

tice of medicine and pharmacy in this State a quarter of a century ago, tracing the development of the prescription writer in place of the dispensing doctor and naturally the development of the dispensing pharmacist. He gave many illustrations of mistakes made by both doctor and pharmacist and told how one worked with the other for their common good and for the good of the patients. The feeling of the patient who suffered a mistake on part of the druggist, which consisted of labeling boric acid solution for internal use and potassium iodide solution for eye drops, were vividly described. Also those of the patient whose bottle for cough syrup was labeled for external use and the liniment for internal use. He enumerated some of the disadvantages of the older days when it was necessary for the doctor to leave medicine. Verbal instructions were oftentimes ignored. One patient reasoned that if one pill (strychnine) did a little good a lot would do much more. The result was nearly fatal. To guard against repetition of this the doctor told the wife of the next patient that the pills were poison.

As a result she threw them out of the window where the chickens found them and then, according to the doctor's story, died. The doctor failed to state whether he received his fee or was required to pay for the chickens.

Then at the request of a member the Senator this time told about "Law making." The Senator has been an ardent supporter of the druggists and Colleges of Pharmacy and related some interesting instances of "politics" connected with the passing of laws.

After a brief general discussion the meeting adjourned, all leaving with the feeling that the evening was well spent.

#### DECEMBER.

The December meeting was called to order Thursday, December 8th, President Richards presiding. After a brief business session the meeting awaited the coming of the speaker of the evening, who was to present two films showing the manufacture of biologicals; however, he was unavoidably delayed and the program had to be deferred.

H. A. LANGENHAN, *Secretary.*

## COMMITTEE REPORTS

### REPORT OF THE COMMITTEE ON PHYSIOLOGIC ASSAYING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION FOR 1927.\*

PAUL S. PITTINGER, *Chairman.*

During the past year it was necessary for the chairman of this committee to move from Philadelphia to Baltimore. The details incidental to this change and the equipment of his new office and laboratory made it physically impossible, in the early part of the year, to accomplish anything in the way of committee work. During the past two months the majority of the committee members were busy working on a series of coöperative experiments on the U. S. P. assay method for Digitalis. This work was planned by and under the direction of one of the committee members, Dr. J. C. Munch, of the Bureau of Chemistry, U. S. Department of Agriculture.

The Chairman thought it inadvisable, therefore, to plan further coöperative laboratory work at this time and accordingly thought it would be advisable that the Report this year take the form of a survey or synopsis of the work done in the field of Physiology from July 1, 1926 to July 1, 1927.

We, therefore, beg to submit the following bibliography with short abstracts of articles published during the above period.

This bibliography may not be complete but contains all of the articles that came to the Committee's attention.

#### ABSTRACTS FROM JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

*July 1926.*

G. G. Colin: "Study of the anti-diabetic properties of Tecoma Mollis. Preliminary report." Pp. 556-560. Experiments upon humans suffering from diabetes showed that an

\* St. Louis meeting, 1927.

aqueous extract of *tecoma mollis* possessed hypoglycemic qualities. The solution can be sterilized without injury. One cc. subcutaneously caused a fall in blood sugar within two hours.

**E. V. Lynn and Dorothy Gaston:** "The relaxing action of some aromatic esters." Pp. 560-563. The depressor or relaxing action of 11 alcohols and esters closely related to benzyl alcohol were determined by their effect upon rat intestines suspended in a chamber filled with Locke solution. All members of this series inhibited or depressed smooth muscle to about the same extent as benzyl benzoate. The products used were: phenyl *n*-propyl alcohol, acetate and benzoate; benzyl methyl carbinol, acetate and benzoate; phenyl ethyl carbinol, acetate and benzoate; mandelyl acetate and benzoate.

**J. C. Berardi:** "Chemical and biological assay of drugs. Digitalis standardization: under anesthesia." Pp. 563-566. 0.02 cc. of a standard tincture of digitalis per Kg. body weight of a dog, intravenously, will reduce the heart rate 20 per cent in from 30 to 60 minutes. It was found that the heart rate under anesthesia increased greatly. When digitalis was given to dogs anesthetized with ether the heart rate was decreased from the rate under anesthetization, but was still above the normal rate.

