ELEVENTH ANNUAL MEETING

American Drug Manufacturers' Association

HOTEL BILTMORE
New York City

June 5-8, 1922

CONTENTS

PART ONE

Abstracts from Business Sessions

ADDRESS OF THE PRESIDENT

Read at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8, 1922.

Friends and Fellow Members of the American Drug Manufacturers' Association: Under the rule and custom, this the Eleventh Annual Meeting of our Association should have been convened in April. It so happened that several other national associations in some of which a considerable number of our members are as well interested had arranged their anual meetings during that month and in May, and on that account your Executive Committee thought it best to postpone the date of our meeting until this time.

Business Conditions and Readjustment

As we gather here, just fourteen months since our last meeting, we have before us the record and experience of business for the year 1921, and each of us knows how nearly correct was the promise and hope I held out when addressing you in April, 1921, that we had then turned the corner and from that time on might reasonably look forward to a more stable condition in the drug and chemical market, and as a consequence a larger volume of business as well. It is difficult even in ordinarily normal times for the most experienced to forecast with any degree of accuracy either the course of prices or the probable volume of business, and as none of us have ever before passed through the experience and aftermath of a World War—the greatest the world has ever known—it is obvious that one man's guess was a year ago, and is none the less today, as good as another's.

The post-war readjustment of business has been much slower than many of us had hoped it might be. World politics, and especially European politics, has been and is still so badly confused on account of the many conflicting national interests, that economic conditions are still far from a condition of normalcy. That great International Disarmament Conference called by our own government and held recently at Washington, was I believe the greatest forward step ever taken to promote a community of interests of civilized nations, and to minimize the possibility or probability of future warfare. That Conference demonstrated I think conclusively that the principle of open diplomacy is the only safe and sane route toward international peace as contrasted with the old time secret methods which have so often in the past cost the world so much in blood and treasure.

But what was accomplished at Washington is but a beginning, and until that is followed by the most constructive kind of statesmanship looking forward to the adjustment of the many conflicting currents of selfish interests in Continental Europe today, we may not hope for a restoration of sound economic conditions, and until that time there can be no very great improvement in the volume of export business done by this country.

While not all of our members are directly interested to any considerable extent in export business, especially with European or Asiatic countries, it seems to me essential nevertheless that the United States as a whole have an outlet to European countries on a very large scale for its great surplus production of cotton, wheat, corn, oats, copper, steel and an almost unlimited list of manufactured items in order that our people may all be employed and that profitably. Then and then only may we hope for a return to capacity volume of business in our several lines of manufacture.

In the past few months, and especially since the beginning of this year, there has been a very encouraging increase in most lines of business. Our export trade has shown an encouraging growth in volume, notwithstanding the lower price level, and as a result general business has increased in volume not only as measured in dollars, but in tonnage as well. While I have learned to be a little cautious in making predictions as to the future, I think we may now be confident that the worst is behind us and that we may look forward with hope and confidence to the future.

Market Fluctuations

Prices of the very great variety of materials required by the members of this Association in the manufacture of their products advanced steadily after August, 1914, until about the middle of 1920, when they had reached the peak and were at that time, as nearly as we have been able to calculate, just about double the pre-war level. By December 1920 they had declined very little—only about six per cent—whereas in December, 1921, the average cost was about fifty per cent higher than in 1914.

During the earlier period while prices were advancing, inflation in business was such as to crowd manufacturing capacity, and I fear some of us did not then realize that there could be no exception to the rule of cause and effect, and that sooner or later we must be prepared to face an equally drastic deflation, in cost, selling price and volume.

Most of us doubtless have cause to remember the year 1921 as the most unsatisfactory in our long experience.

Notwithstanding the very drastic readjustment which has already taken place, the cost of materials is still very much above the pre-war level. While I do not anticipate we shall soon again have a level of prices comparable with the pre-war level, we must I think be prepared to see within the next twelve months still lower prices for many commodities, while on the other hand quite a number of staple materials have recently sold at prices in some cases lower than the pre-war level and with an improving volume of business must necessarily advance, thus bringing about an irregular market in which perhaps the advances and declines will practically offset one another.

While a condition of this kind is most unsatisfactory, we need only a continuance of that improvement which we have already noted in business generally to stabilize the market somewhere near the present level.

Competition

The large volume of business which came to all of us in 1918, 1919 and 1920, large not only because of greatly inflated values but large in tonnage as well, beyond our most sanguine hope of a year or two before, led some of us I fear to forget altogether our old friend and unfailing guide, "Competition." But this old fellow has never yet failed us and you will I am sure agree with me he is back with us again in his most vigorous form and with the promise he will not soon again desert us, but will stand by at all times to assist up in protecting our customers' best interests.

This year of 1922 will I feel see accomplished an equilibrium in world conditions which in turn will result in sound and stable business on a gradually improving scale. But not many of us I fear will be enabled to pay extra dividends or retire on our profits.

Taxation

Since last we met there has been a revision of our Federal tax and revenue laws, and though the relief granted is far from what we had hoped for, it is nevertheless considerable and should, I feel, prove helpful in reviving business activity. Especially is it helpful in that the onerous and destructive Excess Profit Tax has been repealed and business men may now begin to put forth their best efforts and initiative looking forward to the economical operation of their business with the

assurance that their success will not be penalized by confiscation of the greater part of their profits.

While we are still obliged to pay excessive freight rates the actual cost of transportation has been reduced by the repeal of the tax formerly assessed on both freight and passenger rates.

The reduction in the sur-tax rates on incomes is not great, but will as well prove helpful and encourages us in the belief that with the promised rigid economy exercised in the conduct of the Federal Government we may have further and considerable reduction of these rates within the near future.

Tariff

The Tariff Bill now before Congress will unquestionably increase the cost to us of many largely used materials, which is greatly to be regretted; but we must not forget that the government must have the revenue, and if we do not pay it in this way we shall have to in another. Personally I feel that there should be no tariff assessed on any raw material which we cannot produce in this country, nor should an increased tariff be assessed on the finished product produced from such material.

An instance of much interest to all of us is the case of the greatly increased tariff proposed not only on cork-wood, but on corks as well, whereas the cost of corks entering into the packaging of all kinds of medicinal preparations is already disproportionately large. Perhaps this meeting may care to suggest some line of action or protest through our Legislative Committee.

Financial Situation

During the past year there has been a very great improvement in the financial and credit situation in this country. Old high cost inventories have very generally been worked off, though in many cases at a great loss. Bank loans have been largely reduced, and in consequence the demand upon banks is today so moderate that money rates are little more than half of what they were less than two years ago. With a continuance of the improvement which we have noted in business conditions during the past few months this fact of ample funds at moderate interest rates should prove most helpful. The fear we entertained only a short time ago that the banks of the country might not be able to meet the tremendous demand made upon them for funds necessary to provide for the unheard-of requirements of the Federal

Government, as well as the vast amounts required by business on account of inflated values, was evidently not well founded and our financial situation today is most satisfactory and encouraging.

The Wage and Labor Situation

While wage scales have quite generally been moderately reduced, they are yet in most cases considerably out of line with the general level of prices and particularly with the fact that there is at this time a large percentage of our workers unemployed. It has always been an easy matter to reduce prices or advance wages without fear of criticism from consumer or worker, but quite the contrary has been the rule with every attempt to either advance prices or reduce wages, whereas all economic law requires that they go hand in hand—a reduction or advance in one calling for a corresponding change in the other, and it seems inevitable that further wage reductions must be accomplished in many lines of work, including skilled labor, before we may hope for a well-balanced economic condition, when instead of having two-thirds of our people employed at excessive wages we shall have them all employed at a fair living wage.

Alcohol

Since our last Annual Meeting we have had with us at all times the ever-menacing proposition that denatured alcohol be employed in the manufacture of medicines intended for internal administration. At first it made its appearance in the House as H. R. 5033, known as the Anti-Beer Bill, which had its origin in the usual quarters. This Bill would have prohibited altogether the withdrawal of any but denatured alcohol for any purpose except in cases where the Prohibition Commissioner might be convinced that an essential preparation could not be made with any but pure ethyl alcohol, and vested in the Commissioner as well the autocratic power to decide who might and who might not be permitted to have such premedicated alcohol for manufacturing purposes. It was suggested that ethyl alcohol might be denatured by having added to it while still in bond at the distillery such an amount of one of the drugs with which it was ultimately to be employed as the Prohibition Commissioner might consider necessary.

This would have required each manufacturer to have had in stock at all times as many special containers of variously denatured (premedicated) alcohol as he listed or supplied, Fluid Extracts, Tinctures, Elixirs, etc., a proposition manifestly absurd, and would have ren-

dered it impossible for the manufacturer to control his product, since one stage of its manufacture would have been entirely outside his knowledge or supervision.

In like manner the retail pharmacist would have found it impossible to carry in stock all the many kinds of premedicated or so-called denatured alcohol which he would require for the purpose of filling physicians' prescriptions, his prescription business would thus have been practically destroyed and the sick unable to procure the medicine prescribed by the physician. The members of our Legislative Committee were in Washington for several days during May, 1921, at the hearing of this Bill before the Judiciary Committee of the Senate, and it was through their efforts I believe more than anything else that Sections 2 and 3 providing for the premedication of alcohol were defeated.

Not content with defeat of this Bill, the same interests a few months since, supported by certain manufacturers of proprietary medicine, undertook to secure a ruling through the Prohibition Division of the Internal Revenue Bureau making it not compulsory but permissive, that such denatured or premedicated alcohol might be used in the manufacture of medicine intended for internal administration. and I am glad to be able to say that this has been opposed very strongly by representative men from every branch of professional pharmacy; and I am hopeful that as a result of the very vigorous protests filed with the Secretary of the Treasury and the Commissioner of Internal Revenue by many of our leading pharmacists, professors of pharmacy, state and municipal pharmaceutical associations, in addition to your own Association, such a revolutionary ruling will not now be forthcoming.

I will not trespass further upon the province of our Legislative Committee, but have felt so strongly concerning this proposal to subject the sick and afflicted, as well as pharmacy and the practice of medicine, to another unnecessary, dangerous and burdensome governmental regulation that I could not refrain from speaking to you concerning it.

Narcotic Law and Regulations

While much effort has been expended by your Legislative Committee during the past year to secure relief from the great amount of detail involved under the present law and regulations in the handling of narcotics, nothing tangible has as yet been accomplished and

the system of accounting which involves so much unnecessary work on the part of retailers, jobbers and manufacturers as well, is still in vogue. A meeting was recently called at his office by the Commissioner of Internal Revenue at Washington for the purpose of considering a new form of narcotic order. The form suggested by the Chief of the Narcotic Division, which included among other things a restriction to only three items on one order form and did not carry with it any relief from the present involved system of accounting, was opposed by representatives of every branch of the drug trade, including the National Asociation of Retail Druggists, National Wholesale Druggists' Association and American Drug Manufacturers' Association. Nothing definite came out of this meeting and the matter is still under consideration by the Narcotic Division. We are hopeful that some measure of relief may yet result from that meeting.

A Greater Association

In these days of the "modern reformation" we must keep ever before us the motto "Eternal Vigilance," lest while we are absorbed in our daily routine of business some misguided or designing politician in an endeavor to strengthen his fences "back home," or some self-appointed guardian of our moral and business conduct may conceive some Utopian notion which he will endeavor to have enacted into law or promulgated as a regulation which in operation will work out in a way much similar to Mark Twain's experience when shooting with an old Allen pepper-box and aiming at a mark fifty paces in front of him, found he had killed a mule one hundred paces to the rear.

Too frequently laws and regulations designed to accomplish a definite purpose fail utterly in that direction and work disastrously for some legitimate interest of which the author was entirely ignorant or had not even considered. We have had too much law and regulation in business, until many branches of American industry are so badly hampered by red tape and senseless restrictions that there remains little incentive to risk the necessary capital or expend the energy required to insure successful progress.

"Eternal Vigilance is the price of Liberty," and this Association must be prepared more than ever before to keep a constant lookout over the entire legislative horizon, in all the States as well as at Washington and I most earnestly recommend that this meeting adopt the several Amendments to our Constitution and By-Laws which will be submitted for your consideration. These Amendments will enable

us to increase materially our membership, give us the considerably greater revenue which is essential for carrying out the plans we have in mind, and thus enable us to so materially improve our facilities at our Washington Office that we will hereafter be much better prepared to look after the interests of all our members in any matters which they may care to entrust to our Secretary.

As our membership is restricted to those actually engaged in the manufacture of products intended ultimately for the use of physicians we cannot hope to make the Association one of large numbers, but it should be fully representative of the manufacturing element. If we are to accomplish what we should to the extent of securing a fair and equitable consideration and recognition of the importance of pharmacy in all its phases as represented by our membership to the people at large, we must be prepared at all times to present an unbroken front and one which will be recognized at once as representing the entire manufacturing branch of the profession.

I would therefore urge that the scope of our membership be enlarged to include not only Manufacturers of Medicinal Chemicals, Manufacturers of Pharmaceuticals, Surgical Dressings and Plasters, Crude Drug Millers, Essential Oil Manufacturers and Biologic Producers, but Manufacturing Physicians' Supply Houses as well, and that out Committee on Membership be instructed to make a supreme effort to bring into the Association every house engaged in these several lines. With such a representative membership the Association will be in position to maintain at its office in Washington an organization which will insure to every member a quality and quantity of service worth many times the cost.

Our Secretary

Since its organization in 1912 the American Drug Manufacturers' Association has been particularly fortunate in having had as its Secretaries, first, Mr. Charles M. Woodruff, who served us as Secretary for the first five years of the Association's history and since then for the past five years as our General Counsel and Chairman of our Legislative Committee. No man could have been better prepared by both education and experience through long association as counsel for one of our members, to render that particularly efficient and constructive service which Mr. Woodruff has so long given the Association, and we all regret that during the past year or two his health has not been good and especially that he should have suffered so severely from an

attack of pneumonia during the past winter. While he did not feel it wise in order to be with us today to undertake the trip from Southern California where he went some weeks since for a rest, we are happy to know that he has fully recovered from that attack and is now again in his accustomed good health.

In 1917 when Mr. Charles M. Woodruff felt the duties of both Secretary and General Counsel were rather more than he could well continue to undertake, we were again fortunate in having as our Assistant Secretary Mr. Wilfred J. Woodruff, and at that time elected him as Secretary. Mr. Wilfred J. Woodruff has therefore served us now for more than five years as Secretary and more than seven years in all, and has given us all that anyone could reasonably ask or expect. He has displayed exceptional ability in managing the affairs of the Association and has, through his unvarying courtesy and willingness to do at all times, won the highest esteem and regard of every member.

I know you will learn with the utmost regret that Mr. W. J. Woodruff has asked that he be not considered for reappointment as Secretary because of the fact he has an opportunity at this time to accept a position where he feels his prospects for the future are much greater. This has left us no alternative but to try and find some one who will fill our requirements as Secretary in order that Mr. Woodruff may be relieved at an early date, since he has very kindly consented to remain with us until our new Secretary has been made familiar with the routine of the office.

Your Executive Committee recently met in this house and after having canvassed the situation thoroughly and having considered several possibilities, were unanimous in their selection, provided the man they had decided on could be induced to undertake the work, and I feel we are again to be congratulated in so quickly finding a way out of the difficulty in which Mr. Woodruff's withdrawal had placed us, in that the gentleman selected by your Executive Committee has consented to accept the appointment as Secretary. I use the word "appointment" because of the fact one of the Amendments to be proposed at this meeting provides that hereafter the Secretary will no longer be an elective officer, but will be subject to appointment by and under control of the Executive Committee.

No man in the drug world today is better fitted to serve most efficiently the best interests of every section of our membership than Mr. A. Homer Smith, who is an educated and practical pharmacist and has had many years experience in the manufacturing field. He

is familiar with the products of every branch of our membership—Medicinal Chemicals, Biologics, Surgical Dressings, Pharmaceuticals, Crude Drugs and Essential Oils—and during the World War represented the interests of this Association at Washington as Assistant to Lieutenant-Colonel Simpson, Chief of the Medical Section, Council of National Defense, and has an acquaintance and entree there which will prove of much value and assistance to him in handling Association matters.

In taking this opportunity to thank Mr. W. J. Woodruff not only for the co-operation he has at all times given me since you made me your president, but for the very valuable and efficient service he has for more than five years given the Association as its Secretary, I would as well earnestly recommend to the incoming Executive Committee that the appointment of Mr. A. Homer Smith as Secretary of the Association be promptly confirmed.

Conclusion

I have already taken more time than was my intention when I began speaking, and as we have a number of unusually interesting and instructive Committee reports to be presented, I will not trespass any further upon your time or patience, except to express my appreciation and thanks to the Executive Committee, our Secretary and Committee Chairmen as well for the very willing and helpful co-operation they have at all times accorded me.

REPORT OF THE SECRETARY

Due to the unfortunate illness of Secretary W. J. Woodruff no Secretary's report was read at the Eleventh Annual Meeting.

Shortly after starting work on his annual report Mr. Woodruff was compelled to undergo an operation for appendicitis from which fortunately he has since completely recovered. This illness not only prevented his attendance at the Eleventh Annual Meeting but also made it impossible to complete the report in time for it to be read at the meeting.

Mr. Woodruff had planned to place before the membership a survey of Association activities since the removal of the exeecutive offices to Washington, D. C., in January, 1921.

SALES CONDITIONS

Report of the Committee on Sales Problems read at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5–8, 1922.

This year the Committee on Sales Problems has endeavored to approach its tasks from entirely a different angle. Our plan was to have every member of the committee actively at work, and to this end we divided up the work into sections, appointing each member of the committee, including the chairman, as chairman of each section of the subject of sales problems. An outline of the work assigned is as follows:

Section 1.	Crude Drugs	Mr. C. G. Gery
Section 2.	Essential Oils	Mr. Edgar W. Emery
Section 3.	Medical Chemicals	Mr. G. L. Camp
Section 4.	Biologicals	Mr. W. A. Caperton
Section 5.	Surgical Dressings Pharmaceuticals	Mr. J. R. Worden

A questionnaire was sent to each of the members belonging to the different sections by the sub-chairman and replies received. Your chairman of the committee on sales problems is of the opinion that the data assembled may be of some service to our members in general.

Section 1, covering Crude Drugs, assigned to Mr. C. G. Gery, Sales Manager of the H. K. Mulford Company, Philadelphia, Pa., did not get in its report in time for this composite report.

Essential Oil Sales Conditions

Section 2, covering Essential Oils, was excellently handled by Mr. E. W. Emery, Sales Manager for the E. L. Patch Co., Boston, Mass. In a letter accompanying his report he says: "The following questionnaire was sent to the four members of the Essential Oil section. Replies were received from three of the four. One house employs no travelling men. They state that occasional calls from one of the officers is productive of more goods than frequent calls by salesmen. On account of the limited number of members engaged in the Essential Oil trade, and the fact that there were replies from but two employing

salesmen, it has been extremely difficult to submit a report that has anything but limited information in it." His report follows:

Percent of Cost Per Sale Shows Increase

1. Does your percent. of cost per sale show increase or decrease? In two cases the percentage cost per sale shows an increase.

Essential Oil Salesmen's Salaries

2. What percent., if any, have salesmen's salaries been reduced in your organization, comparing 1922 with 1920? In starting salesmen do you start them at the same salary in 1922 that you did in 1920? One concern reports that salaries have been reduced 15 per cent and no new salesmen added. The other firm has not reduced salaries or started any new men in 1922.

3. Do you pay your salesmen: (a) Straight salary and expense? (b) Inclusive salary and expense? (c) Commission? (d) Salary, expense and bonus? (e) What in your estimation is the most satisfactory method?

In the matter of salary, both pay salary and expense and commission. Answer (e) indicates that one believes that salary and expense is the best arrangement and commission is second best. The other firms evidently believe that each way has its advantage.

Sales Effort of Essential Oil Salesmen

4. Have you noticed any increase in effort by your salesmen as compared to 1918–20? One sees increased effort by the salesmen, the other house does not.

Mileage Books and Routing

5. Do your salesmen use mileage books? The answer to this question indicates that the use of mileage books is not general.

6. Do you route your salesmen? If so, briefly outline. Do you consider it a success with men familiar with their territories? Essential Oil salesmen route themselves without supervision from the office.

Hiring, Starting and Training Salesmen

7. Hiring, starting and training salesmen: (a) What are your methods in obtaining new salesmen? (b) Do you advertise? (c) In what publications: trade journals, drug magazines, newspapers? (d) Do you favor men whose homes are on the territories to be covered? (e) What are your methods of training salesmen not familiar with your

firm? (f) If you employ inexperienced salesmen, how long do you give them to make good?(g) Do you believe that a man should have one month? three months? six months? to demonstrate his ability to be a successful salesman? The two firms advertise for salesmen, using trade journals, drug magazines, newspapers. Both favor men whose homes are on territories covered, and depend for future success on personal instruction at home office. The usual period is from three to four months.

No Sales Conventions Among Essential Oil Houses

8. Sales conventions: (a) Do you hold them? (b) How often? (c) Do you have district sales meetings? (d) How often? (e) What have you found the most efficient way of conducting these meetings? (f) To what extent do your salesmen enter into the meetings? (g) Do you assign salesmen topics to speak on? What method have you for making the assignment? (h) What form of entertainment do you provide after business sessions? (i) Do you consider sales conventions as worth while? Sales conventions are not held by the Essential Oil firms.

Section 3, covering Medicinal Chemicals, assigned to Mr. G. L. Camp, Sales Manager for the Dow Chemical Company, Midland City, Mich., is not available from the fact that Mr. Camp, try as hard as he could, could not get sufficient data from the members of this committee to make up a report. We are hoping for much greater things from this committee next year.

Biological Sales Conditions

Section 4, covering Biologicals, assigned to your chairman, is reported in detail as follows: (Replies were received from six of the seven biological houses to whom questionnaires were sent).

Per Cent of Increase in Cost Per Sale

1. Can you estimate the increase in cost per sale in 1921 as compared with 1914? Five cannot. One estimates about 10 per cent.

2. Is your cost per sale at present showing an increase or decrease? Three show an increase, one a slight increase, one a decrease.

Biological Salesmen's Compensation

3. Do you pay your salesmen a straight salary and expenses? Inclusive salary and expenses? Commission only? Salary and commis-

sion? Two pay straight salary and expenses. Two pay salary and commission. One pays inclusive salary and expenses for city men; salary and commission for rural territories. One pays 50 per cent of his men straight salary and expenses; 50 per cent inclusive salary and expenses.

4. What per cent. have your salesmen's earnings been reduced in your organization, comparing 1922 and 1920? Two say "none." One says "practically none." Another says, "None, because they have to earn their drawing account." One estimates 10 per cent by replacement. Another says, "Average bonus reduced about 15 per cent."

5. If you pay a straight salary and expenses, what percentage have salaries been reduced? Three do not answer. One says "practically none." Another says, "We have made few salary reductions." Another says, "I guess 10 per cent."

Biological or Drug Experience Invariably Required

6. What is your policy with regard to employing salesmen without drug and biological experience? "Do not employ them." "Employ only pharmacists or physicians." "We do not employ salesmen who are not graduates in pharmacy." "Very seldom employ such men." "Salesmen without pharmaceutical experience seldom succeed." "Poor."

Developing Salesmen From Own Organization

7. Do you develop your salesmen largely from your own organization? Three say no. Two say yes. One says, "To some extent."

8. Do you employ salesmen with previous outside experience? Four say yes. One says "occasionally." One says "not many."

Increased Sales Effort During 1921–22

9. Have you noted an increased attention and accomplishment on the part of salesmen in 1921 as compared with 1918 and 1920? Five say yes. One says "to a small extent."

Limiting Traveling Expenses

10. Do you place a maximum limit upon traveling expenses? Three say yes. Three say no.

Cost of Biological Salesman's Calls

11. Do you know what it costs you to make a call upon a wholesale customer? Upon a retail customer? Upon a physician in doing

special promotion work? One answers yes to all three questions. One answers no to all of them. One has the information on a retail customer, and one has it only on a physician—$1.25 average. One does not answer.

Routing Biological Salesmen

12. (a) Do you route your salesmen in detail or only in a general way? Three say no. One says, "Only in a general way." Another says, "Only in a general way, but we keep close check on method of covering territory, number of customers called on each day, etc." One says "in detail."

(b) Do you consider it necessary with men familiar with their territories? Two say no. One says, "That depends on the individual salesman." One says, "It might help standardize things." Another says, "Yes, in order to do follow up work in routine." Another says, "It is always necessary to do this because old experienced men have a tendency to get into a rut."

Training Biological Salesmen

13. Can you give a brief outline on your method of training salesmen? The answers are as follows: "We endeavor to train our salesmen by giving them a general posting which usually lasts a week or ten days." "Before starting them out we give them a two weeks' course of instruction with written examinations and subsequent training by a course of lectures by mail." "Posting classes covering one to two weeks. Sales and detail demonstrations and lectures." "Instruction at headquarters and a period as assistant to seasoned salesman." "According to training and experience; a promising man gets one week's instruction inside and one to four weeks on the territory with an experienced tutor."

Biological Sales Conventions

14. Also on your attitude toward sales conventions? One says, "Favorable." One says, "We think profitable." One says, "Thoroughly believe in them." Another says, "We have sales conventions from time to time in the various branches. Impracticable to bring entire staff of traveling men together at home office." Another says, "Good in selected groups; unprofitable in large gatherings." Another says, "Indifferent to large; favorable to small."

Pharmaceutical and Surgical Dressing Sales Conditions

Section 5, covering Surgical Dressings and Pharmaceuticals, has been most excellently handled by Mr. J. R. Worden, Sales Manager of Frederick Stearns & Co., Detroit, Mich. We are sure that our members will get a splendid lot of information from this report. Mr. Worden in his letter accompanying this report says:

"There are a few things which seem to me of more than passing interest, and perhaps should deserve some special attention. The first I would mention as seeming to be of quite importance is question 21 and question 22.

Reduction in Number of Tablets, etc.

"Eleven out of seventeen firms answered 'yes' to the question of whether they believed some concerted action and recommendation should be taken in reducing the number of tablets, pills, fluid extracts, etc. The same ratio applies on question 22, in eliminating some of the sizes.

"It strikes me that this majority in favor would warrant the serious consideration of this question at the next meeting of the Association. I believe concerted action would mean the elimination of a lot of detail and expense, and simplify production, and mean increased profits for every pharmaceutical house. If the majority are in favor of it, as indicated here, why not make it one of the important things to bring up?

"There is another thing that is interesting, and that is the various and varied answers to question 13, and the many different ways we seem to have for handling the automobile question.

"Another thing I am glad to note is that fourteen out of seventeen firms hold conventions, whether large or small, annually or more often, and the fourteen of the seventeen firms believe them profitable. The objections we find are because of the possibility of comparing incomes made, and also the expense objection on two."

His report follows:

Increase in Selling Cost During 1922

1. Does your per cent. of selling cost show increase or decrease? Increase, 13; decrease, 1; same, 2; no answer, 1.

2. Can you show this by comparison in 1921 with 1920, 1919, 1918, 1917, 1916, 1915, 1914? 7 can show comparison; 10 cannot show comparison.

Pharmaceutical Salesmen's Compensation

3. What per cent. have salesmen's salaries been reduced in your organization, comparing 1922 with 1920? Ten per cent by replacement, 1; no reduction, 11; about 25 per cent, 1; no answer, 1; 5 per

cent, 1; old men, none, new men, 20 per cent, 1; salaried men, one-third, 1.

4. Do you pay your salesmen: (a) Straight salary and itemized expense? (b) Inclusive salary and expense? (c) Commission? (d) Salary and expense and bonus? a, 3; b, 1; c, 1; d, 4; b and d, 1; a, b and c, 1; a, b and d, 1; a and d, 1; a and b, 2; a and c, 1; c and d, 1.

Employing Salesmen With No Pharmaceutical Experience

5. What success have you had in employing salesmen outside of drug experience in selling your products? Poor, 12; no difference, 2; good in some instances, 3.

Efficiency of Pharmaceutical Salesmen

6. Have you noted an increase in efficiency of your salesmen as compared to 1918, 1919 and 1920? Yes, 10; no, 5; no answer, 2.

7. How do sales compare between city salesmen and country salesmen? Country salesmen better, 4; city salesmen better, 7; one as good as other, 6.

Costs of Rural and City Salesmen Compared

What is comparison of cost? Country salesmen lower, 2; city salesmen one-fourth of country, 1; city salesmen one-half of country, 2; city salesmen three-fourths of country, 2; cost same for both, 10.

Cost of Pharmaceutical Salesman's Calls

8. Do you know what it costs you to make a call on: (a) A retail customer? (b) A wholesale customer? (c) A physician? (d) A hospital? Don't know, 10; approximately, 3; estimated, 1. (a) $1.48, 1; $2.00, 1; (b) $1.00, 1; (c) $1.75, 1; $3.00, 1; $1.25, 1; (d) no reply.

Orders Received at Time of Call

9. What percentage of calls made produced an order at the time? Not answered, 14; 25 per cent, 1; 1 per cent, 1; 75 per cent, 1 (guessed at).

Routing Pharmaceutical Salesmen

10. Do you route your salesmen? If so, briefly outline. Salesmen route themselves, 9; route salesmen partially, 4; yes, 4.

Do you consider it a success with men familiar with their territories? Yes, 7; no, 3; no answer, 7.

Training Pharmaceutical Salesmen

11. What methods do you employ in training salesmen? House, 5; house and field, 8; no answer, 1; never train them, 1; regular study course, 2.

Pharmaceutical Sales Conventions

12. Do you hold sales conventions? (a) In small groups or one large group? (b) Yearly or more often? (c) Do you believe them profitable (d) What are your objections, if any? Do hold conventions, 14; do not hold conventions, 3. (a) Large, 2; small, 8; both, 7. (b) Annually, 9; semi-annually, 1; quarterly, 2; individually, 1; various times, 6. (c) Yes, 14; no answer, 3. (d) None, 2; no answer, 11; object because salesmen compare incomes when together, 2; object because of expense, 2.

