

foresee them. It would be a brief and trifling measure indeed that would not be worthy of an afternoon's discussion, and if it is one of any considerable length or complexity it is probable that the entire time of an annual meeting would not be too much for its adequate consideration.

It is no part of this plan to rush these model bills to the legislatures for immediate enactment. The prime object is to provide a series of carefully thought out, well-balanced, and accurately drafted measures to be made use of only when there is a real need of new legislation, or when it is necessary to quickly find a substitute for the crude and sloppy attempt of some crank reformer.

The Proper Education of Public Opinion.—Another essential in the campaign against useless legislation is the better education of the general public as to what constitutes necessary and proper regulation of the sale of drugs and medicines.

Every one owes it to his calling to protect its good reputation as zealously as he would protect his own. Every individual druggist, and every association should enter prompt protest through the press of their community against every extravagant tale of the sensation monger which reflects unjustly upon the drug business.

The American public is a fair-minded jury, but like every other jury it must base its conclusions upon the evidence and arguments which are brought to its attention. If we do not deny or protest against the sensational stories of the druggist's faults and crimes, we have no right to reproach the jury for accepting the alleged facts as true.

Not only is the general public disposed to be fair to the druggist, but it is already beginning to suspect that it has been victimized by the office-seeking patriot with his talk of wholesale adulteration of foods and drugs, and the reckless selling of narcotics and of dangerous and fraudulent medicines, and it is more than ever ready to listen to what the druggist has to say in his own defense.

The gods help those who help themselves.

REPORT OF COMMITTEE ON DRUG MARKET, PENNSYLVANIA
PHARMACEUTICAL ASSOCIATION.*
(1914-1915.)

The report of your Committee on Drug Market is given under world conditions which have created effects never before experienced in the drug trade. Dependent as we are upon Europe for many of our crude drugs and fine chemicals, a conflict such as is now raging there has great effect upon the drug trade in this country. Although we have recovered somewhat from the semi-panic and disorganized condition existing during the first few weeks after the outbreak of the war, there is still an inevitable shortage of some drugs, due in part to the severance of the means of communication and transit with those countries which have supplied us with them; the enlistment of men in the various armies and the use of many products in large quantities by the fighting forces of the nations at war.

* Presented to Pennsylvania Pharmaceutical Association, June, 1915.

Before the British Order in Council of last March went into effect it was not so very difficult to obtain supplies from Germany or Austria, but conditions since the order became operative have become more serious and are steadily becoming worse. Goods that were ordered before the British order went into effect were permitted to be shipped after that date, but considerable delay was usually experienced, sometimes extending over three or four months, on account of the requirement that contracts, invoices, etc., be submitted to the British Government for inspection. Cases are known where so much time has been lost on account of the negotiations that the foreign shipper in a neutral port has been compelled to return the goods to the original shipper rather than submit to the continued loss of interest on the money invested. The situation is also complicated on account of the fact that certain steamship lines trading between the United States and Holland usually refuse to carry goods of German origin. Their reason for doing so is to protect their vessels from delay or seizure by the blockading fleet.

A new development is seen in the fact that the drug centers of Europe have been shifted from Hamburg and Trieste to Rotterdam and until recently to Genoa. Marseilles is shipping more than the usual amount. New York has also benefited, as South American goods that were formerly obtained through Hamburg brokers are now shipped direct to New York and from there distributed throughout this country and those countries of Europe that can be reached. Since Italy's participation in the conflict it is practically impossible to obtain goods from Trieste.

However, in spite of existing conditions, it is a remarkable fact that there has not been much lowering of quality nor more than the normal amount of adulteration. Some errors have naturally occurred on account of the advent of brokers in neutral European countries into the drug trade who knew practically nothing about the goods they were handling; for instance, one broker who before the beginning of hostilities was engaged solely in the non-medicinal seed business wanted to know what a pharmacopœia was and to send him one.

Some of the goods examined owe their inferior quality to improper gathering, some on account of having been placed in dirty packages, some others on account of the depletion of the regular stocks and others on account of accidental admixture with small amounts of foreign substances. Instances of seeming inferiority are also due to confusion of standards as established by various manufacturers. A condition worthy of notice is demonstrated by the fact that drugs found adulterated last year were found to be authentic and of standard quality this year, showing the value of publicity and education.

An improvement has been noticed in the quality of some substances usually found inferior; for instance, it is now possible to obtain mineral oil that is tasteless, odorless, free from fluorescence and color and equal to the Russian variety. It is true that it is lower in specific gravity, but it is claimed by the refiners that a low specific gravity does not necessarily indicate a thin mineral oil.

Summing up the situation in the drug market at the present time, we have found that the quality of the goods on the market is equal to that existing last

year. Of the hundreds of samples examined there were only five cases of adulteration or substitution and only two or three instances of goods of grossly inferior quality. There is quite a scarcity of goods, such as antipyrine, carbolic acid, salicylic acid, sodium salicylate, salol, phenacetin, etc. The great demand for ipecac occasioned by the use of emetine as a remedy for pyorrhea alveolaris and the low price of menthol are also noteworthy.