*August 1926.*

**Patrocínio Valenzuela:** "Philippine ginger." Pp. 652-661. September, pp. 734-744. To determine the pungency, the modified Scoville method was used (1 per cent alcoholic solution is made by boiling one Gm. of the drug with alcohol for one-half hour, filtering and diluting into 100 cc. Two drops 5 per cent NaOH added to measured amounts of this 1 per cent solution and diluted to 100 cc. with water. 1 cc. of dilution held in mouth for 15 seconds produces an unmistakable warmth.) Cortex found most pungent and parenchyma least pungent. Limit of pungency for cortex was about 1:2500 to 1:5000.

*September 1926.*

**Charles C. Haskell:** "The action of caffeine on the poisoned heart." Pp. 744-747. Experiments upon dogs showed that caffeine depresses the heart in poisoning with morphine or with alcohol. It probably depresses the heart in dogs and in guinea-pigs which have received diphtheria toxin.

**E. A. Bilhuber:** "Digitalis standardization at Geneva." Pp. 748-750. Reports discussion of Health Committee of League of Nations in September 1925. Cushny reported that cats fell into two classes when used for digitalis assay by a modified Hatcher method: one class showed definitely higher resistance to digitalis than the other. Cushny, Pick, Straub and Rost all reported the frog method a valuable means of assay. Committee recommended the frog method and Magnus modification of the cat method as sufficiently accurate for use. The frog method recommended is apparently a 4-hour frog method. The accuracy of the method is given as 10 per cent. A standard digitalis leaf prepared by Prof. Magnus is adopted as the international standard. A method of preparation of the extract from this leaf is given.

*December 1926.*

**Thomas S. Githens:** "Additional studies on *Miré*." Pp. 1067-1068. Aqueous or alcoholic extracts corresponding to 30 mg. of crude drug per Kg. injected into frogs cause characteristic jerking and twitching. Doses two or three times as large produce similar effects, the heart finally stopping in diastole. Intravenously, 300 mg. per Kg. in mice and 200 mg. per Kg. in rabbits, causes jerky respiration and slowing of pulse. This investigation showed that *Manaca*, which is very abundant and cheap, produces effects almost identical with those produced by the relatively rare and expensive *Miré*.

**R. A. Konnerth and E. Pickering:** "*Digitalis lutea* vs. *digitalis purpurea*." Pp. 1069-1070. Sample of *digitalis lutea* grown in medicinal plant garden of College of Pharmacy, University of Minnesota, was assayed by U. S. P. IX frog method and found to be 125 to 133 per cent of the specified potency. As many samples of *digitalis purpurea* fell between 100 and 170 per cent of U. S. P. requirements the authorities concluded that the physiological activity of the two varieties are similar.

*January 1927.*

**S. Palkin and H. R. Watkins:** "The stability of atropine and hyoscyamine during process of analysis." Pp. 21-30. A physiological method of assaying mydriatics was developed by J. C.

Munch of the Pharmacological Laboratory of the Bureau of Chemistry, who determined the "threshold" doses (the concentrations of which one drop just produced a perceptible dilation of the pupil of the eye of a cat as compared to the untreated eye, which served as a control) of various mydriatic alkaloids. By the use of this method the results of chemical analysis were interpreted showing the stability of the solution of hyoscyamine and atropine in the form of the salts, and showing their instability as alkaloids.

**Harry E. Dubin:** "Nutritional value and standardization of cod-liver oil and of its non-saponifiable fat-soluble vitamine concentrate (Oscodal)." Pp. 41-45. This report dealt with the reports of various workers upon cod-liver oil. It touched upon the U. S. P. method for determining the antiophthalmic vitamine-A potency of cod-liver oil and similar preparations. References were also given to methods of determining the antirachitic potency.

February 1927.

**D. I. Macht and J. C. Krantz, Jr.:** "Effect of polarized light on the pharmacodynamic properties of some drugs." Pp. 106-110. Tinctures of digitalis exposed to polarized light for various periods of time ranging from 30 minutes to 6 hours underwent distinct deterioration in potency as is shown by tests upon frogs, frog hearts, gold fish, cats or *Lupinus albus* seedlings. Solutions of cocaine hydrochloride similarly exposed to polarized light were found to show marked deterioration in potency as indicated by effects upon gold fish and *Lupinus albus*. Solutions of quinine sulphate and tartrate tested by effects upon *Lupinus albus* were also reported to show a decreased toxicity.

