

AMERICAN JOURNAL OF PHARMACY
Volume 60, #1, January, 1888

Botanical Medicine Monographs and Sundry

EXTRACTUM ASARI FLUIDUM;
FLUID EXTRACT OF WILD GINGER.

Contribution from the Pharmaceutical Laboratory, Philadelphia College of Pharmacy.

By F. P. STREEPER.

Read at the Pharmaceutical Meeting, December 20, 1887.

Having undertaken a series of experiments to determine a menstruum which would most effectively exhaust asarum, and hold in solution the volatile oil and resin to which the medicinal properties are probably due, three fluid extracts were made of different alcoholic strengths and numbered Nos. 1, 2, and 3.

No. 1.—150 grammes of ground asarum was moistened with 95 per cent. alcohol, and tightly packed in a conical percolator, a sufficient quantity of the requisite menstruum was then added to thoroughly saturate the drug and leave a stratum above it; when the liquid commenced to drop from the percolator, the lower orifice was closed, and having closely covered the percolator, maceration was allowed to proceed for forty-eight hours. Percolation was then commenced, gradually adding alcohol until the drug was thoroughly exhausted, the first 135 c.c. of the percolate was reserved, the remainder evaporated, by means of a still, to a soft extract, and the alcohol collected. The soft extract was dissolved in the reserved portion, and enough alcohol added to make the fluid extract measure 150 c.c.

This furnished a perfectly transparent liquid of a rich, amber color, with an agreeable, aromatic, strongly persistent odor, and pungent, warm and lasting taste, and showed no indications of precipitating after standing for several weeks, and beyond a doubt holds in solution the active principles of the drug.

No. 2.—150 grammes of the ground drug was taken as before, macerated and percolated, using, however, a menstruum consisting of three parts of alcohol and one part of water, corresponding to 71 $\frac{1}{4}$ per cent. of absolute alcohol; the operation was conducted in precisely the same manner as the preceding. This furnished a darker fluid extract than No. 1, no doubt due to the more aqueous menstruum dissolving more of the coloring matter, but the soft extract obtained by distilling and evaporating the percolate was mostly insoluble in the reserved portion, and deposited as an oily, resinous precipitate. This fluid extract on standing for several weeks deposited yellowish-white stellate crystals, which were not further examined. These crystals were not noticed in either one of the other two fluid extracts.

No. 3.—150 grammes of the ground drug was taken, as in each of the preceding cases, and exhausted, using a menstruum consisting of two parts of alcohol and one part of water, corresponding to 63 $\frac{1}{3}$ per cent. of absolute alcohol, the most aqueous menstruum used. This finished fluid extract is darker than either of the preceding

ones, showing that the coloring matter is dissolved principally by the water, and as in the case of No. 2, it precipitated most of the volatile oil and resin, which had been extracted by the alcohol, leaving in solution in the aqueous menstruum but a small portion of the active principles.

From the foregoing experiments it will be seen that in cases where a drug owes its activity to volatile oil and resin, and a large quantity of either is present, as is the case with asarum, a menstruum of 95 per cent. alcohol or nearly this strength is absolutely necessary, if it is desired to thoroughly exhaust the drug of these principles and retain them permanently in solution in the finished fluid extract.

EXTRACTUM CIMICIFUGAE FLUIDUM; FLUID EXTRACT OF CIMICIFUGA.

Contribution from the Pharmaceutical Laboratory, Philadelphia College of Pharmacy.

By EDWIN C. LESHER.

Read at the Pharmaceutical Meeting, December 20, 1887.

The investigation of the active principle of medicinal plants, and the determination of the menstruum for extracting the same, is a work attended with no little trouble. Having made a number of experiments to ascertain the best Menstruum that would produce a fluid extract of cimicifuga, the following results are hereby recorded:

Formula No. 1: Cimicifuga in No. 60 powder, 8 ounces av.; alcohol sufficient to make 8 fluid-ounces. Moisten with 2 fluid-ounces of alcohol.