Use of Autos by Pharmaceutical Salesmen

13. (1) Do your men use automobiles? (2) Do you or the men furnish the car? (3) What is your method of compensation?—(a) in city? (b) in country? (1) No answer, 1; no, 1, few only, 1; to some extent, 10; many instances, 2; house helps to buy, 2. (2) Men furnish, 14; house furnishes, 2. (3) Commission men pay their own, 2; flat salary and expense men pay their own, 1; daily allowance for car, 8; (a) $2.00 per day, 2; $2.50 per day, 1; flat allowance, 1; mileage, 1. (b) $3.50 per day, 2; mileage, 2; 5c. per mile, 1. One reply read: $50 a month if we own car and $4.50 a day if salesman owns car.

Pharmaceutical Sales Quotas

14. Do you assign sales quotas to your men? Yes, 11; no answer, 2; no, 4. What method has proven most satisfactory? Various methods, 1; no answer, 9; estimate what territory should produce, 4; based on earnings, 3.

Most Effective Sales Stimulas

15. What form of incentive to the dealer has proven most successful? (a) Long discount; (b) free goods; (c) cooperative advertising; (d) direct advertising; (e) mailing lists. Used none of these, 1; no answer, 4; service, 1; fair treatment, 1; (a), 1; (b), 2; (c), 1; (e), 1; (a, b and c), 1; (c and e), 1; (b, c and e), 1; (b, d and e), 1; (a and b), 1.

Most Effective Salesman Supervisions

16. What forms of direction have seemingly brought best results from your salesmen? (a) Branch managers? (b) Field managers? (c) Home office? Branch managers combined with house, 5; field managers, 7; home office control, 14; no answer, 3.

Checking up Salesmen Through Dealers

17. Do you have any method of checking up your salesmen through your dealers? Yes to limited degree, 1; no, 8; field managers, 3; no answer, 3; by results, 1.

Increasing Good Will

18. How do you maintain and increase your good will? Quality, product, and quality service, 5; service and advertising, 3; detail and advertising, 2; promotion work, 2; conservation, 1; no answer, 4.

House Organs

19. Do you publish a magazine to the trade? Yes, 7; no, 7; medical profession, 2; no answer, 1. What does its use reflect to you? Good will and business, 6; more business, 1.

Marketing Products Outside Retail Drug Trade

20. Do you believe certain of your items can be marketed through other channels than the retail drug trade? Yes, 4; no, 9; never tried, 1; no answer, 3. If so, how? Confectionery and soda fountain, 1; hospitals and physicians, 2; dealers, 1.

Reducing Number of Products

21. Do you believe in taking some concerted action and recommending a reduction in the number of tablets, pills, fluid extracts, and elixirs as offered by all pharmaceutical houses? Yes, 11; no, 4; questionable, 1; no answer, 1.

22. Do you believe in recommending the elimination of some of the sizes in which pharmaceuticals are offered? Yes, 11; no, 4; food for thought, 1.

Can Salesmen Detail Physicians Successfully

23. In your opinion, can a salesman carry general lines—pharmaceuticals, package goods, etc., at the same time detail physicians successfully? Yes, 5; no, 7; small towns, 5.

Respectfully submitted.

WOODS A. CAPERTON,
Chairman.

EXPORT TRADE

Report of the Committee on Foreign Trade Read at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8, 1922.

In practically all lines of export business the year 1921 proved to be generally a period of contraction and consequent disappointment. American export trade during this particular year registered a loss of no less than 45 per cent whereas South America, which is looked upon as a particularly favorable field for the United States, sustained a loss of no less than 56 per cent. This refers to all American commodities usually exported. In viewing this enormous shrinkage, however, it is well to bear in mind that what we suffered in 1921 was a direct result of the very unusual circumstances which were attendant upon the general export business of the previous year. A review of the period which immediately preceded 1921 may not be out of order, although the facts are now thoroughly well known to those conversant with foreign business.

It is well understood that during 1920 when there occurred a notable shrinkage in domestic business it became possible for American manufacturers to expedite delayed foreign shipments, with the result that unheard-of quantities were rushed from the American markets at a time when values were shrinking very rapidly. This naturally led to an enormous congestion in most of the harbors of the world. Buyers took advantage of every technicality in order to refuse shipments, or to demand unusual concessions—all of which tended to still further complicate a situation already going from bad to worse.

This condition ran parallel with a depression in the foreign exchanges which enormously enhanced the difficulties of those importers who were earnestly endeavoring to protect their obligations. Countries that were and are constantly dependent upon the export of raw materials—as for instance South America—were particularly hard hit. Europe with scant funds was simply unable to purchase their raw material and America was quite unable to take care of the surplus. These combined unfavorable influences brought about a situation which was indeed an eloquent aftermath of the War.

It is not always clear to the seller that all foreign trade has certain limitations. Mr. Dollar says "that trade with other countries means an exchange of commodities; we must buy as well as sell." While this is one of the A B Cs of foreign trade nevertheless it is

not always recognized as a fundamental fact which cannot be waved aside. It very quickly became apparent that those countries dependent upon the export of their raw materials which were formerly largely taken by Europe, were facing a condition which could only be corrected through a somewhat painful and long-drawn-out period of liquidation.

All of the evils which attend a market that is purely and simply a seller's market, and when the exchange of commodities is not conducted through the medium of evenly balanced conditions, were classically exemplified in the year 1920. It was therefore natural that the following year should be one presenting very unusual difficulties.

Present Difficulties

In the foregoing I have endeavored to sketch briefly the chief factors which brought about the phenomena characterizing foreign trade operations during 1921; right now we are more concerned in a consideration of present-day problems and there is a sufficient array of them to convince any student that some time will be required to re-establish those normal conditions by means of which commercial intercourse between the nations of the world can be best and most successfully conducted.

Under ordinary conditions Europe today would be an amazingly fine market for American products. Everywhere there is a crying need for commodities of every conceivable description. Unfortunately, whereas the spirit to buy is present, the pocket wherewith to pay is empty. As stated by Governor Harding of the Federal Reserve Board: "The mere need of goods, however urgent, does not create an economic demand. There must be an ability on the part of those needing goods to pay for them." The big issue therefore that confronts the American manufacturer is the one with which statesmen throughout the world are struggling today—how can Europe be placed in a position where she may again become a large consumer and purchaser of the products of the world?

It is generally conceded among statisticians that our export trade, as nearly as they can evaluate it, amounts to about ten per cent of our total production. In any factory it is the last ten per cent of production which carries with it the largest measure of profit, and so it is with the business of any nation as well—it is the last ten per cent of production which counts heavily and this may well mean the difference between a prosperous national condition and one which brings

want to a great many of our people. The desirability therefore of securing this exchange of our surplus production is unquestioned. There are those who argue that the United States is self-supporting and can get on without the other nations of the world. This fact strikes us as being sheer sophistry since it depicts a stage which is a part of our past history rather than the present.

It is well known that the current depreciated foreign exchange is a result of a combination of many economic factors and while it may be looked upon as the effect rather than the cause nevertheless it continues to be one of the main obstacles preventing a rapid return to the exchange of commodities throughout the world. Its present demoralization is a barometer reflecting many unhealthy conditions which lay beneath the surface.

Then again our own immense accumulation of gold—which in the beginning seemed to enormously strengthen our position—is now proving to some extent a handicap.

The merchant in those countries where local currency is greatly depreciated finds it almost impossible to purchase American manufactured goods since their final price to the consumer becomes so high as to make their use almost prohibitive. It is for the same reason that Europe, though it sorely needs the raw materials which are produced in abundance both in this country and in South America, is unable to pay the price, and the willing seller must await the time when Europe's condition becomes more satisfactorily adjusted or such credit arrangements are established as will justify the shipment of the much-needed materials.

It is therefore obvious that until exchanges throughout the world approach somewhat closer to normal, all trade must necessarily be conducted on a basis which abounds with the unusual difficulties.

Volumes have been written on this subject of foreign exchange. Remedies of every color and complexion have been suggested by writers of every conceivable political persuasion, yet we seem no closer to a solution of the problem than when its painful operations recently became manifest. An encouraging sign, however, does arise from the fact that this somewhat complicated subject is coming to be better understood, and economists generally are agreed that any permanent improvement cannot be effected through any expedient of financial quackery but that we must wait until present conditions are so corrected through natural means as to actually justify an exchange improvement. This will probably occur when the European countries

reduce their appropriations for their military and naval establishments, when they have the courage to tax their people so that the result will be an evenly balanced budget—when in fact maneuvering to secure some political advantage gives way to real constructive work in answer to the present economic requirements—when in fact the printing press which is now worked day and night to turn out valueless paper currency again gives way to the minting of gold. When these things have been accomplished or at least are well on the way to accomplishment then the perfectly natural result will follow. Depreciated exchanges will be well on their way back to normal.

What Is the Remedy?

In order to procure a much-needed increase in production nations everywhere at the present time are carefully reviewing possibilities of enlarging their export business and one under these conditions might look for a reasonably liberal policy based on the theory of "live and let live" among the various parliaments of the world. On the contrary it is quite evident that each country, in fear of placing its own nationals in a disadvantageous position, is using every effort to increase its own tariff on incoming merchandise, thus impeding a free and natural exchange of commodities just at a period in the world's history when it is most needed. The policy of the open door is therefore to a large extent being ignored temporarily at least as every country is scrambling to protect its own interests which under the circumstances, while a perfectly natural procedure, is nevertheless an unfortunate one.

To further facilitate the possibility of exporting American products certain reforms, could they be accomplished, would prove very helpful. Possibly somewhat less of government restriction may well be placed at the head of the list. The development of a first-class merchant marine is always more or less uppermost in our minds, though the indifference of so many Americans to the subject of export trade is such that it is difficult to get any substantial aid from the national legislature. It is to be hoped that the measure recently advanced by the President, aiming to gain some support for the American merchant marine, may not encounter the same fate as has been meted out to similar measures during recent years. We need American boats for American commerce and it should be possible for these boats to compete with the other mercantile navies of the world.

It occurs to me that it would be extremely desirable if it were possible to educate the general public as to what export trade really means. The average person living some distance from the seaboard is only vaguely interested in this problem. The lay press in this country is our most potent factor in forming public opinion. It would be extremely desirable if their aid could be secured in spreading a wider knowledge of the subject so that the man on the mountain or on the plains might be made to realize that the more the manufacturer in the East exports, the greater will be the demand for the agricultural products he produces. It is particularly erroneous to assume that only a limited section of our population is actually interested in this question of export. It is reported that a recent analysis of a cargo carried by a United Fruit liner sailing from New Orleans to South American ports showed that practically every community in the United States, manufacturing or agricultural, had some part in the production of the cargo sent out in this steamer.

The Future

While the foregoing recitation of difficulties may not present an altogether pleasing picture, it is well nevertheless to understand what we have to face in the future so as not to underestimate the task which is to be accomplished. On the other hand it is a source of satisfaction to witness a great many elements which are clearly indicative that the worst is over and that we are approaching with reasonable rapidity an era which should prove to be one of remarkable development. According to available statistics the total of American pharmaceutical products exported last year amounted to something less than $13,000,000.00, which it would seem is a very insignificant amount when viewing the opportunities which exist throughout the world.

It is especially encouraging to observe that the pre-war inflation of prices has well-nigh disappeared and that American products are being offered at prices which no longer make the foreign buyer stand aghast. Then again, the exchanges in a great many countries are showing very notable improvement, all of which should reflect itself before very long in the way of increased business. During recent months many markets that appeared to be in a comatose condition are again reviving. Orders are forthcoming from many sources, which indicates that buyers likewise feel that conditions generally are improving and that to do business warehouses must be stocked with goods.

The social unrest everywhere which characterized 1920 and the early part of 1921 seems to have largely disappeared. People generally have slowly come to the conclusion that prosperity may be enjoyed only through the old-fashioned process of work.

Another feature that brings with it abundant encouragement is the constructive work that is being done by men like President Harding, Mr. Hughes and Mr. Hoover. It is quite apparent that the Administration is using every effort to help in the work of reconstruction. That America, with its wonderful capacity for industrial accomplishment, will continue its own march of progress to an ever-enlarging extent there can be no possible doubt. We feel the utmost faith in the American spirit of enterprise, and despite the obstacles which will be encountered during the next few years, America surely must and will succeed in its determination to make American commerce throughout the world of ever-increasing importance.

O. W. SMITH, *Chairman.*

LEGISLATION DURING 1921-22

Report of the Committee on Legislation, read at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York, June 5-8, 1922.

You have received from the Secretary's office from time to time full information of the activities of your committee, new enactments, rules and regulations and decisions affecting the operations of the members of this Association. You have each adjusted your business, where necessary, to the new conditions, and therefore any detailed repetition of what you have already had would be of no practical value.

The burden of our address at the last meeting was "sane and sound legislation." This had been the burden of the presidential campaign of 1920. There was a cry for and a promise of "more business in legislation and less legislation in business." There was a feeling that many administrative interpretations of the law were in effect new legislation and an executive usurpation of legislative power.

A spirit of hopefulness, therefore, pervaded our meeting a year ago. We had the temerity to recommend some constructive legislation. We heartily endorsed certain measures proposed by the pharmaceutical congress held in Washington the month before; measures designed to relieve the drug trade from some unjust and impractical regulations under the prohibition law; and some expensive erroneous interpretations of the amended Harrison Act.

But "man proposes and God disposes." There is no reason to doubt that these campaign promises were sincere; but who could anticipate the farmer's bloc and other conditions which have changed the situation.

Constructive Legislation for the Industry

In the face of this new situation we have made considerable progress in the matter of constructive legislation; having effected important modifications of objectionable features of pending measures.

An effort was made to reduce the difficulty of obtaining alcohol by an amendment of the regulations; but the time was not propitious. A change in administration was about to occur, and an agitation had sprung up for even more drastic rules, due to certain exposures of derelictions on the part of some prohibition officers.

We have framed bills to correct evils not remedial by amendment of the rules and regulations; but no opportunity of effectually introducing

them has been offered. Mention may be made of a bill to amend the Harrison Act so as to effect what we believe to have been the original intent of Congress. This bill was framed by the chairman of your Committee, submitted to the Executive Committee and the Committee on Legislation, as well as to members particularly interested, revised to meet some suggestions offered, and is now in shape to be introduced.

It is easy to have a bill introduced "by request," but such bills are generally pigeon-holed by the committees to which they are referred. No progress can be made until a Senator and a Congressman can be found who may be convinced of the righteousness of the measure and are willing to father it in their respective chambers, and fight it through.

Defensive Efforts Against State Legislation

In the line of defensive effort we have successfully opposed a measure that threatened our existence in Iowa and been equally fortunate respecting a similar measure in Kentucky. Either measure would have cost the pharmaceutical manufacturer many thousands of dollars.

We were not successful in opposing the Hicks Bill in Michigan, but the prediction of its proponents that the measure would not seriously affect our industry has so far been fulfilled. This is due to the reasonable attitude of the officials now charged with the enforcement of the law; which attitude, your chairman believes he has been somewhat instrumental in influencing by informing the proper officers of the nature of the pharmaceutical business.

The Supplemental Prohibition Bill

Hardly had the new Congress got under way before it became necessary for your Committee and the Association itself to give attention to H. R. 5503, introduced by Mr. Volstead, April 25, 1921, entitled 'A Bill Supplemental to the Prohibition Act." Under the provisions of this bill alcohol could not have been withdrawn for the manufacture of fluid extracts that had not been so "medicated or compounded" in bond as to render same "as nearly as practicable unfit for use for intoxicating beverage purposes." The very energetic efforts of the Committee and the Association in educating the members of the House Committee on Judiciary as to the nature and importance to the medical profession of fluid extracts, etc., defeated this feature of the bill.

The Tax Free Denatured Alcohol Movement

An effort is now being made to secure the right to use tax-free denatured alcohol in the manufacture of medicines for internal use.

The Association regards this movement as very prejudicial to the highest interests of medicine and pharmacy and has therefore opposed the idea with such force of reason as to enlist the support of the best elements of the wholesale and retail drug trade to say nothing of the medical and allied professions.

An attempt was made to put the National Drug Trade Conference on record as believing that the Act of June 7, 1906, as amended by the Act of March 2, 1907, penalizing the use of denatured alcohol in "liquid medicinal preparations," had been repealed. The Chairman of your Committee had reached a contrary conclusion in an opinion published in the *Oil, Paint and Drug Reporter* during the summer of 1921, and sent to all members of the Association in A. D. M. A. Report I-38. Inasmuch as the movement is still afoot your Committee recommends that this opinion be reprinted for use in opposing it. It has been endorsed by high legal authority, and is in sympathy with the views of Mr. Volstead, who openly said of the opinion that the law had been repealed: "I have that opinion. It is about as long as the moral code. The Treasury officials do not take any stock in that opinion and I don't believe anyone ought."—Printed Report Hearings, H. R. 5503, page 265.

Reformers Keep Industry in Constant Foment

It is very unfortunate that our present day reformers do not recognize that no law will enforce itself, and time, money and energy are wasted in devising and promoting new legislation that should have been spent in more intelligently enforcing existing law. There is a decided tendency to make lack of efficiency the occasion for propaganda for further enactment. Incompetency is thus camouflaged. Unreasonable reformers demand to know why their favorite laws are not more effectually enforced. The enforcing officers, too often the creatures of these complainers, look for a scapegoat and find it in "the weakness of the law." Thus we are kept in constant foment. We may know what the law was yesterday, but we are not sure what it is today or will be tomorrow.

The Jones-Miller Bill

A redraft of the Jones-Miller bill has recently been directed to your attention. It has been reported out and is now (at the time of writing this report) in the Committee of the Whole House on the State of the Union.

A Model State Narcotic Law

The medical profession is interested in uniform narcotic legislation. At a meeting recently held in the city of New York, under the auspices of the American Medical Association, a committee was appointed to draft a tentative model act which is to be reported to another meeting of the conference, and probably to the various organizations interested. It may come up for discussion during the meeting of the Association in June.

The idea of drawing model bills to be adopted by the several States in order to effect uniform legislation is quite a fad, except with the American Bar Association which goes about the matter in a most intelligent and practical way, and yet does not effect any uniform act until several years of study in the field of comparative law. The negotiable instruments law, now adopted by nearly every State in the Union, was the result of many years of study and conference.

The difficulty of many of our laws is that they are framed by those who know nothing of the science of law, and are therefore complicated and often unworkable. What sort of a house would a lot of doctors or pharmacists build?

The Michigan Cocaine Law

The Michigan cocaine law of 1909 was a good model of a simple yet effective act. Its outstanding feature was the separate order blank and it was from this law that the idea of the official order blank was obtained. The chairman of your Committee drew this law. It passed without contest and remained on the statute books of Michigan, until the Harrison Act became a law, when your chairman framed another law that is automatically complied with by every person who complies with the federal act; and yet there is no reference to the federal act in it. This law is a model law and Michigan needs no other law to regulate the manufacture and sale of narcotics, whatever may be needed to regulate the treatment of addicts.

Movement Against Eighteenth Amendment

In the field of prospective prohibition legislation we find a well organized movement on foot for the repeal of the Eighteenth Amendment. The Amendment seems to be losing popularity in certain circles of unquestioned respectability. A recent canvass made by *Leslie's Weekly* shows 66 per cent as "not in sympathy with National Prohibition." But we must remember that the Anti-saloon League apparently

has the solid backing of the evangelical churches; although there is a sentiment entertained by many that belief in National prohibition is not a passport to Heaven nor unbelief a commitment to Hell. One's attitude towards another who disagrees with one determines one's character. Intolerance and bigotry are not elements of a true Christian character. However, the Eighteenth Amendment does not prohibit the medicinal and pharmaceutical use of intoxicating liquor and this Association has no quarrel with it. It is the uncalled-for restrictions in the non-beverage use of distilled spirits that we object to.

The Surgical Ligature Bill

Restrictive legislation does not end with narcotics or intoxicating liquors. We are facing a proposition to regulate interstate traffic in sutures and surgical ligatures. A bill similar to the serum laws is now before the Committee on Interstate and Foreign Commerce.

The Tariff

The tariff is rather a delicate subject, some of our members being large manufacturers of products of which other members are large consumers. Naturally all want what they buy to be on the free list and what they sell to be on the duty list. However, suppliers are vitally interested in the prosperity of their customers, and a condition of mutual dependence exists that will make for mutual helpfulness, wherefore we need not anticipate any family quarrels over tariff legislation.

Germany is determined to destroy our chemical industry and American buyers are as much interested is not being forced to depend upon that country for supplies as American producers are in not being destroyed.

Wiping Out Inter-Allied War Debts

America's interest in Germany is intensified by the recent English suggestion that all inter-allied war debts be wiped out and the amount credited to the account of German reparations. In this scheme America has everything to lose and nothing to gain. *The Literary Digest* for April 1, 1922, has an exhaustive resume of the press opinion of the country, which is not at all receptive of the idea. As one paper points out, the debt can not be canceled. It is evidenced by bonds which must be paid; if not by European nations for which the debt was contracted, they must be paid by the American people. So-called cancellation simply means the transfer of the obligation from Europe to America's shoulders. If the suggestion meets the approval of other

nations, Uncle Sam will be placed in an embarrassing position, for if he stands out alone, what will be the effect upon our foreign commerce?

In the meantime Congress had made no provision for American citizens presenting their private claims against Germany, or even perpetuating evidence thereof against such time as they may be presented.

Right to Fix Price to Ultimate Consumer

In the matter of judge-made law there is nothing worthy of comment. Apparently conflicting decisions of the Supreme Court on the right of one to fix the price to the ultimate purchaser and to refuse to sell to a dealer who will not maintain such price, have been rendered. The gist of the whole matter is this: the act of refusal is lawful if it is not the result of a contract.

Differentiating Between Pharmaceuticals and Patent Medicines

The legislators of most of the States will meet during the coming winter. Many bills intended to regulate the patent medicine business will affect us because of improper definitions. Legislators must be educated as to the difference between pharmaceuticals and patent medicines to the end that laws may properly distinguish between them. There is no reason why medicines exclusively intended for the medical profession, or why even recognized "household remedies" should be burdened with restrictions necessary with respect to medicines exclusively intended for self-medication, and advertised in the press, but not upon the label, for the self-treatment of some of the gravest and most complicated disease conditions.

Supplemental Tax Legislation

There are many other matters that might be discussed in this report. Suggestion crowds suggestion. As it is being written the mail brings A. D. M. A. Report J-11, forecasting supplementary tax legislation due to the bonus act and a large treasury deficit. This legislation is likely to take the form of a sales tax, and we must strive to see that the several branches of our industry are not discriminated against in an attempt to get at the patent medicine man.

Recommendations

Your Committee respectfully submits the following recommendations:

1. That the bill already drawn to amend the Harrison Act be introduced in Congress at the earliest possible date.

2. That the President of the Association be authorized to secure the personal presence of a representative of the Association before any Committee of any State legislature upon any measure pending which may, in his judgment, seriously menace the interests of the Association or any of its sections.

3. That the Executive Committee be authorized to provide suitable prizes for the best, the second best and the third best paper written by any person connected in any capacity with any member of the Association, setting forth the general nature of the manufacturing pharmaceutical industry, and distinguishing products intended for the medical profession, as well as ordinary "household" or "domestic" remedies from patent or proprietary medicines.

In submitting this recommendation we wish to point out that it is not the intent of the Committee to reflect upon those who prefer to offer their products direct to the public for self-medication; but it must be recognized that laws which may not seriously affect the proprietor of one, or at most six products, may destroy the business of a manufacturer whose function is to supply, in their various forms, the many hundred medicinal agents used and prescribed by the physician in the treatment of disease. Our problems are peculiar and we have the right to seek their solution without dictation from the proprietary interests.

4. We renew our recommendation of a year ago respecting the simplification of the Volstead Act, and such modifications of the rules and regulations as will make it possible and practical for manufacturing pharmacists to supply dealers and physicians, for medicinal purposes only, with recognized medicinal preparations which may be classed as intoxicating liquors, respect being had to customary packages and quantities.

5. We recommend active opposition to any stamp or sales tax on medicinal agents not held out to the public for self-medication.

6. We recommend the adoption of the following resolution:

Resolved, That it is the sense of the American Drug Manufacturers Association that the Eighteenth Amendment should be vigorously enforced; but we protest that such Amendment in no way prohibits or restricts the bona fide use of intoxicating liquors in the practice of medicine and the manufacture and sale of medicinal agents; and we further protest that any law, rule or regulation treating members of the medical profession and the drug trade as potential violators of the Eighteenth Amendment is not in harmony with American ideas of government, nor compatible with the highest interests of the public health which interests it is the peculiar function of medicine and pharmacy to serve; and we protest that

such laws, rules and regulations inspire a contempt for the Eighteenth Amendment and thus prejudices its proper and effective enforcement.

7. Finally, we repeat our recommendation of a year ago, that as soon as the condition of its treasury will permit, the Association father a comparative study of the drug laws of the various States with the idea of furnishing a compact, concise and accurate work, reference to which will enable one to tell what the law in a particular State is by referring to a statement of the law as compared with the national act; or, where no national act exists, then with the law of some one of the leading States whose law will be given in full.

The Committee on Legislation.

CHARLES M. WOODRUFF, *Chairman.*
J. FRED WINDOLPH.
J. C. ROBERTS.
GEORGE C. PRATT.

LABOR CONDITIONS TO-DAY

Report of the Committee on Employment Problems Read Before the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5–8, 1922.

In reporting on the labor conditions in our industry, your committee is glad to be able to say that there has been considerable improvement in the unemployment situation since our last Annual Meeting. While the improvement has varied with the different sections of the country and also in a large degree between the various industries, it can be said that there are now very few localities where a man who actually wants to work cannot find a job. Of course, we still have the floaters and the ordinary laborer whom the labor scarcity of 1919 and 1920 transformed into a pseudo skilled mechanic and who is still painfully learning that conditions have changed, but on the whole labor is in better condition than last year.

Decrease in Labor Rates.

We have corresponded with a number of the members of the Association in various sections of the country with the idea of ascertaining how far the average labor rate has receded from the peak rate of 1920. While the rates vary greatly between the various sections, due to local conditions, the increase in percentages from October 1, 1916, to October 1, 1920, and the decrease from that time to April 1, 1922, have been fairly uniform. We secured the rates on ordinary unskilled labor, such as janitors, sweepers, truckers, etc., and the average was as follows:

At Oct. 1, 1916, 25c per hour.....100%
At Oct. 1, 1920, 49c " " 196%
At Apr. 1, 1922, 41c " " 164%

Steadily Employed Labor Better Off Than in 1916.

It appears that our labor rates practically doubled between 1916 and October, 1920, and since that time have declined about one third of the increase. If labor is steadily employed at full hours, it is better off now than it was in 1916, taking the raise and fall of the cost of living into consideration. However, this varies greatly with the various localities and members so that a definite comparison cannot be made.

Present Efficiency of Labor.

We also asked our various correspondents to give us their ideas of the present efficiency of their labor as compared with the years 1920 and

1916. The general opinion was that labor at the present time is more efficient than during 1920 but not so efficient as during 1916. One member reports that in his opinion the morale and spirit of the people is as good at this time as it has ever been in his experience with the company. It is possible that the present efficiency of labor cannot be definitely determined unless the industry is running full time. When an industry is operating on less than full schedule, there is certainly not the inducement to speed up that there is when work is piled up ahead and they feel absolutely sure that they will be able to work full time.

Best Methods of Reducing Labor Force.

This brings up the point as to the best way of reducing a labor force. During the first half of 1921 a workman who was laid off had little chance of securing a job elsewhere; therefore, a greater number of laborers with shorter hours was probably the fairest way of handling the matter as far as labor was concerned. Since the general improvement in conditions, there is no longer a necessity for furnishing a maximum number of jobs. It would seem that the best efficiency can now be secured by giving a smaller number of people practically full working time, permitting any surplus help to seek employment elsewhere. On the other hand, this eventually causes shifting of partially trained labor which will be needed later as business improves. We simply mention the two viewpoints as a probable subject for further discussion.

Importance of Efficient Foremen.

We believe the past eighteen months have proved the importance of having loyal and efficient foremen and forewomen. They represent the company to the majority of the workers under them, and an organization was fortunate that had a force of conscientious foremen and forewomen who could reason with their subordinates during the trying times through which we have just passed. In our opinion, it means the difference between having many employes who feel that they have been abused by shortened working hours and reduced pay rates, and a force that feels their company has done the best possible to treat them fairly through a period of stress.

S. S. Coleman, *Chairman.*

TRAFFIC MATTERS

Report of the Committee on Transportation read at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5–8, 1922.

Your Transportation Committee have been very active during the past year. We have succeeded in getting some concessions from the carriers, and some of our petitions for reductions in rates or classification, have been denied.

Seeking Lower Rates on Crude Drugs

In April, 1921, and again in October, one of our members petitioned the Classification Committee for a lower classification on Crude Drugs. This application was denied in both instances and your Committee are, at present, collecting data to be used in preparing a new petition to the Classification Committee. We hope to have the information in time to put before them for their July meeting.

Third-Class Rate on Drugs in South and West

During the past year we were successful in securing a Third Class rating on Drugs and Medicines in carloads in Southern and Western Classification territories. This is a reduction from First to Third Class in Southern territory, and from Second to Third in Western territory, which will mean a very material saving to the members who ship into these territories.

No Adverse Fibre Container Regulation

In September of last year the carriers proposed some drastic changes in the regulations covering shipments made in fiber or corrugated containers. There was such a mass of conflicting testimony given at this hearing that they were unable to reach a satisfactory conclusion. They called a second hearing in Washington. We protested the changes, which we figured would work a disadvantage to our members, and we are pleased to announce that there will be no changes made which will be detrimental to our interests.

