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FLUID ACETRACTS.

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The title of this paper, “Fluid Acetracts,” will doubtless strike the pharmaceutical reader as an innovation and inasmuch as innovations in pharmacy are resented by many, it is only proper to endeavor to forestall unfavorable criticism by giving reasons for selecting a title. To those who have followed the efforts which have been made within the last few years to call attention to the uses of acetic acid as a menstruum and solvent for organic substances, there will be no occasion to explain the meaning of the word *acetract*. We have had acetic extracts in the past, and by this term is meant a solid extract made from a drug by the use of acetic acid; the word *acetract* may simply be regarded as a contraction of the words *acetic extract*. Inasmuch as the United States Pharmacopoeia of 1890 recognizes mainly alcohol and water as menstrua, it would be clearly improper to call preparations made with acetic acid, extracts and fluid extracts; for the sake, then, of avoiding confusion in nomenclature it has been deemed best to use acetract and fluid acetract to mean solid and liquid preparations of organic drugs made with acetic acid as a menstruum.

Since writing the paper on this subject (which will be found in the AMERICAN JOURNAL OF PHARMACY for March, 1897), the writer has continued experiments upon a number of drugs and has had the opportunity of observing the effect of age upon these preparations. Since this paper (March, 1897) was written, the effort has been made to use as weak an acetic acid as possible and, as was anticipated, some drugs can be very successfully exhausted with a menstruum containing as little as 5 per cent. of acetic acid; but so far, the strength which seems to be most successful is a 10 per cent. menstruum. It is not to be supposed that acetic acid can replace alcohol as a menstruum in all cases, but from the work which has already been done, the writer feels warranted in stating that fully one half of the official fluid extracts could be satisfactorily replaced by fluid acetracts. The manufacturers of specialties have not been slow to adopt acetic acid for extracting drugs, and the saving in expense has been enormous. The cost of diluted acetic acid—10 cents per gallon-as compared with that for alcohol—$2.50 per gallon-is entirely too great a temptation to resist, and a manufacturer would certainly be foolish to use alcohol except when required by the authority of the Pharmacopoeia.

Sanguinaria has always presented the greatest difficulty in selecting a menstruum for the fluid extract which would not precipitate the alkaloid. I have great pleasure in stating that this question is now settled so far as obtaining a liquid preparation, which does not precipitate, is concerned. A fluid acetract of sanguinaria is herewith exhibited, a cubic centimetre representing a gramme of the drug, made on the 26th of

July, 1892, and which has never at any time within the last five years, shown the slightest sign of precipitation. It seems necessary, however, to use a 60 per cent. acetic acid to accomplish this, for it will be seen by examining the samples that fluid acetract of sanguinaria, made with diluted acetic acid, contains an abundant precipitate.

The fluid acetract of ipecacuanha, made with 60 per cent. acetic acid is two years old, and seems to be in excellent condition, no precipitation being observed. The effect of acetic acid upon pectinous drugs presents some curious anomalies. Sixty per cent. acetic acid seems to act as a solvent for the pectinous principles, for, whilst weaker strengths produce liquid acetracts which will gelatinize, no tendency toward gelatinization is observed in the 60 per cent. fluid acetracts.

One fact is noticeable in light-colored preparations, that is, a tendency to darken with age. The fluid acetract of squill herewith shown, was of a light amber color when first made; in two years it has become a clear, dark red. When added to syrup, however, in the proper proportion to make syrup of squill, it will be observed that the resulting preparation is not very different from that which is official.