Formula No. 2: Cimicifuga in No. 60 powder, 8 ounces av.; diluted alcohol sufficient to make 8 fluid-ounces. Moisten with 2 fluidounces of diluted alcohol.

Formula No. 3: Cimicifuga in No. 60 powder, 8 ounces av.; alcohol, 2 parts; water, 1 part. Moisten with 2 fluid-ounces of the menstruum.

Formula No. 4: Cimicifuga in No. 60 powder, 8 ounces av.; alcohol, 3 parts; water, 1 part, sufficient to make 8 fluid-ounces. Moisten the powder with 2 fluid-ounces of the menstruum.

Pack firmly in a cylindrical percolator; then add enough menstruum to saturate the powder and have a stratum above it; when the liquid begins to drop from the percolator, close the lower orifice and macerate for forty-eight hours. Then allow the percolation to proceed, adding menstruum until the cimicifuga powder is exhausted. Reserve the first six fluid-ounces, distil off the alcohol from the remainder, and evaporate the residue to a soft extract; dissolve this in the reserved portion and add enough menstruum to make eight fluid-ounces.

In making these experiments the alcohol was recovered by the use of the still, and after having ascertained its specific gravity, converted into diluted alcohol.

The making of fluid extracts is not a difficult operation in the hands of the practical pharmacist. It cannot be too strongly urged that a druggist should make his own fluid

extracts. It is in these more especially, that manufacturing pharmacists have almost a monopoly, and will continue so to have as long as the drugman is disinclined to help and work for his own individual interest. The making of these give him, 1st, confidence in his own ability; 2d, practical knowledge which he cannot know or remember as well, simply from books; 3rd, assurance that his extracts are not only what he represents them to be, but that none are better, if any are as good; 4th, respect and confidence from the physician, who must needs feel that such a druggist is progressive, and trying to keep up the advance of pharmacy.

On examination of the different residues it was found that the one in which three parts of alcohol and one of water, as the menstruum, was used was entirely exhausted; the extract was of a very good quality, if not superior to the one in which alcohol was used as the menstruum.

PRACTICAL NOTES IN PHARMACY.

Abstracts from Theses.

Mucilago Acaciae.—With the view of rendering the mucilage of gum-arabic permanent, George P. Ringler, Ph. G., suggests to prepare it by dissolving 4 ounces of the gum in a mixture of 4 ounces each of glycerin and water. The solution is effected in the usual way by maceration and agitation, and usually requires straining to free it from accidental impurities. It is particularly well adapted for the preparation of:

Syrupus Acaciae, by mixing 3 parts of the mucilage with 5 parts of simple syrup. The syrup should be prepared extemporaneously, since it will not keep long in warm weather without spoiling.

To ascertain the preservative influence of glycerin upon the solution of gum, the mucilage prepared according to the Pharmacopoeia, and several samples containing glycerin were simultaneously exposed to a temperature varying between 65° and 80° F., and it was found that the former would keep for about one week; while a menstruum composed of 28 water and 16 glycerin would render the mucilage serviceable for two weeks; a mixture of 24 water and 10 glycerin for five weeks, and a mixture of 20 water and 15 glycerin for more than seven weeks.

Tinctura Vanillae.—While retaining the pharmacopoeial percentage of vanilla in this preparation, John K. Faust proposes changes in the menstruum and in the manipulation. Instead of using sugar for beating the vanilla into powder, he suggests the use of washed sand for this purpose, but in much larger proportion than has been employed by Mr. Chas. Shivers (AM. JOUR. PHARM., 1861, p. 383). The menstruum contains glycerin, the alcoholic strength is reduced, and maceration in the percolator, for a short time, is resorted to. Cut vanilla, 10 parts, is beaten into a uniform powder with washed sand, 75 parts, the mixture packed into a percolator, and macerated for four hours with sufficient menstruum composed of alcohol 50 parts, glycerin 19 parts and water 31 parts; percolation is then allowed to proceed until 100 parts of tincture have been obtained.