Following its usual custom the committee has taken advantage of the generosity of the firms of H. K. Mulford & Co. and the Smith, Kline & French Co., and have taken the following data from their analytic files. The matter presented at this time does not of course represent all the substances examined by these firms, but are typical of those articles examined during the periods extending from May 31, 1914, to June 1, 1915.

Preceding the comments on the goods examined during the past year we present the following observations, contributed by Mr. C. E. Vanderkleed, the Chairman of our Committee, in regard to the labeling of U. S. P. substances:

The presence of qualifying words and phrases other than the letters "U. S. P." on U. S. P. substances and the absence of "U. S. P." on strictly U. S. P. substances is very common. It is difficult to fathom the reason for leaving off the letters "U. S. P." from the label of a U. S. P. substance when the substance is strictly U. S. P. since the statement that the substance is "U. S. P." adds distinction to the quality of the substance. Some of the qualifying words and phrases noted were:

"Formaldehyde U. S. P.—Methyl alcohol and water 62.7%—Formaldehyde 37.3%." In this case an ingredient, methyl alcohol, is stated which is not mentioned in the U. S. P., although of course it is commonly understood to be present to some extent.

"Formaldehyde U. S. P.—Methyl alcohol 62.7%—Formaldehyde 37.3%." This is intended to be the same as the above but the labeler accidentally omitted the statement "and water."

"Iodine, Crude, Com'l." was strictly U. S. P. except that it was in lumps instead of plates.

"Calomel, White" was strictly U. S. P.

"Manganese Dioxide, Heavy" was strictly U. S. P.

"Acetic Acid 36%." Evidently "U. S. P." was intended to be the information conveyed by "36%." However, an acetic acid may be 36% without being U. S. P., but not U. S. P. without being at least 36%.

"Acid Acetic, U. S. P. 99%" was the label on a lot of Galacial Acetic Acid U. S. P.

"Ox-gall" without any modifying statement was used on a package of powdered ox-gall.

"Oil Sassafras, True," was strictly U. S. P.

"Caffeine Alkaloid" a common method of labeling caffeine U. S. P.

"Oil Rosemary, for Technical Use" was below U. S. P. requirements in total borneol content.

"Arsenous Acid, Pure" was strictly U. S. P.

"Acetic Ether, 90%" was strictly U. S. P.

"Oil Fennel Seed, Sweet," was strictly U. S. P.

"Colchicine Pure, Cryst." contained about 22% chloroform of crystallization.

"Colchicine, Amorphous" was practically U. S. P. in quality.

"Oil Lavender, English and French Blended, U. S. P." was strictly U. S. P.

"Oxalic Acid, for Tech. Use" contained 0.156% non-vol. residue, was a trifle dirty but otherwise U. S. P.

"Indigo-Disulpho-Acid, not to be used in food products," contained a trace of heavy metals.

"Saccharin, Insoluble," required 500 parts instead of the 250 parts of water required by the U. S. P. for solution. It was otherwise strictly U. S. P.

"Ozone Vanillin" was strictly U. S. P.

"Petrolatum U. S. P. Extra Amber" was strictly U. S. P.

"Petrolatum U. S. P. Lily Ambers" was strictly U. S. P.

"Glycerin Pure" gave faint opalescence in test for sulphate, contained a trace of butyric acid but was otherwise U. S. P.

"Chloroform for Anaesthesia. Contains about $\frac{3}{4}$ % alcohol." Was strictly U. S. P.

"Citric Acid, U. S. P., Dried and Powd.," was U. S. P. citric acid powdered but not dried.

"Tartaric Acid, Dried and Powd., U. S. P.," was strictly U. S. P. The "dried" in the name is superfluous.

Acetone.—Of the ten lots examined, only three complied with all the U. S. P. requirements. Three samples had slightly higher boiling points and were slightly lower in strength, two other samples were low only in strength and two had high boiling points. The strength of the various lots ranged from 98.5% to 99.66%, and the boiling points from 56° C. to 59° C. Reported by J. G. Roberts.

Acid Acetic.—All of the samples examined were of good quality. Reported by J. G. Roberts.

Acid Cresylic.—One sample of 98% to 99% strength had a pronounced objectionable tarry odor. Reported by J. G. Roberts.

Acid Oleic.—The improvement noted in the 1914 report still continues as the four lots examined were all of U. S. P. quality. Reported by J. G. Roberts.

Acid Salicylic.—An examination of eight lots demonstrates the wisdom of raising the present U. S. P. melting point standard from 156° to 157° C. to 156° to 159° C. as proposed for the U. S. P. IX. Only three lots complied with the present requirement of 156° to 157° C. Three of the others melted at 158° C. and two at 159° C. All the samples were satisfactory in every other respect. Reported by J. G. Roberts.