Fluid acetract of ergot is very successfully made with a 10 per cent. acetic acid menstruum. Since the publication of the paper above referred to (1897), many letters of inquiry upon the subject have been received, and it is evident that acetic acid is being extensively experimented with in many laboratories. It is with a view of encouraging investigations on this subject that these papers are written, and any information in the possession of the writer will be cheerfully furnished, in the hope that sufficient experience will have accumulated in two years more, to warrant the introduction of some of these preparations in the next Pharmacopoeia. Dr. Charles F. Squibb has furnished the writer with nine specimens of fluid extracts made with diluted acetic acid, which are submitted to the meeting for inspection. They are as follows: Digitalis, cascara sagrada, aconite root, nux vomica, belladonna leaf, compound gentian, gelsemium and coca. It will be observed that these represent some of the most important official drugs. They have all been made by repercolation, and on the large scale it is found that it is possible, with drugs like nux vomica, to use such, very coarsely ground instead of in fine powder, the acetic acid seeming to penetrate hard tissues and to dissolve the active constituents with great facility.

The presence of acetic acid in the finished product is, of course, sometimes objectionable. Practically, this would not be a serious fault in fluid acetracts made from powerful drugs where the dose is from 2 to 5 minims, given in water, and where only a 10 per cent. acetic acid is used for a menstruum.

CANTHARIS VESICATORIA.

By BERTRAM SNYDER PH.G.

The Spanish blistering beetle belongs to the class Insecta, order Coleoptera, family Meloidae. The following is a description of the insect (Fig. 1) found in commerce: Oblong, somewhat flattened above, usually $^{3}/_{4}$ inch, though often found 1 inch or more in length; $^{3}/_{16}$ to $^{1}/_{4}$ inch in breadth. The entire insect is of a brilliant metallic green

color, changing in different parts, especially beneath, to a golden green. Head: triangular, and divided by a faint median line into two lateral lobes. Mandibles stout, and partly concealed beneath the labrum. Clypens distinct. Antennae filiform, composed of conical joints; three basal joints, green or bluish green, the remainder of a black color. Eyes comparatively small and compound, placed on the anterior portion of the lateral lobes and to the side. Ocelli absent. Thorax: the dorsal surface of the prothorax is quadrilateral, tapering from above to the sternum, having the appearance of a wedge placed between the head and mesothorax. Scutellum very small. Legs with five tarsal joints. Elytra covering the abdomen, and extending a short distance over the pleural surface. The Spanish blistering beetle, though the only one official, is by no means the only one possessing vesicating properties. It is found in the southern and central portions of Europe. In its native state it chiefly feeds upon the leaves of the plants belonging to the Oleaceae and Caprifoliaceae, but as a larva it is parasitical, The female insect deposits its eggs during June, and the larvae, when hatched, attach themselves to bees or other Hymenopterous insects. The insects are gathered during the early morning and late in the evening, when they are less active from the cold. The persons who gather them protect their hands with gloves and usually wear masks, The trees or shrubs are shaken, and the insects fall into sheets spread on the ground. They are killed by exposure to the fumes of vinegar or by turpentine, dried by artificial heat and packed in paper-lined boxes.

FIG. 1.—Cantharis Vesicatoria.

FIG. 2.—Mylabris Cichorii.

The beetles may be kept for any length of time in air-tight bottles without losing their vesicating property, but on exposure to moist air the cantharidin is decomposed and the beetles become useless. They are also much injured by the attacks of other smaller insects, particularly by a small mite, which entirely consumes the soft inside

portions, leaving the hard external shell intact. They may be preserved from these attacks to some extent by the addition of small pieces of camphor, or, better, by exposing the beetles to the vapor of pyroligneous acid.