Syrupus Sarsaparillae Compositus.—In 1878 Mr. Isaac Davis proposed (AM. JOUR. PHARM., 1878, p. 327) the preparation of this and other syrups by percolating the drugs, suitably powdered, with simple syrup. Irvin J. Brandt, Ph. G., now suggests a modification of this process, by combining the process of dissolving the sugar with that of exhausting the powdered drugs. For the syrup named he proposes the following manipulation: Reduce to a number 20 powder the following drugs: sarsaparilla, 12 1/2 ounces, avoirdupois; guaiacum, 1 1/2 ounces; pale rose, 1 ounce; glycyrrhiza, 1 ounce; senna, 1 ounce; sassafras, 1/2 ounce; anise, 1/2 ounce, and gaultheria, 1/2 ounce. Moisten the powder with a menstruum composed of 1 part of alcohol and 7 parts of water; when thoroughly saturated transfer to a percolator, pack firmly, cover with a piece of filtering paper; upon this place 50 ounces of sugar, and gradually add more menstruum until the percolate begins to drop; then close the lower orifice, macerate for forty-eight hours, and finally percolate until 3 1/2 pints of syrup are obtained.

Syrupus Scillae Compositus was made by the same process and with equally good results, a small quantity of ammonia having been added to the menstruum with the view of holding the pectinaceous principle of senega in solution.

ABSTRACTS FROM THE FRENCH JOURNALS.

Translated for the AMERICAN JOURNAL OF PHARMACY.

Pichi.—In an article on *Fabiana imbricata* (*Jour. de Phar. et de Ch.*, Nov. 1) 1867). Nivière and Liotard “conclude that pichi contains no alkaloid, and that its therapeutic action is due to a glucoside resembling aesculin.” As such investigations are often widely quoted, it is proper to state, that Limousin suspected the presence of an alkaloid in fabiana; that its presence was indicated by Dr. Rusby in 1885; and that Dr. Lyons found less than 0.1 per cent. of this alkaloid. (See AM. JOUR. PHAR., 1886, p. 71. Dr. Lyons also showed the resemblance to aesculin of the fluorescent principle of fabiana.)

Strophantus And Strophantine. At a meeting of the *Société de Phar.*, (Nov. 2), several members presented observations upon the therapeutic uses of the plant. It was found that the different species were very variable as to physiological activity, some of them being almost valueless. Mr. Wurtz remarked, concerning strophantin, that its present price—60 francs per drachm—prevented its use in therapeutics.

Pills of Terpinol.—Tanret's formula is given as follows in *Nouv. Rem.* Dec. 8, 1887: terpinol and benzoate of sodium, each 1 gm.; sugar, q. s. Make 10 pills; dose 5 to 10 pills daily.

Therapeutics of Terebinthina and Derivatives.—Dr. Dijardin Beaumetz places the substances thus, in the order of their value: for maladies of the bladder: oil of turpentine, terpin, terpinol; for maladies of the bronchia: terpinol, terpin, oil of turpentine. *Nouv. Rem.*, Dec. 8, 1887.

PRELIMINARY NOTE ON TINCTURE OF (QUILLAIA SAPONARIA.

By PETER BOA.

Having had some experience in the use of quillaia bark for other than strictly medicinal purposes, I had long ago come to the conclusion that an aqueous menstruum was the most suitable for extracting its active constituents. I was therefore somewhat surprised to find that the formula given by the British Pharmaceutical Conference Committee directed the tincture to be made with rectified spirit. It is true that no dose is specified, and as the tincture for which the formula is given is used in the preparation of liquor picis carbonis we may reasonably assume that this was the sole object for which the tincture was designed, and if this be so we can scarcely find fault with it, because for the purpose in question a rectified spirit tincture would be preferable to one less strong in alcohol. However, there is an increasing demand for tincture of quillaia for internal use; in Edinburgh this has been markedly so since the beginning of this year, when Dr. Claud Muirhead, in the Edinburgh Medical Journal, referred in commendatory terms to the administration of the drug in bronchitis, and there is just a possibility that the B.P.C. formula may be taken as a guide to the preparation of the tincture for this purpose. It would, I think, be a pity if it were so taken, because this tincture does not at all represent the virtues of the bark, I have looked up a number of references to quillaia, and I find that all the writers on the subject agree in the conclusion that water is the best solvent of saponin, which is regarded as the active principle of the bark. Gmelin says that saponin is easily soluble in water (1 in 4), more soluble in dilute than strong alcohol, insoluble in absolute alcohol.