**David I. Macht and Justina H. Hill:** "The effect of ultraviolet and polarized light on mercurochrome." Pp. 110-113. No appreciable deterioration in the potency of 1:500 solutions radiated for 30 to 78 minutes by ultraviolet and polarized light could be detected as shown by the effect upon growth of a 24-hour culture of *B. coli*.

**L. W. Rowe:** "The colorimetric assay of strophanthus." Pp. 113-115. The Knudson and Dresbach modification of the Baljet reaction was applied to a number of samples of ouabain and of tincture of strophanthus. The results were controlled by assays of the same preparations by the Houghton M. L. D. frog method of assaying cardiotonics. It was found that colorimetric determinations ranged from 20 per cent low to 40 per cent high with an average error of 10 per cent. Eliminating two extremes, the average error was 6.7 per cent. These results were based upon 14 preparations. In another series of 8 unknowns the average error was found to be 8 per cent after eliminating one sample which was 29 per cent high. The author concludes that strophanthus preparations can be assayed in a preliminary way with fair accuracy by the picric acid colorimetric method with a U. S. P. ouabain 1:25,000, or tincture strophanthus U. S. P. X diluted 1:140 as standards. The colorimetric assay of fluidextract of squill, convallaria and veratrum viride failed to give satisfactory results due to lack of color development.

**W. R. Bond:** "The biological standardization of digitalis based on the relationship of the M. L. D. to the heart weight." Pp. 137-140. The M. L. D. of tincture of digitalis was determined using the Hatcher and Brody cat method. After death the heart was removed from the pericardium, longitudinal incisions made in each chamber, and the heart washed in running water until free from blood. Excess moisture was then removed by a dry towel and the heart weighed. In 13 experiments decerebrate cats were used. Results were calculated in terms of milligrams of digitalis per Kg. body weight and in terms of milligrams of digitalis per Gm. of heart weight. Calculated upon the heart weight basis, the deviations were found to be 30 to 50 per cent less than when calculated upon the body weight basis.

"An Interesting and Valuable State Board Report (Michigan)." Pp. 156-158.

With reference to aconite, the report states that while chemical assays of samples of this drug may show it to be up to standard, the activity of the drug as demonstrated by the present official biological assay is often far below standard. There is reason to believe, therefore, the report continues, that the "unprecedented number of sub-standard samples of tincture of aconite" is due to hydrolysis of the aconitine and that the hydrolysis is caused by aging and its rate is materially increased by the manipulation given the fluidextract in preparing a tincture from it. The report promises that this matter will be further investigated.

March 1927.

**M. I. Sparks:** "The potency of various samples of digitalis grown in British Columbia." Pp. 203-209. Assays of three samples of *digitalis purpurea*, two with purple and one with white blooms, and of a sample of *digitalis lutea* grown in Canada were made by the U. S. P. X one-hour frog method, and by the Magnus cat method. A sample of digitalis leaves grown in England and a sample of the international standard digitalis leaf prepared by Professor Magnus at Utrecht were also assayed. Certain discrepancies were found between the results by the cat and the frog methods; *digitalis purpurea* with purple blooms had practically the same activity as the *digitalis purpurea* with white blooms when tested upon cats, but by the frog method was definitely more potent. *Digitalis lutea* was apparently more active than *purpurea*. Sodium nitrate as a fertilizer increased the yield and the potency of *digitalis purpurea*.

**David I. Macht and John C. Krantz, Jr.:** "A phyto-physiological study of digitalis assay." Pp. 210-218. Dry *Lupinus albus* seeds were soaked over night in tap water at room temperature, then kept on moist sphagnum moss at about 20° for two or three days. The rootlets are then about 20 to 30 millimeters in length. The seedlings are then placed in Shive solution containing various substances to be studied. The effect of concentrations of tincture of digitalis ranging from 0.1 per cent to 1.0 per cent upon the rate of growth of the seedlings was determined. The same samples were then assayed by the Hatcher and Brody cat method. The authors report that the inhibition of the growth of seedlings is proportional to the concentration of digitalis solution used. They also claim that there is less variation in the phyto method of testing than in the cat method, and that there is a close agreement between results obtained by the two methods.