The commonly-called Chinese blistering beetle (*Mylabris cichorii*) (Fig. 2) found in some portions of Southern Europe and in China, has acquired some note. The body is of an elongated oval or cylindrical form, from $^3/_4$ to 1 inch in length, and from $^3/_{16}$ to $^5/_{16}$ inch in breadth. Head of a jet-black color, somewhat triangular; maxillary palpi three-jointed; mandibles stout and large, almost concealed beneath the labrum; clypens rather large; antennae clavate eleven-jointed and articulated to the front of the head, below and between the eyes; eyes large and compound; the facets or corneae are discernible with a pocket lens; they are situated on the side of the head and rather far apart; ocelli absent; prothorax decidedly wedgeshaped, of a black color with faint prominences and depressions on its dorsal surface; praescutum very small; scutellum of an oval shape; the femora of the first and second pair of legs are clothed with yellowish hairs; third pair jet black; elytra black with two broad-waved transverse bands of brownish yellow, in some species examined of a golden-yellow color; on the anterior portion of each elytom there is a circular spot of the same color; abdomen rather large and conical, entirely concealed by the elytra, which not only project beyond the posterior portion, but also cover the sides, which is characteristic of the blistering beetles. The blistering beetles are well represented in this country, and it is to be regretted that they have not a place in the U. S. Pharmacopoeia, as they are in no wise inferior to the *C. vesicatoria* in vesicating properties. The most common are *C. vitatta, C. cineria, C. marginati, C. atrata,* and *C. vulnerata*. The best known is *C. vitatta* (Fig. 3), commonly called potato fly. It is somewhat smaller than *C. vesicatoria*, being from $^1/_2$ to $^3/_4$ inch in le gth and about 3/16 inch in breadth. It is of a black color, with the exception of ochreous markings; the under portion of the body is cinereous; head cordate of a light ochre color, with two black spots on the apex; mandibles entirely concealed by the labrum; labial palpi two-jointed, the last joint large and flattened; maxillary palpi three-jointed; antennae black and filiform; clypeus large; eyes large and compound, extending over the lower side of the head; prothorax elongated and much narrower than the head, of a black color, with a brownish yellow central and a faint lateral line; coxae, of the first pair of legs much elongated; the articulated portion of the femora are of an ochre color; the other portions are cinereous; scutellum small; elytra are black, with a median and marginal stripe of yellow; they slightly overlap the pleurites. The whole insect is covered with a fine pubescence.

FIG. 3.—Cantharis Vitatta.

The vesicating properties of the blistering beetles reside in a crystallizable substance termed cantharidin, and according to some writers, in a green fixed oil; but this is no doubt due to the presence of cantharidin, which is soluble to some extent in the oil.

A portion of the powdered cantharides was treated with carbon disulphide and set aside to macerate. On decanting the liquid and subjecting it to spontaneous evaporation, a thick, dark brownishgreen oleaginous matter was obtained , which was insoluble in alcohol, soluble in ether, chloroform and benzin. It melted at 18º C., below which it was solid. It was entirely soluble in excess of ether, which on partial evaporation separated out a yellowishbrown fat; when entirely evaporated and the fat separated by filtration, a light pea-green oil was obtained, which raised a small blister in eight hours without any covering, the oil being placed on the back of the hand. Alcohol and water both dissolve an extractive matter. The alcoholic extract was soluble in ether and acetic ether.

A separate portion of the powdered beetle, on treatment with chloroform, yielded, after evaporation, an abundance of crystals of cantharidin along with dark fatty matter, which was removed by CS_2 and the cantharidin redissolved in a fresh portion of chloroform and recrystallized. A small portion of this cantharidin raised a large, painful blister in four hours on the same part of the hand to which the oil was applied. The distillation of the powdered cantharides with water affords a volatile principle which is vesicating. While treating the powder that was used in the distillation with alcohol and then evaporating the solution by means of heat, I stood over it at intervals stirring with a glass rod. At night I was much annoyed by a scratching sensation in closing the lids over the eyes. Next morning intense inflammation had set in. On consulting a physician he stated that I must have been using some irritating substance in my eyes. I was compelled to stay in a dark room for twenty-four hours; for a few days after had to use a shade.

Boric acid, 6 gr., camphor water, 2 ounces , and distilled water 1 ounce, using three drops in each eye allayed the irritation. I noticed that the irritation of the left eye was much worse than the right. In stirring the evaporating solution I leaned on the counter with my left arm, thus exposing the left eye more to the vapor.

ANALYSIS OF THE ROOT OF HYDRANGEA PANICULATA, VARIETY GRANDIFLORA.