Hager gives a formula of an infusion, and a tincture prepared with dilute alcohol.

Grazer, an American pharmacist, recommends for emulsifying purposes a tincture with 3 parts of water and 8 of rectified spirit.

Dr. Claud Muirhead has used with success a decoction.

Collier gives a formula (*Phar. Jour.*, Sep. 20, 1879, *Am. Jour. Phar.*, 1880, 41) for emulsifying purposes with 4 ounces of bark to a pint of rectified spirit; this apparently is the formula copied into the B.P.C. formulary, but made with only half the quantity of bark.

For the purposes of this note I have prepared tinctures of various alcoholic strengths I take three of these for comparison:

No. 1 is made according to the B.P.C. formula.

No. 2 is made with proof spirit.

No. 3 is made with 3 of rectified spirit and 4 of water.

The time at my disposal since agreeing to bring the subject before this meeting has

not been sufficient to enable me to estimate the comparative values of these tinctures except in a somewhat rough and ready way, although I believe the results may be taken to be fairly trustworthy. The quantity of saponin in a tincture may be estimated comparatively by the amount of froth which it produces when shaken up with a quantity of water. Taking the three tinctures above mentioned, adding one-half a drachm of each to two ounces of water in a six-ounce bottle, and shaking, the following results were observed:

No. 1 gave of froth 1.

No. 2 gave of froth $1 \frac{3}{4}$.

No. 3 gave of froth 2.

A percolate obtained by running a quantity of water, equal to half the quantity of the original tincture, through the mare from the B.P.C. formula, gave nearly as good results as No. 3, showing that the bark had not been exhausted by any means; a percolate obtained in the same way from the proof spirit tincture residue gave very little indication of value. I may say that preliminary mixtures with the water were made with spirit added to Nos. 2 and 3 to make them equal in alcoholic strength to No. 1, in case the spirit might affect the froth test. It was not found to affect the results and has not been added to the specimens shown to illustrate the comparative frothing power. An emulsion made with No. 1 and a fixed oil separated more quickly than one prepared with No. 3. I hope, if time will permit, to determine more accurately the comparative values of these tinctures. However, I have no hesitation in concluding from the result of my experiments that a weak alcohol is preferable to a strong for making tincture of quillaia. In fact I see no use for any alcohol except for preservative purposes.

The question arises : What should be the strength of the tincture? Dr. Muirhead says he gave $\frac{1}{2}$ to 1 ounces of tincture, but, unfortunately, he says nothing about the strength. He mentions, however, that the decoction of which he gave—a tablespoonful—was made with 5 of bark and 200 of water. A tincture of equivalent strength might, therefore, be made with 2 ounces to a pint. To make the tincture approximate in strength to senega tincture, 1 ounce to the pint would be more than enough.

There is just one point more to which I would allude. The B.P.C. formulary does not specify the part of quillaia bark to be used. Undoubtedly the white portion of the bark is the more valuable; the brown outer portion contains chiefly coloring matter. Both, however, are used together, for I have seen commercial specimens of tincture resembling in color tincture of orange peel. The specimens shown, made from the white portion, are, at most, pale straw color. In making liquor picis carbonis color is of no consequence, and the quantity of bark ordered is greatly in excess of what the menstruum can exhaust, hence, presumably, the want of any specification on this point.—*Phar. Jour. and Trans.*, November 19, 1887, p. 426.

THE ANTISEPTIC ACTION OF HOPS.¹

By DR. HAYDUCK.

In a previous communication the author had stated, as the result of experiment, that hops do not influence detrimentally the alcoholic fermentation, but that on the other hand they retard the lactic acid fermentation. In a further investigation the author has sought to ascertain to which of the hop constituents this antiseptic action is due.