April 1927.

**Edward E. Swanson and Chester C. Hargreaves:** "The standardization and stabilization of aconite preparations—Paper III." Pp. 296-301. Continuing their previous work, this paper discusses the effect of  $p_H$  upon stability of tinctures and fluidextracts of aconite. The necessity for a standard technique of assaying aconite preparations upon guinea-pigs is developed. The authors starve 275-325 Gm. guinea-pigs for 24 hours, after they have been in the laboratory for a month on a standardized diet. The calculated dose is diluted to a total of one cc. with physiological salt solution, and injected into the subcutaneous tissue of the abdomen. The lethal dose is determined as the smallest dose that will kill within six hours. Comparative results were also obtained using Rowe's "white mice" method. More than 1000 guinea-pigs and about 900 mice were used in this study. For stable preparations there was a remarkably good agreement between results of the assays by the two methods. Mice required practically ten times as much tincture or fluidextract to kill as did guinea-pigs. No deterioration was noted when the product contained sufficient acid to maintain the  $p_H$  at four or above. When the  $p_H$  fell below four deterioration was evidenced by tests upon both types of animals. There was a lesser degree of agreement between results by the mouse and the guinea-pig methods on deteriorating samples and the ratios of M. L. D.'s fell to around 1 to 3. The amount of acid required to produce the desired  $p_H$  varied for each sample. It was recommended that a  $p_H$  of 2.5 to 3 be produced in order to prevent deterioration. The authors found that 10 per cent to 20 per cent of alcohol in the dose injected into guinea-pigs and mice did not change the ratio of the lethal doses. However, 30 to 40 per cent of alcohol decreased the toxicity on guinea-pigs and increased the toxicity on mice.

May 1927.

**Ralph E. Terry:** "A study of *ephedra nevadensis*." Pp. 397-407. The diuretic effect following the administration of various preparations of *ephedra nevadensis* was determined by giving fluid and solid extracts and infusions to various human subjects. The infusion is recommended. Slight constipating action was noted following the continued administration of the fluidextract. The alcoholic and chloroformic extracts were uniformly inactive. The diuretic constituent is apparently water soluble.

June 1927.

**Georgianna Simmons Gittenger and James C. Munch:** "Physiological potency of imported ergot of rye." Pp. 504-505. Samples from 69 shipments, representing 1100 bags of ergot of rye, have been assayed by the cockscomb method adopted as the official method of assay

in U. S. P. X. Sixty per cent of these shipments were found to be as strong as, or stronger than the U. S. P. X standard fluidextract of ergot; 26 of 27 samples of known Spanish origin were equal to or above the U. S. P. requirement. Six Portuguese samples were also in accordance with U. S. P. requirements. Three of 5 samples from Poland and 7 of 9 samples from Russia were below the U. S. P. requirements.

**Georgianna Simmons Gittenger and James C. Munch:** "The assay of ergot by the cockscomb method." Pp. 505-510. This paper presents various observations in the course of several years study of the cockscomb method for assaying ergot. Varieties of cocks other than white leghorn were found to be unsuitable. Hens were found to be unsuitable. Only 38 per cent of the 190 birds studied had thresholds at 0.5 cc. per Kg. which is specified in the U. S. P. X. The authors point out the necessity for the careful determination of the true threshold of white leghorn cocks to be used. In their experiments the thresholds range from 0.2 cc. up to 2.0 cc. per Kg. By careful attention to details, ergot and its preparations may be satisfactorily assayed by the cockscomb method outlined in U. S. P. X.

