

covery of 69.2% and the resin emulsion 54.0%, which indicates that the substance responsible for the low yield is present in both the oil and the resin.

Emulsions of copaiba No. 2, which formerly gave an average recovery of 52.2%, were reassayed using 10 cc. of saturated solution of potassium iodide and 10 cc. of 30% sulphuric acid. The average recovery was then found to be 75.5%. When these same emulsions were assayed again by introducing 4 cc. of the spirit into the nitrometer and following it with a mixture of: Twenty-one cc. copaiba emulsion, 10 cc. saturated solution of potassium iodide and 10 cc. of 30% sulphuric acid, the average yield was found to be 96.3% and results checked more closely than before. Since the presence of a reducing agent, hydriodic acid, in copaiba emulsion increases the yield, it would seem that oxidation is at least in part responsible for low results. No work has been done toward investigating the cause for increased yield when more concentrated reagents are used.

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ABSTRACTS OF PAPERS, SCIENTIFIC SECTION.

The following papers were presented by James C. Munch for himself and co-workers, summarized by brief statements regarding the work in each of them:

"Bioassay of Propadrin Solutions," by James C. Munch, Walter H. Hartung and Thomas S. Githens.—A number of methods have been studied quantitatively for the bioassay of Propadrin (phenyl-propanol-amine-hydrochloride). It has been found possible to obtain results agreeing within 20% by following the effect upon the blood pressure of anesthetized dogs. Various details which play an important rôle in the assay are discussed.

"The Effect of Variations in Alcohol Content upon the M. S. D. of Digitalis and Allied Drugs," by James C. Munch and Arnold Quici.—U. S. P. X requires that dilutions of Digitalis and similar drugs shall not contain more than 20% of alcohol when injected into the ventral lymph sac of frogs. Our investigations have shown, that no essential or consistent differences are obtained provided the alcohol content does not exceed 30%. Since tincture of digitalis contains approximately 70% of alcohol this obviates the necessity for concentrations and re-dilution of tincture of digitalis in making U. S. P. assays.

"The Electrocardiographic Study of Snake Venoms," by Jose Zozaya, James C. Munch and Joseph B. Wolfe.—The acute action of various snake venoms upon the electrocardiographic and respiratory action of dogs has been followed. Some work has been undertaken upon chronic poisoning by rattle snake venom. It is found that different venoms differ greatly in their pharmacodynamic activity.

"The Seasonal Variation in M. S. D. of Ouabain," by James C. Munch. Results obtained in a collaborative study by twelve laboratories, during 1932, confirmed the seasonal variation in the M. S. D. of Ouabain by the U. S. P. X one-hour frog method. Results obtained in the summer were numerically larger than those obtained in the winter. However, this seasonal variation does not effect the validity of Ouabain as a reference standard. It is recommended that the present value of 0.5 mg. of Ouabain per kilo be retained in U. S. P. XI.

"The Effect of Brucine on the Toxicity of Strychnine," by James C. Munch and Harry J. Pratt.—The toxicity of strychnine and of brucine, as well as various proportions of these alkaloids, has been determined upon earthworms, goldfish, mice, rats, guinea pigs, rabbits, cats and dogs. In addition the minimum concentrations possessing just detectable bitterness have been determined on a number of men. It has been found that the presence of brucine alters the toxicity of strychnine. In general the toxicity is increased. The determination of total alkaloids in nux vomica and its preparations is not a suitable index of physiological activity, nor is the determination of strychnine alone, unless a constant proportion exists between strychnine

nine and brucine. Available information suggests the wisdom of determining the total alkaloid and the strychnine content of nux vomica preparations, to determine the physiological potency.

"Alkaloidal Reagents. IV. Multihomocyclic Derivatives," by James C. Munch, Frank S. Crossley, Walter H. Hartung.—Continuing work reported on previous papers of this series a number of amino, phenolic and other derivatives of naphthalene, anthracene, phenanthrene and other similar compounds were studied, using the seventeen alkaloidal reagents of this series.

"Comparative Pharmacognostic and Pharmacological Studies of *Apocynum cannabinum* and *Apocynum androsaefolium*," Wm. J. Stoneback and James C. Munch.—Comparative Pharmacognostic and Pharmacological tests have been undertaken.

"Comparative Pharmacognostic and Pharmacological Studies of *Scilla* (white and red varieties)," by Wm. J. Stoneback and James C. Munch.—Comparative pharmacognostic and pharmacological tests have been undertaken. The purpose of this study is to point out further relationship between the hydrogen-ion concentration of the heart tonic value, the ash content and the menstruum used in the extraction of tincture of digitalis. This work is a continuation of others which has been done on this same problem, published by the authors, in the *JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION*.

"Further Studies on the Bioassay of Oil of *Chenopodium*," by James C. Munch, George E. Byers and Wm. F. Reindollar.—Continuing investigations of the last three years, further authentic samples of Oil of *Chenopodium* were collected at the Maryland stills and tested chemically for conformity to the U. S. P. requirements. M. L. D. studies have been continued upon earthworms and goldfish. As a result of this extended investigation it is recommended that Oil of *Chenopodium* be bioassayed upon earthworms.

"Proposed U. S. P. XI and N. F. VI Standards for Anthelmintics," by George E. Byers and James C. Munch.—Using the earthworm method, a series of investigations have been conducted upon the anthelmintics official in U. S. P. X and N. F. V. It is recommended that the earthworm method be adopted for the bioassay of these drugs and standard M. L. D. concentrations are reported.

"The Toxicity of Certain Essential Oils to Earthworms and Goldfish," by Harry J. Pratt, George E. Byers and James C. Munch.—The M. L. D. of a number of the common essential oils has been determined upon earthworms and upon goldfish.

"The Toxicity of Aliphatic Alcohols and Alkyl Esters to Earthworms and Goldfish," by James C. Munch and George E. Byers. The M. L. D. of a series of aliphatic alcohols and of alkyl esters has been determined upon earthworms and upon goldfish. The narcotic potency of these products has been determined upon goldfish. The effect of homology and isology has been studied.

"The Bioassay of Depressor Drugs," by James C. Munch, Arnold Quici and George E. Byers.—After studying a number of proposed methods, it has been found the drugs causing a fall in carotid blood pressure (such as Tissue Extract, Acetylcholine and Histamine) may be assayed quantitatively upon anesthetized dogs. By proper attention to various details, rabbits are also valuable. It is suggested that the action of these products in neutralizing the pressor action of epinephrine be used as a standard assay procedure, and the relative potency be expressed in terms of epinephrine.

Commissioner H. J. Anslinger, of Narcotics, in a comprehensive press article on "Need for Uniform State Narcotic Laws," stresses the importance of depriving narcotic drug peddlers of customers as a means of checking the narcotic evil. The legal dispensing of Narcotics is carefully guarded and the laws are observed, violations are remarkably infrequent; the distribution of narcotics is through peddling, and if the peddlers are deprived of customers they will cease to exist. Illegal production

of Narcotics and export to countries seeking to eradicate drug addiction constitutes the other means of distribution for which correction has not been effected.

Dr. Irvin Langmuir was awarded the Nobel Prize, November 10th; he holds the William H. Nichols gold medal of the American Chemical Society and is the winner of the *Popular Science Monthly* \$10,000 award and other honors.