Oil of hops, as well as the hop tannin, proved inactive in suppressing the lactic acid fermentation. Better results were obtained with the bitter acid, as well as with certain resinous constituents which were separated by the following process:

The hops were perfectly extracted with ether, and the extract, after removal of the ether, was dissolved in alcohol; this left a residue of a white wax which occurs in hops in considerable quantity, but which is of no importance in brewing. The alcohol solution was then treated with an alcoholic solution of acetate of lead, which threw down an abundant yellow precipitate. This was separated by filtration, carefully washed, and decomposed with sulphuretted hydrogen, yielding eventually a soft resin. The filtrate, after removal of the alcohol, was treated with light petroleum spirit, which took up a second soft resin that was left on evaporation of the petroleum. In the residue there was left a hard resin, which was insoluble in light petroleum spirit, but readily soluble in ether and alcohol.

In this way therefore three well characterized resins were separated from the hops:—

(1) A soft resin, precipitated by lead. If an ethereal solution of this resin be treated with solution of copper sulphate the ether is colored an intense green; the resin therefore appears to form with copper sulphate a green compound soluble in ether. This resin is also soluble in light petroleum spirit.

(2) A soft resin that corresponds with the preceding in being soluble in light petroleum spirit and in giving the copper reaction, but differs from it in not being precipitated by lead.

(3) A hard resin which is not precipitated by lead, does not give the copper reaction, and is insoluble in light petroleum spirit.

The bitter acid is not obtained by this process.

All three of the resins behave like weak acids; in aqueous solution they are very instable and readily decomposed. The solubility of the resins in water is not constant, but if a quantity of resin be boiled with successive quantities of water the solubility gradually decreases.

No. 2 resin is related to the bitter acid of hops in that the acid is converted by oxidation into this resin. By numerous experiments it was ascertained that both this

¹ From the *Pharmaceutische Centralhalle*, Oct, 27; reprinted from *Phar. Jour. and Trans.*, December 17, 1887, p. 500.

and the other soft resin, which appears, not to have any relation to the bitter acid, act in a high degree upon the lactic acid bacteria as antifermentatives. On the other band, the faintly bitter hard resin, which is contained in hops in larger quantity, has little or no antiseptic influence upon the lactic acid bacteria. All that can be said is that in the presence of this resin the development of the lactic acid bacteria goes on more slowly than in its absence. Neither of the resins influences the growth of mould.

The different bitter constituents of hops were also examined as to their influence upon the acetic acid bacteria, and it was found that the development of these organisms was not retarded by the resins.

AUSTRALIAN OPIUM.

By W. E. MATTHEWS

The greater part of the colonial opium found in the Melbourne drug market comes from the Bacchus Marsh district, where the cultivation of the poppy has been carried on for the past eighteen or twenty years. The first supply of opium sent into the market from this district was in 1871, and scarcely a season has been missed since. Through the favor of Messrs. Pearce Bros., of Bacchus Marsh, Mr. Thomas Doubleday, of Coimadai, who is the largest grower in the colony, has kindly supplied many interesting notes on the culture of the poppy and collection of the opium. The light loamy flats on river banks are most suited to the growth of the poppy, and it has been found advisable to sow at three distinct periods. About the first week in May, the second or third week in June, and the latter end of July are the best seasons for the purpose. By adopting this system of sowing the whole crop comes into readiness in rotation, and is consequently more easily managed.

Mr. Doubleday sows the seed in drills about twenty-two inches apart and half an inch deep. When the plants are two or three inches in height, cleaning and thinning is commenced, leaving the plants ten inches apart, giving from 28,000 to 29,000 plants to the acre, which, in an average crop, yields about 150,000 capsules; and as each capsule receives at least four incisions, and each incision has to be scraped once, a slight estimate may be formed as to the labor attached to an acre only. In moderately moist seasons the plants attain the height of seven feet and over, but this is no advantage to the grower, as it has been noticed by Mr. Doubleday that it not only renders the crop somewhat unmanageable, but also reduces the yield of opium. A crop averaging from three to five feet is by far the most productive and easily managed. An acre, in a good season, will yield from thirty to forty pounds of marketable opium, but from fifteen to twenty-five pounds is about the average product per acre in the Bacchus Marsh district, over thirty pounds being considered exceptionally good. The average yield on the Continent is twenty-five pounds; in India, in a good season, the yield is from thirty to forty pounds per acre. About four days after the flower opens the petals fall, and in another four days after (the time depending mainly on the state of weather) the capsule changes to a bluish-green. It is then sufficiently mature for scarification. Two horizontal incisions are made, extending across one-half of the circumference. This is done in the evening, and the thin, milky juice (opium) that exudes during the night is scraped off early on the