**L. W. Rowe:** "The colorimetric assay of digitalis." Pp. 510-516. The chemical method of assay devised by Baljet and modified by Knudson and Dresbach was applied to about 100 samples of digitalis, digitalin and tincture strophanthus. The M. L. D.'s were determined on the same samples. German digitalin and digitoxin were unsuitable as standards and ouabain was rather unsatisfactory because the rate of development of color was not proportional to that for digitalis. Lowering the ouabain standard from 0.266 mg. per 5 cc. to 0.20 mg. per 5 cc. gave better results. Readings at 15, 20 and 25 minutes after the addition of picric acid reagent gave different results: readings at 20 minutes seemed to be the best. Tincture of strophanthus representing a 1:20 extract was tried as a standard and a 1:70 dilution of this tincture was equivalent to 1:25,000 dilution U. S. P. ouabain. Tincture of strophanthus was found to be most satisfactory as a standard. Rowe concludes that the picric acid colorimetric assay is not a satisfactory method of determining the total activity of digitalis preparations since it yields high and erratic results, and since color tests do not check results obtained by the M. L. D. frog method.

*July 1927.*

**Albert Schneider:** "The earth-worm method for testing santonin and related anthelmintics." Pp. 623-627. The author described a modification of the Trendelenburg method of assaying anthelmintics. Results are based on the production of spasmodic contractions rather than upon toxicity.

**Lloyd K. Riggs and Harold D. Goulden:** "Further studies on the physiologic action of propylene." Pp. 635-639. Electrocardiographical studies on human subjects under propylene anesthesia with electrocardiograph leads 2 and 3. There was a slight reduction in pulse rate with a decrease in sinus arrhythmia. In no experiment was there evidence of a sudden change in rate.

**Charles C. Haskell:** "The influence of digitalis on the resistance of guinea-pigs to poisoning by diphtheria toxin." Pp. 639-644. Tincture of digitalis does not hasten the death of guinea-pigs that are given diphtheria toxin at the same time. Amounts as large as 60 per cent of the M. L. D. of the tincture of digitalis did not appear to lower the resistance of guinea-pigs to diphtheria toxin. Some synergism seems to exist between diphtheria toxin and digitalis; amounts of digitalis suspension causing death of the guinea-pigs poisoned with diphtheria toxin while controls receiving the same amount of suspension usually recover.

ABSTRACTS FROM CHEMICAL ABSTRACTS.

*July 20, 1926.*

**C. M. Gruber:** "Effect of adrenaline upon strips of excised pregnant human uterus." *Endocrinology*, 9, 407-9 (1925).—The action of adrenaline in causing an increased tonus on the muscles of the pregnant uterus is confirmed in experiments on three samples taken at Caesarian section.

*September 20, 1926.*

**K. K. Chen and W. J. Meek:** "The effect of ephedrine on the circulation." *J. Pharmacol.*, 28, 31-57 (1926).—Ephedrine (I) given intravenously in anesthetized dogs in doses of 0.005 to 30 mg. per kg. rises arterial blood pressure, the optimum dose lying between 1 and 10 mg. per Kg. Larger doses usually lower the blood pressure. Repeated intravenous injections of

optimum doses, when given at intervals of 25 min. are not as effective as the first in rising blood pressure in regard to duration and height. Sub-optimum doses, however, when given close together will show a summative effect in elevating pressure. In stimulating doses (those that rise blood pressure) usually slows the pulse rate in animals with intact vagi. Acceleration always takes place when the vagi are paralyzed by atropine. In doses that lower the blood pressure always decreases the pulse rate irrespective of the condition of the vagi. Prolonged vasoconstriction is observed in the perfusion of isolated mammalian organs. The action on the heart of I sulphate is discussed.

October 10, 1926.

**W. E. Wentz, Jr.:** "Toxicity of digitalis to white rats." *JOUR. A. PH. A.*, 14, 774-8 (1925).—A dilution containing 3 volumes of tincture and 1 volume of physiolog. NaCl solution was satisfactory. The M. L. D. intravenously was found to be 0.00395 cc. per Gm. of body weight. All animals fatally poisoned died within 15 minutes after injection. This is much more rapid than the frog (1 hr.) or guinea-pig (2 hrs.). Tincture of digitalis is more toxic to the white rat than to the frog. The toxic dose for the rat and for the guinea-pig are close together. Tincture of strophanthus was more than twice as toxic to rats as the tincture of digitalis. The M. L. D. of EtOH for rats is so near that of tincture of digitalis that further experiments must be conducted to establish the relation of the EtOH present to the M. L. D. of the tincture of digitalis.