Application for General Reduction Unwise

The National Wholesale Druggists' Association had an informal meeting in Washington in December last, in which we were invited to participate. The object of the meeting was to consider the advisability of applying for reduction in rates on Drugs and Medicines.

Your Committee opposed this action, being of the opinion that we should devote all our efforts to securing a horizontal reduction in rates, and our Executive Committee endorsed the action of your Transportation Committee.

We were in hopes of being able to make an announcement regarding the general rate hearing, which has just been concluded in Washington, but the Interstate Commerce Commission have not handed down their decision up to this time.

It is more than likely that this decision will be announced before our annual meeting in June.

The Transcontinental Rate Cases

The Transcontinental Rate cases on which an examiner held hearings thruout the country has not been decided as yet. The examiner, in his tentative report, has recommended that the carriers' application for a Fourth Section Relief be denied.

We are of the opinion that the Commission will not be guided by the examiner's recommendation in this case, in view of the fact that some of the Western carriers have petitioned for permission to reduce the rates still further than they first proposed.

Motor Truck Transportation Becoming Important Factor

The use of motor trucks for transportation thruout the country has been very greatly increased. Where regular service is maintained, this is a very satisfactory method of shipping, and the competition has become so keen that all the electric lines and many of the steam roads are putting forth extra efforts to retain this traffic to themselves.

Heavy L. C. L. Traffic Slowing Up Service

The heavy movement of less carload traffic at the present time has had a tendency to slow up the service some during the past month. The carriers, however, are putting on extra help and making every effort to keep their warehouses clear and avoid congestion.

With the return of normal business conditions, carload movement will naturally increase, and this will have the effect of reducing the less carload movement to some extent.

Bureau of Explosives Now Regulates Poisons and Narcotics

The regulations governing the handling of narcotics and poisons have been placed under the jurisdiction of the Bureau of Explosives, and

one of the members of our Committee has succeeded in inducing the Bureau to refrain from any revolutionary changes without consulting us so that we may be able to safeguard the interests of the Association.

Respectfully submitted.

Wm. J. Buchanan, *Chairman.*
W. G. Norvell.
J. W. Korn.
W. T. Days.
B. F. Williams.
Chas. W. Lytle.

OUR TRADE-MARK BUREAU

Report of the Committee on Patents and Trade-Marks read at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5–8, 1922.

Our first committee on Patents and Trade-Marks was appointed after the seventh annual meeting in 1918. The committee reports of 1919, 1920 and 1921 cover well the general field of patents and trade-marks.

Conditions in U. S. Patent Office

Resolutions have been passed in favor of reforms in the organization and procedure of the Patent Office, particularly favoring a separation from the Department of the Interior and establishment as a separate institution with salaries sufficient to attract and hold a competent staff. Some progress in this line has been made, as salaries have been increased during the past year. In general, however, the deplorable conditions referred to by your last year's committee still exist. The business of our country continues under the handicap of slow and inefficient action in the United States Patent Office.

As the field of patents and trade-marks is so large, the committee will confine its report to the subject of trade-marks and more particularly to our association Trade-Mark Bureau, which was established by resolution at our 1917 meeting.

Original Purpose of Association's Trade-Mark Bureau

From the discussion at that time it is evident that our bureau was established principally to gather together the existing trade, or prior-right names of our members, to adjust existing conflicts and prevent such conflicts in the future. This applied particularly to names not registered and not eligible to registration at Washington. From the reports of our secretary it is evident that our bureau has been of much service in this direction.

Extension of Bureau's Activities Should Be Considered

Since the establishment of our bureau there has been a change in the attitude toward the registration of names by pharmaceutical manufacturers and an increasing number of applications at Washington. Your committee believe it is well to consider at this time the extension of the activities of our bureau.

Under existing practice our bureau registers words which are already the property of or in close conflict with the rights of other parties, as shown by registrations on record at the Patent Office. It appears to us that many of our members are not aware of the limitations of our bureau. If its activities should be extended to a search of the Patent Office files it would enable our members to get a much more complete service at very small cost, and prevent our registering marks in conflict with those already in use.

Perhaps the name under consideration may not be of any particular value to the member applying for registration in our bureau. He simply wants to have his rights thereto respected by his fellow members. Later it may develop that some party, not a member of our association, has been using a conflicting word for some years. When we consider the cost involved in the abandonment of such names and the selection of new ones, wouldn't it be better to have a more complete search made in the first instance. In view of the enormous increase in registrations during the last few years, it is becoming more difficult every day to keep from treading on someone's toes.

Any member having a trade-mark under consideration could make application to our bureau and forward check to cover the cost of a Patent Office search. First a search would be made in our bureau files. If a conflict were discovered here the check would be returned. Otherwise our office would carry the search to the Patent Office files.

Disadvantages of Patent Office's Files

In this connection we want to point out the disadvantages of the official files. First—The present method of indexing on the vowel-consonant system allows confusingly similar words to be overlooked. Second—On the average, twenty-three weeks elapse between the time of publication in the Gazette and the filing of the marks in the Patent Office. Third—When there is a conflict and opposition proceedings, published names may not be filed for three years.

If for the purpose of such searches our office should consult one of the reliable independent record files indexed on the consonant system, more conflicting words would be discovered. All words published will be discovered, whether or not registration has been granted. We find such files are being consulted by prominent patent and trade-mark attorneys in preference to the official files at Washington.

RALPH R. PATCH, *Chairman.*

INSURANCE

Report of the Committee on Insurance Problems read at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5–8, 1922.

Your Committee on Insurance Problems submits the following report:

During the year we submitted to the members of the Association questionnaires on Workmen's Compensation insurance, Burglary insurance, Payroll insurance and Salesmen's Automobile Liability insurance. To answer these fully has been quite a task, and we are pleased to report that most all members cooperated very cheerfully. We had, moreover, during the latter part of last year a questionnaire on "Use and Occupancy Insurance," which was also submitted to the membership, and the reports have been quite complete. For this help your committee wishes to express its thanks to the membership, with the hope that from the information compiled some results have been obtained that will benefit the members generally.

We have confined our efforts to Workmen's Compensation insurance, Burglary insurance, Payroll insurance, and Salesmen's Automobile Liability insurance at the suggestion of the Executive Committee.

Workmen's Compensation Insurance

Thirty-seven members answered our questionnaire, of whom thirty-five reported fully. Twenty-five carry this insurance in old line companies, five in mutual companies, three in other insurance companies, two members carry their own insurance, and one carries insurance for any loss above $10,000.00

Sixteen report State insurance to be 10 per cent or 15 per cent less in cost than that of the insurance companies but those few who carry this insurance with their State companies seem to feel that the latter do not give the service that the regular companies do, and that when insured in the State companies there is a tendency to adjust losses too liberally in favor of the employee.

Three members report maintaining a clinic, five report a fully equipped hospital, and thirty report first aid stations. Ten members report retaining a doctor regularly, five say they have a doctor available upon call, and nine report a nurse regularly on duty.

Thirty-one members report that the equipment in their plants is being regularly inspected by the insurance companies.

When asked if their compensation insurance covered their salesmen wherever located, twenty reported "Yes" and three reported covering salesmen in one or more states.

It may be well for us to reiterate a point made in last year's report, namely, the advisability of covering employees wherever they may operate. Workmen's Compensation laws are now in force practically throughout the Union and the employer is likely to find himself liable for workmen's compensation wherever the employee is injured. The law generally provides that the compensation law of the state where the employee took employment governs the jurisdiction, but this is not universally true, and moreover the question of the proper jurisdiction is frequently hard to determine. In addition, state compensation boards are likely to be jealous of their own jurisdiction, and have a tendency to assume jurisdiction when accidents occur in their own states, regardless of strict principles of law. In such cases complications are very likely to result. The injured employee naturally invokes that jurisdiction which is most favorable. Inasmuch as there is little or no additional cost in having the policy extended to cover employees everywhere, our members would do well to consider this situation carefully and to protect themselves accordingly. Technical complications, trouble and loss may thereby be avoided.

It is possible, of course, for a company to carry its own insurance, but there are disadvantages, such as lack of inspections, possible prejudice against such employers by compensation boards, and possible heavy losses.

One member reports that his salesmen are on commission and he does not cover them for compensation insurance because commission salesmen need not be covered.

We are advised by our attorney that this is not a correct conclusion; that an employee is an employee, whether on commission, salary or wages, so long as the great bulk of his time is given to the employer. It is only when a commission salesman can be classed as a broker—an independent agent—that he comes outside the workmen's compensation law.

The yearly rates for Workmen's Compensation insurance were quoted as follows: For salesmen, from $.059 to $.18, the most rates averaging about $.10 or $.11 per $100.00 per year. For office employees, $.032 to $.12, with the average about $.07. For factory employees, $.32 to $1.55.

This great difference in the various rates on factory employees shows what can be done by many members to get rates down if they will only

improve factory conditions, install proper protection from equipment and machines, and provide adequate clinics and hospital facilities. Almost invariably those members who pay a rate on factory employees of $1.00 and above have only a first aid station—and some not even that. In this connection members should bear in mind that a reduction of 5 per cent to 10 per cent can be obtained by installing a plant hospital with a nurse on duty at all times, and in some cases even more credit can be obtained by having a doctor on duty every day, all or part of the time. In large plants this reduction in cost of insurance will pay for a hospital and nurse, in addition to giving much better protection to employees and minimizing losses from injuries.

Practically every member reporting says his experience with Workmen's Compensation insurance has been satisfactory.

Twenty-six members reported state supervision of Workmen's Compensation insurance rates. Two members report an increase in the rate of this insurance as a result of a decrease in their force and a decrease in the payroll, but the great majority reported no change in rates from such causes. A great many members report less accidents per employee for 1921 than for 1920, due to the fact that the most inefficient and least responsible employees had been eliminated.

Much might be done by members to reduce their losses and their Workmen's Compensation expense. We have already mentioned the installation of a plant hospital or clinic with a trained nurse in charge, and still better a doctor on duty in addition, all or part of every day. Safety committees organized among the employees, with semi-monthly or monthly inspection of machines and equipment, will reduce accidents and rates. Proper and adequate protection from belts, pulleys and other moving machinery will also reduce rates. The proper way to go about such an improvement is to get a competent insurance inspector to look over your plant and make recommendations for improvement. He should be able to tell you what rate you can get if the improvements are made. The saving by plant improvements will not be alone in the decreased rate, but will appear also in the decrease of accidents and the compensation resulting therefrom.

One member suggested that the formation of a mutual association for Workmen's Compensation insurance among our members should help to bring down rates, but it seems to your committee that there are hardly enough members in the Association to promote a sound mutual assurance. The risks would not be spread over a large enough number of firms and employees. The overhead expense to members would

naturally be quite heavy. It is the opinion of your committee that a very careful inspection of plants with the idea of putting all reasonable and proper improvements into effect to prevent accidents, and the installation of proper clinics, plant hospitals and trained nurses, is a sounder and more definite way to lower the cost of Workmen's Compensation.

Payroll Insurance

The questionnaires show that twenty members carry this insurance. Other members do not carry it.

Twenty-five members report that their payroll consists of cash payments, whereas seven report payments by check.

The rate on payroll insurance is determined by local conditions, the largest cities usually paying a higher rate. Other elements are the kind of carrier, the number of guards who accompany the payroll when it is being carried and the like. Naturally, the more guards accompanying the payroll the lower the rate will be. Some firms have also provided a safe, riveted strongly to the bottom of a wagon or truck so that it could not be carried off by robbers. Other firms provide a second automobile following the car which has the payroll, with several armed guards in the second car. Some members employ as many as five or six guards to accompany the payroll from the bank to the factory.

The rates for payroll insurance vary greatly (from $.21 to $2.14), the latter being ten times the former. If your rate is high you can accomplish much, in all probability, by looking into the method by which you carry your payroll and seeing that sufficient guards are near. At least one of our members hires one of the leading express companies to deliver and guarantee delivery of the payroll each week. The cost is very small. Where this is done of course no insurance is needed except to cover the payroll after it reaches the plant and before distribution has been completed. The latter is an important point, however, which should not be overlooked.

No members report payroll insurance losses, but virtually all members feel that under present conditions this form of insurance is very desirable.

Burglary Insurance

Comparatively few members carry this form of insurance. Three report carrying it and covering all stock. Three others report covering narcotics only, and one member reports covering alcohol.

The rates for Burglary insurance vary tremendously, from $.25 to $3.60, depending upon locality, watchmen, burglar alarms, safe storage places, etc.

Where Burglary insurance on narcotics or alcohol alone is desired, the rate has become so much higher in recent years from numerous narcotic robberies, that it seems virtually prohibitive, and a number of our members who formerly carried insurance on narcotics have discontinued it.

Four of our pharmaceutical houses report losses within the last five years. None of these losses has been for more than a few thousand dollars and practically all of them have been narcotic losses.

Salesmen's Automobile Liability Insurance

This is a form of insurance quite important to those of our members who have a substantial number of salesmen operating in different states. The questionnaires show that nine of our members carry this form of insurance; two members report carrying it on cars which the company owns, and seven members report that they do not carry because the salesman owns his own car. We are advised by counsel that this conclusion is incorrect, and that for all practical purposes the matter of the ownership of the car is not a factor in fixing the liability. If a salesman operates a car in the interest of his employer and while doing so, through his own negligence, injures a third person, the employer is liable in damages, regardless of the ownership of the car and regardless of whether the salesman is working on salary or commission. The question is not one of ownership of the car but of the relation of the employer and employee. This involves the law of Agency and the law of Master and Servant. The line of demarcation between the relation of principal and agent on the one hand, and independent contractor on the other, is frequently very vague. If the employer, or principal, retains control over the actions of the salesman, and if the employer holds the salesman out to the trade and the world generally, as a representative, it will be next to impossible for the employer to escape liability. Certainly no private agreement between the employer and the salesman can be invoked to relieve the former of responsibility for the acts of the latter. Moreover, it must be borne in mind that while the salesman is primarily liable for the results of his own negligence, the injured party will—in practically every case—attempt to enforce liability against the principal, for the simple reason that the employer is much more likely

to be financially responsible for the amount recovered than is the salesman.

Therefore, if the injured third party ignores the salesman and sues the principal direct, the principal would have to look to the salesman for reimbursement, and in such a case it should be borne in mind that even though the salesman may have an individual liability policy it might be difficult for the firm to recover from him fully, for the following reasons: (a) The salesman might not have enough insurance to cover the loss; (b) his insurance company might decline to pay, on the ground that the salesman had not been sued, or upon some other technicality.

We are advised by our attorney that the only condition under which a salesman cannot be considered as your agent is when he is a bona fide broker acting as an independent representative in business for himself. There is so much trouble that could come to a firm by not properly protecting itself, on account of possible liability for the accidents of its salesmen; and the cost of insurance which will protect the firm, as well as the salesman individually when driving on his own account, is so moderate, that your committee cannot help but feel it unwise for members to fail to protect themselves properly. Practically all the old line companies now write this sort of blanket insurance covering both the company and the salesman when he is working on firm business, and also covering the salesman when he is driving on personal errands. The cost is substantially the same as it would be if the salesman individually took out the insurance for himself.

If the salesmen of any of our members now pay their own insurance we believe it would be much more desirable for the firm to take out the insurance in the firm's name and also protecting the salesman individually, and then if the firm so desires, to charge the salesman what he has been paying or whatever proportion seems proper. In all certainty this is far surer protection for the firm than if the salesman carries the insurance in his own name.

Four members report losses on account of salesmen being liable for damages resulting from an accident.

Use and Occupancy Insurance

This form of insurance has been discussed in detail and quite fully in the reports of your committee for the years 1921 and 1920. However, the questionnaires answered by members with regard to Use and Occupancy insurance have been received only within the last ten

months. Your committee deems it advisable to give the results of such questionnaires herewith.

Sixteen members report carrying Use and Occupancy insurance anywhere from one to sixteen years. Fourteen members carry it in the old line insurance companies and two carry it in the New England factory mutuals.

Eleven members in their Use and Occupancy policies cover all necessary overhead and profit. Five members cover necessary overhead only.

Five members report Use and Occupancy losses. Of these, four report a satisfactory adjustment of the loss, and one member who was insured in various old line insurance companies reports an unsatisfactory adjustment, apparently due to the insurance company's not allowing for increase in cost price of material that had to be replaced. The terms of these losses varied from two weeks to one hundred and twenty-two days

It may be advisable to remind members that the cost of Use and Occupancy insurance is about the same per $100.00 per year as fire insurance. However, the amount of insurance carried is usually much less than fire insurance, due to the fact that plant and merchandise usually amount to considerably more in value than necessary overhead and profits amount to for one year. Therefore, the total cost of Use and Occupancy in dollars is usually considerably less than the total cost of fire insurance.

The value of Use and Occupancy insurance is that when your plant is not operating, as a result of fire, you are in a position to recover your necessary overhead and profits for such a period. This is very important in many cases, for sometimes the loss resulting from not being able to do business amounts to a good deal more than the fire loss. For instance, suppose the engine and boiler rooms of the plant burned down, thus putting the plant completely out of commission so far as manufacturing is concerned. Perhaps for two or three months very little business could be done. The loss might run $1,000.00 or $5,000.00 per day; yet the actual loss to the engine room boilers might not amount to more than $10,000.00 or $15,000.00.

Use and Occupancy insurance never covers finished stock but it can cover crude material if so desired. However by excluding crude material coverage from the policy a discount of approximately 33 per cent is obtained in the Use and Occupancy rate. The elimination of crude material coverage is justified in the case of a great many pharmaceutical

manufacturers, because practically every item of crude material they use could be replaced within a month or six weeks. This is at least as short a period of time as could be estimated for replacement of any buildings or machinery from a fire of any size. Therefore, it may be safe to conclude that covering buildings and equipment is sufficient, because the stock could be replaced fully as quickly as the buildings and equipment.

This may not be true with the chemical manufactures, plaster manufacturers, or other groups in our membership, and where crude material cannot be replaced within the length of time that it would take to replace buildings and equipment, it is better to include crude material in the Use and Occupancy, even though the cost is somewhat greater.

A still greater discount from the Use and Occupancy rate can be obtained when machinery is excluded as well as crude material, but machinery in many cases would take much longer to replace than buildings, and probably very few manufacturers would want to consider excluding machinery and equipment.

Your committee notes with much gratification that some of our members have taken out Use and Occupancy insurance since the committee's report on this insurance two years ago; and three other members have followed our suggestions last year with reference to Salesmen's Automobile insurance and including salesmen under Workmen's Compensation insurance. We are pleased to note from the questionnaire reports that some of our members have followed suggestions made last year or year before with reference to inspecting plants, improving their hazards in various ways, and thus reducing the cost of insurance as well as reducing the possibility of loss.

We wish to take this occasion to thank the Executive Committee and the membership generally for suggestions and most helpful cooperation.

Respectfully submitted,

NICHOLAS H. NOYES, *Chairman,*
Committee on Insurance Problems.

DATA WITH REFERENCE TO RECIPROCAL INSURANCE

Leading companies are the New York Reciprocal Underwriters and the Individual Underwriters, under the same management, which companies have been established a little longer than most of the others; American Exchange Underwriters and the T. H. Mastin Com-

pany. There are a number of others which have a good record thus far but which have not been established a long period of years.

Best's insurance reports say of the New York Reciprocal Underwriters: "Established in 1891. Has about 600 subscribers and about 800 risks. Compensation of the attorney limited to 5 per cent of all net premiums received. Writes sprinkler risks only, and in every way enjoys a splendid reputation. Both the attorney and the deputy attorney have had many years of training, and the exchange is operated on sound lines. The lines are limited to $500,000.00 on single risk. Controlled by an advisory committee of several subscribers who have general supervision and act as trustees for the funds. Advisory committee selected by subscribers at annual meeting."

Best's insurance reports say of the Individual Underwriters: "This is the pioneer inter-insurance exchange. Established in 1881. Subscribers are concerns of the highest commercial standing in the United States and Canada. Organization under same management as New York Reciprocal Underwriters. Compensation of attorney limited to 5 per cent of the net premiums received. The exchange specializes on sprinklered risks, but writes also on preferred unsprinklered risks. It is the first organization of its kind in America, and in every respect enjoys an excellent reputation. Maximum line $250,000.00."

New York Reciprocal Underwriters and Individual Underwriters combined claim 10 years loss ratio of 16 per cent as compared to 50 per cent for the leading stock companies, and an expense ratio of 17 per cent as compared to 40 per cent of the leading stock companies. They claim combined surplus in excess of all legal requirements of $3,600,000.00 for about $550,000,000.00 insurance. This is 66c per $100.00 of risk as compared to the Home Insurance Company's 30c per $100.00 of risk December 31, 1920.

Nearly one-half of entire expense devoted to inspection. All risks inspected four times a year. Average saving to subscribers approximately 75 per cent of the premium paid. Insurance written at regular old line companies rates.

There is no question but that the Senior and Junior Conference New England Mutual fire insurance companies, which also cover sprinkler leakage and Use and Occupancy insurance, afford as safe insurance as there is and the most economical obtainable. They are so careful in their risks that only firms of the highest standing and with the best sort of plants from the point of view of fire hazard are accepted. There are a few reciprocal companies that have

excellent reputations, among them those mentioned above. If any of our members desire reciprocal insurance, the principal thing to bear in mind is to choose reciprocal companies that have been established firmly, have sound and conservative management and have a good loss-paying record. Your committee believe that those mentioned in this report come under this class, especially the New York Reciprocal Underwriters and Individual Underwriters. The treasurer of one of our members, Mr. Norman McLeod, of Parke, Davis & Company, is a member of the Advisory Committee of The T. H. Mastin Company and speaks very highly of this firm, as does also Mr. A. R. L. Dohme, of Sharpe & Dohme.

Some Brief Facts About Insurance With the New England Associated Factory Mutual Fire Insurance Companies

Senior Conference companies 35 to 80 years old. Junior Conference companies 25 to 35 years old.

Insurance in force December 31, 1921, $661,417,395.00. Total number of risks 3,699. Total gross cash assets $52,837,751.00, of which slightly less than one-half re-insurance reserve should be deducted, leaving the net cash assets as reckoned by the State Insurance Commissioners at $27,000,000.00.

The cost of insurance will average for all risks 1921 about 6 1-2c per $100.00.

Average dividend return for the past 20 years of approximately 91 per cent of premiums paid.

Due to unusually high inspection standards, fire prevention requirements, complete sprinkler protection, segregation of risks and careful selection of risks from the point of view of construction, the losses are exceedingly small. No loss in the great conflagrations of Boston, Paterson, Baltimore, Chicago, San Francisco or Chelsea.

The Manufacturers' Mutual and associated companies which are a part of the Senior Conference report that they have never had a lawsuit over a loss settlement in 86 years.

Inspection service probably the most careful in the United States.

These companies carry on, at considerable expense, research work continually aimed toward fire prevention.

Net cash assets after deducting re-insurance reserve equal about 40c for each $100.00 of risk.

Best's report indicated the Home Insurance Company as of

December 31, 1920, had a combined capital and surplus of $18,500,-000.00 against more than $6,000,000,000.00 insurance, or only about 30c per $100.00 of risk.

Interest received on Securities has more than paid average losses over a considerable number of years. For 1921 interest received was 2 1-2 times total losses.

NICHOLAS H. NOYES, *Chairman,*
Committee on Insurance Problems.

AN INDUSTRIAL SURVEY

Report of the Committee on Financial Problems read at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8, 1922.

Your committee this year comprises practically the same gentlemen who submitted their report to you last year. On that occasion they dealt with subjects, many of which were cleared up to the satisfaction of our members, so that we have been afforded an opportunity this year to devote our discussion to many new topics, touching, however, rather briefly on some of the points discussed last year which were not fully clarified to the satisfaction of the committee and probably to yourselves.

Twenty-seven members out of the total membership of the American Drug Manufacturers Association, answered our questionnaire mailed in February, comprising seven queries and the summary of the details to these replies are tabulatd at the end of this report, but we should like to touch rather lightly upon them in this brief announcement.

Depreciation Percentages

On account of the various constructions of the buildings that we have had to deal with, it was necessary for us to divide this subject into Concrete, Steel, Brick, Wood and Mill, and we find that the greater number of these firms having concrete construction depreciated their buildings either 2 or 3 per cent, steel 2 per cent, brick 3 per cent, wood 3 per cent, and mill 3 per cent. As to their machinery items, the majority depreciated 10 per cent; other fixtures likewise 10 per cent.

Twenty-one of our twenty-seven members advised us that these depreciations had been passed upon and allowed by the Collector of Internal Revenue in past years, so that it is gratifying to know the figures that are allowable in each class of building construction.

To one of the members of our Association we are immensely indebted for the reason that they have supplied us with a graduated scale of depreciation taken from their books in accordance with a schedule laid down and adopted by a reputable concern of Certified Public Accountants.

These percentages have also been passed by the Government. We will not make mention of the name of the company, but if they should

read this report they will know that the committee appreciates the very detailed way in which they submitted their figures.

For example they make the following depreciations:

Automobiles	25%
Bottle Moulds	3%
Fixtures	4%
Furniture	5%
Boiler Brick	2%
Machinery and Implements	4%
Pipes and Fittings	4%
Stable	10%
Tools and Machinery	4%
Type in Printing Dept.	100%

If any other pharmaceutical manufacturers care to study the above figures and have no better system to adopt, this committee heartily recommends consideration of same.

Credit Clearing House

Many of our customers last year favored the Association establishing a Credit Information Bureau on customers with whom we are doing business, but from the answers we received to the questionnaire this year it somewhat reverses the general opinion, for the majority or at least 50 per cent now recommend that we continue to use the existing means of Credit Information such as: Bradstreet's, Dun's, Salesmen, Drug and Chemical Credit Association and Commercial Law League List of Guaranteed Attorneys, etc. Unless, therefore, there is more concerted action to establish our own Information Bureau we will allow this subject to rest for the present.

Foreign Exchange and Credit Conditions

As many of our members are conducting an export business, we have been asked this year to procure an expression of the experiences as they prevail in the various countries in which our Association conducts business, but on account of the fact that limited number of our members cited this class of business, the replies were insufficient for us to intelligently offer any reasonable recommendations so that we refer you to the detailed report containing the answers which in most cases are at variance with one another.

As compared, however, with conditions existing a year ago the present situation shows marked improvement. The recent rise in Sterling reflects Great Britain's recovery of Foreign Trade activity, which

forecasts increased business with the United States and large buying orders for merchandise, raw material and various supplies. The entire European situation is improving and there can be no doubt that England is coming back fast, with France a close second. These gains will react favorably upon this country and must be of great service in stabilizing prices and ultimately relieving the situation of the uncertainties that are incident to a long deadlock in the foreign trade situation.

Cost System

The President of our Association seemed deeply interested in this subject, and recommended that we inquire whether the members of our Association have a department or a set of clerks that devote their particular attention to estimating costs and whether the members are in a position to know the cost of their goods laid down at a certain point. The replies to this query are intensely interesting and the committee was agreeably surprised to learn that so many of our members paid particular attention to this department, for without same, success in conducting business is problematical.

The old price formula of cost of raw materials plus manufacturing and overhead, plus a legitimate profit has seemed to be recently disregarded by certain large manufacturers. Many of their bulk prices have indicated that perhaps one of the three factors has been entirely omitted.

Terms of Discount

This subject was discussed at length at our meeting last year, and the recommendation of your committee was "1 per cent 10 days from date of invoice" instead of 2 per cent. We have since learned that many adopted the 1 per cent 10 day proposition and to find with what success it met, we inquired in Question 5, whether they found the adoption of same universally satisfactory, and we are gratified, indeed, to learn that eight answered in the affirmative. This subject of discount is a very important one to the financial manager, for it involves in many instances thousands of dollars a year, which with the cooperation of customers and close attention to collections on the part of the Credit Department will save sums of money which could ordinarily be expended in directions both beneficial to our plant and equipment as well as to our customers, who would receive goods at lower costs on account of increased production due to improved and up-to-date machinery, etc.

Collections

In looking forward to the spring of 1922 we should resolve to attain the best results from our Collection Department. Sales and Credit Policies should be outlined in conference, so that there may be no conflict between Departments such as the Selling and the Credit. We have known some serious results emanating from a misunderstanding between the managers in these respective departments.

Information received from a large number of the members would indicate that the months of January and February show an improvement over the same months in 1921, while March is inclined to be reported as more draggy than the first two months of the year, although still better than the same month last year. Collections are apparently averaging 35 per cent to 40 per cent of the total outstanding accounts the first of each month.

Selling goods, not terms, should be the principal feature, for anyone can sell goods below the market value or on longer than proper terms, but real salesmanship is in the selling of goods at the proper price and on proper terms. *Proper price* means a reasonable profit above a reasonable operating cost. *Proper terms* mean the quick conversion of *CREDIT* into *CASH* for the longer the credit the smaller the profit. The long payment of an account involves an expense that can in no way be escaped.

Commodity Prices and Labor Costs

Commodity prices and labor costs have shown a downward tendency in the average line of business and this reduction will undoubtedly continue during 1922, but there should be greater equalization in the costs of particular commodities. The price deflation since April or May, 1920, has been erratic and uneven. This was natural under the circumstances, but in 1922 with producing costs reaching more natural levels a more logical basis for all prices should be reached. We are told that the average wholesalers commodity prices are now only 49 per cent above the level in 1913; a year hence competition and other conditions that are staring us in the face should bring retail prices more in line with this deflation.

Freight Allowance

On account of the various groups in our Association there can be no fixed law laid down on this subject. Our answers are quite varied,

but the general practice seems to be to allow freight to destination in Eastern points when the value of the bill of goods exceeds $25.00; to Southern points when it exceeds $50.00; to Middle West and West of the Mississippi an amount not to exceed 5 per cent of the face of the invoice.

Outlook in the Pharmaceutical Trade

One of the replies to our question "Briefly state your views and what you hold for the future in the Pharmaceutical Trade," seems to sum up in a general way the conditions that prevailed in the first three months of 1922.