Acid Sulphuric.—Two lots examined were found to contain 94.3% and 92.6%, respectively, of absolute H₂SO₄. Reported by J. G. Roberts.

Acid Trichloroacetic.—None of the lots examined gave a faint reddish color with FeCl₃ as required by U. S. P., but even reagent acids refuse to conform to this test. Reported by G. E'We.

Aconite Root.—An improvement was noted in the quality of Aconite as all samples examined complied with the U. S. P. requirement of not less than 0.5% aconitine. The following results were obtained on four lots: 0.505%, 0.5%, 0.63% and 0.64%. Reported by J. G. Roberts.

Alcohol.—The only lot examined failed to answer the U. S. P. aldehyde-oak tannin test. This is not an unusual condition, however, as all of the samples examined during recent years have contained traces of these impurities. Reported by J. G. Roberts.

Alkanet Root.—An examination of an average of four samples revealed the fact that it contained only 4.55% of anchusin. The British Pharmaceutical Codex states that Alkanet Root should contain not less than 5%. The samples were unsatisfactory in appearance on account of the presence of an undue proportion of leaf bases which were attached to the upper portion of the root and which are claimed to contain no coloring matter. As alkanet root is mostly used as a coloring agent it can be readily seen that an undue proportion of leaf bases is undesirable. Reported by J. G. Roberts.

Aloes.—No improvement has been noted in the quality of Socotrine Aloes, as four lots examined were in a poor physical condition and failed to comply with several U. S. P. requirements. They contained excessive moisture and an abnormal amount of alcohol insoluble material. The moisture ranged from 15.0% to 23.4%. It was found also that the yield of ash from samples taken from various kegs was quite varied as the following results demonstrate: 4.4%, 4.5%, 5.2%, 4.67%, 4.71%, 12.2%, 4.95%, 13.52% and 30.3%. There was quite a difference in the physical condition of the contents of kegs comprising the various shipments. Some kegs were full of soft semi-fluid aloes of uniform quality, while others were only partially full and contained a mixture of hard and soft aloes. The latter

kegs were probably from an older lot as the aloes were quite hard at the top and sides and soft to within about three inches of the top. An illustration of the variable character of the contents of various kegs is shown by the fact that a sample from the driest keg contained 15% moisture and a sample from the softest contained 23.4%. Reported by J. G. Roberts.

Alum, Dried and Powdered.—Great improvement in moisture content has been noted, none of the samples containing more than 6%, which is close to our arbitrary standard of 5% moisture. Reported by J. C. McCaffrey.

Anise Seed.—About 1% of coriander seed was found in one lot and was probably present as the result of accidental admixture. Reported by J. G. Roberts.

Asafetida.—Two lots were up to the 50% soluble in alcohol requirement, running 61.9% and 59.0%, respectively. The ash contents were 13.1% and 22.5%, respectively. Reported by W. H. Orrick.

Barium Peroxide.—An examination of seven lots gave strength results ranging from 87.12% to 89.4%. Reported by J. G. Roberts.

Belladonna Leaves.—Quite a variation was found in the alkaloidal content of 23 samples examined during the past year as the results obtained ranged from 0.199% to 0.587% of mydriatic alkaloids. Most of the samples were of U. S. P. quality as only four yielded results below the U. S. P. standards of 0.3%. One sample examined was in a poor physical condition as it was found to contain about 50% of stems. The remainder was composed of buds and stems and badly broken and ground leaves. Two instances of substitution were encountered as one sample was composed wholly of phytolacca leaves and one lot of a mixture of belladonna leaves and scopola leaves. Of the twelve bales composing this lot two were practically all scopola leaves, five contained not less than 25%, four not less than 50% and one not less than 75%. Reported by J. G. Roberts.

Belladonna Root.—Three lots contained 0.46%, 0.522% and 0.48%, respectively, of mydriatic alkaloids. Reported by J. G. Roberts.

Benzoin.—The five lots tested ranged between 67.8% and 76.5% in alcohol solubility, and 0.96% and 1.62% in ash. Reported by G. E'We.

Betanaphthol.—Both of the samples examined were not sufficiently soluble in alcohol, one of them also contained a slightly abnormal amount of organic impurities. Reported by J. G. Roberts.

Bismuth.—The only lot examined contained minute traces of arsenic and iron. Reported by J. G. Roberts.

Burdock Root.—One of the two lots examined was grossly inferior. It was wormy, rotten and dirty and was considered a very undesirable article. Reported by J. G. Roberts.

Calcium Carbonate Precipitated.—Usually gives slight precipitate in test for "limit of iron, aluminum and phosphates." Reported by J. C. McCaffrey.

Calcium Chloride.—One lot left 1.4% residue in U. S. P. test for Magnesium and alkalis, while the U. S. P. allows only 0.1%. Reported by J. C. McCaffrey.