**D. W. Beddow, Jr.:** "Toxicity of strophanthus to white rats." *JOUR. A. PH. A.*, 14, 778-81 (1925).—A tincture of strophanthus was standardized by the 1-hour frog method. The M. L. D. was 0.00006 cc. per Gm. of body weight. The M. L. D. EtOH for white rats was determined to be 0.00345 cc. (of 95%) per Gm. of body weight. The M. L. D. of tincture of strophanthus was 0.0017195 cc. per Gm. of body wt. Calculations showed that the EtOH is responsible for about 50% of this. Rats die within a few minutes after injection. The tincture is 25-30 times as toxic to the frog as it is to the white rat.

October 20, 1926.

**F. M. Smith, G. H. Miller and V. C. Graber:** "The action of epinephrine, pituitary extract and acetylcholine on the coronary arteries of the rabbit." *Proc. Soc. Exptl. Biol. Med.*, 22, 507-8 (1925).—Epinephrine was injected at a rate to produce a concentration of approx. 1-200,000,000 in the coronary arteries. The perfusion rate decreased 12 to 22.5%; the heart rate and amplitude were increased. Pituitary Extract in concentrations of 1-50,000 caused a striking decrease in perfusion rate and also in heart action. Acetylcholine in dilutions of 1-100,000 and 1-200,000 raised the perfusion rate 180% and greatly reduced the heart rate. The previous administration of atropine sulphate in concentrations of 1-20,000 largely eliminated the effects of subsequent injections of acetylcholine.

November 10, 1926.

**S. d'Irsay:** "The action of strophanthus on the chloralized heart." *Proc. Soc. Exptl. Biol. Med.*, 22, 530-3 (1925).—The action of a digitalis body is purely myotropic. It has a similar effect on the cold-blooded heart, denervated by chloral hydrate, as it has on the normal organ.

**C. H. Thienes:** "Effects of Cholesterol on smooth muscle of intestine and uterus." *Proc. Soc. Exptl. Biol. Med.*, 22, 539-41 (1925).—Cholesterol in concn. of 1-5,000,000 in Tyrode solution increased the activity of immersed strips of the intestine and uterus of the cat and rabbit. The effect was due to increased contractility of the muscle substance independent of nerve endings and ganglia.

**H. H. Knaus:** "The action of pituitary extract upon the pregnant uterus of the rabbit." *J. Physiol.* 61, 383-97 (1926).—Parturition could be induced in rabbits by pituitary extract injected on the 29th to 32nd days of pregnancy. Previous to the 29th day the muscle cells of the uterine wall are probably too underdeveloped to expel the fetus in response to pituitary extract. There is probably no change in irritability or sensitivity of the uterus.

ABSTRACTS FROM THE CANADIAN MEDICAL ASSOCIATION JOURNAL.

December 1926.

**F. W. Ward:** "The potency of tinctures of digitalis and strophanthus." Samples were taken of the tinctures of digitalis offered for sale by the various manufacturers throughout Canada.

The samples represented those made by British, Canadian and American manufacturers.

An examination of these tables shows that all the samples exhibit great variation in potency throughout the entire lot, and also among the samples of the same manufacturer as sold or dispensed by the local druggist.

The tables show that the variation is just as great in those samples from manufacturers in the United States and Great Britain as in those made in Canada.

A study of the tables shows that if a physician wishes to obtain a potent tincture of either digitalis or strophanthus, he must purchase the tincture of a reliable manufacturer; that he must purchase the tincture in its original sealed container and that the tincture must be of recent manufacture and be from a manufacturer who carries out a physiological standardization of his product.

ABSTRACTS FROM THE JOURNAL OF PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS.

*December 1926.*

**Charles M. Gruber:** "The influence of barbituric acid, of some benzyl derivatives and of the  $p_H$  of fluids on the tonus and rhythmic movements of excised segments of intestine, uterus and ureters." All barbituric acid derivatives tested caused loss of tonus of the excised strips of intestine, uterus and ureters.

Sodium benzyl succinate and sodium dibenzyl phosphate although possessing some tonus relaxing properties are not as effective as the barbituric acid derivatives.

Change in  $p_H$  of the fluid bathing the tissue is an important factor in the response of the tissue to drugs and must be considered in studying the action of drugs upon all excised strips of tissue.