This member writes: "Sales for the first three months of 1922 about the same as the same period last year. Cost of operating over same period less than last year. Expect improvement in sales and increase in profits as compared with the year 1921."

To sum up the replies that have been received on the subject of Business Outlook for the coming year, they seem to be full of promise for the business man as well as the investing public. With corrected legislation the future seems bright, not only in the Pharmaceutical trade, but to all of its branches comprising the various groups of this Association.

The American people are realizing, probably as never before, the need of conservative and economic living, together with sane business dealings. They have come to this conclusion at probably a high cost of experience and the result is that we are making constant headway in many lines. We are feeling the effects of crippled business and the complications growing out of last year's severe losses, but all of these conditions seem to have benefited us.

The first three months of the year witnessed further liquidation and the slackness of various branches of trade which is often seen in these three months.

Deflation, however, is still in progress and notwithstanding the recessions that have occurred, it is apparent that prices will continue to be further reduced in lines that have not been fully liquidated. In cases where reductions thus far made have been manifestly inadequate, further reductions will attract increased buying and genuine business revival will come only through that means.

The American people are determined to secure further revisions before they can place themselves in a mood of absolute security

Replies to Questionnaire in Detail

Summary of replies by twenty-seven members to questionnaire on Financial Problems sent out by the American Drug Manufacturers' Association.

Depreciation Percentages

1. What percentage do you take on

(A) Buildings

Concrete

One	answers	1%
Two	answer	1½%
Four	answer	2%
One	answers	2½%
Four	answers	3%
One	answers	4%
One	answers	5%
One	answers	10%

Eleven do not answer

Brick

Four	answer	2%
Three	answer	2½%
Six	answer	3%
Four	answer	3%
One	answers	10%

Ten do not answer

Steel

Three	answer	2%
Two	answer	2½%
One	answers	3%
One	answers	5%
One	answers	10%

Seventeen do not answer

Wood

One	answers	2½%
Four	answer	3%
One	answers	4%
One	answers	5%
One	answers	10%

Seventeen do not answer

Mill

Two	answer	2%
One	answers	2½%
Five	answer	3%
Two	answer	3½%
Two	answer	4%
One	answers	5%
One	answers	10%

Eleven do not answer

(B) Machinery

Eight	answer	5%
One	answers	6%
Two	answer	7%
One	answers	7½%
One	answers	8 to 12½%
Eight	answer	10%
One	answers	10 to 25%
One	answers	15%
One	answers	Graded scales

One does not answer

(C) Other Fixtures

Eight	answer	5%
Two	answer	7%
Two	answer	7½%
One	answers	graded scales
Thirteen	answer	10%

(D) Have these been passed upon and allowed by the Government on Income Tax Reports in past years?

Twenty-one	answer	Yes
One	answers	No
One	answers	Not determined
One	answers	Yes, but Government reduced Depreciation on Machinery and Fixtures from 10% to 8%

(E) Is an individual inventory kept for each piece of plant and a stated amount written off each year, or is depreciation written off the entire plant and machinery account in one item?

Eight	answer in one item
Four	answer yes
One	answers yes, building and equipment
One	answers No

Some Typial Answers

1. Card index of each piece, but write depreciation from total.
2. By groups of items.
3. Individual inventory for each piece of plant, depreciation off total.
4. 10% from entire account in one item.
5. Written off machinery and plant separately.
6. Class by class, for instance: transmission, electric wires, elevators, etc.
7. Individual depreciation charges monthly.
8. Individual inventory kept; depreciation written off by departments.
9. Each building and piece individually.
10. Individual record of buildings and machinery only.

Credit Information

2. *Credit Clearing House.*—Are you in favor of the Association establishing a Credit Information Bureau on customers with whom we do business?

Twelve answer Yes
Eleven answer No

(A) Do you recommend continuing to use the existing means of credit information?

Seventeen answer Yes
Three answer No
Six do not answer

(B) From what source do you procure the most reliable information?

Answers to this query are pretty uniform, viz:—Bradstreet's, Dun's, Salesmen, Local Banks, Credit Men's Associations, (Drug and Chemical Credit Association well recommended), and Attorneys (Commercial Law League)

Foreign Exchange and Credit Conditions

3. Will you kindly give us an expression of your experiences as they prevail in the various countries in which you conduct business?

Eight members do not answer this query
Three have had no foreign experience

Other answers are:

1. Collections slow; cautious about accepting new accounts.
2. Not proud of our foreign experience.
3. In countries where conditions are worst will ship only against a confirmed credit here or the acceptance of an approved foreign bank. Require settlement in dollar exchange.
4. Buy exchange immediately against purchase.
5. Unsatisfactory; collections hard to make.
6. Mexico good; all others rotten.
7. Because of unusual conditions at present care must be exercised in extension of credit; each case must be treated individually.
8. Business curtailed and collections slow.
9. Business done through resident agents who care for credit conditions.
10. Business improving; collections better.
11. Not enough to testify.
12. Exchange killed business in 1921; much improved since Jan. 1922.
13. Always sell f. o. b. steamer.

(A) What is the average duration of credit extended?

Eight do not answer
Three answer 30 days
Two answer 60 days
Two answer 60 to 90 days
Four answer 90 days

One answers 120 days on foreign
Two answer 4 months
Three answer 4 to 6 months
One answers 30 days to 6 months

The wide variation in time represented in the above replies is due probably to a misunderstanding of the query which is part of the Question No. 3, pertaining to foreign trade and the replies do not differentiate between foreign and domestic credit extension.

Cost System

4. Do you have a department or set of clerks that devote their particular attention to estimating costs?

Twenty-one answer Yes
Three answer No
One answers Clerks part time
One does not answer

(A) Are you in position to know the cost of your goods laid down at a certain point?

Twenty-one answer Yes
Three answer No
Two do not answer

(B) Do you know whether the trade associations have uniform cost systems, and would it be feasible to adopt this plan in our Association?

Seven do not answer
Six answer No or not feasible
Three answer Don't know
Six answer Yes

Other answers are:

1. Believe former attempt a failure
2. Some associations have, and think it advisable for ours
3. Those we have seen are a joke

(C) If feasible, would it be expedient?

Eight answer Yes
Seven answer No
Ten do not answer

One suggests that each manufacturer would have to work out his own system.

Terms of Discount

5. Do you find the adoption of 1 per cent ten days from date of invoice, instead of 2 per cent, universally satisfactory?

One answers No
Eight answer Yes
Three answer 1%
Nine answer 2%
One answers Haven't tried it
Four do not answer

Freight Allowance

6. On what size bill of goods do you allow freight to destination?

Eastern Points

One	answers	3%
Four	answer	$50.00
Two	answer	$25.00
One	answers	$10.00
Two	answer	No limit
One	answers	Carload
One	answers	5% on $10.00
One does not answer		
One	answers	3%
Four	answer	$50.00
One	answers	$25.00
One	answers	$10.00
Five do not answer		

Middle West

Same answers as Southern Points

West of Mississippi River

Same answers as Southern Points

Other general answers—

1. All goods sold f. o. b. factory
2. Do not allow freight; will equalize freight from St. Louis with freight to customers from our nearest branch
3. 100 lbs. and over to jobbing points everywhere
4. All sizes
5. Depends on conditions
6. Up to 5% of invoice
7. $50.00 everywhere
8. Not to exceed 10%
9. $25.00 everywhere
10. $50.00 net.

The Business Outlook

7. Briefly state your views on present conditions and what you hold for the future in the Pharmaceutical Trade?

Seven do not answer.

Others answer as follows:

1. Poor now. Prewar conditions in future
2. Notice slight upturn
3. Bottom has been reached; look for improvement in 1922
4. Trade good in U. S.
5. Present conditions not satisfactory; believe improvement will come as soon as some imported materials are disposed of
7. Note some improvement
8. Sales good; collections good; look for good business in 1922
9. Improving
10. As to staple items it will follow the uptrend of general business; specialties depend on sales methods for success
11. Business conditions slowly improving
12. Experience of last two months indicates an improvement; normal conditions should return within a few months
13. Looks bright and more stable
14. "Damfino"
15. Dullness at present, but not as bad as in other lines
16. Flu is stimulating business now; running behind orders
17. Sales for first three months of 1922 about the same as same period last year—cost of operating over same period less than last year—expect improvement in sales and increase in profits as compared with 1921.

General

One member writes: "We think you have omitted one very important question on this inquiry to the Treasurer, and that is this: 'Do you give protection against decline in price when making contracts? If you do, why? If you do not, why?' In the writer's opinion the curse of contract making is the buyer asking protection against decline in price on the undelivered portion of his contract when he knows full well the manufacturer has been compelled to buy the raw material for cash and at a fixed price. Seriously speaking, you can do more good along this line than by any other endeavor. More business friendships have been destroyed by this clause than any other obligation."—Citro Chemical Company.

Respectfully submitted,

COMMITTEE ON FINANCIAL PROBLEMS,

N. K. Conderman, *Chairman.*

REPORT OF BIOLOGICAL SECTION

Mr. Chairman and Gentlemen: In the absence of Dr. Houghton, Chairman of the Section, I would like to report that the Biological Section met on Monday afternoon. There was no formal report but several matters of interest were informally discussed. The most interesting subject was probably the increasing expense in production and handling, owing to the overwhelming exchanges that there have been in returns of biological products for the past two years, the dealers apparently having the belief that the materials in themselves cost nothing and that they were free to exchange as best suited their will and convenience. We have tried to bring about by moral suasion more care in the ordering and stocking of biologicals, and are hopeful that that will bring some results.

The Section discussed at length the legal responsibility and the danger the biological producers face through lawsuits. It is common belief that if a patient dies any time from one day to one month after an injection of a biological product, that the concern that makes the latter is responsible for the man's death. He might have died within an hour from an attack of acute indigestion after eating a meal yet no one would think of holding a restaurant responsible. But with biological producers there is a different opinion. It was the sense of the meeting that there ought to be a greater amount of co-operation between producers in this connection.

Two weeks ago a case was decided in court in our favor which cost us a great deal of needless effort, time and expense. In a case of that kind we believe the members ought to lend at least their moral support to each other and endeavor to secure the best legal advice. The decision referred to will be very far-reaching and used as a precedent for other cases, and is a decided victory for the industry as a whole, as a deterrent to prevent action in similar suits.

The question of standards for biological products is one of all-absorbing interest. Heretofore the Hygienic Laboratory has laid down the standards, very often after the individual members have each established their own and varying standards. A case cited at the present time is the pollen extract for hay-fever, in which every house has a different method and a different standard, and there is no uniform unit of the pollen extract.

It was moved and seconded that the members ought to get together, at least suggest uniform standards and not wait for the

Hygienic Laboratory to promulgate their regulations. We ought to be a few jumps ahead of proposed regulations and by getting together and making our recommendations we feel that the support of Dr. McCoy and his associates can be had in that way.

Following that, the officers of the Section were unanimously re-elected and the meeting adjourned .

H. H. Whyte.

THE REPORT OF THE CHAIRMAN OF THE COMMITTEE ON VOLUME 1, HISTORY OF PHARMACOPOEIAL DRUGS

It pleases me in making this final report which need necessarily occupy but a few lines to state as follows:

The introduction to the publication referred to (Vol. 1) is now in the hands of the members of the organization. It extends to them a detailed report that needs necessarily be simply referred to in this communication.

The total expense of Volume 1 will be embodied in the report of the Secretary. It consists mainly of the bill of the Methodist Book Concern, Cincinnati, there being no other expense to the Society, my contributions both as concerns research and publications necessary for said research, being gladly offered without expense to the organization.

It probably is not out of place for me to state that in my opinion Volume 1 will be but an introduction to the more portentous Volume 2 the research work of which is in the hands of Drs. Waldbott and Heyroth, the larger share of said research expense having been paid by the organization. May I not repeat statements made previously to the effect that these gentlemen have accomplished a prodigious work; most faithfully and energetically have they applied themselves. In my opinion Volume 2 of the publication will make a record (lasting) that will be extraordinary in service to scientists, scholars, teachers and pharmacists.

Assuring the Society that I will take great pleasure in helping the chairman appointed for Volume 2 in every way possible, my services to be given, and thanking every member of the Society and all members of the committees connected with Volume 1 for their kindness and supportive help, I am,

Sincerely yours,

John Uri Lloyd.

LETTER OF APPRECIATION TO PROF. JOHN URI LLOYD

June 8, 1922.

Prof. John Uri Lloyd,
Cincinnati, Ohio.

Dear Professor Lloyd:

The American Drug Manufacturers' Association in convention assembled at the Hotel Biltmore, New York City, has received and read with great interest and appreciation your report upon the completion of Volume 1 of the "History of the Drugs of the U. S. P." and the status of the work upon Volume 2, of the same work upon the chemicals and preparations of the U. S. P.

It desires to express to you its hearty appreciation of the splendid work you and our confreers have done in the compilation of this extremely valuable and instructive work.

It desires further to express to you its regret that you were unable to attend the meeting this year and to convey to you their heartfelt wishes that your health may be preserved for many years to come so that you may not only further use those great talents with which God has endowed you, but live to experience to the full the appreciation of the value of your work by the medical and pharmaceutical professions of both hemispheres.

With our cordial greetings and sincerest regards, we remain

Yours very gratefully,

AMERICAN DRUG MANUFACTURERS' ASSOCIATION.

A. HOMER SMITH, *Secretary.*

DRUG MARKET CONDITION

Address Read Before the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York, June 5-8, 1922.

By Williams Haynes

Drug Market Conditions as Affecting the Cost and Supply of Fine Chemicals, Crude Drugs and Essential Oils.

PRICE TREND SHOWN BY AVERAGE PRICES

	Pre-War Aug. 1, 1914	Peak May 15, 1920	Last Yr. June 1, 1921	Low Pt. Aug. 1, 1921	Today June 1 1922
Fine Chemicals	.80	3.90	1.25	1.15	1.20
Crude Drugs	.55	1.40	.70	.60	.75
Essential oils	2.60	5.55	3.00	2.40	2.50
Average	1.32	3.62	1.65	1.38	1.48

We were in the midst of the sharpest and most rapid price decline that this generation of the drug industry has ever seen, when this Association met last spring, and in the market report which it was my privilege to submit to you then, I ventured the opinion that the drug market were full of "lurking bargains." That phrase called forth some discussion among you buyers; but the intervening year has made its meaning plain.

The cost of your crude materials, speaking broadly of all fine chemicals, crude drugs, and essential oils as a group, continued to decline, but less rapidly than during 1920, until August, 1921. Since then, prices have advanced a little and are still advancing.

Many Factors Affect Prices

It is no easy task fairly to judge the trend of our markets. Speculation is always present and prices are affected by numerous outside influences. A native uprising in southern India is a bullish factor in senna. A textile strike in New England affects the supply of coal-tar materials, by reducing the consumption of dyes. Too much rain in the south of France or too little rain in Asia Minor; a revolution in Central America or a famine in China are all reflected in our quotations. An epidemic anywhere in the world and the

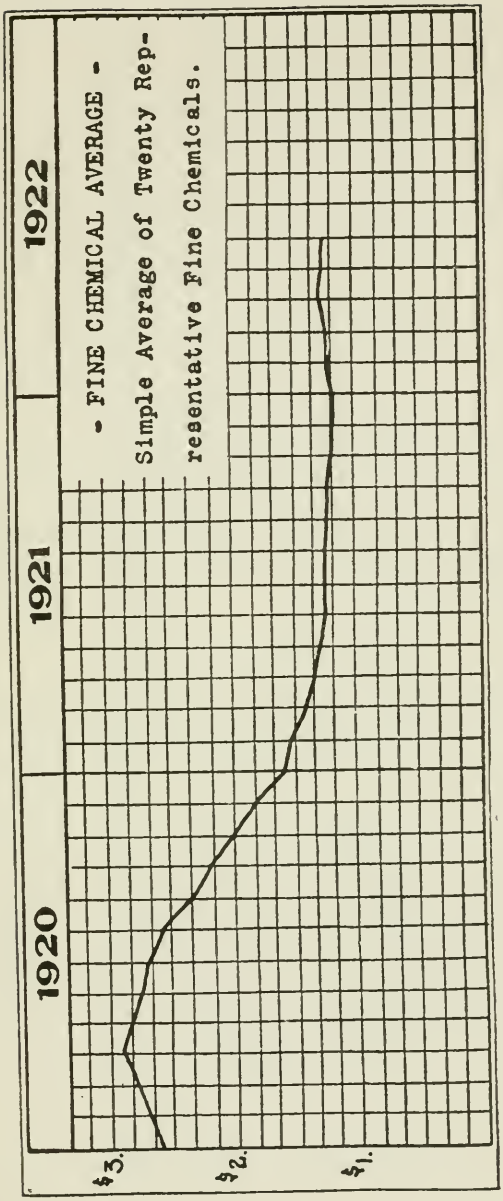
1920
1921
1922
$3.
$2.
$1.
- FINE CHEMICAL AVERAGE -
Simple Average of Twenty Representative Fine Chemicals.

FIGURE 1

slightest change even in foreign exchange will show up in the profit and loss statements of the manufacturer of medicinals. A crude drug like nux vomica affects the price on an alkaloid used in medicine and in agriculture; a synthetic flavoring chemical is affected by the cost of oil of cloves; changes in the quotations on such metals as bismuth and quicksilver change your costs on many chemicals and the price of many pharmaceuticals you make. The interrelationships between crude drugs, oils, and chemicals are numerous and very complicated. The decline in menthol, the advance in santonin, the ups and downs, just within the week, of lemon oil, show how easily marked price fluctuations of important items may assume undue proportions in our consideration of market conditions. The closer a buyer is to the market and the greater his financial interest in it, the more difficult for him to judge broad market trends without bias. Yet the costs of your raw manufacturing materials, because you buy widely, are based on market conditions as a whole. Your profits depend not on the price of menthol, or santonin, or lemon oil; but on the cost of all your crude supplies, and I can be of most service to you in reviewing market conditions broadly.

Average Price Advances 6%

For this purpose average prices are most useful. Taking twenty representative items in each of the three groups—chemicals, drugs, and oils—a simple average of their prices in original packages shows that the peak of high prices was about two years ago, April-May, 1920, and that the low point was reached last summer in August, 1921. The accompanying table sets forth these figures in detail. For the whole group, the average price as of June 1, 1922, is $1.48, an advance from $1.38 of last August and a decline from $1.65 of last year at this time. It is interesting to compare the present figure $1.48 with the high point of May, 1920, $3.62, and with the pre-war of $1.32.

In other words, the costs of your drug materials as a whole have advanced 6 per cent since last August and stand today only 12 1-2 per cent above pre-war.

Average Price vs. Index Number

One of your members asked last year why we use a simple average in expressing these broad movements of prices, and not a so-called index number. The question is important in any serious

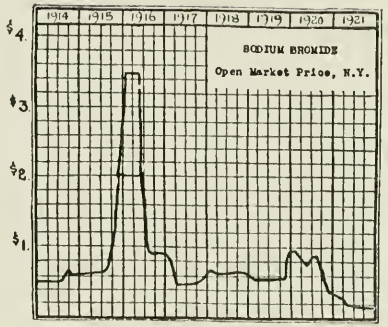

FIGURE 2

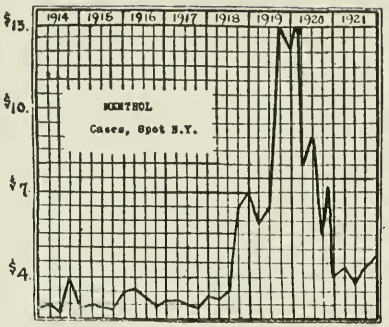

FIGURE 3

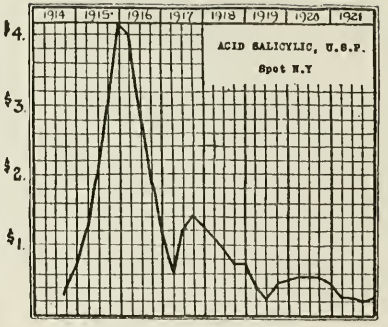

FIGURE 4

study of prices or costs and has been raised in the American Statistical Society, to which, as a member, I have been asked to report on this subject.

An index number is a scientific, statistical term as definite in meaning as a chemical formula or a U. S. P. standard. No real index number ever has been made for drugs or chemicals. It cannot be, for a true index number is price weighted by production or consumption figures. As you gentlemen know well, no reliable figures on either production or consumption of drugs or chemicals are available today. The publication of so-called index numbers weighted by old and imperfect import or census reports is distinctly misleading.

Chemicals 75% Higher Than Pre-War

As would be expected, chemicals, being manufactured goods into which labor and fuel costs enter, advanced higher and have declined less than drugs and oils. The average price of fine chemicals stand now just above 75 per cent over the pre-war and, as a class, will hardly decline until manufacturing costs are brought down.

In fact, the tendency of late has been higher. Imported chemicals, especially from Germany, are not being dumped here to the extent of a year ago. Last year German chemicals fell into the hands of second hand speculators, who in Germany, as here during the war, controlled the export situation. But German war stocks, as well as our own, are apparently cleaned out, and with real manufacturers again in control and probably well sold up, German prices have materially stiffened. Rising exchange has brought about higher quotations from England, France, Holland, Italy, and Switzerland. It is significant that as soon as prices have nearly equalized, American buyers display marked preference for American-made chemicals. There is little patriotism and much sound business in this, for experience has proved that imported chemicals, save of standard brands in the original containers, are not up to pre-war quality nor even up to the current representations of sellers.

Curiously, the tariff discussion has had less effect on fine chemical prices than we had expected. No speculative buying, no upset of price has followed the announcement of proposed new rates in the House or the revision made by the Senate. Obviously, importers are willing to gamble with Congress that the proposed higher schedules will not go into effect soon.

Menace of Chemical Price Cutting

Competition between American chemical makers has been bitterly keen during the past year, and the pharmaceutical industry has had opportunity to see a new aspect of the price-cutting evil. Chemical price schedules have been broken by rebates, by delayed price advances to certain customers, by sales through the "backdoor." A thoroughly demoralized market condition has resulted, which gives only a temporary advantage to the buyer and what is a very real menace to the chemical industry. For if conditions have been demoralized in the fine chemical markets, they have been far worse in the field of those heavy chemicals that are the basic crude materials of all industries. When chemical makers do not quote you a known, firm price, you are forced willy-nilly to be "price hagglers," for the one thing you, as a buyer, dread most is that your competitor buy his chemical supplies cheaper than you. By breaking his price schedule, the chemical manufacturer forces you to beat down his price as low as possible. That may be a temporary gain for you, but it is a sober and sound fact that if you force him too low—i. e., below his production cost—some day you will pay for it.

Pharmaceutical manufacturers know well the causes and the baneful effects of price-cutting in the retail trades. If you believe it does not threaten manufacturing industries, let me repeat what a big hosiery maker told me: "Store buyers are making their own prices on stockings, and goods that used to be sold on quality are now bickered over between the littlest notion store and the biggest mill." You gentlemen know better than I whether this has reached the sales of pharmaceuticals but so wide-spread is the evil that the National Association of Purchasing Agents—3,000 of them, representing big industries all over the country—at their conventions three weeks ago, passed a resolution calling on the producers of basic commodities, including chemicals and drugs, to publish their prices and live up to them as a means of stabilizing business.

A few of the leading chemicals deserve particular mention.

Future of Quicksilver Uncertain

The proposed duty of 25c a pound on quicksilver, or $18.75 on a flask, will probably stand, and a duty of about 40 per cent be put on mercurials. The price future of the metal is uncertain for the Spanish sales agency which the Rothschilds of London have held twenty years has been terminated. Whether the Spanish and Italian

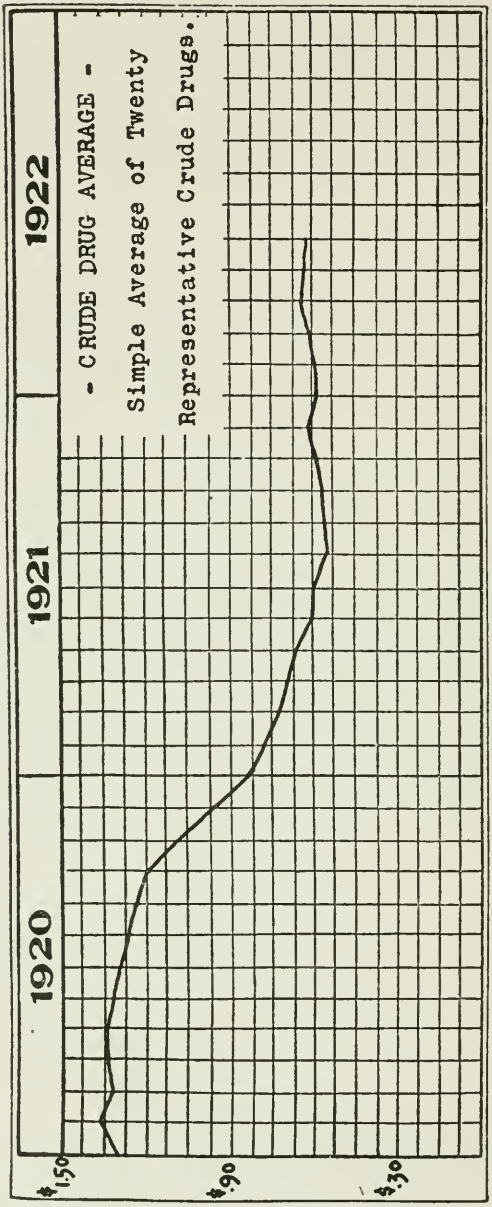
1920
1921
1922
- CRUDE DRUG AVERAGE -
Simple Average of Twenty
Representative Crude Drugs.
$1.50
$.90
$.30

FIGURE 5

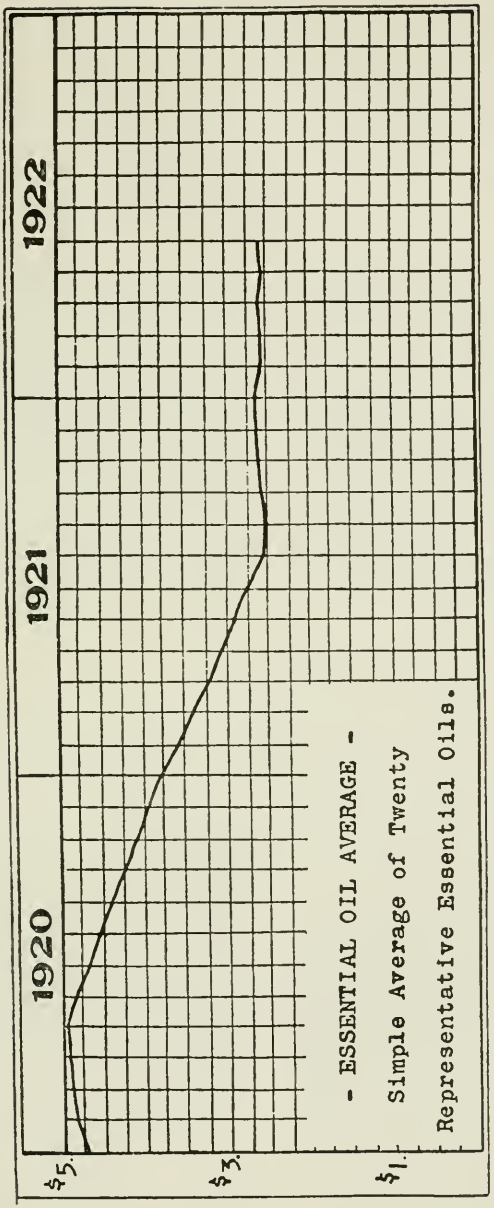
1920
1921
1922
$5.
$3.
$1.
- ESSENTIAL OIL AVERAGE -
Simple Average of Twenty
Representative Essential Oils.

FIGURE 6

interests will wage a price war or enter into a price maintenance agreement is not yet known. Between them is 80 per cent of the world's output and the future lies in their hands. Higher sterling exchange and a firmer market in London has raised the price of quicksilver from $37.00, the low point of six months ago, to $55.00 a flask, resulting in two price advances on mercurials during that period, and further advances prophecied on tariff prospects.

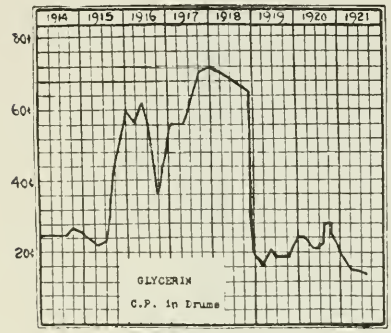

FIGURE 7

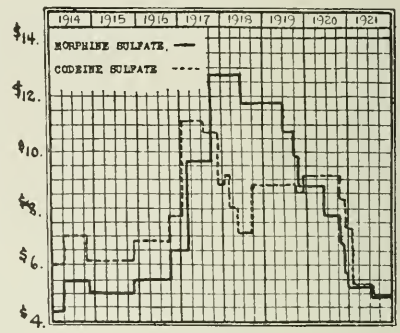

FIGURE 8

Iodides Steady; Bromides Weak

Iodides have held firm, due to the well maintained price of iodine. A new use for vast quantities of iodine is reported to have been discovered in a precipitation process for matallurigical work; but

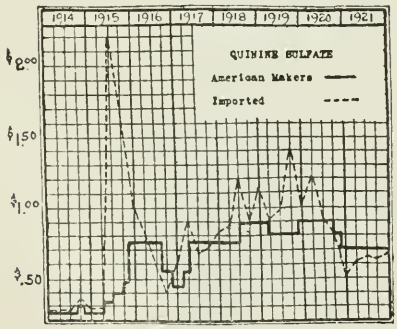

FIGURE 9

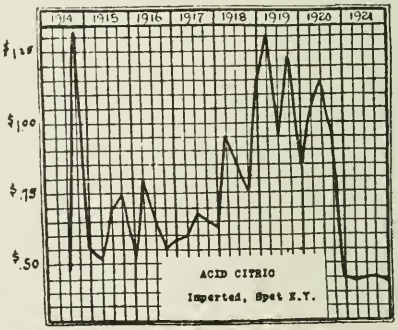

FIGURE 10

its successful use depends on cheap iodine. The British Syndicate recovers only about 10 per cent of the iodine available in the Chilean nitrate brine which it controls, and it is a question whether they will

consider it more profitable to maintain high iodine prices for a limited output, or to extend their operations and produce great quantities at a low figure.

