica*; call for the *alcoholic* extract, and you will not be so likely to meet with disappointment in its use. The *aqueous* may be cheaper, but it is dear at any price, as it is almost if not quite inert and worthless.

Time fails to speak of the improvements in pharmaceutical processes, and of old standard remedies which have recently been taken up from bye places where they have been left to lie, consigned thither by the tender mercies of money-gripping manufacturers—men who have subordinated science and the public weal to lucre—old remedies, I say, taken up, and the dust of neglect wiped from them, polished by the appliances of science, until the old familiar face renews its youth, and shines again with rejuvenated lustre. A brighter day is coming for old favorites, like the *spiritus nitri dulcis*, the *spiritus etheris compositus*, and all kindred preparations. A short allusion to two or three preparations must suffice for the present.

The Pharmacopœia defines *adepts* to mean the prepared fat of *sus scrofa*, free from all saline matter. How many physicians get that so, unless they take the trouble to prepare it themselves? Impressed with the importance of this question, the writer fitted up an apparatus, and operated on some thirty pounds of lard, such as is found already rendered in provision stores. The result was rather surprising, both as to the amount of feculent matter thus

removed from the lard, and the improved texture of the fat thus treated. It is to be credited that the disrepute into which unguents of almost all kinds have fallen, is in consequence of the imperfectly prepared axunge furnished. Another improvement may be found in saturating fats, such as are employed in medicine, with some odorous body. Gum benzoin is often employed for this purpose, and the effect seems to be the prevention of the change known as rancidity.

Among the improved processes for pharmaceutical preparations, we may cite that for the cerate of cantharides. The process consists of exhausting the flies with alcohol by the displacement process, evaporating this tincture to the consistency of a soft extract, adding the wax, resin and lard, melting them together, occasionally stirring; maintain at a temperature of 212° for fifteen minutes. Strain through linen to separate the extractive and other insoluble matter that may be present, and stir until cool. This cerate should have a slight greenish-yellow hue, of rather firm consistency, and possessing in a perfect degree the active properties of the Spanish flies. The quantities used may be those directed in the U. S. Pharmacopœia. The cerate made by this process is offered as a substitute for the official cerate, from its elegance and greater efficacy, which has been fully attested. It is found to vesicate well, and to leave behind it none of that soreness so much resembling a burn, which is often experienced after the use of the flies in substance in the cerate. The heating of the alcoholic extract with the ingredients of the cerate affords a solution of the cantharidin in the oily matter, and at the same time a separation of the extractive.

Griffith's Myrrh Mixture is a preparation much used, yet not one apothecary in a dozen dispenses it in the shape in which it ought to be made. It is very easily done, however, with a little care and some labor, without which nothing that is worth having can be got. Let us take the quantities for a gallon, and I will set my newly arrived clerk to work upon it. First, get out your two ounces of gum myrrh. Stop! what are you going to do with that powder? You will never be able to make a decent mixture with powdered myrrh. Go to the drawer and pick out your finest and clearest lumps. You have got two ounces, have you? Ah! you have got the weight by which you sell, not that by which you compound. What is the difference? There is some eighty grains, sir; enough, in some cases, to make a matter of life or death, if it is only two thirds of a grain to the ounce. So far, so good. Now weigh out your carbonate of potassa and your sugar—six drachms and two scruples of the first and two ounces of the latter; put them into a large wedgewood mortar, and grind fine with the pestle. Now, then, we are to prepare the menstruum—as we are to make a gallon, and a gallon is equal to one hundred and twenty-eight fluid ounces, and our bottle will hold but half a gallon—how are we to

proceed? Nothing is easier—divide one hundred and twenty-eight by two, and we have sixty-four ounces. But of this sixty-four ounces, eight ounces must be allowed for the spirit of lavender, which enters into the composition of the mixture. We accordingly take fifty-six ounces, or three pints and a half of rose-water; triturate the myrrh with it, added by small quantities at a time, grinding with great perseverance, often scraping the gummy mass off the pestle, until the myrrh is reduced long before the bulk of the rose-water is added; strain it with expression through the fabric known as Nainsook cambric, and finally add the spirit of lavender. This should by no means be the compound tincture of lavender, or red lavender, as it is commonly called, but should be a few drops, say twelve, of choice otto of lavender, dissolved in eight ounces of spirit. We now have the dry ingredients for one gallon of the mixture dissolved in half the quantity of menstruum, and to dispense it we take, say four ounces of this mixture as prepared, and four ounces of rose or good common water, in which we dissolve twenty grains of crystallized sulphate of iron; mix the two solutions, and the thing is done. The advantage of this process is, that it takes but little longer to prepare the half gallon mixture than it does eight ounces, and, once made, a pint or half pint can be dispensed in five minutes, always furnishing the peculiar green coloration belonging to the proto-carbonate of iron.

One word more. The commercial confection of senna has been a source of deep disgust to the unfortunates who were required to quack it down, but when they have been enabled to turn to the officinal preparation, the change has proved doubly grateful. The specimen made according to the formula of the U. S. Pharmacopœia contains forty-two grains of powdered Alexandria senna to the ounce, and operates *tuto, cito, et jucunde*.

Thus far we have taken a meagre glance at the progress of the materia medica during the ten years which have just closed. Many things have been omitted which might have added interest to the report; the aim of the writer has, however, been to say what is useful—and that attained, he is satisfied. Should the Association see fit to commit the subject to him another year, he will promise his best endeavors to act faithfully, and so far as possible to consult the interest of the Association.

All which is respectfully submitted.

Portland, June 17, 1861.

H. T. CUMMINGS, M.D.

LETTER FROM FORTRESS MONROE.

GEN. HOSPITAL, FORTRESS MONROE, VIRGINIA, }
June 30th, 1861. }

MESSRS. EDITORS,—There are about one hundred and twenty-five patients at present in the General Hospital; the number is liable, of course, to sudden and considerable variation. Many of the