Decreased  $p_H$  of the fluid bathing the strips of intestine, uterus and ureters causes a lowered tonus and may cause it to disappear entirely. Increasing the  $p_H$  results in heightened tonus of these same tissues.

*February 1927.*

**A. McFarlane and G. A. Masson:** "On the standardization of digitalis by the cat unit method." A large body of experiments on the assay of digitalis by the cat unit method as modified by Magnus from that of Hatcher is recorded.

It is pointed out that the results vary to a considerable extent, there being a relatively larger number of high results than are obtained by other observers. By means of group frequency curves it is shown that there are probably two groups of cats being dealt with, the high results belonging to a small and apparently distinct group with a greater resistance to the drug.

*April 1927.*

**J. Ernest Nadler:** "A quantitative comparison and toxicological study of ephedrine and epinephrine." A method is described for the study of the action and antagonism of drugs on the smooth muscle and the nervous control of melanophores of squid.

Both ephedrine and epinephrine can antagonize the action of  $BaCl_2$  and the extracts of the parathyroid and the anterior and posterior lobes of the pituitary gland.

Epinephrine is about 20 times as effective as ephedrine in antagonizing the action of the extracts of the parathyroid and the anterior pituitary gland, twice as effective in antagonizing the action of the extract of posterior lobe of the pituitary gland. Ephedrine is almost 10 times more effective than epinephrine in antagonizing  $BaCl_2$ .

*June 1927.*

**F. R. Winton:** "The rat-poisoning substance in red squills." Red squill preparations, administered per os to rats, induce convulsions and paralysis. There is no diarrhea, and an action on the circulation adds no significant contribution to the fatal result.

The technique of quantitative estimations of toxicity is discussed.

The rat-poisoning substance in red squills is relatively thermostable, soluble in water and in concentrations of alcohol and acetone up to 90 per cent. It is destroyed by boiling with dilute acid or alkali. It can be kept for long periods without appreciable deterioration.

July 1927.

**Louis E. Martin:** "A clinical standardization of digitalis." It was possible in a series of 19 cases of myocardial insufficiency treated with three preparations of dried powdered digitalis leaves to determine the relative potency of each by clinical methods.

These relative potencies compared favorably with results obtained by biological methods.

Dried powdered digitalis leaf is advocated because it is stable and easy to administer in uniform doses.

Digitalis may be given rapidly and should be given in considerable quantity until evidence of therapeutic effect is apparent and then continued at a rate approximately equal to the rate of excretion.

ABSTRACTS FROM AMERICAN JOURNAL OF PHARMACY.

**Leonard and Heacock:** "Testing germicidal power of certain products," Vol. 99, p. 335 (1927).—The authors describe a method, which is a modification of the Hygienic Laboratory Phenol Coefficient Test. In place of the *Bacillus typhosus* the strain of *staphylococcus aureus* is used. The authors describe method of making medium and an outline of procedure, and an example of an average test for determination of the germicidal strength as compared to phenol.

**Burn:** "Some methods of biological assay," Vol. 98, p. 657 (1926).—The author reviews and describes methods of biological testing, Houghton's Frog Method, Hatcher's Cat Method, Assay of Ergot, Testing of Ovarian Extract and Gland Therapy.

**Charles L. Wible:** "A comparison of methods of digitalis standardization," Vol. 98, p. 396 (1926).—A comparative assay of digitalis preparations made from *purpurea* and *lutea* by three methods—the official Frog Method, Hatcher's Cat Method and Knudson's and Dresbach's Colorimetric Method. The biological methods agree within the limits of biological error. The colorimetric method did not parallel the biological methods. The figures obtained by the colorimetric method indicate greater activity for each preparation than do our biological assay, they do not establish a constant ratio between the results of the colorimetric and biological methods. The assay of ten commercial tinctures of supposedly uniform strength (65 mgm. = 1 c. u.) shows an activity ranging from 53 mgm. to 100 mgm. per c. u.

PAUL S. PITTINGER, *Chairman*.  
W. A. PEARSON,  
L. W. ROWE,

D. I. MACHT,  
E. E. SWANSON,  
J. C. MUNCH.

THE PHARMACEUTICAL SYLLABUS COMMITTEE—BULLETIN II.