By AUGUST G. LEUBERT P.D.
Contribution from the Chemical Laboratory of the Philadelphia College of Pharmacy. No. 180

Hydrangea paniculata, variety grandiflora, is a cultivated hybrid of Hydrangea paniculata. It is a showy annual shrub, having very large panicles of sterile flowers, which open late in August, or early in September. It is one of the most commonly cultivated shrubs in the Northern and Middle States.

As far as I am able to learn, there is no record concerning the chemistry of this plant. The AMERICAN JOURNAL OF PHARMACY for 1887 contains on page 122,

however, an essay on the chemistry of Hydrangea arborescens, a closely allied species. Mr. C. S. Bondurant, the author of the essay just referred to, obtained, from both the alcoholic and ethereal extracts of the plant, a distinctly crystalline body; this, he proved to be a glucoside, and named it *hydrangin*. It crystallized in stellate clusters. On addition of an alkali to the aqueous solution, a very distinct and strong opal-blue fluorescence was observed; this was destroyed by acidifying. It melted at 235º C., and on increasing the temperature slightly, it sublimed without decomposition. A characteristic reaction was obtained on dissolving it in sulphuric acid, and adding a small crystal of potassium bichromate, a dark purple color being produced. This color, after some minutes, faded to violet, and, on addition of a few drops of water, changed to an olive green color, which gradually faded.

The work of the present writer consisted in making a proximate analysis of the root of the variety grandiflora. Dragendorff's method of analysis was followed. The root was reduced to no. 40 powder for this purpose.

Petroleum ether having a boiling point Of 50º C. removed 1.20 per cent. of soluble matter. This consisted of wax, saponifiable fat, and caoutchouc.

Official ether extracted 2.39 per cent. of the weight of the root. The extract was granular in appearance and waxy in consistence. it had a characteristic, sweetish odor, which somewhat resembled that of the root. The extract was digested with water, and the mixture filtered. The filtrate was agitated with several successive portions of ether., the ether separated and allowed to evaporate. A crystalline residue was obtained; it was purified by recrystallization. The crystals were similar to those obtained from the portion of the ethereal extract which was insoluble in water, but soluble in alcohol. These are yet to be described in this paper. The aqueous layer, from which the crystals had been removed by ether, was heated on a water-bath to expel the ether, and then warmed with Fehling's solution. This reagent was reduced, thus showing the presence of a sugar or a glucosidal body.

That part of the ethereal extract which was insoluble in water was entirely soluble in absolute alcohol. The solution deposited crystals on standing, These crystals gave no reactions for alkaloids. On mixing water with a portion of the crystals, and making a part of the resulting mixture alkaline with solution of sodium hydrate and applying Fehling's solution with heat, there was a reduction of this reagent. Another portion of the mixture was made acid with dilute sulphuric acid, heated on a water-bath for some time, then made alkaline and treated with Fehling's solution; the last was again reduced. The treatment with dilute sulphuric acid left a resin-like, insoluble substance of a brownish color, while the super-natant liquid acquired a decided fluorescence. This fluorescence was removable by filtration. The foregoing behaviors indicate that the principle itself reduces Fehling's Solution, or that it is decomposed by alkalies and acids, with the production of a substance which reduces Fehling's solution. From a concentrated ethereal solution, the principle crystallized in branched clusters. It was charred by sulphuric acid, and upon adding a crystal of potassium bichromate, a darker color and an effervescence were produced The principle melted at 178º C. These properties show that it is not identical with the *hydrangin* found by Bondurant. The name, *para-hydrangin*, is suggested for the substance until further investigation shall decide its exact chemical identity.

Absolute alcohol dissolved 14.49 per cent. of extract from the root. The extract was partly soluble in water; the remainder was soluble in alcohol. The aqueous solution contained some of the crystalline principle that was found in the aqueous solution of the ethereal extract. The alcoholic solution of that part of the absolute alcohol extract insoluble in water gave no precipitate with alcoholic solution of ferric chloride. Lead acetate in alcoholic solution caused a yellowish-brown flocculent precipitate. A third portion of the alcoholic solution of the extract yielded a precipitate when mixed with water, but it could scarcely have been resin since neither aqueous nor alcoholic solution of potassium hydrate dissolved it. This extract contained 2.38 per cent. of sugars, calculated as glucose, and 0.7 per cent., calculated as saccharose.