Calcium Glycerophosphate.—The following results were obtained on three samples of different makes when tested according to the methods proposed for the U. S. P. IX:

Sample Number	1	2	3
Proportion soluble in water.....	1 gm. in 50 cc.	1 gm. in 50 cc.	1 gm. in 50 cc.
Reaction of aqueous solution to litmus.....	Acid	Alkaline	Acid
Phosphates	None	None	None
Heavy Metals.....	None	None	None
Sulphates	None	None	None
Chlorides	Normal	Normal	Normal
Alcohol soluble impurities.....	4.19%	0.67%	7.27%
Moisture at 130° C.....	10.70%	7.32%	9.17%
Residue upon ignition.....	49.40%	55.82%	47.43%
Strength	81.68%	92.29%	78.42%

Sample No. 2 was the only one that met the requirements as it was above 90% strength and was alkaline in reaction. It contained some alcohol soluble impurities, but it was considered that the slight amount present was unobjectionable. Reported by J. G. Roberts.

Calcium Phosphate.—One lot contained chlorides in excess of U. S. P. allowance. Reported by G. E'We.

Cannabis Americana.—An examination of one sample showed it to be in poor physical condition and almost physiologically inert. A separation of seeds from three other samples revealed the presence of 1.47%, 4.22% and 13%. Reported by J. G. Roberts.

Chromium Sulphate.—The two lots examined assayed 85.4% and 87.1% Cr₂(SO₄)₃, respectively. Reported by G. E'We.

Colchicine.—Colchicine continues to contain excessive quantities of chloroform and moisture. The thirteen lots examined lost 2.2%, 4.2%, 8.3%, 9.1%, 9.3%, 10.3%, 12.1%, 12.7%, 12.9%, 22.3% and 29.2% of their weight at 102° C. the loss in each case, with the exception of the 4.2% figure, being due chiefly to chloroform. The lot losing 4.2% lost only moisture. There is probably no excuse for the excessive quantities of chloroform left in this alkaloid, as it is readily driven off on heating without appreciably affecting the color of the alkaloid. It is difficult to obtain a good qualitative reaction with the U. S. P. Hydrochloric Acid-Ferric Chloride-chloroform test if the mixture is heated only to boiling, as required by the U. S. P., but if the boiling is continued for one to two minutes guarding against excessive evaporation a good reaction is always obtained. Reported by G. E'We.

Colchicum Seed.—0.82% Colchicine was found in the only lot examined. Reported by J. G. Roberts.

Cresol.—One lot examined was of U. S. P. quality in every respect. This is an uncommon condition as the specific gravity is usually abnormal. The specific gravity of five other lots ranged from 1.029 to 1.045; two of these had too high a boiling point as only 32% and 64% of distillate was obtained between 195° and 205° C. Reported by J. G. Roberts.

Only two of the sixteen lots examined had a specific gravity within the U. S. P. limits of 1.036-1.038, these two having specific gravities of 1.037 and 1.038, respectively. One of the others had a specific gravity of 1.039, one had specific gravity of 1.016 and the other twelve ranged between 1.030 and 1.033. All of the samples answered the U. S. P. requirement of 90%, distilling between 195-205° C. except one of which only 86% distilled. It is almost impossible to obtain cresol soluble in 60 parts water, but as a rule the insoluble portion is very small in amount. All other U. S. P. requirements were complied with by the samples. Reported by G. E'We.

Cubeb Stems.—An experimental determination produced about 5% of oil by steam distillation. Reported by J. G. Roberts.

Dandelion Root.—No chicory or any other adulterant was found in five lots examined. Reported by J. G. Roberts.

Digitalis.—The physiological activity of three lots was satisfactory. Reported by J. G. Roberts.

Dragon's Blood.—A comparison of the coloring power of one sample with a control sample showed it to be only about 1/3 as valuable. Reported by J. G. Roberts.

Elm Bark.—Considerable of the brownish outer bark was found in one rejected sample. Reported by J. G. Roberts.

Ether.—An examination of two samples of ether gave the following results:

Sample Number	1	2
Physical appearance	Normal	Normal
Specific gravity @ 25° C.	.7149	0.7145
Residue from 25 cc.	.0004 gm.	.0004 gm.
Boiling point	35° C.	35.5° C.
U. S. P. excess of alcohol and water test	Normal (19.75 cc.)	Normal (19.65 cc.)

Neither of these samples complied with all the requirements of the U. S. P., as they contained aldehyde and an excess of acid. One sample also left a foreign odor when evaporated from filter paper.

Both samples complied with the U. S. P. boiling point requirement and the test to determine the presence of an undue amount of alcohol or water. They each had lower specific gravities than that specified in the U. S. P., but that is a desirable quality as it indicates a strength a little above that required by the U. S. P.

The U. S. P. states that moistened blue litmus paper should not be reddened when immersed in ether for 10 minutes and also that no color should develop when 10 cc. of ether is occasionally shaken during one hour with 1 cc. of potassium hydroxide test solution. Upon applying these tests to the sample it was found that an excess of acid was present in each of them as one sample reddened the paper in 1 minute and the other in $\frac{1}{2}$ minute. The presence of aldehyde was proven when both samples imparted a yellow color to the potassium hydroxide solution. Reported by J. G. Roberts.