following morning, so as to finish gathering before the opium becomes hardened by the sun. Cold, showery weather is much against the grower, as the exuding juice, being thin, is easily washed off hot days and heavy dews at night increase the flow, and improve the consistency Of the product. Two days after the first scarification the capsule is ready for incisions to be made on the opposite side. This is sometimes repeated till the capsule is thoroughly exhausted. The opium, when gathered, is made into balls from about half a pound to a pound in weight. These are dried in the shade, care being taken to turn them every second day to prevent mould, the length of time between the turnings being increased as the opium hardens.

A sample of that collected last season at Bacchus Marsh, assayed in accordance with the British Pharmacopoeia, yielded 11.5 per cent. of morphine in the dry powdered opium. A small sample from Queensland gave 9.8 per cent. of morphine by the same process. An analysis of the Bacchus Marsh opium gave the following results:—morphine, 10.65; codeia, .55; narcotina, 6.48; narceine, 6.11 ; gummy matter, 26.70; mucus, 21.62; resin and oily matters, 6.80; water, 9.19; undetermined and loss, 11.90; total, 100.00. A batch of extractum opii, prepared from one pound of colonial opium, yielded a product of 9.3 ounces of a good extract of full alkaloidal strength.—*Austral. Jour. Pharm.*, Nov., 1887, p. 393.

USTILAGO MAYDIS.

By W. A. N. DORLAND, M.D.

After briefly reviewing the history of cornsmut, the author relates his observations in nine cases in which the drug was employed, and then continues:

The above comprises all of the cases within the three months in which it was deemed necessary to employ the drug to shorten the duration of labor. Before proceeding, it may be as well to state that the patients were all in good physical condition, that all were at term, and that all made a rapid and complete recovery.

Having, now, this record before us, let us endeavor by a careful examination of the cases, to group the results of our experiments, that we may the more clearly ascertain the value of the drug. Three or four points seem to stand out prominently, demanding our consideration.

1. The toxicology and physiological action of the drug.

No cases of poisoning in man by the drug are on record. That it is, however, possessed of toxic properties in large doses has been proved by Mitchell.² He found that in the lower animals, in large doses, it acted violently upon the spinal cord, paralyzing first the sensory, later the motor tracts, finally involving the motor, and probably also the sensory nerves. Like ergot, then, it is probable that the chief force of the drug, in toxic doses, is expended upon the nerve centres, producing a toxic paralysis.

As may be understood, our studies on the physiological action of ustilago were

² Dr. James Mitchell, Inaug. Thesis, Univ. of Pa., 1883.

necessarily limited. After the administration of the drug in three instances, there was considerable nausea, followed in one case by vomiting of the ustilago, together with the other contents of the stomach. This nausea seems to be of a similar nature to that produced by the ergot of rye, and calls for no further discussion.

The action of ustilago upon the uterus has been more carefully noted. After the ingestion of a sufficient amount, in from twenty minutes to half an hour, the pains, if present, are increased in severity, in frequency, and in duration, presenting a marked clonic character, following each other in frequent succession, with a decided intermission between each. In this respect it differs decidedly from the action of ergot, which, in full doses, produces one continuous, tonic spasm of the uterine muscle. It is this property of ergot which has, when administered before the delivery of the placenta, produced in so many instances the irregular contractions of the uterus, of which the hour-glass is a well-known example. The employment of ustilago seems to be entirely free from such unpleasant complications.