Bromides have been badly demoralized through cut-throat German competition. Of late, prices have been firmer; but, although a German export decree is supposed to enforce a price that figures out about 18c f.o.b. Hamburg, nevertheless, 14 @ 15c bromides are offered in New York.

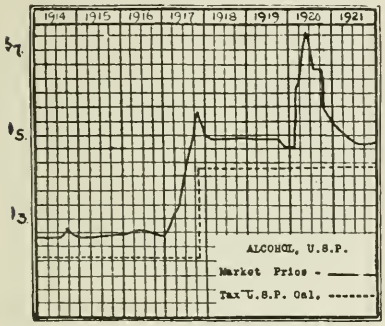

FIGURE 11

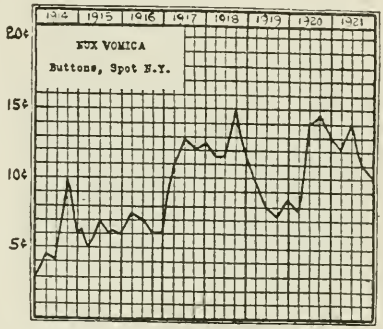

FIGURE 12

Price-Cutting in Salicylate Group

Competition between American makers of salicylic acid and salicylates at prices well below the cost of production has been noted, and these items have been a sorry example of the evils of price slashing. The U. S. P. acid sold as low as 18c; but a bargain price did not increase consumption and makers have successively advanced to 22c, to 24c, to 26c and despite second-hand shading, the spot market is firmer.

Strychnine looks to lower on the prospect of foreign competition. It has been told that one important American factor has been selling nux vomica here well below import cost, principally to force down shipment prices from primary markets, which is borne out by direct advices from India that two American firms have recently been shopping for nux in India with very bearish ideas as to price.

The price reduction on quinine this week is in line with the expected lower prices. There has been no talk of a 20c (pre-war) price, however, since the extension of another five years of the Java bark contract, two years prior to its expiration in 1924. Lower prices are also expected on camphor and menthol, as recent speculative

advances were quickly broken down and Japanese finances are not yet strong enough for successful bullish operations.

Crude Drugs Advance 20% in 9 Months

Crude drugs as a group, however, have advanced close to 20 per cent since last summer, and every indication points to still

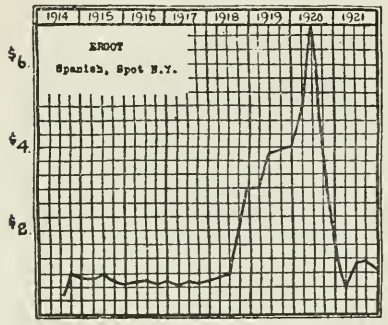

FIGURE 13

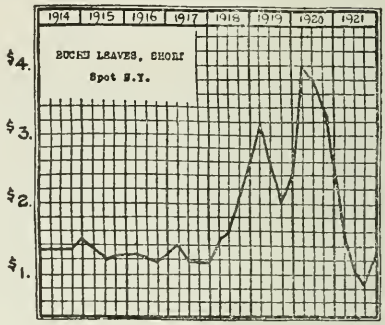

FIGURE 14

higher prices. Generally speaking stocks in New York are very low, and we frequently find the spot supply in a single hand. Prices from primary markets are—and long have been—higher than in New York. Rising exchanges has sustained foreign markets in the face of good

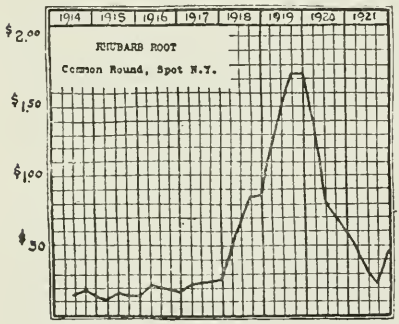

FIGURE 15

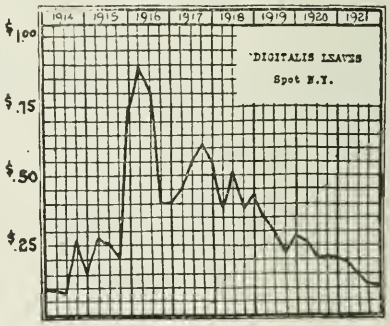

FIGURE 16

primary stocks, and these accumulated supplies have discouraged further collections or extensive crops. Every factor indicates further advances, and this belief is further supported by the fact that average price is only 20 per cent above pre-war, not sufficient to cover advanced labor and shipping costs.

Throughout the year ergot has been a puzzle that even the biggest direct importers have not solved. The answer lies in the problem of when and how much will Central Europe ship. Russian ergot offered in New York is claimed by Spanish shippers to have been of Portugese origin. With high Spanish exchange, Spanish ergot is too cheap; but with rubles selling by the bushel no sane man will venture a guess at prices, if Russian supplies become available in anything like pre-war quantities.

Rhubarb and Buchu Fluctuations

Rhubarb has had a series of ups and downs during the year. From $1.50 lb. it dropped to 20c last summer. Like burned children the importers dreaded the fire, and stocks fell so low that in January the price rose to 90c. It has dropped back to 60c, however, on inter-

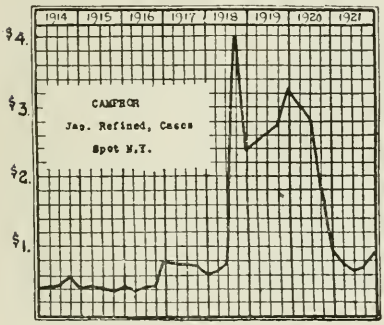

FIGURE 17

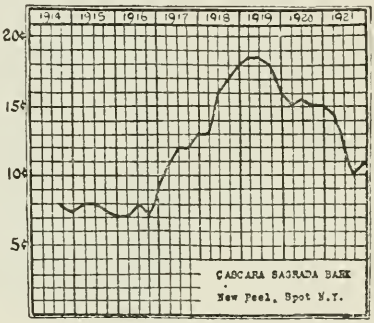

FIGURE 18

mittant imports and uncertain demand. Buchu has also caused trouble for both importers and consumers. Shipment prices from South Africa during 1922 have carried from 3s to 3/6 c.i.f. and for the past three months the New York spot price has apparently been below import cost. A large consumer indicated three weeks ago that he had purchased for shipment on the basis of 60c c.i.f. New York. This was vigorously denied by dealers, and the price of 85c in bales, which has held since January, has been tending upwards.

All of the 1921 peel of cascara sagrada bark is reported sold on the Coast, and prices for 1922 are said to be higher at 10 1-2c f.o.b. western shipping points. Spot old bark in New York is commanding advancing prices.

Senna, too, is likely to sell higher. For four months plentiful

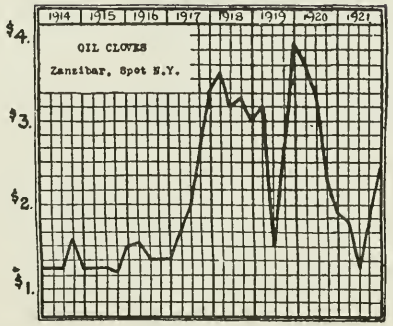

FIGURE 19

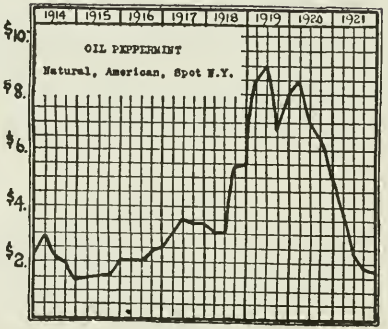

FIGURE 20

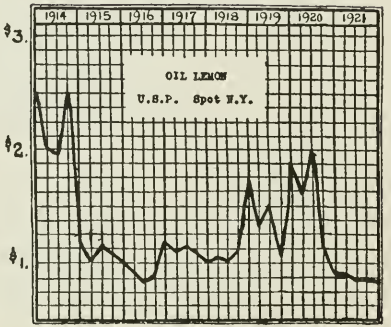

FIGURE 21

stocks have been moving slowly under considerable selling pressure, but better demand and somewhat smaller stocks indicate firmer tendencies in prices. It will doubtless be interesting to you to know that reports from Malabar tell of successful experiments to grow Alexandria senna in India. As the Tinnavelly variety was originally transplanted from Arabia, there is no plain reason why Egyptian sort should not be successfully cultivated in India with the result that this valuable variety will come to us better picked, better graded, and better packed.

Essential Oil Prices Expected to Rise

The basic position of the essential oils is similar to that of the crude drugs. Higher prices for shipment than are asked for spot goods, depleted stocks, and reduced production naturally suggests that on the least buying provocation prices must go up.

The almost certain prospect of a 30 per cent duty on oil of lemon has furnished a good excuse for speculative buying, and the price has been jumping back and forth since last February.

A 400,000 lb. peppermint crop in 1921 (50,000 lbs. above normal) with considerable carry over from 1920 would have forced the price down further than it did, had the oil not been firmly held in strong hands who were supported by a nice export demand. Crop prospects for this year are for another big yield, but the price holds steady at $1.75 in the country.

The spectacular rise of cloves up to 40c on short crop reports, and the drop back to 29c, when the stories from Zanzibar were more or less disproved, caused the oil to shoot up from $1.25 to $2.00 and then to recede to $1.95.

To sum up: the bargains that were lurking in our drug and chemical markets last year are pretty plainly apparent today. Nine months ago these markets took a decided upward turn, and any chemical, drug, or oil that is selling below the cost of production is sure to advance to a price that shows fair profits to the producers.

All if the necessary adjustments have not been made to the complicated machinery of world business. But we are "getting a spark" and the engine is beginning to "turn over."

THE PROFITABLE AND UNPROFITABLE IN WELFARE WORK

Address Delivered at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8, 1922.

By Dr. Lee K. Frankel, *Vice-President, Metropolitan Life Insurance Co., New York City*

Dr. Lee K. Frankel: *Mr. President and Gentlemen*:—I never question the title of a subject that is assigned to me for an address because I think a title always gives a man a very wide latitude: he can stick to it if he pleases and he can stay away from it if he pleases. I haven't anything whatever to say on the subject of the profitable and the unprofitable in welfare work. I am possibly enough of an enthusiast to say that when you speak of the unprofitable in welfare work you are speaking of approximately the same type of subject as when you refer to mistakes in Ireland; namely, there are none. I doubt very much if anything can be undertaken in welfare work that will in the realms of propriety and within reasonable realms of cost, would in the last analysis be found unprofitable. It depends entirely upon the point of view and upon the results obtained.

Whatever enthusiasm I may have, however, I think I am sufficiently sane to realize that there are only certain things that can be done, that each industry will have to adapt these things to its own particular circumstances and to its own particular environment. Things that would be done in a large iron furnace, for example, in Western Pennsylvania, are not the things that you men would perhaps do in the work in which you are engaged.

To digress a moment. It is rather interesting to reflect that twenty-five years ago when I was a practicing chemist, the names of some of the concerns in this Association, Mr. President, were just as much household words as they are today, and that you men stood and your organizations stood, even then, for that reputability and that standardization that I think has put the manufacture of drugs among the professions rather than in the business group.

I do not think there is anything more necessary today than this need for standardization of pharmaceutical and other preparations.

What I want to say to you today can be said in very few words, in fact the substance of it was said here just a few minutes ago;

namely, that we must cultivate the good-will of employes. That is the basis of it all. But the historical situation is rather interesting. To grasp it you must work your way back over many centuries, you must remember that in the old days, going back to the time of the gilds of the middle ages, a workman was an artisan. If he was a shoemaker, he made a shoe; he did not only make a last, he did not only put in pegs, but he made a shoe and he had pride in his work because he constructed something, he was engaged in making something definite and was probably proud of making it better than did his neighbor. That shoemaker was an important factor in his community. He had his sign out on his door—"So And So—Shoemaker." Then, in his middle age, when he was married, he took in an apprentice and he tried to give that apprentice all the traditions of his trade, whether he was a shoemaker or a saddler, or what not. That apprentice lived with him in his home. There was the direct, personal contact, and very frequently the apprentice married his daughter and continued the business under the old name. If you go to England and Germany today, you will find signs out over shops, signs that have hung there for generations, and the old name, probably, still remains there, because that family has carried along the tradition of the high-grade finished product that was originally made by their ancestor, and which all the traditions of the family have continued.

What then happens? The machine came. No one deplores that. The machine revolutionized industry. Today, instead of the individual worker or the group of workers with the employer, in daily contact with him, living with him, thinking with him, the machine has brought great plants and there has come to differentiation between employer and employe. It is not an unusual thing for the employer not to know his employes, not to know who they are, almost never to see them. They are engaged by a foreman, by a subordinate. Very frequently it is that foreman who has full power with respect to their employment and discharge. If he happens to be in a good mood or humor, the employe probably benefits accordingly. If the reverse is the case, he suffers. But the employer does not know anything whatever about it.

In the old days; the employer knew what was going on, not only in the business affairs of the workers, but also what was going on at home and in his family. How often does it occur, in these days that the workman comes in: he is late, he is shiftless apparently, or malingering; he does not turn out good work; he spoils work. Per-

haps for all that any one may know both last week that man may have been sitting up night after night with a sick wife or a sick child, with the result that he comes into the shop incompetent and unable to work, not because of unwillingness to work, not because he does not want to do the work, but because he is physically unfit to do the work.

A few years ago our company held a meeting in Baltimore. One of the speakers there was from the Maryland Federation of Labor, and our President happened to be speaking of the work we were doing for our employees. This union man said, "If the day ever comes when all employers of labor will do for their men what you are doing for your men, labor unionism will die; there will be no further need for it." He said, "My father told me how in his day when he went for his money at the end of the week and his payroll was handed out to him by the boss, the boss said to him, 'Well, John, how's the wife and how are the children? How is little Mamie getting along? Is she over the measles? Is the boy going to school?' "—and so on. He concluded, "Today, when I go for my pay envelope, it is handed out to me by a hired functionary who hasn't the least interest in the things that I am doing."

We are not readily going to get back to those old days, but at least we can get away from what the machine has brought about—this utterly impersonal relationship between employer and employee. We must do it for our own sakes, if we are to build up a staff of employees who are efficient, competent, and contented.

There isn't a trace of humanitarianism or charity in this whole proposition. There is a high element of altruism, there is a regard for work people that enters into it, but it is not a philanthropy. What you men or others may do for the betterment of working people is a mutual proposition; it is done for their benefit, it is done equally, if not more, for your benefit.

Today the great need of industry is efficiency. If we are to turn out products, keep our costs within reasonable limits, and establish profits for enterprises, we must have the workers as efficient as machines; in order to do this, we have to make workers fit, we have to make them happy, and satisfied with their work.

I believe that all of the things that are being done in industry, and that have been done for the last decade or two, universally pay. I contend, for example, that it pays if you look after an employee's health; if you watch his general welfare; if you give him surround-

ings to work in that are fit, that are sanitary, that are decent; if you keep an eye on the conditions in his home, and if you give him protection from the great worry of workingmen, namely, protection against sickness, disease, incapacity. What he is worrying about is the fact that tomorrow he may be on his back, that tomorrow he may be unfit for work, and that when he is unfit for work his pay will stop and his family eventually will become dependent upon public charity. That is the fear before the average workman, wherever you may find him. He doesn't say so, but that is it. Give the workman protection against disease, against sickness, give him protection against disability, permanent incapacity, give him eventually some assurance that if he stays, if he is fit, if he is loyal, if he proves his integrity, that he has a right to ask of industry some protection and some care when he becomes old or incapacitated.

I think, in substance, that this covers a welfare program. Whether it is advisable to extend it along certain of the ramifications that are being tried today, is purely a matter dependent upon the industry. You men have heard, for example, of golf clubs and country clubs. I think it is the United Shoe Machinery Company that has a wonderful place in Massachusetts, run largely by the employees; I think it is supported by them, but subsidized by the United Shoe Machinery Company. That is very desirable; probably very useful. Just what its real value is with respect to cost, no one is able to determine. And I want to say right now that no one has any distinct knowledge as to the cost of welfare work based upon results. It is guesswork, pure and simple. However, I know from the experience of our own organization and from the experience of dozens of others who are doing similar things (we happen to be one of the many and probably there are many here already doing a similar type of work) that we are building up employees who are remaining with us longer that is the average for similar enterprises; that we are keeping our female employees—and of course you understand this may not refer to a manufacturing industry; your problem is entirely different—on an average of over seven and one-half years and we are keeping our male employees on an average of approximately fourteen years. Our men do not leave us.

There have been very distinct estimates made as to what it costs to break in a new employee, but we know that when you have to put a new man on the job it means waste and that you are losing all along the line. You are not only losing the skill, but you are

losing all the historical knowledge that a man has. What makes you men good executives? The length of service that you are giving; the fact that you are doing today things almost intuitively. Propositions are put up to you on which you seem to form almost a snap judgment. As a matter of fact, they are not snap judgments; they are based on years and years of experiences. And that is what we lose when an old employee goes away disgruntled, unhappy, discontented.

Fundamentally, to me, the whole problem of welfare work is: Can we keep employees? Can we make it pay to ourselves to keep employees?

Take a situation such as ours is. You know where we are on Twenty-third Street and Madison Avenue. A matter of fifteen years ago, as you may recall, Twenty-third Street was the principal shopping section in the city of New York; Stern's and all the other big retail stores were on Twenty-third Street. What was our experience? Our girls worked across the street and we had at that time probably fifteen hundred to two thousand. Their lunch hour, say, was at twelve o'clock. At half-past eleven a girl would begin to think about a hat that she was going to purchase over in Stern's. She was working, it is true, but she was not giving us 100 per cent; she was thinking of something entirely different. She knew that she had a limited time for luncheon. She jumped out of the office on the stroke of the bell, ate a pretzel, possibly drank a glass of lemonade that was so weak it was not fit for anything; rushed over to Stern's, undecided as to whether she wanted a blue hat or a green hat or a yellow hat. There were probably two or three other girls with her. They got into a discussion, and first thing you know they looked at the clock and one of them said: "My heavens, we're late!" Then they rushed back to the office and arrived fifteen minutes late; they had wasted fifteen minutes of the company's time. Even then the girl probably was not giving her entire attention to her work, because she was undergoing the mental process of determining whether she had not made a mistake after all in picking the red hat instead of the blue one. That was another fifteen minutes of the company's time wasted and it was difficult for her to become composed again and get her mind on work.

What did we do? We cut that Gordian knot and crossed the Rubicon, not merely by establishing a restaurant, but by giving the luncheon free. Today we have the satisfaction of knowing (and

today there are six thousand of them in that building) that whatever they may have had at home before they came to the office, every employee is properly fed at noon, so that they are competent to do an afternoon's work, and that we can rightly expect it of them. We know also that they are not frittering their minds away on outside things, but that they are attending to business and doing their work.

It has cost us several hundred thousand dollars a year to give them their luncheon. We have been criticized for it. We have been asked: "What right has a mutual insurance company to give free luncheons to its employees?" This is our answer: We know that a girl who comes into our employ and is given fifteen dollars a week to work does not think she is getting fifteen dollars; she says, "I am getting seventeen dollars and fifty cents, because it would cost me two dollars and a half to get my own lunch outside."

We are measuring returns in efficiency, and if we could calculate the time we are saving, I am quite confident we would not be out a dollar on the cost of those luncheons.

We have all of our people medically examined. We require a medical examination upon entrance. Why do we do that? Why take on a lot of incompetent, weak people who we know will prove to be unfit and within a year or two will fall on us as burdens, to be taken care of in some way or other?

We examine periodically—and I do not believe there is a bigger thing from the standpoint of industry than the development of that thought. Every single one of us, beginning with the children even before the school age (it is being done today in any number of schools), should take a periodic inventory of ourselves. If we are going to cut down disease and build up efficient workmen, we should know our physical condition.

Last year Postmaster General Hays asked me to come over to Washington and organize a Welfare Division for the Post Office Service. They have 325,000 employees. One of the things that I did was to have a group of them in New York carefully examined—100 men, postal clerks and letter carriers, men who were working on their jobs. Out of those 100 eleven of them should have been in bed, at home or in the hospital. One of them had incipient tuberculosis, two or three of them were running blood pressures of 220 to 230, one or two more had acute Bright's disease, and these men were working without any knowledge whatever of their condition; fifty per cent of them had flat-feet, a distinct occupational disease—

among letter carriers. What is going to happen? In time those men will break down; they will either have to be discharged from the post office service, if they have not had long enough service, or go on the Workmen's Compensation Act and become a permanent burden upon the United States Government. That same thing is happening in industry. Men are breaking down in industry. Other industries find this to be true just as we do.

The Metropolitan Life Insurance Company requires a periodic medical examination. In one year that I happen to recall, out of 1,000 examined, we found over 360 suffering from some form or other of acute impairment of the heart, of the lungs, or of the kidneys. They did not know it. We found it. We had them examined, and then we put them under advice. A year later forty-seven per cent of those impairments had disappeared, simply by proper guidance and proper direction. And men like it, they take willingly to it; they see you have an interest in their welfare; they see that you have an interest in their concern.

Then, of course, we, as many others, have supplemented this by the protection, during illness, that I speak of. All of our people, for example, after six months of service (and remember that every one of them is examined medically before they come into the service) are given the equivalent of one year's wages in insurance by the company. If a man earns $2,000 a year, he is given a policy for $2,000 and the company pays that premium. It is an expense to the company. What does it mean? It means that nobody is passing a hat around in our shop; that there are no collections of any kind when a man dies. Within twenty-four hours after death a check is in the hands of his parents, or his wife, or whoever his nearest relative may be. When he is sick, he is covered by an insurance policy, towards which he pays half the premium. He gets for twenty-six weeks' illness two-thirds of his salary; if he is sick longer than that, half of his salary continues for five years. If he remains ill beyond that time, one-third of his salary continues until he is sixty-five years of age. If he remains sick longer than that, after sixty-five, he is entitled to an annuity or an allowance, or whatever you want to call it, equivalent to one-third of his salary; and if without that illness he gets to be sixty-five years of age, he may be retired on one-third salary.

What does it mean? It means that mothers are coming into our office, asking that their daughters be given employment, because

they know that they are protected, that they are sheltered, that they are looked after; that their hours are fairly easy and fairly comfortable; that they are being treated in a fashion that the mother desires; that the girl gets luncheon; that she has opportunity to go to various classes of one kind or another; that she has the use of a gymnasium; that she is examined medically; that she is required to have her teeth examined twice a year in order to find out whether they are in good condition. We have more tardiness and more absences due to toothaches than to anything else. It is pure, clean loss again. If, after her teeth have been examined, repairs are necessary, she is required to go to her own dentist and have them made, and to report within a certain definite period of time that these repairs have been made. In other words, it simply spells a general oversight without any attempt, if we can possibly help it, at paternalism. There is the other thought that I want to bring out. It is quite true that all our own work did grow up, not from the employees but from the management; in other words, it was something that was superimposed from above and did not come up from the bottom.

I do not know how many of you ever read George Ade's fables, but George Ade has written a very remarkable fable called "The Good Fairy with the Lorgnette, or How she Got it Good." It is one of those interesting stories of a charming philanthropic woman who went down into the lower East Side in New York in her automobile, visited a wash-woman, Mrs. Milligan. The woman puts her lorgnette up to her eyes when she saw Mrs. Milligan and inquired whether Jim had a good job yet. Mrs. Milligan, who had been standing over the washboard all day long and trying to get through a hard day's wash, was very much disgusted with her. But little Jimmy saw the lady come out of their house and noticed that his mother had been crying, and being near an ash can he found an over-ripe tomato, and as the philanthropic lady went up the alley toward her automobile, he hit her with an over-ripe tomato—and that explains the second part of the title, "How she Got it Good." She got it good, all right! (Laughter.)

The story is not nearly as interesting as the moral. The moral of his story, as he put it, is this: "When uplifting, get underneath." That is, to my mind, the finest text-book on sociology that I ever read; it is the finest text-book with respect to industrial relations that I ever read—"When uplifting, get underneath."

If you are going to get your men to do what you want them to do you have to make them realize that they are partners in your enterprise, that they are not merely work people. When I went over to Washington a year ago Postmaster General Hays had published his announcement: That what he wanted to do was to humanize the Postal Service. He said: "We want 325,000 partners!" There was a rumor that the conditions in the Post Office Department prior to Mr. Hays's administration were most deplorable; that there was discontent, dissatisfaction, uprising, changes in personnel; men going in and going out, and that the Post Office service was bad by reason of these changes.

You cannot imagine what that one statement of Mr. Hays did in this country. It was a perfectly easy thing for me, with all that preliminary introduction, to take these 325,000 men, through their representatives, to take eight large national postal organizations—the National League of Postmasters, the National Association of Supervisory Post Office Employees, the National Council of Supervisory Officials of Railway Mail Service, the Railway Mail Association, National Rural Letter Carriers Association, National Federation of Post Office Clerks, United National Association of Post Office Clerks, the National Association of Letter Carriers, and even the Post Office laborers have their own association—five of them affiliated with the Federation of Labor and the other three not—and to be able to get these eight associations to come together, to form a National Welfare Council in Washington, out of which there has originated a local Welfare Council in approximately 800 post offices in the United States is really a worth while accomplishment. Today there are 800 meetings every month in the year, and these meetings are attended by duly elected representatives of the clerks and the carriers and so on. The opportunity is given to any man who has a grievance to come before that body and present it. He is listened to just as a judge and a jury would listen to him. If his case has any merit, it is considered, and if it is considered, it is transmitted to the Postmaster. If he rules against it, it goes on to Washington to the National Welfare Council, made up of the officers of these eight societies. Eventually it goes to the Postmaster General with a recommendation.

The interesting thing is that there are no grievances coming to the notice of the National Welfare Council in Washington. (I may say that I have retired from my position, but I know the work is

being carried on.) The only things they are receiving today from 325,000 men are helpful suggestions; some of them critical, some of them suggesting improvements. The sanitary conditions in any number of our post offices are very bad and they should be changed. But the point is that today there are 325,000 partners in the post office and that these men, many of them working hard and getting an insufficient wage (of course, that is all prescribed by Congress and nobody can change it), are working willingly, honestly, eagerly, to help Uncle Sam in his Post Office Department.

That, I believe, in substance is the thing that industry has to do generally: it has to give its men, first of all, sanitary conditions to work under. I commented, as I went around the country, on the difference, for example, between some of our post office buildings where the so-called "swing room," which is a place where the letter carriers and others go during the swing period between trips, is badly lighted.

In a building that I saw last summer between Minneapolis and St. Paul, just put up by the Montgomery-Ward people (it was the last word in factory construction), the greater part of the front was windows and everything about it was of the very finest and the very best. In other words, thought had been given there to the consideration of the condition of the employees. I do not know to what extent, for example, among the drug manufacturers today there is opportunity or likelihood of occupational disease, or particularly of industrial poisoning. Those are matters of very great import, however, and they are matters that have to be very carefully considered.

The man deserves proper and fit environment in which to do his work, and so does the woman. You look after his engines and see to it that they are cared for, oiled, watched and studied. Your human machinery has just the same right, and has the right to demand the same kind of care and attention. You have to take away from your men that bugaboo of sickness and death, the fear that their families may be left unprovided for and become public charges. You have to see to it that those things are given to your men that make them better workmen—not through any philanthropy, not through any charity, but as a good business proposition on the supposition that it pays you as well as it pays them.

Finally, you have to work out some method under which we can get back to those good old days when the employer and the employee

were thrown more closely together, when the employee was able to feel that he was part of the enterprise.

We have to make our men feel that we are interested in them and that we in return have a right to ask for their interest in us, and for advice from them. Some of the biggest inventions in industry have come in that way, through the request for suggestions from those who are occupying minor positions.

In the long run, gentlemen, it means one thing: A happy, contented, satisfied employee. This, in turn, means persistency in occupation. With persistency in occupation comes better efficiency, greater ability, which spells in the last analysis better work and greater profits.

THE BUSINESS OUTLOOK AND HOW TO MEET IT

Address Delivered at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8, 1922.

By George O'Reilly

Vice-President, Irving National Bank, New York City, N. Y.

Mr. President and Gentlemen:

The subject upon which I am to talk to you for a little while this morning is a very formidable-sounding one—"The Business Outlook and How to Meet It." I hope that you will not expect too much. If I could answer the question suggested in this title in such a way as to represent important value to you, gentlemen, I would not be holding down a mere vice-president's job in a bank, I assure you; I would be too valuable in other fields of activity.

The title of this subject also suggests the possibility that I may discuss your business problems, but I assure you that the possibility is in no serious danger of being developed.

I shall not presume to discuss your business for reasons which are sufficient to me and I am sure obvious to you. However, it does seem to me and it has seemed to me from the beginning—and that feeling has been intensified considerably by reading the very interesting and comprehensive report of your last convention which your Secretary, Mr. Woodruff, was good enough to send to me, that we are all more or less in the same boat, and it should not be difficult for us to agree upon a common business language in times like these when necessity has thrown us all together so mercilessly it should not be difficult for even a banker to get the general business idea in whatever form expressed.