Flour (Wheat).—Gluten ranging from 11.5% to 14.5% was found in 29 lots examined. Moisture determination on five lots yielded results ranging from 9.95% to 12.8%. Reported by J. G. Roberts.

Formaldehyde.—All the formaldehyde examined exceeded in specific gravity the U. S. P. requirement of 1.075-1.081, averaging between 1.082 and 1.087; most of them gave reactions for chloride, sulphate and calcium in the U. S. P. tests for same, but were otherwise U. S. P. Reported by T. Liberati.

Glycerin.—Two lots were rejected on account of color and their undesirable dirty appearance. Reported by J. G. Roberts.

Guaiac.—Alcohol solubility ranged between 77.5 and 99.2%, only one being below U. S. P. standard of 85% soluble. Ash ranged between 0.51 and 5.70%, only one being above U. S. P. standard of 4%. Reported by G. E'Ve.

Hellebore.—1.21% of total alkaloids was found in a seventeen-bale lot. Reported by J. G. Roberts.

Hydrastis.—Each of the seven lots examined was found to comply with the U. S. P. standard of not less than 2.5% hydrastine and were found to contain the following amounts: 3.18%, 3.82%, 3.61%, 3.12%, 2.78%, 2.94% and 2.79%. Reported by J. G. Roberts.

Hydrogen Peroxide.—The twenty-three lots examined were satisfactory with the exception that two gave total solids of 0.0479 gm. and 0.0340 gm. per 20 cc. sample, in which test the U. S. P. requires not more than 0.030 gm. Reported by N. Saito.

Hyoscyamus Leaves.—Only one of the nine lots examined complies with the U. S. P. mydriatic alkaloids requirement. The other samples contained 0.04% to 0.06% of mydriatic alkaloids. Reported by J. G. Roberts.

Ipecac Root.—Results ranging from 1.83% to 2.06% of alkaloids were obtained in the examination of five shipments. Reported by J. G. Roberts.

Iron (Ferrous) Sulphate, Dried and Powd.—Continues to vary greatly in $2\text{FeSO}_4 + 3\text{H}_2\text{O}$ content. The fifteen lots tested ran as follows: 80.0, 83.1, 88.5, 91.3, 91.9, 92.3, 92.6, 93.4, 93.4, 95.2, 96.0, 96.0, 99.0, 103.0 and 104.8 percent. Reported by W. H. Orrick.

Kamala.—Adulteration was indicated when three samples yielded 53.5%, 49.1% and 56.9%, respectively, of ash. It is said that red sand is often added to such an extent that an ash yield of 40% to 60% has been obtained. Foreign pharmacopœias place the ash limit between 6% to 10%. Reported by J. G. Roberts.

Keiselguhr.—Much of the Keiselguhr offered for pharmaceutical purposes contains organic matter, from which this product should be freed by ignition. Reported by G. E'Ve.

Laundry Blue.—Several lots were not sufficiently soluble in water and gave a reddish tint to the aqueous solution. One lot was found to contain 0.7% of water insoluble material. Reported by J. G. Roberts.

Licorice Root.—12.27% of glycyrrhizin was found in one sample. One authority places the standard at six to eight percent. The residue upon ignition was 6.59%. Reported by J. G. Roberts.

Lupulin.—The ten lots examined showed:

Soluble in Ether	Ash
55.5%	8.23%
55.0%	7.72%
57.1%	7.60%
58.6%	10.70%
54.7%	19.40%
67.6%	13.30%
55.3%	18.30%
44.2%	28.40%
69.2%	12.80%
68.2%	14.40%

The U. S. P. requires 60% soluble and not more than 10% ash. Reported by L. H. Glickman.

Magnesium Carbonate.—Two of the six lots examined were low in MgO after ignition, these two assaying 92.6%, and 94.8%, respectively. Five of the six lots contained calcium in excess of the U. S. P. limits. The six lots were otherwise U. S. P. Reported by G. E'We.

Magnesium Oxide.—One lot contained only 93.9% MgO after ignition, U. S. P. requiring 96%. None of the lots examined during the past year gelatinized with water as required by the U. S. P. and most of them contained calcium in excess of the U. S. P. limits. Reported by G. E'We.

Magnesium Sulphate, Dried and Powd.—The usual variation in water-content was noted during the past year. The five lots examined contained 14.9%, 26.9%, 27.7%, 29.8% and 31.5%, respectively. Reported by L. H. Glickman.

Manaca Root.—During a recent examination of Manaca Root it was found that information concerning it is rather meager, so that it became necessary to base our results upon a comparison made with a sample that was declared to be genuine Manaca Root. During the examination of the literature on the subject it was found that some authorities claim that there is a red and a white manaca. The Red Manaca is given the most prominence and is the only variety described. The White Manaca is merely mentioned and no description whatever is available concerning it.