Water removed 3.60 per cent. of organic solids from the root. This amount included 2.42 per cent. of mucilage, and a trace of dextrin. Sugars were not found in this extract.

A weak solution of sodium hydrate was the next solvent applied to the root. It extracted 15.88 per cent. of organic matter. A portion of the alkaline solution was acidified with acetic acid and precipitated with five times its volume of alcohol. A precipitate amounting to 7.30 per cent. of the root was obtained. Lassaigne's test gave no indication of nitrogen in this precipitate, consequently it was composed of mucilage.

The root yielded 4.88 per cent. of soluble organic matter to a weak solution of hydrochloric acid in water. This extract contained 2.37 per cent. of the substance known as pararabin.

Starch was present in the air-dry root to the extent of 9.46 per cent.

The air-dry material contained 7.94 per cent. of moisture, and 8.12 per cent. of ash.

The cellulose, lignin and allied substances amounted to 32.04 per cent.

NOTES AND NEWS.

Guaiacum of lower grade has been offered at the drug auctions of London mixed with the seeds of *Anacardium occidentale.—Chem. and Drug.*, 1898, p. 253

Cod Liver Oil of good quality is demanded by the customers of the retail druggist. The Lofoten cod liver oil is palatable, and its consumption in the United States is steadily increasing.

The Ovoid Cardamom is the fruit of *Amomum medicine* Low., and is a native of Southwestern Kwangsi, as well as of Tonquin. The centres of export by the West River are Nan-ning and Po-sê.—*Pharm. Jour.*, 1898, 226.

Gas Pipes out of Paper are being made in England. These are made from cellulose paper and coated with asphalt. They are said to withstand a high pressure and to be

less affected by temperature and not affected by electrical currents.

Seedless Raisins.—In California there were experiments in stoning raisins so as to have them as free from seeds as the ordinary currant. Success has followed, till now seedless raisins are becoming an important item among the fruit industries of California. —*Meehans' Monthly.*

Fuller's Earth in California.—An immense bed, apparently inexhaustible, of fuller's earth has been found in San Bernardino County, Cal. The earth is considered at least equal, and possibly superior, to that imported from Great Britain.—*Chem. and Drug.*, 1898, p. 337.

Agar-Agar as an Ointment Base.—Gallois (*Bull. gèn. de Therap.*) recommends the use of agar-agar jelly as an ointment base. Small portions of this rubbed on the affected area quickly dry, giving a closely adherent film. It possesses the great advantage over gelatin that in drying on the skin it does not contract.

The Cultivation of the Nutmeg Tree in Ceylon is undertaken very tardily. The yearly exports from that island amount to only about 4,000 to 7,000 pounds. It is now reported that a crop has been gathered in the lower country districts of Kurunegala and Kelain Valley within five years, being at least five to ten years earlier than the time usually required for these trees to bear.—*Chem. and Drug.*, 1898, p. 360.

To Destroy Ants in Lawns.—The following recommended formula for the destruction of ants is given in *Meehans'Monthly* in response to the inquiry of a subscriber: Mix one tablespoonful of bisulphide of carbon in two or three gallons of water. Pour this into holes six inches deep and twelve inches apart, filling in the holes immediately after this has been done. The fumes penetrate the soil and destroy the ants.

Bacteria in Holy Water.—A continental bacteriologist has found in the holy water in use in one of the most popular churches of Sassari not only staphylococci and streptococci, but also the bacillus of diphtheria and colon-bacilli, which frequently produce appendicitis. The presence of the diphtheria bacillus is supposed to be due to the custom of the worshippers touching their lips as well as other parts of the face with the consecrated water.—*Chem. and Drug.*, 1898, P. 337.