So, for practical purposes, I will imagine (please join me in the fiction) that I am a business man and you a lot of bankers as far as this business outlook, the business prospect, business conditions, business possibilities, business difficulties, and the ways in which to meet them are concerned. Please agree with me too in the belief that generalization rather than a specific treatment of details is permissible. I think that is safer nowadays. I think it is more profitable for all of us. The time has passed when business men or bankers or any one else can afford to be too severely critical upon the person who dares to deal in generalities.

There are many general features of the situation which we all recognize as of vital importance in our detailed operations now which, in former years, we passed by on the general theory that this stuff was all right for the college professor and the lecturer, but that we practical, hard-headed business men didn't have time to fool with it. But we are looking around a bit more nowadays than we did a few years back because we have learned the importance of more and wider looking than in the past. We are coming to recognize some of the mistakes we have made and have discovered that keeping one's nose right down to the grindstone all the time does not serve all purposes. Of course you gentlemen, interested as you are in the foreign as well as the domestic expression of business activity, can, I am sure, agree with me upon this point without any difficulty.

So I shall start my very informal talk with the assumption that we are all in the same boat, that your problems and mine are not essentially different, considered in a larger way. We are interested in domestic and foreign business; we are interested in taxes and costs and labor and insurance and financing and all the rest—it is a pretty broad basis of interest that the average American possesses in these days.

Now, taking a little jump, which is a privilege that I sometimes assert, I would say that I have been doing a good deal of conventioning in the last two months. I go to conventions ordinarily not to listen to the papers which are read there, for most of these papers one can have on his desk before he leaves for the convention. (I refer to large conventions like that of the National Foreign Trade Council recently held at Philadelphia, the Chamber of Commerce of the United States at Washington and other such conventions), but to look about and check my conclusions with those of the other fellows. I didn't listen to a speech or to the reading of a paper in either of these two leading conventions, but I did rummage around and talk with a great many of the people and swap experiences and points of view with them, talked it over—which, unfortunately, is not done enough in these large national conventions, but fortunately is done constantly in your smaller gatherings of business people. I go to these conventions for the purpose of finding out what the other fellow thinks about it.

And I have made this rather interesting discovery (I wonder if it has not come to some of you), that there is more optimism and more pessimism to the square inch in the American situation at the present

time—and I would not be surprised if it characterizes the situation quite generally throughout the world—than I had ever imagined to be possible. It is a constant mixture of lights and shadows, ups and downs, "yeas" and "nays."

There is nothing new about optimists or pessimists. We always have had them. There is nothing new either about optimism or pessimism, but ordinarily your optimist is on one side of the line and your pessimist is on the other; the optimist deals in optimism and the pessimist in pessimism. But I find that the average business man nowadays, as far as the combination or mixture of these two qualities (optimism and pessimism) are concerned, is a sort of an up-to-date Dr. Jekyll and Mr. Hyde. He is both. That is, he is intensely pessimistic and in the next breath almost as intensely optimistic.

Let me tell you in more detailed form what I mean. Talk with almost any business man—and I think I might say any business man in this audience and he would assist me in demonstrating the correctness of my theory—talk with almost any business man about the details of the past three years, and naturally you will talk about, not the details of small importance, but rather those of greater importance; talk about any of the big things we have been discussing for the past three years and he will give you the impression that the world has gone, or at least is going to the dogs, and that realization of the demnition bow-wows is only a short ways off.

Talk with him about tariff and he will tell you that the tariff situation in Washington is worse than it ever was. Talk with him about the bonus situation and he will not express any great joy. Talk with him about the shipping situation and he will say we are making no progress, indeed a great many very intelligent business men have said to me that they believed we were going backwards, were slipping on our shipping situation. Talk about the League of Nations and he throws his hands up in the air; and about Genoa, hands still higher; about the possibilities of The Hague and they go to the ceiling. Talk about the Edge Law Corporations and you have nothing but pessimism from him. Talk about the hundred million dollar Foreign Trade Financing Corporation, which was and is not, and it is the same story.

Incidentally I had the great pleasure of running the speakers' bureau for Mr. McHugh, who was Chairman of the Organization Committee in that particular enterprise. All I had to do was to

pick up about a thousand volunteer speakers in different parts of the United States, and all they had to do was to tell everybody everywhere everything about all the rest of it. It was very interesting. Everybody was in earnest, everybody was honest in their intentions, everybody was, to a considerable degree, intelligent in their conception of what was to be done, of what should be done, and up to a certain extent as to the means whereby this thing should be done. Success in the movement would mean substantial progress toward the rehabilitation of our export trade in the world.

Senator Hitchcock had a beautiful $4,500,000,000 foreign trade financing plan which was talked over. I am convinced that the plan is resting comfortably in some, I hope, sympathetic waste-basket somewhere. The Senator doesn't know it is dead yet. I heard him talk up at Hartford the other night and he is quite enthusiastic about its possibilities, but to me it has gone with the other great plans to the projects in which we all were interested.

The Frank Vanderlip plan, an excellent one, so many people said, has gone; the Senator Owen plan for the financing of foreign trade has gone; the American importers' and exporters' plan has gone—and all the rest of them.

In other words, gentlemen, as we look back over a period of three years, say, since the signing of the Armistice, we find a nearly perfect batting average of failures of conspicuous plans which have been projected in our business and economic situation. Undoubtedly you can recall a number of other plans, which I have overlooked, the history of which has run true to the characterization I am trying to give you.

It is not strange under these conditions that any individual, even one possessing a most abiding faith in the soundness of things and in the safety of the future, should feel pessimistic when he thinks of these details—failure, failure, failure, and three years after the signing of the Armistice we are just as far from having a world plan (and I sometimes think a little farther, because difficulties have been more fully developed) as we were when the Armistice was signed. Rather slow program in our World Planning Department I should say!

But you say to the same man who has handed to you all these highly pessimistic and soundly intelligent observations as to the tinge of blue that belongs in the atmosphere, "How are things going?" His answer is, "Fine, everything is going to be fine; we are coming

out all right." He is more optimistic now than he has been at any time since we entered the war. Of that I am convinced. It seems to me, too, analyzing his attitude and the general business situation, that his optimism is not the kind of optimism that held us straight during the war and the earlier days after the war. You know there wasn't anything particularly definite or tangible in this situation to justify the theory that we were coming out right; it was a matter of pure grit; we hung on with our teeth; we knew we were coming out right because we felt we were built that way; we couldn't afford to come out any other way; there wasn't going to be any smash-up; we were going through, and so we hung on and hung on and continued to hang on.

However, it seems to me now that there is another element that has come into this situation which adds considerably to the stock of things upon which any of us may justify a pronounced theory of optimism, and that is the fact that we have been going on; that since the signing of the Armistice we have been going on and that we are going stronger now than at any time since the Armistice. That is a pretty substantial element to get into your optimistic situation, gentlemen, and it is unmistakable absolutely.

It just happens that one of the things that keeps me busy down in our place is the preparation of a monthly trade review. You all know what I mean. Your wastebaskets are more familiar with them than you are, of course; but we banks are all doing it nowadays, we are all perpetrating trade reviews, and we are right in with all the rest of them in that particular. But there is this feature about it that I suppose deserves some measure of serious respect, some kindness at least. There is a great deal of work connected with it, a great deal of research and investigation connected with these things. We bankers try to be accurate and safe. We don't always succeed, but when we don't succeed and say the wrong thing at the right time, something happens that isn't cheerful to the spirit of our peace of mind around home.

However, in order to write one of these perfectly harmless trade reviews it is necessary that we have two or three hundred well established and accredited sources of information in the United States and probably 50 to a hundred sources of information abroad. We work the telegraph, we work the cable, we work our correspondents and our friends and our directors and everybody else in our effort to find out what is the actual direction of the currents of busi-

ness, of economics, of finance, of political movement (because that has a bearing on business consideration nowadays)—what are these currents like, how are they running?

From the midst of this mass of constant effort we attempt every 30 days to make a safe estimate, to present an intelligent picture of the business situation and I am convinced that on a basis of five lines of business or ten or fifty or two hundred—select any number you wish upon which to base your investigations and calculations—the conclusion will be the same: progress forward; we are going ahead. There is nothing very pronounced, nothing in the least spectacular about it, but we are going ahead, we are a little better today than we were yesterday, and nearly all of us are included in the movement.

Some lines discover more slack to be taken up than others. In other words, some lines find better business immediately than others. However, I think, Mr. Chairman, that the best way to look at anything which bears a dangerous resemblance (and I use the term "dangerous" intentionally) to really good business encountered by us in these lines should be considered as a taking up of slack. There will be ups and downs; there will be slack and there will be depressions in our business experience, I am convinced, but things are getting better, they are going ahead, slowly, but still ahead.

It isn't altogether a matter of psychology either. You know we pleased ourselves for a long time with this statement, "Oh, yes, things are getting better of course; people are thinking better." Well, that is pretty scant consolation for a business man who is up against it and who finds the currents all running in the wrong direction. But now we are thinking better, and doing better. The psychology of the people of the country is better, but added to this is the fact that the process of liquidation which, after any crisis is indispensable in a proper readjustment of conditions and values and currents and things, has been going on. We are getting nearer every day to the point we are looking for, but we won't recognize it when we get there, we will think of some other point on ahead and shoot for that. Fortunately we human beings are built that way.

Now the question might be asked, and it is a perfectly reasonable one, "If we have performed in such an extraordinary manner in the matter of securing a high batting average on failures during the past three years, how about this realization of success, what is the explanation of it, what is the secret of it, where does it come from?

Progress is built upon plans ordinarily and if your plans have fallen down, how do you account for your progress?"

To me it is the simplest thing in the whole situation, but one of the elements to which none but a few people have paid any particular attention to. The answer is this: Progress has been made principally from the fact that every man has been on his own job just digging along, doing a full day's work every day, doing the thing he is best qualified to do, making each day's work a little more valuable because a little more productive, and a little more telling than the work of the day preceding; doing what was necessary, doing the things we do without thinking—almost one hundred and ten million violently active, dynamic people like ourselves just pegging along, each man on his own job. It isn't built upon any process of planning, there isn't any hitching of chariots to stars about it, it doesn't have any reference to what is happening to the other fellow or what is going to happen to him; it has no reference to what the other fellow may do or should do or might do—it is just our pegging along on our job, with the result that a momentum has been established in our situation which is sweeping us along toward better times.

It is a very simple theory. I don't claim any credit for having evolved it; I haven't evolved it at all; it is just one of the simple little things upon which I have stumbled in trying to account for this apparently incomprehensible combination of pronounced pessimism and pronounced optimism in the average, normal Amarican business man.

Now, of course, we are going to keep on plodding, we are going to keep on digging, and if we are wise, each one of us will stick to his own job and do the things he knows how to do. Why, even I went into this world rehabilitation game and made up plans, although I didn't say very much about them. I don't suppose there is a banker down town who didn't waste some time during the past three years making up fool plans which he didn't have the nerve to show or tell about to anybody. A few of us have been wasting a great deal of our time experimenting with jobs that were not ours.

It was splendid, it was very attractive to realize that we were the great creditor nation of the world. We had all the wealth of the world thrown on us. We are good sports, we like to play the game and we said, "We will save the world," and we didn't pay any particular attention to just how we were going to save it, but began immediately working up these extraordinary delightful, and many

of them highly intelligent, plans to which I have referred. They haven't worked; it wasn't our line. We have been kidding ourselves. That is a slangy word. I have lived in New York only seven years and I am getting a little bit into the vernacular. We, at least in most of these things, have not been seeing things as they were; we have been seeing them as they should have been or as they might have been, or as they used to be or in some other way, but we have not been seeing them as they were.

A couple of years ago I talked all the way from Boston to New York with a very highly intelligent gentleman who had just completed a very comprehensive survey of the industrial conditions in Europe. He was the head of one of the great manufacturing concerns in this country. I won't tell you his name nor the name of his concern, but if I named either you would recognize him immediately. He was terribly in earnest about the rehabilitation of Europe, particularly England, France and Belgium. Said he to me, "They are antiquated; their methods, their machinery, their entire plan of operation is so far behind the times that unless very radical changes take place they will not be able to get anywhere in competition with other countries after the other countries get squared away."

I said, "What is the answer?" He said, "We have got to put brand new, up-to-date labor-saving American machinery there and we must send our American engineers there to show them how to install this; we have got to help them out and put in American institutions that will provide them with an opportunity to learn this and that and the other thing." I said, "There is a gentleman living over in Holland now who talked that same sort of thing for a number of years, and I imagine he is sorry; he just didn't see the other fellow as the other fellow is, or was. He was going to rehabilitate the world in his particular way. He had a certain conception of efficiency that may have been right, I don't know; it was certainly highly efficient in certain parts."

Some years ago in Europe I listened to a very well-known German diplomat who was discussing the heaven-sent world mission of his nation. I said, "Yes, I know this sounds fine, but if the other fellow doesn't want it, if the world isn't educated up to the point of appreciating and realizing the merit of this benevolent enterprise of yours towards the improvement of the world, what will happen then?" He said, "He must realize it." "But," I said, "If he doesn't, and when you insist on forcing it on him, he tells you to go to the devil,

what then?"—and that is just what the world did come pretty near telling him when it came to a certain point and they got down to certain points in the discussion. But that is a departure; this is not a war talk, gentleman, in any sense.

Again assuming the privilege of jumping, I feel that I can very consistently take the position on your business and my business and everybody's business, business generally, that most of us have been wrong in that we have exaggerated the seriousness of the serious things in the world business situation. We have had hard sledding, I realize that; things are not going without friction now; we are to have bumps in the future beyond the possibility of doubt, but, gentlemen, I believe firmly and definitely that things are not wrong essentially; things are right. I believe that there is enough to go around. You can't always find it; it may be badly distributed, but there is enough to go around, enough of money and enough of credit and enough of raw material and enough of confidence and enough of charity and enough of intelligence and all the rest of it. (Applause.)

It is our job to find this sufficiently. We have had problems, we have problems before us now, and we shall find new problems developing before us constantly, but I believe, I am convinced that there is an answer for every problem. We don't always know the answer. If our foresight was as good as our hindsight we would know the answer. However, the answer is there. You can't do as I used to do when a kid in school—look at a problem and then turn over to the back page to find out what the answer was. The pages in this book that we are studying nowadays are fastened together, are sealed up, but the answer is there, and it is the correct answer.

When I say things are right, that they are not wrong, I mean something as that fellow said in one of Shakespeare's plays: "The fault, dear Brutus, is not with our stars, but with ourselves." He said something about our being underlings; that was the idea. I am a lawyer by profession and I will claim the lawyer's privilege of giving only as much of the quotation as serves my particular purpose, which is perfectly sound in legal practice and not altogether out of line in banking practice. I don't know how it is in business generally. (Laughter.) But, "The fault, dear Brutus, is not with our stars, but with ourselves." We have not seen clearly.

Somebody may think, "Oh, we have heard all about that vision stuff; we are sick and tired of that." Well, then look back to the time of the Armistice; place yourself back three years when the

fighting of one kind had stopped (just as interesting fighting is still going on), when the war, theoretically, had stopped and we began to think in terms of business and the future and not in terms of the past and when all of us were anxious to get rid of our weaknesses and our prejudices and our hatreds and all the other things that show up so strongly, in any great conflict of human peoples. Place yourself back at that point and look forward and you see nothing but problems, nothing but difficulties, nothing but obstacles impossible of solution. We hung on with our teeth but we didn't have very much to justify our profound faith in the future. One mountain range of impossibilities after another was ahead of us. Could we get through? Yes, our bulldog grit said, "Of course we are going to get through." But how are we going to get through? And nobody attempted to answer that question.

Now, gentlemen, we have gotten through, haven't we? All of these problems have not been solved, but we haven't bumped up against anything that has hurt us very seriously, have we? There have been casualties and there will be more of them, but we have been going ahead constantly since the time of the signing of the Armistice and we are going stronger now and we are feeling better now that at any time since the end of the War. Every man is on his job doing the thing he knows to do best, and doing it every day and just pegging along. You can't beat it as a working plan.

So I am convinced that things are right, there is enough to go around; they are not wrong, there is an answer for every problem. What is our job then? Why to just keep on pegging along, keep on digging. There are currents running through the business and the economic and the political life of nations which are not running in the right direction. We can help straighten them out a bit. There are a good many broken and scattered ends; we can assist in tying them together.

Just one more word before I end, gentlemen. I heard a man make a speech the other night, and it was a very good speech. The only difficulty with it as it struck me was that it was all wrong. His first premise and all his other premises and all his conclusions were wrong, because he said, "Now we are going to get along fine; everything is going to be all right." I went right along with him joyously up to that point. Said he, "You see the point is that at last, finally and providentially, the political thing has been backed off the boards." He didn't state it in those crude terms, he stated it

properly. He said, "The force of economics has asserted itself, the great problems of Europe are being worked out on a business basis." Well, thought I, "My friend, you belong in heaven, not here on earth."

Why, gentlemen, it seems to me that the thing from which we must recover before we can get anywhere in the way of world rehabilitation, is politics, politics, politics—political expediency, political expediency.

Political expediency, gentlemen, is in the saddle with its feet firmly fixed in the stirrups (I was brought up in the cow country out West), and the stirrups are tied underneath, which is darned bad form out in that country; it is worse almost than "pulling leather." If any of you gentlemen have ever lived out there you will get my idea. I can't dig up terms strong enough to characterize the importance of the position of political expediency in the business saddle at the present time. We didn't go to Genoa, thank God, because we have a man in the State Department down at Washington who sees things pretty plainly. Never mind what he said to the public, I am convinced that I know what he said inside—"Let's have some smoking out before we go in." If we Americans had made the mistake that we made once before and had gone into a world conference on the assumption that we could bring our own direct-from-the-shoulder, open-minded American atmosphere with us, we would have been just as sorry for it at Genoa as we have been sorry for what happened.

If you go in to the other fellow's territory and try to play his game or a game that isn't yours altogether, you must play the game according to the rules of the game, and the rules of the game at Genoa were not generosity; they were not fair play; they were not "hands across the sea"; they were not frankness; they were not brotherly love; they were—each nation get it while the getting is good.

I am not a crank on this subject, gentlemen, but let's look the facts in the face. The reason why I am convinced we haven't gone to The Hague is just the same. Mr. Hughes evidently wants them to do a little more smoking out and find how many more secret treaties and how many more secret understandings there are, and after they have gotten them ironed out a little bit more and the atmosphere gets cleared up somewhat and the situation is such that it will furnish the kind of ozone that is indispensable in honest business talk and business dealing, why we shall be very glad to go in. The diplomatic expression for it is, "Until the political situation has assumed more

definite form we don't feel like going in. However, we will be very glad to discuss the economic problem unofficially," and so on and so forth.

Russia made an interesting and amusing mistake. I think I will relate this to you because it is rather a bright spot in an otherwise impossible situation. Russia didn't see things as cleverly as Mr. Hughes did. That is, Russia in Russia not bound by any laws or any rules, not obliged to be consistent or to recognize the moral law or any other law, was impregnable. Somebody said, "But you have got to do this." "Oh," but they said, "We don't recognize the right of private ownership of property." "But," said somebody else, "This is your obligation." "Oh," said they, "We don't recognize obligations at all." You can't do anything with a person who takes that position and maintains it.

But when they went into the Genoa Conference on the assumption that they could bring their Russian Bolshevist atmosphere of impregnability into the Conference, they missed their guess, just as when we went from an absolutely impregnable position over to the Peace Table and found ourselves obliged to play the game according to the rules of the game. So Russia is getting pretty well smoked out. They went over to Genoa and found that they had to play according to the rules of the game as they were being read at Geona, not in Russia. They had to indulge in a sort of talk and recognize a class of obligations the recognition of which was not included in their scheme of things.

Gentlemen, this has been very delightful; it hasn't even been as warm as I feared it might be. As I said, this is not a speech or an address or anything of that kind. I have had the pleasure of talking to you gentlemen and I have tried to discuss these subjects in the same manner in which I would have discussed them if you had come to my desk and sat down and said, "Well, now, what do you think about it? I have been trying to tell you what I think about it. I don't know of what merit of soundness or accuracy or foresight the points I have tried to make to you are, but they possess at least this merit: I believe them thoroughly. I think that the plodding along, the pegging along, the digging on our own job with a little less of world politics and a little less hitching to stars in the world's chariots is the right line to follow.

And above all, things are not wrong—they are right.

MULFORD EXPEDITION TO SOUTH AMERICA

Address Delivered at the Eleventh Annual Meeting, American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8, 1922.

By Dr. Henry H. Rusby

Mr. President, Ladies and Gentlemen: I want, in the first place, to congratulate this Association, and compliment the authors, on that magnificent work on the history of vegetable drugs, which you published last year. I am sorry I could not be here yesterday to participate in the discussion of that subject. I know something about the amount of labor that is involved in it. That historical study of drugs is a field into which I have never entered, for the reason that it involved such an immense amount of research in libraries, in delving in ancient literature, that I never was able to spare the time to take it up; so I went into the study of the drugs themselves. I can appreciate, as perhaps not everyone can, the amount of labor that was involved on the part of Professor Lloyd and his associates. It is a great thing for pharmacy in all of its departments when such a work as that can be gotten out. I want to say also that it just adds one more illustration to that principle which we are now seeing illustrated so frequently, of the work that manufacturers can do and are ready to do for the general welfare of the profession, in the matters wherein they themselves have no special interest. There is no particular interest, from a money point of view, to you manufacturers, in the work which Professor Lloyd did. It is a contribution on your part, an unselfish contribution, to the welfare of pharmacy.

Now with regard to my own work, there is not, of course, time to go into the details of what was accomplished on my recent expedition; in fact, we don't know what the results are as yet; it is going to require a great deal of study to determine what there is of practical value in them. However, I am able to tell you that there was a great deal in the work that we did that will not only be of interest, but of value in the practical manufacture of drugs. You who manufacture galenical products know what difficulty there is in getting the right drugs for the making of those products.

There are many things in relation to South American drugs which we do not know. We are not always able to determine in advance what is to be the quality of a drug about to be imported. My work especially was directed toward removing some of these difficulties and

doubts. I have not only been able to secure a good deal of information that I did not possess, and which no one possessed, in regard to these drugs, but I have been able to convey some of that information to the collectors themselves. I have thus done something toward educating the collectors of drugs in South America. I have found in one place five varieties of Cocillana bark, four of them species of Guarea, growing in an area of perhaps one hundred miles square, but only one of them genuine. I have instructed the collectors on that point, and I think in the future there will be less spurious material coming.

You all probably know that the origin of Coto bark has been unknown. I don't know what Dr. Lloyd said about it in his book, but the only thing he could have said was that nobody knew more about it than the general region whence it came. I know that for fifteen years not one pound of genuine coto or paracoto bark came to the United States, and yet dealers generally had them on their lists. I went down to Dr. Squibb's laboratory one time, just to pay a little visit, and he courteously asked me if there was anything I would like to see in their stock. I said, "Doctor, have you any fluid extract of coto?"

"Yes," he said, "we made up a hundred pounds of it only yesterday."

He sent for some. I tasted it, and said, "It is absolutely spurious."

He immediately issued orders to have it distilled, and to recover the alcohol and throw the residue away.

Coto bark, gentlemen, is one of the most valuable drugs in the materia medica, and the reason that physicians have not used it more is because of their experience with these spurious things.

We made a special expedition to discover this tree. I was unable to go, because I was too lame and ill to get about, but I sent Dr. White, the Assistant Botanist of the Brooklyn Botanic Garden, who was my associate on this expedition. He walked for days carrying heavy loads on his back, through the forests and over the mountains, and sleeping in the rain. He obtained three varieties of coto bark, one of them being genuine, and we found them very similar to one another. All of these things are going to be studied from the excellent material obtained. The botanical, histological and chemical work will be performed, and the results submitted at the next meeting of the American Pharmaceutical Association.

Another interesting thing was the discovery of the finest quality of

calissaya bark, growing abundantly in a section farther south than I have previously known it to occur.

Another interesting find was the simaruba bark tree. I never had seen it before. You all know that we have two kinds of simaruba bark, often occurring in the same bale. You will find one very thick and brittle and the other in long, tough and fibrous strips. I always believed that one of these came from the trunk of the tree and the other from the root, and verified that assumption on this occasion, because I collected from a tree a strip of bark, beginning at about two feet up the trunk and carried it right down along one of the roots, and thus have the two kinds attached to one another as nature attached them. Certainly, they belong to the same tree, only one is the root bark and the other the stem bark.

Ipecac, which I wanted very much to see, I was unable to study. I never have been able to get into that region. Those of you who have not been in the interior of South America (I suppose very few of you have) can hardly realize the difficulties of transportation. The difficulty of getting from one place to another is often great, even though the distance is short. You are dependent upon opportunities, unless you have your own complete outfit, which is practically impossible. You can use your own mules until you get to a place where there is water travel, then it becomes impossible to transport them. After going some distance by water you come again to mule travel. Thus you are dependent upon other people for transportation. You can realize the difficulty, when you find a steamer going to a place only once a month. From there, you must go somewhere else and then depend upon that same steamer for your return. Before you know it, three months have gone and you have accomplished only one little thing. So you cannot accomplish much work unless there are enough men in your party to have them working in different places at the same time.

All I can do today is to tell you in this general way about things that we found; the details will be made known after careful studies have been made.

I want to make one thing clear to this Association, namely, that there is not a single bit of information that you will not all receive. No one is going to gain any advantage over any other by having advance information. Everything covered regarding this work will be published so that you will know it as soon as those who took part in the expedition. There is no element of selfishness in this work.

I have listened to the magnificent address of my predecessor here and have been impressed more than I can tell you by what he has said; that the secret of the success of any project as a whole depends upon the pegging away of the individual man in his job. Gentlemen, for more than fifty years. I have worked as hard as it was possible for a man to work, I have worked night and day, Sundays and holidays, and I have enjoyed my work; every minute of it. I know that what this gentleman said is true. It is by the individual workers, plugging away, that the result is going to be accomplished. I just want to say before concluding that I believe the greatest menace in our industrial world today is organized labor; in backing millions of men whose object is to do as little work as possible; not only to do as little work as possible themselves, but to prevent other people from doing their work; to punish and perhaps kill other people if they do a little more work than they themselves think ought to be done; and, worst of all, to make workers hate their work. That is the weak spot in the basic element of success that this gentleman has told us of. We have to get to the point where everybody is working interestedly and is doing his best.

I have tried to do the best I could on this expedition and am very happy that I succeeded in getting back alive and well enough to continue working, and I hope that I will be able to render many more years of service. It will be my great pleasure to make known to you the results of the study of the collections that we have made.

RESOLUTIONS

Adopted at the Eleventh Annual Meeting American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8 1922.

Recommendations to the Revision Committee of the United States Pharmacopoeia

Resolved, that the following recommendations of The Scientific Section of the American Drug Manufacturers' Association be adopted by the Association in Annual Convention assembled and transmitted by the Secretary to the Revision Committee of the United States Pharmacopoeia.

(1) That a limit of free Salicylic Acid in a tablet of Acetylsalicylic Acid when one year old be not less than 1%.

(2) That a physiological assay only for Aconite and its preparations be adopted.

(3) That a standard for Fluidextract Ipecac of 1.50 grams per 100 CC be established and the mentruum specified by the United States Pharmacopoeia 8th Revision be adopted.

(4) That Strophanthin from the official drug Strophanthus Kombe be adopted as the standard for Digitalis and its preparations.

(5) That the physiological assay for Fluidextract Cannabis be dropped.

(6) That the process for Fluidextract Ergot include defatting the drug.

(7) That the report of the Scientific Section of this association with reference to Essential Oils adding a limit of ash for Rose Water and eliminating Benzaldehyde be referred to Revision Committee of the United States Pharmacopoeia:

(8) That the texts adopted by the Scientific Section of this association for the following drugs be referred to the Revision Committee of the United States Pharmacopoeia, i.e:

Spartiene Sulphate	Picrotoxin
Cephaeline in Emetine	Hyoscyamine Sulphate
Procaine	Morphine Meconate

Protesting Treasury Decision No. 3335

Whereas, the Commissioner or Internal Revenue, with the approval of the Secretary of the Treasury, has recently promulgated a Treasury decision No. 3335 providing for a complete change in the

form of bonds filed covering the use of alcohol, which are clearly in the nature of a forfeiture bond; and

WHEREAS, the various bond companies engaged in the business of furnishing such bonds have indicated their intention of materially increasing the rates for such bonds,

NOW, THEREFORE, BE IT RESOLVED that the Secretary and the Legislative Committee of this Association be, and they are hereby authorized and empowered to cooperate and act with the other branches of the drug trade to the end that the form of such bonds may be so changed as to avoid an increase in premium rates or such other steps as may from time to time be necessary to protect the interest of the members of this association in that respect.

In Re Tariff Legislation

WHEREAS, in order to prevent in the future, unscientific action in framing or altering tariff legislation to meet changing conditions, it is necessary to provide the requisite basis and information for proper and informed action by Congress;

NOW, THEREFORE, BE IT RESOLVED by the American Drug Manufacturers' Association in annual convention assembled,

FIRST: That Congress be urged to prepare for such future contingencies by empowering some agency of the Federal Government to prepare schedules containing, so far as practical, specific duties, which duties shall be based on the difference between production and conversion costs here and abroad, such production and conversion costs to include all labor, invested capital, transportation charges and all other items making up the direct and overhead charges involved in such production and conversion costs.

SECOND: That the Tariff Committee of this Association be directed, subject to the approval of the Executive Committee of this Association, to take such action as may seem proper and necessary to accomplish the purposes of this Resolution.