Copies of the third edition of the Syllabus, to be used in connection with the work of revision, will be sent to members, on request.

A copy of the two-page supplement to the third edition of the Syllabus, giving a suggested general outline of the three-year minimum course in pharmacy, is enclosed for careful consideration, as some general topics connected with this outline, on which a tentative understanding must be reached soon, are submitted for consideration in this Bulletin.

It will help us to avoid misunderstanding if the origin, duties and powers of the Committee are clearly understood by all regular and associate members and are kept in mind during the progress of the work.

The Committee is made up of twenty-one members, one member being appointed each year for a seven-year term by each of the following three national organizations: THE AMERICAN PHARMACEUTICAL ASSOCIATION, The American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy. The duty of the Committee is to prepare and publish the Pharmaceutical Syllabus, outlining the minimum course in pharmacy, within the general requirements adopted by the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy, with such additional matter as is deemed advisable. While the Committee is a self-governing body, it must keep within its limitations. It should be remembered that the Syllabus is suggestive, not obligatory, and it tries to assist the colleges and boards of pharmacy in their work, not to rule them. Schools are at liberty to exceed the requirements,



either in the time devoted to subjects in the Syllabus or by the addition of other subjects to their curriculums.

The first subject for consideration is the question of the possible omission of any subjects now included in the Syllabus. For instance: Elementary physics is taught in high schools and is now among the subjects required for entrance to many colleges of pharmacy. Is it necessary or desirable to continue this subject in the Syllabus? Members are requested to critically examine the list of subjects given in the enclosed supplementary pages and to send the Chairman their views on the possible omission of physics and any others from the list.

It is also necessary for us to determine what additional subjects are to be included in the minimum course. The Charters report includes several subjects which are not now included in the Syllabus, some of which can well be combined with subjects already included, like public health (hygiene) with physiology, a standard combination. Others which it will be profitable to include, are the pharmaceutical aspects of bacteriology, immunology, biological assaying and gland therapy. While the average pharmacist does not require a working knowledge of these subjects, he should have a general knowledge of them, to enable him to understand some modern developments in pharmacy.

A very interesting short section of the Charters report is entitled "Professional Morale." This includes vocational guidance, the history of pharmacy, responsibilities of the pharmacist, personality of the pharmacist, research in pharmacy and other sub-topics. Will it be well to include such a subject in the course, and, if so, in which year?

Suggestions for other subjects that might be added to the course are requested, but it should be remembered that time for subjects added must be taken from the time of those already included, to keep within the total number of hours in the minimum course.

Regular and associate members are requested to consider these matters carefully and to send suggestions on them to the Chairman. Later, a revised general program for the three-year course will be submitted for criticism.

Other general topics will be submitted for consideration in later bulletins, with concrete questions for decision, as they arise.

Respectfully submitted, T. J. BRADLEY, *Chairman.*

#### COMMITTEE ON BIOLOGICAL PRODUCTS.

The following letter has been addressed to all schools and colleges of pharmacy by Samuel S. Dworkin, Chairman of the Committee on Biological Products.

Dear Dean:

At the meeting of THE AMERICAN PHARMACEUTICAL ASSOCIATION held last August at St. Louis, a resolution was adopted authorizing the Committee on Biological Products to secure dummy packages of various biologicals and make them available to the Colleges of Pharmacy for lecture demonstration.

The Chairman of the Committee on Biological Products has arranged to supply representative sets of water-filled biological packages to all of the Colleges of Pharmacy in the United States.

The Committee feels that by having available the various types of biological products containers, such as ampuls, syringes, etc., the lecturer will be in a position to supplement his instruction with practical demonstrations which will be interesting to his classes and which will acquaint them not only with the appearance of the containers but with the technique employed in administering their content.

The Committee is hopeful that students receiving this type of instruction will, through the intimate knowledge thus gained, handle biological products with a feeling of keen interest, appreciation and confidence when, as registered pharmacists, they are brought into close professional relations with physicians.

If you will write to me at your earliest convenience, stating that you will accept this service for use at your college, a complete set of the biological packages will then be forwarded to you without cost and with delivery charges prepaid.

SAMUEL S. DWORKIN, *Chairman,*  
Committee on Biological Products.