The samples submitted for examination were in large pieces about 18 inches long, knotted at one end and tapering from about 3 inches at the knotted end to about one-half inch at the small end which, however, had been cut. They had a yellowish-red color, a pronounced and distinctive odor and were covered with a thin, easily removed flaky scale. They were rather tough and broke with a fibrous uneven fracture. The bark was relatively thick and could be peeled with little difficulty. The authentic sample had a reddish-brown color and a similar but not as strong an odor. It differed also from the other sample in the fact that it is hard and has a thin, tenacious bark and breaks with an uneven fracture.

A microscopical examination revealed important differences in both the transverse and tangential sections. In transverse sections the medullary rays of the authentic sample are only one cell wide, while they were one to four cells wide in the trial sample. The pitted ducts are also slightly smaller in the authentic than in the trial sample. In tangential sections the medullary rays are few in the authentic sample and quite numerous in the trial sample. Starch grains are present in the medullary rays of both samples. In both the transverse and tangential sections the cork layer is much wider in the trial than in the authentic sample.

In accordance with the results obtained in the foregoing examination it was considered that the sample submitted for examination was not true Manaca but a closely-related species. Reported by J. G. Roberts.

Manganese Dioxide.—A sample of poor quality was examined which was only 65.66% pure (U. S. P. 80%), and which contained 17.13% of antimony sulphide and insoluble substances. Reported by J. G. Roberts.

One lot contained some insoluble residue in test for "antimony sulphide and insoluble substances," but was otherwise U. S. P. Reported by J. C. McCaffrey.

Manganese Sulphate.—Continues to vary greatly in water content. The seven lots examined contained 29.4%, 31.7%, 32.3%, 32.5%, 35.9%, 37.3% and 37.4%, respectively, four being above the U. S. P. limit of 32.3%. These figures for moisture were obtained by employing the lowest possible red heat on the manganese sulphate in a porcelain crucible. The U. S. P. directs that the salt be "gently ignited." Different loss in weight of the salt is occasioned at different degrees of ignition. Reported by G. E'We.

Milk (Dried).—One lot which contained only 0.56% fat was probably made from skimmed milk. Reported by J. G. Roberts.

Mustard (Yellow).—An examination of one ground sample yielded the following results: Ash 5.88%, ether extract volatile at 110° C. 0.1%, ether extract non-volatile at 110° C. 14.53%, moisture 6.33%, turmeric or charlock none. Reported by J. G. Roberts.

Oil of Anise.—Two lots which complied with all the U. S. P. requirements contained traces of lead. Reported by J. G. Roberts.

Oil Anise, Chinese.—Two samples were nil in optical rotation but answered all the other requirements for Oil Anise, U. S. P. The U. S. P. requires a laevogyrate rotation. Reported by G. E'We.

Oil of Cod Liver.—The saponification numbers of various samples ranged from 186.07 to 190, and the iodine numbers ranged from 151.44 to 162.9. Not one of the eight lots examined complied with the U. S. P. saponification value requirement of 175 to 188 and iodine value requirement of 140 to 150, but were all within the limit proposed for U. S. P. IX. Reported by J. G. Roberts.

Oil Lemon.—The six lots examined tested 3.52%, 3.56%, 3.63%, 4.08%, 4.18% and 4.32% citral by the method of J. C. Umney in *Perfumes and Essential Oil Record*, 1913, 4, 269. Reported by T. Liberati.

Oil Lemon, Extra Strong.—There is no declared citral content on this product and it varies accordingly. The two lots examined assayed 12.55% and 21.5% citral by method of J. C. Umney. Reported by T. Liberati.

Oil of Neatsfoot.—The rejection of one lot was recommended on account of its high specific gravity and iodine value. Lewkowitzsch quotes specific gravities of pure oils ranging from 0.914 to 0.917 at 15° C. and iodine values from 66 to 71. The rejected sample had a specific gravity of 0.9227 and an iodine value of 91.9. It also had a higher congealing point than is usually found for Neatsfoot Oil as other samples examined ranged from 22° F. to 42° F. This sample congealed at 50° F. Reported by J. G. Roberts.

Oil Wormseed.—One lot was adulterated with 44% of a fixed oil. Oil Wormseed ordinarily averages 1.5% non-volatile residue. Reported by G. E'We.

Oxgall, Powd.—None of the Powd. Oxgall examined this past year contained starch; a decided improvement in this product. Reported by W. H. Orrick.

Petrolatum (Liquid).—Owing to the shortage of supply from European sources a fine grade of medicinal mineral oil of American origin has been placed on the market. It complies with the requirements of the U. S. P. with the exception of specific gravity, which has ranged from about 0.835 to 0.853. Reported by J. G. Roberts.