In Re Federal Narcotic Control Board

WHEREAS, Congress has recently enacted a law known as Public Act No. 227 which materially restricts the importation and exportation of the narcotic drugs, so-called; and

WHEREAS, the said Act provides for the creation of a Federal Narcotics Control Board, consisting of the Secretary of State, Secretary of the Treasury and Secretary of Commerce, and empowers such

Board to make and publish all proper regulations to carry into effect the authority vested in it by the Act; and

WHEREAS, upon the Act becoming effective on May 26, 1922, the Secretary of the Treasury issued instructions to the various collectors of customs forbidding the further importation and exportation of shipment of narcotic drugs until such time as the said Federal Narcotic Control Board could make and publish proper regulations to carry into effect the authority vested in it by said Act; and

WHEREAS, it is deemed necessary and proper that this Association shall, through its Secretary and Legislative Committee, take such steps as may seem advisable to protect the interests of the members of this Association in connection with the issuance of regulations to carry into effect the authority of the Federal Narcotics Control Board as vested in it by said Act;

NOW, THEREFORE, BE IT RESOLVED, that the Secretary and the Legislative Committee of this Association be, and they hereby are authorized, empowered and directed to take all proper and necessary steps to protect the interests of the members of this Association in connection with the issuance of regulations by the Federal Narcotics Control Board to carry into effect the authority vested in it by said Act.

Extending Best Wishes to W. J. Woodruff

WHEREAS, it was with sincere regret that this Association in Annual Convention assembled, learned of the untimely illness and unexpected resignation of W. J. Woodruff, who for several years past has served it faithfully in the capacity of Secretary,

NOW, THEREFORE, BE IT RESOLVED that this Association desires to extend to Mr. W. J. Woodruff its sincere wish for a speedy and complete recovery from his untimely illness, and success in any new venture in which he engages.

Counsel Emeritus

WHEREAS, Charles M. Woodruff has, since the inception of this Association rendered to it faithful service of inestimable value in various capacities and has for the several years last past been Counsel and Chairman of the Legislative Committee of this Association; and

WHEREAS, after over forty years of active work in behalf of pharmacy Mr. Woodruff should, on account of the state of his health,

be relieved from the burdensome duties of Counsel and Chairman of the Legislation Committee of this Association;

Now, Therefore, Be It Resolved:

1. That this Association in Annual Convention assembled desires to extend to Mr. Woodruff its sincere appreciation and thanks for the faithful work and services of inestimable value rendered to this Association in the various capacities in which he has been connected with it and express the hope that future years hold in store for him happiness and good health.

2. That the office of Counsel Emeritus be, and is hereby, created.

3. That Charles M. Woodruff be, and he is hereby, elected Counsel Emeritus.

Appreciation of Work of Dr. R. P. Fischelis

Whereas, Dr. R. P. Fischelis has rendered to this Association invaluable service in keeping the drug trade constantly informed of the ideals and accomplishments of this Association,

Now, Therefore, Be It Resolved that this Association in annual convention assembled, desires to extend to Dr. Fischelis its sincere appreciation and thanks for the invaluable services rendered to this Association by keeping the drug trade constantly informed of its ideals and accomplishments.

Effective Date of Revised Annual Dues

Resolved, that the annual dues provided for in Article II of the Constitution of this Association as amended, shall become effective and payable on July 1, 1922.

Testimonial of Appreciation of the Services to Scientific Pharmacy During A Long and Useful Life of Dr. A. B. Lyons.

Whereas, Dr. A. B. Lyons has during a long and useful life devoted his talents successfully to the solution of the problems of the chemical assay of Drugs in which work he was one of the pioneers together with A. B. Prescott and others, and

Whereas, every pharmaceutical chemist appreciates the real merit of the pioneer work done by Dr. Lyons in the days when pharmaceutical assaying was in its infancy, and

Whereas, this Association deems it advisable to give expression to these sentiments during the lifetime of Dr. Lyons, rather than after his life's career is ended, therefore be it hereby

RESOLVED, that the members of the American Drug Manufacturers' Association convey to Dr. A. B. Lyons their feelings of appreciation and gratitude for the eminent services which he has rendered scientific pharmacy and as well their wish that his life and usefulness may be for some time preserved so that his talents may yet develop more of the useful and helpful thoughts and methods which in years gone by he has in the modest volumes made available for his fellow workers in scientific pharmacy, and be it further

RESOLVED, that a copy of these resolutions be sent to him with the greetings and cordial wishes of the Association.

PART II

Abstracts from Meeting of the Scientific Section

THE STATUS OF THE U. S. P. REVISION

Address Delivered Before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8, 1922.

By Professor E. Fullerton Cook

Chairman, Revision Committee, United States Pharmacopoeia

Mr. Chairman and Members of the Scientific Section of the American Drug Manufacturers' Association: It is indeed a pleasure to be permitted to attend a session of this Association and I regret only that it will be impossible for me to remain throughout all of your scientific discussions. I know that if this were possible I would learn many new and interesting angles of the U. S. P. revision.

It is the honest application of scientific facts which gives to the Pharmacopoeia its practical value to physicians and pharmacists and its protective value to the public.

Such a report as we have just heard on Pepsin is illustrative of the need for more scientific study of established remedies. The Pharmacopoeial Committee cannot conduct this kind of work unaided; it must utilize the experience and record of scientific workers everywhere. Private laboratories, colleges, government bureaus, and especially the research departments, associated with manufacturing firms, contribute to the common knowledge. Some of the most valuable suggestions are those reported by the latter since a business house must satisfy the customer and is compelled to find a practical solution of each problem which arises.

To discuss the status of the Pharmacopoeial revision at its present stage is somewhat embarrassing because publicity cannot be given to many subjects which are yet under discussion. The Committee must of itself arrive at decisions, by considering the available evidence, before inviting public discussion. The Committee, however, has adopted a policy of liberal publicity after decisions have been reached.

I am therefore able to place some important conclusions before you, and will also invite your discussion of several questions yet undecided but on which the members of this Association are specially qualified to give assistance.

The tenth revision of the Pharmacopoeia is making gratifying progress. That conventional statement gives about as much information on "status" as an address of many pages is likely to convey.

The fact is that no matter how intimately associated one may be with the revision, it is impossible to predict the time when all problems will be settled and the book ready for publication.

There are of course definite stages to the revision but these overlap and it is not until the last question is satisfactorily answered that the printing order may be given.

When the new Committee meets, there must first come the organization of the General Committee and of Sub-committees, then the early decisions on admissions, giving work to all Sub-committees and calling for the detailed study, by Sub-committee members, of texts and individual questions. Questions of policy, guiding principles and many general questions must be settled. Following this, the first drafts of new texts for Sub-committee study must be outlined, then the Sub-committee reports in partly edited forms, for the study of the General Committee members, followed by their comment and criticisms, properly compiled, and lastly the publication in the medical and pharmaceutical press of abstracts of proposed changes. The preparation and editing of copy can only be undertaken when each text has passed through the preliminary stages just outlined and after that the galley, page proof, and plate proof must be handled before the printed book is produced.

Some texts have been carried through to the final editing stage but naturally a few articles which will be in the U. S. P. X have not yet even been admitted.

It is planned that the abstract of changes for a number of texts will be prepared during the next two months and will be available for discussion at the August meeting of the A.Ph.A. when a session of the Scientific Section will be reserved for U. S. P. symposium.

The question of admissions and deletions is, however, well in hand and a word about this may be of interest. As probably everyone familiar with the revision already knows, the decisions on the scope of the new Pharmacopoeia were left largely to the Sub-committee on Scope. This consisted of the seventeen physicians selected by the medical members of the Convention, and subsequently elected to the Committee of Revision, the President of the Convention, a physician, and three pharmacists, a total of twenty-one members.

The decisions, so far as reached by this Sub-Committee, were published in medical and pharmaceutical journals several months ago and comments were invited from any one interested in the subject.

All comments received have been circularized in the General

Committee and are now to be considered by a special referee committee, consisting of all members of the Revision Committee who hold an M.D. degree and the report of this special committee is final. This Referee Committee is just being organized.

The report of the Sub-committee on Scope, as originally published, does not, of course, in its entirety, please everyone. There are those who believe that too large a list has been admitted while others see favorite drugs or articles largely used in their neighborhood, among those not admitted. This result is inevitable where the practice of so large a number of physicians is involved and the final conclusions on Scope are among the most difficult questions to settle in the work of revision.

Alcohol

While the present paragraph in the Preface of the U. S. P. IX, authorizing a modification of official processes on a manufacturing scale, if the finished products are identical, has been interpreted to cover the use of a suitably denatured alcohol in the manufacture of those preparations in which no alcohol remains in the finished product, as pilular or powdered extracts, yet this practice will doubtless be specifically authorized in the new book.

It is hoped that the Government officials have been convinced that premedicated alcohol for use in manufacturing preparations for internal administration is impracticable.

Biological Assays

This method of assay which has been on probation in the U. S. P. IX, has proven its value where chemical assay methods are not available.

It has been suggested that to insure greater uniformity in strength when in the hands of various operators, that one of the Government laboratories be requested to supply standard samples against which private laboratories may check their preparations.

This would largely overcome the errors due to variations in the susceptibility of the test animals and in differences in the experience and skill of operators.

If it is decided that this course is desirable, it is likely that those having large experience in this field, whether in Governmental, teaching or private laboratories, will be invited to a conference to determine the character of these standards.

Volatile Oils

Copies of the proposed texts on Volatile Oils for the U. S. P. X will be placed in the hands of dealers and producers of volatile oils in the next few days and they will be invited to comment upon the text and even attend a hearing, if they so desire.

Trade Marked Preparations

The policy of the U. S. P. X on this question is as follows:—The Board of Trustees consider it wise to admit any protected substance that the Sub-committee on Scope may recommend and the Committee of Revision may accept, but proprietary or trade-marked names shall not be used either as titles or synonym in any case in which the patent has not expired, appropriate titles being selected for these substances.

In the case of substances, the patent upon which has expired, the Committee may in its discretion use the trade-marked name as a synonym, provided there is identity of composition but the trade name must not be used as a title without the written consent of the parties claiming ownership.

Affiliation With Foreign Pharmacopoeial Commissions

During the year just closed, interesting correspondence has been conducted with foreign pharmacopoeial commisions, a most gratifying response following an offer to cooperate.

The proposed texts are being sent confidentially to a number of those committees which are actively conducting revisions and the suggestion that an International Secretaryship on Pharmacopoeias be established at the Hague is receiving renewed interest.

The Chinese Pharmacopoeia

A recent letter from Dr. Carl Crow tells of unexpected delays in the completion of the transalation of the U. S. Pharmacopoeia into the Chinese language and in the meanwhile, the U. S. Board of Trustees have authorized the use of the U. S. P. X text for this purpose if Mr. Crow can await the proofs.

Methods of Revision

During the revision many interesting, scientific questions have arisen, such as shall Cantharidin replace Cantharides, shall the so-called "Mexican Scammony" be recognized, can a satisfactory general text be established for a silver salt of the Argyrol type, what standard is available for Hypophysis, how describe and fix degrees of turbidity, will color charts be of value, what ash standards should be adopted for drugs, etc.

These cannot here be discussed in detail and in fact they are the problems for the experts in the particular Sub-committee involved and it is hoped that Sub-committee Chairmen will have an opportunity to present reports on some of these subjects before scientific bodies during the coming year.

At best, however, pharmacopoeia revisions offer little opportunity for original research, it requires the collation of published scientific facts and investigations, which have been tested and proven and to that degree lacks the thrills of research and discovery, but a function of pharmacopoeial activity must increasingly be that of farthering and stimulating true research that there may be available for the future, the necessary proven facts upon which to base judgments in establishing standards and this spirit closely links the work of your own Committee on Papers and Queries from which, in times past, so many valuable suggestions for the revision of both the U. S. P. and N. F. have come.

Section Expresses Desire to Cooperate With U. S. P. Revision Committee

Dr. Dohme: I would like to offer a resolution, Mr. Chairman, that it is the sense of this Section that it expresses its desire to cooperate in any way that may be desirable with the Revision Committee in the matter of approximate assays and holds itself subject to the call of the Chairman at any time that be may desire.

The motion was seconded by Dr. Snyder and carried.

Vote of Thanks to Professor Cook

Dr. Dohme: It gives me great pleasure, Mr. Chairman, to offer a vote of thanks to Professor Cook on behalf of this Section for his kindness in coming here and for the very complete and lucid explanation that he has given of the present status of the revision.

The motion was seconded by Dr. Fenger.

Chairman Proctor: It has been moved and seconded that we give Professor Cook a vote of thanks, and I would like to add that we make it a rising vote of thanks.

All arose and applauded—Professor Cook, we certainly appreciate your being with us.

Professor Cook: Thank you very much indeed, and I am only glad for the opportunity of being here.

ACETYLSALICYLIC ACID

Report of the Subcommittee on Acetylsalicylic Acid read before the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5–8, 1922.

Acetylsalicylic Acid Tablets

Free Salicylic Acid Determination

The following method has been given a thorough trial by the committee and has given such results that we prefer it to any known procedure, both from the standpoint of rapidity and reliability.

Standard Salicylic Acid: REAGENTS

Salicylic acid	0.100	gram
Alcohol	10	cc.
Acetic acid (glacial)	0.04	cc.
Water (to make)	1000	cc.

Iron Solution:

Ferric ammonium sulfate	0.500	gram
Normal sulfuric acid solution	10.0	cc.
Water (to make)	500	cc.

Alcohol:

95 per cent, neutralized if necessary. A satisfactory grade is Denatured Alcohol, Formula 30.

APPARATUS

2—100 cc. graduated cylinders (matched as to color of glass)
2—Mohr's pipettes 10 cc. in 1/10's
1—Mohr's pipettes 1 cc. in 1/10's

PROCEDURE

Crush one 5 grain tablet, equivalent (closely approximate) to 0.3 gram of acetylsalicylic acid, transfer to a 100 cc. cylinder and shake with 3 cc. of alcohol. Dilute with water to 90 cc. and filter through a rapid, folded filter paper.

Divide the filtrate, 30 cc. in one cylinder and 60 cc. in the other. To the lesser volume add 1 cc. of alcohol and dilute to 60 cc. with water. To each cylinder add 5 cc. of iron solution.

Match the color of the larger portion by adding standard salicylic acid solution to the smaller from a pipette. The amount of salicylic acid required is obviously equivalent to that present in 0.1 gram of the

sample. Therefore each cc. of the salicylic acid solution used corresponds to 0.1 per cent.

For more accurate work it is advisable to repeat the test adding at one time the amount of salicylic acid indicated as necessary by the preliminary test. Tests should be carried on as rapidly as possible, 3 to 4 minutes being sufficient for the entire manipulation.

Notes

(1) It is possible that the amount of iron solution indicated above may not be sufficient for some samples. With tablets of which the approximate salicylic acid content is not known it is well to prove the presence of an excess by adding more iron solution to the larger portion.

(2) In testing tablets unusually high in free salicylic acid it may be necessary to make a double dilution. For example make the original volume 100 cc., take half of this, dilute to 90 cc. and proceed as given. In this case, however, 1 cc. of standard salicylic acid used will correspond to 0.2 per cent of free salicylic acid in the sample.

(3) In testing tablets low in free salicylic acid, say less than 0.15 per cent, it is advisable to use two tablets and twice the volume of alcohol specified but otherwise retaining the above procedure. Each cc. of standard salicylic acid solution used will then correspond to 0.05 per cent free salicylic acid in the sample.

(4) Deterioration of the standard salicylic acid solution has been observed by at least two members. Errors in results due to this condition should be guarded against. When kept stoppered and away from the light a solution is stable for at least two weeks.

Deterioration of Acetylsalicylic Acid Tablets

Development of a standard formula for tablets, including a study of the rate of deterioration. Five samples of tablets representative of the trade product were secured by Secretary Woodruff and submitted to the committee in February, 1921. These have therefore been under observation for more than a year and at the time of the last examination were probably 12 to 15 months old. The results of this work are shown in Table I. Two of the samples, Nos. 1 and 3 are quite stable. The others, especially No. 2, show a more rapid rate of deterioration.

Cooperating with the committee on Diluents and Excipients, six lots of tablets were prepared by as many different manufacturers, but all from the same lot of acetysalicylic acid and on the following formula:

"Mix the acetylsalicylic with 1 per cent by weight of powdered stearic acid. Compress into tablets of about 20 grains each. Rub the tablets through a No. 8 brass sieve and add to this granulated material 25 per cent by weight of corn starch. Recompress 6¼ grains on a 13"/32 punch with no further addition of any sort."

These tablets have been examined at frequent intervals by several members of the committee with the results as shown in Table II.

Recently we have also taken up the study of the effect of pressure and of diluents on decomposition. For this work a crystalline acetylsalicylic acid was used which flowed to the tablet machine without previous treatment (i. e. without granulation or pre-compression). The tablets made in this manner have only been under observation for a month. The data given in Table III is therefore preliminary.

In commenting on the results obtained in our work on tablets, sample 2, Table I, and sample D, Table II, are excluded from consideration other than to state that No. 2 has obviously deteriorated at a rate much faster than the average and from the appearance and odor of sample D, as well as the more rapid deterioration, the formula on which it was to be made was not adhered to strictly.

It is indicated by our work that deterioration is continuously though not always uniformly progressive. The time factor is therefore of importance in establishing any limiting standard.

Thus the average free salicylic acid content of the commercial tablets at the time of the first test (Table I) was 0.1 per cent, in five months 0.25 per cent, and after twelve months 0.5 per cent.

Similar figures for the tablets made on a uniform formula by the pre-compression method (Table II) show approximately 0.1 per cent soon after manufacture and 0.2 per cent after six months. Dealing with average figures therefore the claims made for the stability of tablets made by the pre-compression method appear to be well grounded. Only tablets Nos. 1 and 3 of Table I, show a comparable stability and the latter may have been made by the pre-compression method also.

It is a fact, however, as demonstrated by the results appearing in Tables II and III, that the acetylsalicylic acid used for tablets or tablets pressed from this material without the addition of any diluent show practically no deterioration at all. The particular acetylsalicylic acid used for the tablets A to F, inclusive (Table II), was made in November, 1920, and has therefore been under observation for at least fourteen months without any more of an increase in free salicylic acid than may be accounted for by experimental error.

Referring to the preliminary data given in Table III, it is evident that pressure has but slight influence on deterioration. Whether moisture in the starch or flour, a slight variation from neutrality of the diluent or some other factor entirely is the cause of decomposition is not known. The data is too meager for any conclusion on this point and we suggest continuing the observations. It may be of value, for example, to study the effect of the slight difference in reaction of the diluents from the standpoint of hydrogen or hydroxylion concentration.

Two members have suggested the adoption of a tentative maximum limit for free salicylic acid in commercial tablets of 0.5 per cent. On putting the matter to a vote the majority favored holding the subject open for discussion at the annual meeting.

Incompatibilities of Acetylsalicylic Acid

Through the questionnaire distributed last year by the Secretary, a list of a number of alleged incompatibilities was obtained. Several of these have been investigated on assignment by the Chairman to individual members of the committee. Partly as a result of this work but to a greater extent from published data, Table IV has been compiled.

Difficulty has been experienced in obtaining reports on this problem, owing to a considerable degree, we suspect, to the fact that chemical staffs have been reduced during the last year. The present table therefore would bear amplifications and some further work with regard to points on which sufficient data has not been obtained.

Recommended U. S. P. Text for Acetylsalicylic Acid

Recommendation to the Revision Committee for U. S. Pharmacopoeia, tenth edition:—The text as proposed for admission of acetylsalicylic acid to the next edition of the U. S. P., as approved by this committee at the last annual meeting, has been slightly amended by the deletion of the paragraph referring to resinous impurities.

> "1.0 gram dissolved in alcohol and evaporated to dryness in a dish protected from dust should give a perfectly white crystalline residue and no colored ring around the edge of the residue."

This action was taken on vote of the committee when it was found through actual experience that the test would furnish a potential source of dispute between buyer and seller without producing any determinable improvement in the product. This is also in accord with the intention of the U. S. P. Revision Committee to eliminate, wherever possible, such tests as are indefinite.

Table I

Free Salicylic Acid in Acetylsalicylic Acid Tablets

Five samples representative of the trade product. Dates of manufacture assumed to be from October, 1920, to January 1, 1921.

Tested By	Date	1	2	3	4	5	Average for Nos. 1, 3, 4 and 5 (omitting 2)
		Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Bengis	July, 1921	0.10	Exceeds 0.2[1]	0.15	Exceeds 0.2[1]	Exceeds 0.2[1]	.....
	October, 1921	.....	Exceeds 0.2[1]	Exceeds 0.2	Exceeds 0.2[1]	Exceeds 0.2[1]	.....
	December, 1921	.....	Exceeds 0.2[1]	Exceeds 0.2	Exceeds 0.2[1]	Exceeds 0.2[1]	.....
Ritch	July, 1921	0.10	0.26	0.13	0.29	0.21	0.18
Heyl	March, 1921	0.12	0.45	0.15	0.34	0.17	0.20
Bebie	February, 1921	0.07	0.55	0.08	0.15	0.10	0.10
	March, 1921	0.09	0.55	0.16	0.29	0.22	0.19
	July, 1921	0.14	0.80	0.20	0.50	0.30	0.29
	October, 1921	0.18	2.00	0.25	0.50	0.60	0.38
	January, 1922	0.23	2.80	0.30	0.60	1.00	0.53
Tested	February, 1921	.....	.....	.....	.....	.....	0.10
	July, 1921	.....	.....	.....	.....	.....	0.24
	January, 1922	.....	.....	.....	.....	.....	0.53
Color	.....	Nearly white	Pinkish	Nearly white	Nearly white	Nearly white	.....
Odor	.....	Starchy	Acetic and starchy	Starchy	Starchy	Very sharp acetic	.....
Physical Appearance	.....	Good	Good	Good	Good	Good	.....

[1] Quantitative data not given.

Table II

Free Salicylic Acid in Acetylsalicylic Acid Tablets

Tablets made by six representative manufacturers from the same lot of acetylsalicylic acid and using the same formula.

Tested By	Date	A	B	C	D	E	F	Acetylsalicylic Acid Used For Tablets	Average A, B, C, E and, F (Omitting D)
		Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.
Bengis..	July, 1921.....	0.02	0.08	0.05	Exceeds 0.2[1]	0.10	0.05	0.03	0.07
	October, 1921..	0.20	0.15	0.10	Exceeds 0.2[1]	0.20	0.15	0.03	0.16
	December, 1921	Exceeds 0.2[1]	0.15	0.15	Exceeds 0.2[1]	Exceeds 0.2[1]	0.15	0.04	.....
Fiske...	August, 1921...	0.14	0.06	0.05	.....	0.05	0.04	....	0.07
Ritch...	August, 1921...	0.25	0.11	0.10	0.29	0.20	0.18	0.07	0.17
Heyl....	September, 1921	0.15	0.11	0.10	0.20	0.09	0.08	.. ..	0.11
	February, 1922.	0.20	0.12	0.16	0.27	0.24	0.13	0.05	0.17
Hoskins.	July, 1921.....	0.20	0.15	0.12	0.35	0.20	0.10	....	0.15
	October, 1921..	0.25	0.17	0.13	0.40	0.20	0.13	0.05	0.17
	January, 1922..	0.25	0.17	0.14	0.41	0.20	0.12	0.05	0.18
Bebie...	July, 1921.....	0.12	0.03	0.07	0.20	0.09	0.04	0.04	0.07
	October, 1921..	0.22	0.13	0.13	0.60	0.17	0.09	0.04	0.15
	January, 1922..	0.26	0.17	0.16	0.60	0.22	0.10	0.04	0.18
Tests made to and including:	August, 1921...	.....	.....	.....	.....	.....	.....	....	0.09
to	December, 1921 January, 1922..	.....	.....	.....	.....	.....	.....	....	0.18
Color....	.....	Sl. Yellowish	White	White	Mottled	White	White	White	.....
Odor....	.....	Sl. Starchy	Prac. None	Prac. None	Perfumed	Prac. None	Prac. None	None	.....
Physical	*Appearance*....	Some capping	Fair	Good	Good	Fair	Fair	.....	.....

[1] Quantitative data not given.

Table III

Free Salicylic Acid in Acetylsalicylic Acid Tablets

Tablets prepared from crystalline acetylsalicylic acid which was fed directly to the tablet machine without granulation or pre-compression.

Tested By	Date	Diluent							Acetylsalicylic Acid (Crystals)
		Corn Starch	Dried Corn Starch	Potato Flour	Dried Potato Flour	Rice Flour	Dried Rice Flour	No Diluent Used	
		Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent.	Per Cent,
Bengis....	April 5, 1922.....	0.08	0.03	0.08	0.03	0.10	0.03	.....	0.03
	April 14, 1922.....	0.20	0.06	0.10	0.05	0.18	0.05	.....	0.03
Heyl.....	April 5, 1922.....	0.12	0.07	0.09	0.05	0.11	0.05	.....	0.04
	April 15, 1922.....	0.11	0.055	0.11	0.057	0.12	0.045	.....	0.05
Bebie.....	February 2, 1922....	.....	.....	.....	.....	.....	.....	.....	0.03
	March 22, 1922.....	0.08	0.04	0.05	0.04	0.05	0.05	0.035	0.03
	April 15, 1922.....	0.12	0.05	0.08	0.05	0.07	0.05	0.035	0.03
Loss on drying of diluents (5 hrs. 103–105° C).....		10.8	None	14.9	None	9.0	0.06	.....	.....

Incompatibilities of Acetylsalicylic Acid

Alleged Incompatible	Reference	Conclusion or Recommendation of This Committee	Remarks
Chemical Incompatibilities (General)			
Water; Moist air; hygroscopic substances or those having water of crystallization	Various text books and current literature	Incompatible	
Alkalies			
Hydroxide Carbonate Bicarbonate	Various text books and current literature	Incompatible	
Acids (Encountered principally as citric, malic, tannic, oxalic, etc. as constituents of drugs such as: Cassia Sassafras Cascara	A. D. M. A. questionnaire	No report	Assigned to Dr. Fiske for investigation
(1)Acetanilid	A. D. M. A. questionnaire	No report	Assigned to Dr. Schaefer for investigation
Alkalie Acetate	Pharm. J. 1911 P. 643	Incompatible	
Alkalie Citrate	J. A. M. A. 1922 P. 275	Incompatible	

Incompatibilities of Acetylsalicylic Acid (Cont.)

Alleged Incompatible	Reference	Conclusion or Recommendation of This Committee	Remarks
(1) Ammonium Chloride	A. D. M. A. questionnaire	No report	Assigned to Mr. Hoskins for investigation
Iron Salts	Various	Incompatible	
(1) Phenacetin	A. D. M. A. questionnaire	No evidence of incompatibility	Assigned to Dr. Bebie for investigation
(1) Phenolphthalein	A. D. M. A. questionnaire	Slight if any evidence of incompatibility. Slight acetic odor and increase of free salicylic acid from 0.02 to 0.03% only within 10 months	Assigned to Dr. Bebie for investigation
Quinine	Various; particularly U. S. Disp. XX, P. 19 and J. A. M. A. 1921 P. 999	Slowly developing incompatibility but no toxic compound formed	
(1) Salol	Anonymous	No evidence of incompatibility	Assigned to Dr. Bengis for investigation

Note:—(1) Should be referred to a tablet manufacturer for checking a possible mechanical difficulty.

Incompatibilities of Acetylsalicylic Acid (Cont.)

Alleged Incompatible	Reference	Conclusion or Recommendation of This Committee	Remarks
Antipyrine	A. D. M. A. questionnaire	Incompatible developing of odor and slight yellow color when mixed in the dry state. In presence of a little moisture, decomposition takes place immediately as indicated by strong odor and decided yellow color.	Assigned to A. L. Ritch
Hexamethlene tetramine	A. D. M. A. questionnaire		No assignment

During the chairman's six months' absence from this country in the latter part of 1921, Mr. L. A. Watt has been in charge of the committee. While the chairman has been keeping in close touch with the situation since his return, Mr. Watt has continued to handle the active chairmanship and his skill and untiring work in the performance of this duty is herewith gratefully acknowledged.

Jules Bebie,
Chairman, Sub-Committee on Acetylsalicylic Acid.

Condensed report of Sub-Committee on Acetylsalicylic Acid of the American Drug Manufacturers' Association, as presented before the Scientific Section, Hotel Biltmore, New York, June 5, 1922.

Problems

The work of this sub-committee has covered the two general problems carried from last year, namely the examination of commercial tablets of acetylsalicylic acid, looking toward the setting of a limit on the free salicylic acid content, and second the compilation of a list of incompatibilities of acetylsalicylic acid.

Tablets

As a necessary part of the tablet work a method of examination was tried out thoroughly and has been approved by the committee.

In the observations on commercial tablets the rate of deterioration was noted as indicated principally by the increase in free salicylic acid. Thus, of five samples secured through Secretary Woodruff and submitted without the manufacturers' names, 4 samples contained an average of 0.10 per cent free salicylic acid in February, 1921; 0.24 per cent in six months and 0.53 per cent in a year. The fifth sample not included in the above average contained initially 0.55 per cent and after one year nearly 3.0 per cent.

Reference to our table "I" shows that two lots of tablets did not exceed 0.30 per cent free salicylic acid within a year thus indicating clearly that some manufacturers have the problem of stability well in hand while others are not out of the woods.

Special Tablets

Co-operating with the sub-committee on Diluents and Excipients six members prepared a set of tablets on a uniform, precompression formula, all using a portion of the same lot of powdered acetylsalicylic acid. The results of our observations of the stability of these tablets

are given in table II, and show that an excellent tablet can be prepared by this method.

Observation for a longer period may be desirable but the greater stability of the tablets made by the precompression method over those now put out by certain manufacturers recommended the method especially to those individuals.

Further experimentation was begun using crystalline acetylsalicylic acid which flowed directly to the tablet machine without either granulation or precompression. Two months' observation of such tablets made with dried starches, indicates a maximum increase of free salicylic acid of 0.04 per cent initially to 0.06 per cent. These results, from acetylsalicylic which itself contains 0.03 per cent free salicylic acid, deserve continued observation.

Incompatibilities

In attempting to compile a list of incompatibilities difficulty has been experienced in obtaining reports, owing to a large degree, we suspect, to the fact that chemical staffs have been reduced during the last year.