The Toxic Ptomaines of Preserved Meal, when found in hams, game pies, etc., are due, according to Van Ermenglin (*Jour. Pharm. Chem.*, 1898, p. 88), to the presence of a specific organism, Bacillus bolulinus. The soluble toxin (boluline) is extremely potent; 1/1000 part of a milligramme killed a rabbit in twenty-four hours. Fortunately, however, this ptomaine is destroyed at a temperature of 60º-70º C., and the bacillus which produces it at 85º C., so that thorough cooking will remove all dangers in the case of salted or smoked meats.—*Pharm. Jour.*, 1898 p. 217.

Birch Leaves as a Diuretic.—Huchard confirms the statement of Winternitz that a decoction of birch leaves acts as a useful diuretic. In order to render the resinous matter soluble, Moreau recommends the use of a little sodium bicarbonate. The decoction is made thus : From 10 to 15 grammes of the leaves are boiled in 1,000 c.c.

of water, then cooled to 30º or 40º C. and 1 gramme sodium bicarbonate is added. Instead of this decoction, an extract, made by percolation with alcohol from the leaves gathered from the flowering tree, is given in pills in a daily dose of 1.6 to 2.4 grammes.—*Pharm. Jour.*, 1898, P. 237; from *Rép. de Pharm.*, X, 24, after *Jour. des Pract.*

Cultivation of Henbane and other herbs has been carried on successfully by George Allen & Co., of Ampthill, Bedfordshire, England. This firm has had many years' experience in the growth and culture of medicinal herbs, and Lehn & Fink are the sole agents for the United States. Their preparations, particularly of belladonna, digitalis, conium, hyoscyamus, stramonium, scoparius, etc., according to the *Chemist and Druggist*, represent excellent preparations from drugs which exhibit full care in harvesting and drying. The illustration represents a crop of henbane of this firm. They grow or collect all those medicinal British plants which are required for the preparation of green and other extracts, juices, liquors, confections, etc.

Crop of Henbane, second year biennial plant.

Pa-Chioh is the Chinese name for Star aniseed, signifying "eight horns or corners," from the shape of the fruit. The tree which produces this fruit, according to A. Hosie, occupies a comparatively small area, being confined to Tonquin and the southwest of Kwangsi. The bulk of the star aniseed trade has hitherto passed through the port of Pakhoi, and in 1896 Pakhoi exported 6,691 piculs of the value of 113,817 Haikwan taels. This, as well as the oil extracted from the seeds (2,053 piculs valued at 410,692 Haikwan taels) was sent to Hong Kong, while 69 peculs of oil, of the value of 15,552 Haikwan taels, passed Lungchow for Tonquin. It is stated that, owing to the destructive method of collecting the fruit, there is a good crop only once in three years. Complaints have been made that the oil is adulterated with kerosene.—*Pharm. Jour.*, 1898, p. 226.

The Cassia Producing Districts of China are situated in the southern border lands of Kwangtung and Kwangsi provinces, in the south of the West River. The market town of Ta-wu, in the Pinguan district is the great centre of the cassia trade, where

50,000 to 60,000 piculs are annually disposed of. It is exported, packed in matting, by junk to Canton, where there is a powerful cassia ring, which has an arrangement with the native custom house and likin offices, and virtually controls the whole trade of Kwangtung and Kwangsi. The total export of cassia, including cassia lignea, buds, twigs, twig-bark and broken cassia, from the two provinces through Canton in 1896 amounted to 102,810 piculs, valued at 590,798 Haikwan taels; of so-called cinnamon, 99 piculs, valued at 4,801 Haikwan taels were also exported, as well as 398 Piculs of leaf oil of the value Of 56,484 Haikwan taels, making a total of cassia and cassia products of 653,083 Haikwan taels. China is reported to consume very much more than she exports, so that the total value of the cassia trade must be very considerable.—*Ibid*., 226.