The Russian variety being practically unobtainable, resource must be had to oil from other sources. These oils are difficult to obtain free from kerosene taste and fluorescence and are much lower in specific gravity than desirable. Reported by G. E'We.

Quinine Alkaloid.—Extreme variation in water content of this alkaloid is still noted. The nine lots examined contained 0.0, 7.3, 9.3, 11.3, 12.5, 12.7, 13.0, 15.1 and 20.0 percent water, respectively. The U. S. P. allows 14.3 percent. Reported by N. Saito.

Resin Jalap.—One lot was not completely soluble in five times its weight of ammonia water. Reported by W. H. Orrick.

Resin Scammony.—Sample did not comply with the U. S. P. ether and turpentine solubility requirements and did not give satisfactory results with the sulphuric acid identity test. According to the U. S. P., Resin Scammony should be completely soluble in turpentine and almost completely soluble in ether. We have never examined a sample that was wholly soluble in turpentine but have had several that were almost completely soluble in ether.

The ether solubility test is a strong indication of the purity of Resin Scammony as the spurious varieties are not nearly so soluble as the genuine U. S. P. variety which is not less than 95% soluble in ether. As the sample submitted for examination yielded only 68.2% of ether soluble material it was considered to have been obtained from one of the spurious varieties. Reported by J. G. Roberts.

Sanguinaria.—The following amounts of alkaloid were obtained from the four lots examined: 2.88%, 4.09%, 4.7%, 2.86%. Reported by J. G. Roberts.

Sodium Benzoate.—A twenty-barrel lot of generally inferior quality was rejected. It had a yellowish color and an undesirable odor. It also contained 4.9% of chloride computed as Sodium Chloride and was only 88% pure. Reported by J. G. Roberts.

Sodium Glycerophosphate (75% Solution).—The following results were obtained on two samples:

	No. 1	No. 2
Reaction of 1-20 solution.....	Very alkaline	Alkaline
Heavy Metals	None	None
Phosphates	None	None
Alcohol soluble impurities.....	0.14%	0.17%
Strength as anhydrous Sodium Glycerophosphate.....	53.63%	59.97%

Neither of the samples comply with the proposed standard of not less than 66%. It is possible, however, that the manufacturers do not calculate on the anhydrous basis as Sodium Glycerophosphate containing $5\frac{1}{2}$ molecules of water is manufactured. Calculating upon this basis, sample No. 1 would be increased to 78.23%, and sample No. 2 to 87.46%. Reported by J. G. Roberts.

Sodium Iodide.—One lot assayed 95.2% absolute NaI; the low assay being due to moisture. Reported by G. E'We.

Sodium Salicylate.—A 500 lb. lot was rejected on account of being 4% low in strength. Several samples also contained traces of heavy metals, according to the U. S. P. test. Reported by J. G. Roberts.

Two lots were lower than the 99.5% standard, assaying 97.2 and 98.4%, respectively. Reported by L. H. Glickman.

Sodium Sulphite.—The only lot examined was 2.44% low in strength. It also was dark in color and was too alkaline in reaction. Reported by J. G. Roberts.

Spigelia.—An improvement is noted in the quality of *Spigelia*, as one lot contained only a few foreign roots. The other two lots contained only about one and two percent, respectively, of *Ruellia*. Reported by J. G. Roberts.

Stramonium Leaves.—Sixteen lots were examined, fourteen of which were of U. S. P. strength. The others contained 0.19% and 0.23%, respectively, of mydriatic alkaloids. Reported by J. G. Roberts.

Stramonium Seed.—Both lots were slightly below standard and yielded 0.28% and 0.29% of mydriatic alkaloids. Reported by J. G. Roberts.

Strontium Peroxide.—One lot assayed only 69.2% absolute SrO_2 , which is below the 84.5% stated by the N. & N. R. for a good product. Reported by N. Saito.

Terra Alba.—The trade still differs as to what the composition of *Terra Alba* should be. Most of the lots examined were Calcium Sulphate, but one lot was clay, another lot was clay with much calcium sulphate and another lot was clay with a little calcium sulphate. Reported by G. E'We.

Thyroid Glands (Powdered).—The following amounts of iodine were found in several lots examined: 0.029%, 0.0585%, 0.044%, 0.065%, 0.18% and 0.19%. It can be readily seen that the last two are the only lots that will meet the iodine standard of 0.17% to 0.23% proposed for the next U. S. P. Reported by J. G. Roberts.

Pinus Maritima.—A steam distillation of this substance yielded about 10% of an oil having

an optical rotation of $-30^{\circ} 31'$ and a specific gravity of 0.868 at $25^{\circ} C$. Reported by J. G. Roberts.

Wild Cherry Bark.—About 50% of old reddish-brown undesirable bark was found in one lot. Reported by J. G. Roberts.

Zinc Oxide.—Three lots which complied with all the U. S. P. requirements contained 0.21%, 0.275% and 0.196% of lead calculated as lead oxide. Reported by J. G. Roberts.