In addition to being a valuable adjuvant in stimulating weak uterine contractions, ustilago seems to possess the property, which some years ago was ascribed to quinine, namely, of exciting uterine pains when entirely suspended. This has been noticed by Leonard and others.

As to the time required for the action of the drug to become apparent, it may be said that it differs in different cases, depending, undoubtedly, upon the rapidity with which it is absorbed from the gastro-intestinal tract and carried into the system. In the above record, in only two instances, did it require over thirty-five minutes before the ustilago acted upon the uterine tissues, and in the latter case most of the drug was ejected by emesis. In the remaining seven cases the average time required was twenty-five minutes.

The effect produced by ustilago upon the other unstriped muscular tissues of the body has not been inquired into. Probably it produces the same increase of intestinal peristalsis, and the same rise in the arterial pressure due to vasomotor spasm as is produced by ergot. This is yet open to investigation.

2. The indications for the employment of the drug.

It may be noticed that in all the above cases the ustilago was not administered until complete dilatation of the os had been accomplished. Whether or not a disastrous effect would be produced by the administration of the drug prior to the commencement of the second stage of labor cannot be stated. As yet, that question has not been decided. From the study of the physiological action of ustilago, we should think all danger of the irregular contractions of its compeer, the ergot of rye, would be precluded, and that if there were any possibilities of the exigencies of the case demanding its use, it might be employed with impunity during the first stage of labor. At present, however, we shall consider the first indication for its use to be the failure of the pains, with *complete dilatation of the os uteri*.

In none of the cases was the drug employed until the pains of labor had either become so weak that they were inefficient to accomplish the expulsion of the fetus, or until

they were entirely suspended. This, then, We consider the second indication for its use, namely, the *inefficiency or entire suspension of the parturient pain*.

After the ustilago had been taken, it may also be noticed that in no case was there the slightest tendency toward a post-partum hemorrhage. In each case after the expulsion of the placenta, the uterus remained in a state of firm contraction. While, during the three months the great majority of the remaining cases, in which the customary ergot had been employed, showed no tendency whatever toward this alarming accident, however, in two instances was there such an occurrence demanding prompt attention. The third indication, then, for the employment of ustilago we shall consider to be a *condition of uterine inertia threatening or producing post-partum hemorrhage*.

3. The dose and mode of administration.

The preparation of ustilago employed in all reported cases, as well as in our own, was a good fluid extract. The dose of this varies from one-half to two, drachms, one drachm being a fair average. This may be repeated at intervals as required. Should it be necessary, it may be used hypodermatically in doses of from five to fifteen minims.

Finally. *The advantages of ustilago over ergot.*

Dr. Frank H. Potter in a paper on the "Proper Use of Ergot in Obstetrical Practice," I closes his article with a series of ten conclusions. In these he states that when administered during labor the action of ergot is uncertain, producing irregular contractions, rigidity of the os, with interference of the placental circulation, or too rapid expulsion of the fetus, jeopardizing the maternal tissues. He also asserts that the life of the child is endangered through absorption of the oil of ergot, and that indirectly the drug may prove a cause of puerperal septicemia by preventing the removal of every portion of the placenta and membranes. His last conclusion is as follows: "The proper use of ergot in obstetrical practice is limited to those cases in which, after the expulsion of the placenta, the uterus refuses to contract, or having once contracted, shows a tendency to secondary relaxation. Even in these cases reliance should not be placed upon it alone, but its action should be supplemented by the other means used to provoke uterine contraction."

When compared to this formidable array of objections the employment of ustilago seems much to be preferred to that of ergot. It does not produce irregular contractions with all the consequent complications and sequelae; containing but two and a half per cent. of fixed oil, while ergot contains from twenty-five per cent. to twenty-eight per cent., the dangers of absorption are reduced to a minimum; and, finally, as it can be procured at a cost of fifty per cent. less than that of ergot, it seems to be on a fair highway toward the supplanting of the latter in obstetrical practice, should the results of the investigations thus far be confirmed by subsequent researches.—*Med. News*, Nov. 5, 1887.

PHILADELPHIA HOSPITAL.