The following table shows the results of 133 crude drug assays made in the Analytical Laboratory of the H. K. Mulford Co. during the year June 1, 1914, to June 1, 1915 :

DRUG	No. of Samples	Lowest Assay	Highest Assay	Average	Standard	No. Above Standard	No. Below Standard
Aconite Leaves	1	0.355	0.355	0.355	0.2% ether soluble alkaloids	1	0
Aconite Root.....	5	0.360	0.625	0.497	0.5% ether soluble alkaloids	2	3
Belladonna Leaves ...	3	0.247	0.350	0.300	0.3% mydriatic alkaloids	2	1
Belladonna Root	7	0.424	0.640	0.511	0.45% mydriatic alkaloids	5	2
Cantharides, Chinese..	6	0.570	1.10	0.869	0.6% cantharidin ...	5	1
Cantharides, Russian..	1	0.625	0.625	0.625	0.6% cantharidin ...	1	0
Capsicum	6	13.85	20.84	16.65	10% oleoresin	6	0
Cinchona, Red	1	8.35	8.35	8.35	5% total anhydrous alkaloids	1	0
Cinchona, Yellow	10	6.50	11.00	8.56	5% total anhydrous alkaloids	10	0
Coca Leaves	1	1.053	1.053	1.053	0.5% ether soluble alkaloids	1	0
Colchicum Seed	3	0.660	0.850	0.780	0.45% colchicine...	3	0
Digitalis	2	0.293	0.365	0.329	0.25% digitoxin...	2	0
Ergot	6	0.115	0.380	0.256	0.15% cornutine...	4	2
Gelsemium	4	0.503	0.849	0.630	0.4 alkaloids.....	4	0
Ginger, African	2	7.99	8.90	8.44	6% oleoresin.....	2	0
Ginger, Jamaica	1	3.93	3.93	3.93	4% oleoresin.....	0	1
Hydrastis	5	3.16	3.98	3.63	2.5% hydrastine...	5	0
Hyoscyamus	20	0.031	0.140	0.073	0.08% mydriatic alkaloids	6	14
Ipecac, Powdered	3	1.666	2.130	1.872	1.75% alkaloids....	2	1
Ipecac, Whole	6	1.846	2.380	2.221	1.75% alkaloids....	6	0
Jalap	1	7.17	7.17	7.17	7% total resin....	1	0
Kola Nut, Dried.....	10	1.40	2.02	1.582	1% alkaloids.....	10	0
Lobelia	1	0.591	0.591	0.591	0.5% alkaloids....	1	0
Nux Vomica	7	0.705	1.328	1.013	1.25% strychnine...	2	5
Opium Gum	9	11.31	12.35	11.74	9% cryst. morphine	9	0
Opium Powd.	6	11.84	12.58	12.11	12%-12.5% cryst. morphine	3	3
Pilocarpus	1	1.06	1.06	1.06	0.5% alkaloids....	1	0
Quebracho	2	0.95	1.22	1.08	1% alkaloids.....	1	1
Sanguinaria	1	3.98	3.98	3.98	2.5% alkaloids....	1	0
Stramonium Leaves ..	1	0.219	0.219	0.219	0.25% mydriatic alkaloids	0	1
Veratrum	1	1.32	1.32	1.32	1% alkaloids.....	1	0
Totals	133					98	35

Comparison with reports sent in previously:

Year	Total	Above	Below	Percent Above
1909	395	313	82	79.3
1910	340	291	49	85.6
1911	263	224	39	85.1
1912	298	235	63	78.8
1913	382	264	118	69.1
1914	286	221	65	77.2
1915	133	98	35	73.6

Last year the drugs running habitually below standard were Aconite Root, Calabar Bean, Hyoscyamus, Jalap, Mandrake and Nux Vomica.

This year Aconite Root, Hyoscyamus and Nux Vomica are running low.

The Smith, Kline and French Co. found that Hyoscyamus, Nux Vomica and Stramonium Seed were generally below standard.

Respectfully submitted,

COMMITTEE ON DRUG MARKET,

J. G. ROBERTS, Acting Chairman,

CHAS. E. VANDERKLEED,

HENRY C. BLAIR,

D. M. KRAUSER.

SUGGESTIONS FOR A COURSE IN MICRO-ANALYSIS AND BACTERIOLOGY FOR COLLEGES OF PHARMACY.

ALBERT SCHNEIDER.

(Concluded from July.)

The following blank report sheets should be used. The sample reports given will indicate how these are to be filled out based upon the results of the analysis:

Form No. 1. Blank report sheet for the microscopical examination of organic drugs and dry food substances.

No. (I. S. Laboratory or other serial number).

Label

Sample received.....Sample examined.....

Conditions of wrappings and seals.....

Organoleptic tests

 Consistency of Feel.....

 Color

 Odor

 Taste

Adjunct Tests

 Ash%

 Acid-insoluble%

 Sand (beaker test).....%

Special Tests

.....

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Microscopical Findings

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