A report of progress is made, however, showing such incompatibilities, chemical, physical or therapeutical, as came to our attention or were tested out by our committee. In addition to those listed in our detailed report we can add as a result of further work in the chairman's laboratory

Acetanilid
Hexamethylamine

both of which are found to be incompatible. Perhaps others can report at this session.

L. A. Watt,
Acting Chairman Sub-Committee on Acetylsalicylic Acid.

Discussion by Membership

Limit of Free Salicylic Acid in Tablets Acetylsalicylic Acid

Mr. Watt: In any discussion which may arise on this report, a question which will undoubtedly occupy an important position will be the setting of a limit, or at least a tentative limit, for free salicylic acid in tablets, and we have presented some data to indicate what that limit should be.

Chairman Proctor: I think one of the striking points that comes

out in this report is that the amount of free salicylic acid in the tablet where no diluent is used is practically the same as in the orginal substance. This would tend to show that it was not pressure alone or defect in the manipulation of the substance that caused the gradual breaking down of the acetyl. I don't know as there can be anything of value brought out or deduced from that observation, but it certainly shows that it is not simply manipulation of the substance that does it. The Committee has reported that it might be the alkalinity or acidity of the diluents, but we don't yet know enough about the making of acetyl tablets to prescribe a very close limit of free acid. That is the way I feel about it; and I think that 0.5 per cent is not an unreasonable quantity to adopt as a limit.

Mr. Watt: *Mr. Chairman,* 0.5 per cent is certainly not too high. In view of the fact that the commercial tablets show a progressive deterioration over a given period the time factor is important, and that is the reason I should hesitate to set a limit quite as low as 0.5 per cent based on the data in hand. I should fear even a remote possibility of having to revise the standard upward, and of course it would be much more desirable to revise it downward a year from now than to be forced to raise it. Both the precompression formula (the data on which was given in our Table II and Table III) to which Professor Proctor just referred indicate that we can ultimately make our standard much lower than 1.0 per cent so that I should call that figure conservative.

Dr. Heyl: In looking over the results as they are tabulated here, I thought that we could accept five out of six samples as representing a fair illustration of what we might accept as the composition of tablets made under commerical conditions. I think the second sample which increased from 0.55 per cent to 2.8 per cent probably should be ruled out as being an unfair sample. There is another one there which increased from 0.1 per cent to 1 per cent. That is possibly also a doubtful product but in view of the fact that there are several there that approached 1 per cent, it seemed to me that 1 per cent was an allowable limit as the conditions are today.

I thought one point which ought to be made in connection with setting any limit was that if we set a limit we should also state a time for which the limit applies; that is, all these results were obtained in a period of one year, so I think it would be fair to conclude from these results as they stand that 1 per cent should be placed as a limit

for a one year period. I firmly believe that the tablets will all continue to deteriorate along this line as time goes by.

I also believe, since this matter has been brought up for the study of this Committee, that the general commercial conditions will show some improvement. Possibly if the work of the Committee were continued we would be able to revise any opinion that we might have at this time; it might be we could revise this limit downward to one-half of a per cent, but under present conditions I would say we ought to concur in an opinion which is based upon the facts as they are found and in a liberal interpretation, one that we can readily live up to, rather than an ideal one which would be a subject of discussion. I would say that a fair interpretation of these results would be a 1 per cent limit in a tablet which is one year old.

Chairman Proctor: Dr. Heyl's statement is undoubtedly true: Since the Committee has been studying acetylsalicylic tablets, the quality has gone up, because the manufacturers have been alive to the situation. Under these conditions it may be unnecessary for the Section to take any definite action. Yet, if it is the sense of the Section that we should pass a resolution that we approve a standard as not to exceed 1 per cent in one year, it would be in order to do so.

The motion was made, seconded and carried unanimously.

ACONITE

Report of the Subcommittee on Aconite read before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8, 1922.

The work of this committee has shown that a chemical assay of aconite is untrustworthy because of the difficulty of separating the saponification products of aconitine always more or less present in the drug from the aconitine. We have usually weighed a variable amount of benzoyl-aconine and some aconine as aconitine which is faulty in itself and doubly faulty because of the variable amounts of these two products at different times.

Results of Last Year's Physiological Assay

We recommended that the physiological assay be given a fair trial and based that recommendation upon the results obtained last year and reported to this section by Dr. A. L. Walters of our committee, and which indicated enough agreement to warrant the hope that further experiments would show that in the hands of various operators results would be secured that would show a fair deree of agreement among themselves. Thus the M. L. D. of aconitine cryst. in gm. per gm. weight of guinea pig as determined by five members was:

		F. E. Aconite Root
Eli Lilly Co.	0.0000000625	0.000275
Norwich Pharmacal Co.	0.0000000510	0.000360
Parke, Davis & Co.	0.0000000600	0.000300
Sharp & Dohme	0.0000000625	0.000300
Upjohn Company	0.0000000600	0.000266

And the same applied to a Fluidextract Aconite Root as given in the second column above verified this agreement. Results agreeing thus closely are satisfactory and can be made the basis of an essay process by pharmaceutical chemists.

The Method Employed

The method used in making these assays was to dilute 1 cc. fluidextract to 10 cc. with 50 per cent alcohol. Use 300 to 400 gm. guinea pig and calculate the dose per pig and dilute this with normal salt solu-

tion to a total volume of 1.5 cc. per pig. Inject this into the subcutaneous tissues of the abdomen and take as a lethal dose the smallest amount which will kill within 24 hours.

For the Aconitine—dissolve 0.1 gm. to 100 cc. of 2 per cent acetic acid. Dilute 1 cc. of this solution to 10 cc. with distilled water giving a 1:10000 solution of aconitine. Calculate the total dose required for a pig of 300 to 400 gm. and dilute with normal saline solution to a sum total of 1.5 cc. and inject as for the Fluidextract Aconite. Approximately 0.000000005 per gram is usually the lethal dose.

Results of This Year's Assay

Accordingly a new sample of a fluidextract aconite root and of a powdered extract aconite root were sent to all the members of the subcommittee with the request to try the above method upon the aconitine sent last year, the old fluidextract sent last year and the new fluidextract and powdered extract sent this year.

The results are given below:

	Aconitine	F. E. (Old)	F. E. (New)	P. E. (New)	Results F. E. (Old) 1921
Eli Lilly & Co. . . .	0.000000065	0.0000375	0.000025	0.000012	0.0000275
Norwich Pharm. Co.	0.0000000525	0.000036	0.000037	0.00002	0.0000360
Parke, Davis & Co.	0.00000012	. . . . .	0.000025	0.000010	0.0000300
Sharp & Dohme. .	0.00000006	0.0000375	0.00002	0.0000075	0.0000300
Upjohn Company.	0.00000009	0.00025	0.00002	0.000010	0.0000266

Recommendation of the Test Justified

From which develops that the method of assay obtains sufficiently concordant results in different operators' hands to justify the committee in saying that a trustworthy reliable and practicable method of assay of aconite preparations has been found and that they can recommend to this section that this method of assay be suggested to the U. S. P. Revision Committee for adoption as the official assay method of the pharmacopoeia.

Crystallized Aconitine and F. E. Aconite Root Are Stable

There is also an inference to be drawn from these results, viz.: that neither crystallized aconitine nor fluidextract of aconite root appear to deteriorate to any appreciable extent during the period of one year.

Similar Work on Ergot and Digitalis Suggested

If we could work out a similar method for ergot and digitalis it would be quite a desirable thing and with this success scored for aconite assay we should set for ourselves the goal of trying to accomplish as much for ergot and digitalis.

Respectfully submitted,

A. R. L. Dohme, *Chairman,*
F. W. Heyl,
A. L. Walters,
J. M. Francis,
J. P. Snyder.

Assay for Aconite Discussed

Physiological Assay of Aconite

Dr. Dohme: *Mr. Chairman,* this Committee's work practically represents a continuation of last year's and previous year's work and bases itself fundamentally upon results obtained last year by Dr. Walters and several others of the Committee, upon the physiological test of Aconite, and while those results last year were convincing as results, we figured that they should be extended to cover a larger number of operators and for possible further suggestions as to the improvement of the method, and this report practically represents that experience of five operators trying the method and modified forms of the method; and the conclusion is that in the hands of an average experienced operator in physiological assaying Aconite can be assayed to within a reasonable percentage of agreement, certainly much more so than any chemical set of assays of Aconite as yet carried out or worked by a group of operators, and we feel as the result of our experience that the physiological test as laid down in this paper for Aconite and its preparations is sufficiently trustworthy and sufficiently simple to justify us in recommending it for adoption by this Section and recommend to the Revision Committee as the efficient method of standardizing and assaying Aconite. From the comments that we have heard during the year from others than the Committee, we feel that that meets with rather general approval and that Aconite at least is one drug of importance that seems to have been solved as to its control by assay methods.

In order to bring this officially before the meeting and open it for discussion, I move you, sir, that the method recommended by the

Committee and given in this paper for the assaying of Aconite and its preparations be adopted and be recommended to the Revision Committee for its adoption in the next Pharmacopoeia.

Relation Between Chemical Assay and Physiological Assay of Aconite Extremely Irregular

CHAIRMAN PROCTOR: I would like to ask Dr. Dohme if the chemical assay bears any relation to the physiological assay. If the Pharmacopoeia retains an alkaloidal assay and adds a physiological, as it has in some instances, it would defeat the whole purpose, would it not? The chemical assay should be abandoned entirely.

DR. DOHME: Yes, sir. I don't think there is any possible relation except an extremely irregular one, which would have no value between the two, and of course we all know the reason: that the Aconitine does deteriorate by hydrolysis into its constituent products in an absolutely irregular and indeterminable form. Therefore, there is no way of connecting the percentage of Aconitine that may be in the drug at any particular time as compared with what was in it originally, and therefore no possible connection can be made between that method and the physiological, which does determine the amount of Aconitine that is in the drug at the time it is assayed. A double standard, as you suggest, would be self-contradictory and undesirable.

DR. PITTENGER: I would like to add in that connection that we have run comparative tests for practically seven years on both the chemical and physiological test for Aconite and can substantiate exactly what Dr. Dohme said: that we did not find any parallelism existing between the results of the chemical and the physiological assay. We did find, however, that if a sample assayed 100 per cent by the physiological assay, we also found that it was O.K. chemically; but we often found that they were O.K. physiologically but not chemically.

Recommendation of Physiological Assay to U. S. P. Revision Committee

It was voted, upon motion of Dr. Dohme, seconded by Dr. Walters, that the method recommended by the Aconite Committee and given in its paper for the assaying of Aconite and its preparations be adopted and recommended to the Revision Committee for its adoption in the next Pharmacopoeia.

CANNABIS

Report of the Subcommittee on Cannabis read before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers Association, Hotel Biltmore, New York City, June 5-8, 1922.

To determine whether concordant results in assaying fluidextract of cannabis could be obtained, the following procedure was followed:

Manner in Which Test Was Made

Five samples of fluid extract were sent to each of five laboratories. One was a composite sample made from fluid extracts received from the five different firms represented on the committee and this was taken as the standard for comparison and was figured as possessing 100 per cent activity.

Samples 2, 3 and 4 were individual fluid extracts made by three different firms. Number 5 was made from sample No. 4, by dilution to make it 70 per cent as active.

Results of Tests

One laboratory used animals of no uniformity and the results were based on the time it required for symptoms to appear rather than on the minimal dose required to produce symptoms. No percentage figures were given nor could they be estimated and these results are therefore not incorporated in the accompanying table. This laboratory reported that it was unable to detect any difference between samples Nos. 3, 4, 5, that sample No. 2 was slightly more active than these and that no dose could be ascertained for No. 1 which was the sample to be used as the standard for comparison.

The other four laboratories, which may be called A, B, C and D, reported their results in percentages and these are tabulated as follows:

		A	B	C	D
Composite sample.....	#1	100	100	100	100
F. E.....	#2	55	110	136	145
F. E.....	#3	100	65	107	83
F. E.	#4	65	90	200	135
70% F. E.....	#5	80	100	100	95

Unsatisfactory Character of Results

If the cannabis test has any value as a commercial means of assay or standardization, these four laboratories failed to prove it. The evident error in assaying samples No. 4 and No. 5 by two laboratories is difficult to explain. Both found No. 5 stronger than No. 4, when as a matter of fact it had been made by diluting No. 4 so as to be only 70 per cent as active. Whether by accident or otherwise one laboratory actually found No. 5 to be 70 per cent as strong as No. 4 which was its true value. Laboratory "C" broke the first sample of No. 4 specimen and a second sample of the same fluid extract was sent and this was assayed at a much later date. This laboratory found No. 5 to be 50 per cent as active as No. 4.

It is to be remembered that in the U. S. P. there is no standard preparation provided. In the above laboratories a standard was provided in sample No. 1, and yet there was no uniformity whatever in the results obtained.

DR. A. L. WALTERS, *Chairman.*

Cannabis Assay Discussed

Cannabis Assay Should Not be Compulsory

DR. WALTERS: I would like to move, Mr. Chairman, that this Section of the American Drug Manufacturers' Association recommend to the U. S. P. Revision Committee that the present method of cannabis assay and the present standard be retained as an approximate quantitative standard, but that it be made optional and not compulsory.

In explanation of that I would like to say that most of the members of this Committee do feel there is some value in this method and that there are at times different drugs on the market which vary considerably in their activity, and that you can get a relative value of these drugs by this method.

CHAIRMAN PROCTOR: This has been an excellent way to attack the problem of cannabis. We have been worrying with it for several years, but we have here conclusive evidence that it is not an exact assay.

Dr. Walters' recommendation that it be accepted as a qualitative test is what I had in mind also. You can select Cannabis by the present test, and undoubtedly will have a better product, a more uni-

form product, by using the present test as a method of selecting your drug.

DR. DOHME: *Mr. Chairman,* I heartily concur in what Dr. Walters has said and I feel, as you just said, that it would be difficult to get the Revision Committee to retain a standard without retaining its sting.

I would therefore like to amend that motion by adding to it the following: In the present status of our knowledge of cannabis chemistry, the best that can be expected is a result that is not reliable and dependable, and we feel that until the chemistry of cannabis is sufficiently advanced to enable us to get an accurate method, the best that can be hoped for is a method that will vary greatly in the hands of different operators.

CHAIRMAN PROCTOR: Dr. Walters, is that acceptable to you?

DR. WALTERS: Yes, sir.

CHAIRMAN PROCTOR: Are there any further remarks? If not, all those in favor of disposing of the matter in that way please say "aye"; contrary? The motion is carried.

DIGITALIS

Report of the Subcommittee on Digitalis read before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5–8, 1922.

In order to determine which of the various biologic methods of testing digitalis was being employed by the various workers throughout the country, your chairman last year addressed to practically all of the experts throughout the country, the following questionnaire on digitalis:

Last Year's Biological Assay Questionnaire

1. What biologic method do you use in standardizing the Digitalis Series?
2. Give detailed outline of technique employed.
3. What do you consider the principal advantages of the method which you use as compared with other commonly used methods?
4. What method do you prefer?
5. Would you consider it a practical plan not to make any method of assay official, but simply to state the U. S. P. standard in terms, of the most commonly used methods and thus permit the use of any recognized method as a means of standardization?
6. In case this scheme is favored it would be necessary to co-ordinate the different methods of technique so that whatever one is followed, the standard by that method would be equivalent to the standard by any other one.

Assay Methods Employed by Different Workers

The replies received showed that of the various biologic methods employed for testing digitalis preparations, 16 workers employed the "One-hour Frog Heart Method," 5 the "M. L. D. Guinea Pig Method," 2 the "M. L. D. Frog Method," and two the "Hatcher Cat Method."

Wide Variations in Use of Common Method

The number of workers using a method, however, is not necessarily an index to its relative accuracy. It was thought advisable, therefore, that this year our committee do some cooperative laboratory work in order to see if results could be obtained showing the comparative accuracy of the various methods employed.

In cooperative tests which have been made by our committee heretofore, each worker was asked to assay the samples submitted by several different methods. A large variation was usually found in the results obtained.

We are of the opinion that a great deal of this variation has been

due to the fact that the individual worker was asked to carry out tests, using methods which he does not employ in his routine work.

Tests by Regular Method of Each Worker

It is natural that each worker obtains the best results with the method with which he is most familiar and uses daily in his laboratory.

In order to obtain additional information as to the relative accuracy of the proposed methods, the chairman, accordingly sent a set of 3 samples of Tincture Digitalis to each member of the committee. Each worker was requested to assay the samples according *to the method or methods with which he is most familiar and uses in his routine work.*

The relative strength of the 3 samples was to be determined by comparing sample No. 2 and No. 3 with sample No. 1 which was called 100 per cent.

Samples No. 2 and No. 3 were dilutions of No. 1 prepared so that No. 2 was 80 per cent of the strength of No. 1, and No. 3 was 60 per cent of the strength of No. 1. Each set of samples, however, was simply labeled No. 1, 2 and 3, the members of the committee having no knowledge of their relative activity.

The Results Obtained

The results obtained follow:

Sample	Actual strength	"M.L.D. Guinea Pig," (Quici)	"1 Hr. Frog Heart," (Houghton)	"1 Hr. Frog Heart," (Walters)	"M.L.D. Frog," (Houghton)	"Cat" (Houghton)	Fiske	Snyder
#1	100	100	100	100	100	100	100	100
2	80	77.2	67	96.4	89	93	.....	.....
3	60	65.5	57	81.8	64	76	.....	.....

You will note from the above table that differences between results obtained and the actual strength of the samples are as follows:

Method employed	Sample #2	Sample #3
M. L. D. Guinea Pig Method..	2.8%	5.5%
M. L. D. Frog Method.....	9.0%	4.0%
1 Hr. Frog Heart.....	13.0 to 16.4%	3.0 to 21.8%
Cat.....	13.0%	16.0%

Relative Merits of the Different Methods

These limited experiments would indicate that the "M. L. D. Guinea Pig Method" and the "M. L. D. Frog Method" are about equally accurate, and that both are more accurate than either the "'One Hour Frog Heart Method" or the "Cat Method."

Realizing the fact that it is impossible to arrive at definite decisions from such a limited number of tests, your chairman has sent a set of samples to each of eight other workers.

When these results are received, it will no doubt be possible to draw conclusions as to the relative accuracy of the various methods.

The above experiments, however, bring out one important point, i. e., that the greatest variation between the results obtained and the actual strength of the preparation was only 21.8 per cent. When we consider the fact that tinctures of digitalis vary 300 to 400 per cent in activity it is apparent that if properly conducted, digitalis and its allies can be satisfactorily assayed and standardized by either the "M. L. D. Guinea Pig or Frog Method," the "One Hour Frog Method," or the "Cat Method."

Respectfully submitted,

PAUL S. PITTENGER, *Chairman.*

Discussion by Membership

Report on Digitalis Samples No. 1, No. 2, and No. 3

DR. PITTENGER: Since the printed report was distributed I have received the results from Dr. Fiske who reports 100 per cent for sample No. 1, 93 per cent for sample No. 2, and 70 per cent for sample No. 3.

CHAIRMAN PROCTOR: Dr. Pittenger, have you a specific recommendation for the action of the body on the report?

Cat Method of Testing Least Satisfactory

DR. PITTENGER: No, I have not until I obtain the results of the other samples that were sent out.

I feel, however, as stated in the conclusions, that the results obtained by the four workers actually employed in laboratories of manufacturing houses, that if properly conducted any of the four methods are reasonably acurate.

I sent the other four sets of samples to workers who are not connected with the laboratories of manufacturing concerns. I have

just received the results obtained by one of the strongest advocates of the "Cat Method," who in using this method reports Sample No. 3 as 20 per cent stronger than the No. 2, where in fact Sample No. 2 is 20 per cent stronger than Sample No. 3.

These results would tend to substantiate the opinion of most of the members of this Association that the Cat Method is not as satisfactory as the other 3 methods proposed.

I would like to get the opinion of the members of the Association on this question. Lately, there has been quite a bit of publicity given to the "Cat Method" for standardizing the digitalis series. The results of this Committee's work show that it is the least accurate of the four methods proposed and the least adaptable to routine assay work. This being the case, I feel that the Association should go on record by informing the Revision Committee of the U. S. Pharmacopoeia that we are opposed to the adoption of the "Cat Method" as the official method for standardizing Digitalis and its allies.

Minimum Lethal Dose Method Favored

DR. DOHME: *Mr. Chairman,* I think that it might be well in view of what has been said, that we do go on record against the "Cat Method" here officially. If the Chairman of the subcommittee of Biological Assays of the U. S. P. is seriously considering making any method official, provided it meets with standard as given, that might include the Cat Method. Therefore, I think it would be wise for us, in view of what our experience has been, to at least go on record against the Cat Method and if it meets with the approval of the Chairman of that Committee, I will offer a resolution that it is the sense of this Section that the Cat Method is not as good as the Minimum Lethal Dose Method and that therefore we favor the M. L. D. Methods as against the Cat Method.

The motion was seconded by Dr. Pittenger and carried.

Strophanthin From Strophanthus Kombe U. S. P. as Standard

DR. HOUGHTON: There is a question up before the U. S. Pharmacopoeia Revision Committee, the Section on Biological Assays, which perhaps can be mentioned here to advantage. Some are anxious that we should have in the next edition of the Pharmacopoeia a statement that Ouabain should be used as the standard by which to measure the value of the heart tonics of the digitalis series. We have come to believe that we should have a standard that comes from the

U. S. P. Strophanthus Kombe for the following reasons: First, Such a standard, Tincture Strophanthus or Strophanthin, is stable and prepared from an official drug. Second, It can be prepared or obtained in the United States while so far as I know Ouabain is a foreign product, varying in activity as found on the market.

I believe that it might be well for us (if it can be done) to crystallize the opinion of this Section relative to the question of what we should recommend as the standard to be adopted by the U. S. Revision Committee, and if I may, I would offer a resolution to the effect that we would recommend to the U. S. P. Revision Committee, as a standard by which the value of Digitalis and other heart tonics may be measured, Strophanthin or some other product derived from the U. S. P. Strophanthus Kombe.

The motion was seconded by Dr. Pittenger and carried.

DILUENTS AND EXCIPIENTS

Report of the Subcommittee on Diluents and Excipients read before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers Association, Hotel Biltmore, New York City, June 5-8, 1922.

The committee has confined its work for the year to competitive tablets—including compressed lozenges, and in accordance with the suggestions made at the last meeting, has concluded the list of these products.

Explaining the Table

The form of tabulation differs from that previously attempted, in that the figures given are the weight in grains and the diameter in fractions of an inch of the finished tablets.

In the table "Compressed Tablets" the numbers 1 to 12 represent the member houses reporting.

In the lozenge table, the diameter is not given, as lozenges are made in many shapes and no direct comparison is possible.

Conclusions of the Committee

It is the opinion of the committee that:

1. Excipients must in all cases be physiologically inert in the quantities used, and must not be chemically incompatible with any ingredient of the formula in which they are used.

2. When the nature of the ingredients of the products admits, excipients should be limited to: *sugar, starches, powdered organic materials, such as Licorice Root and Althea.*

3. When the product contains oils, waxes or resins, insoluble organic excipients may be used, such as *Calcium Carbonate, Calcium Phosphate, Calcium Sulphate, Magnesium Carbonate, Kaolin, Fullers Earth, Talcum.*

4. When the product contains chemically active substances that preclude the use of sugars, soluble salts may be used, such as *Sodium Chloride, Sodium Sulphate, Sodium Phosphate, Magnesium Sulphate.*

Prof. R. W. Proctor, *Chairman,*
Dr. J. M. Francis,
Dr. A. R. L. Dohme,
Mr. Mortimer Bye,
Mr. J. D. Hoskins,
Mr. W. W. Davies.

Compressed Tablets

	1		2		3		4		5		6	
Absorbent Dyspeptic	6	1/2 3/8	6	13/32			6	3/8 13/32			6	1/2 3/8
Acetanilid 1	1	1/4 7/32	1	1/4 7/32			1	1/5 7/32	1	1/5 7/32		
Acetanilid 2	2	1/2 5/16	2	1/2 5/16			2	1/2 5/16	2	2/5 9/32	2	2/5 5/16
Acetanilid 3	3	1/2 11/32	3	3/4 11/32			3	3/4 3/8	3	3/5 11/32	4	11/32
Acetanilid 4	4	3/4 13/32	5	3/8			5	13/32			5	3/8
Acetanilid 5			6	1/4 13/32	6	7/10 13/32	6	1/4 7/16	6	1/5 7/16	6	1/4 13/32
Acetanilid Co. Aulde			6	1/4 13/32	7	13/32						
Acetanilid & Quinine			6	1/4 13/32			6	1/2 7/16				
Acetanilid & Salol	5	1/2 13/32	6	1/2 13/32	6	9/10 13/32	6	3/10 7/16	6	3/10 3/8		
Acetanilid & Sodium Co	6	13/32	6	1/2 13/32			6	1/5 13/32	5	7/10 3/8		
Acetphenetidin 1			1	3/10 1/4			1	1/4 1/4	1	1/5 7/32		
Acetphenetidin 2			2	3/5 5/16			2	3/5 5/16	2	1/2 9/32		
Acetphenetidin 3	3	1/2 11/32	3	9/10 11/32			3	3/4 11/32			3	1/4 11/32
Acetphenetidin 5	5	1/2 12/32	6	1/2 13/32	6	3/8	6	1/4 7/16	5	4/5 13/32	6	13/32
Acetphenetidin & Salol			6	1/2 13/32	6	13/32	6	3/10 4/10	6	1/2 13/32	6	13/32
Acid Boric 5	5	1/2 13/32	5	3/8	6	3/8 3/8	5	13/32	5	3/8	5	1/10 3/8
Acetyl Salicylic Acid 5			6	1/2 13/32	7	1/10 3/8	6	13/32	6	13/32	5	1/2 3/8
Ammonium Chloride 3			3	5/16			3	5/16	3	5/16	3	9/32
Ammonium Chloride 5			5	3/8	5	3/8	5	3/8	5	3/8	5	11/32
Antacid—Roberts	7	1/2 3/8	8	13/32			8	1/2 7/16	8	1/5 7/16	7	1/2 7/16
Anti Asthmatic—Hare			6	3/8			10	1/10 7/16			6	1/2 3/8
Anti Dyspeptic	3	1/3 5/16			3	3/10 5/16	3	3/5 5/16			3	5/16
Anti Lithia—Dr. Howish							8	7/16	6	7/10 3/8	8	7/16
Aphrodisiac	3	5/16					4	9/10 11/32			2	1/4 5/16
Asafetida 1							1	1/5 7/32				
Asafetida 2	4	5/16					2	1/2 5/16	2	1/10 5/16		
Asafetida 3	5	3/8					3	4/5 11/32	3	1/20 5/16	3	1/4 5/16
Asafetida 4							4	1/2 3/8	4	3/10 3/8		
Asafetida 5	7	1/2 3/8					6	3/10 13/32	5	3/10 3/8		
Asafetida & Nux Vomica							4	3/5 3/8			3	1/2 5/16
Bismuth Subgallate 5	5	1/2 13/32			6	1/10 11/32	6	7/10 3/8	6	1/5 11/32	6	3/8
Bismuth Subnitrate 5	5	1/2 13/32			7	1/10 11/32			6	5/16	6	5/16
Blaud 3							3	1/2 5/16	3	5/16	3	1/4
Blaud 5	5	35/100 3/8			5	15/100 11/32	6	3/8	5	1/10 3/8	5	9/32
Blaud Modified 3							3	1/2 5/16	3	1/2 5/16		
Blaud Modified 5	6	3/8			5	3/10 11/32	6	3/8	5	1/10 3/8	5	9/32
Blaud & Strychnine Co					6	1/5 3/8	6	3/10 3/8				
Blaud & Sumbul Co	6	3/8					4	4/5 11/32			4	9/32
Bronchial	10	1/2	6	1/2 13/32			6	13/32	6	2/5 7/16	5	3/8
Brown Mist. Comp			5	3/8			5	7/10 3/8				
Buchu Comp			9	13/32			10	3/5 7/16			7	3/8
Calcium Lactate 5			6	3/8					6	1/5 3/8	5	1/2 3/8
Cal. Podo. & Soda	5	5/16	4	1/2 9/32			4	1/5 5/16				
Cal. & Soda 2½ ea	6	1/2 11/32	5	1/2 9/32			5	1/5 5/16			5	1/4 5/16

Compressed Tablets—Continued.

	7		8		9		10		11		12	
Absorbent Dyspeptic			6	3/8	7	3/8	6	4/10			5 3/8	
Acetanilid 1			1 1/4	7/32			1 3/5	7/32				
Acetanilid 2	3	5/16	2 2/5	5/16	2 2/5	9/32	2 1/4	5/16	3 1/10	5/16	2 1/4	9/32
Acetanilid 3	4	11/32	3 7/10	11/32	4	11/32	3 1/2	11/32	4 2/5	3/8	3 3/8	11/32
Acetanilid 4			4 9/10	3/8							4 1/2	3/8
Acetanilid 5	6	13/32	6 1/10	13/32			6	4/10	7 4/5	7/16	5 3/4	13/32
Acetanilid Co. Aulde					6	3/8	5 1/2	3/8			7 1/6	13/32
Acetanilid & Quinine	6	13/32					5 1/2	4/10	6	7/16	5 1/2	3/8
Acetanilid & Salol	6	13/32	6	3/8	6	3/8	5 1/2	4/10	6	7/16	6	13/32
Acetanilid & Sodium Co			5 1/2	3/8	6	3/8			6	13/32	6	13/32
Acetphenetidin 1			1 1/2	7/32			1 1/10	7/32				
Acetphenetidin 2			3	9/32	3	5/16	2 1/5	5/16	2 7/10	9/32	2 3/4	5/16
Acetphenetidin 3	4	3/8	3 7/10	11/32			3 3/10	11/32	3 4/10	11/32	4	11/32
Acetphenetidin 5			6 1/2	13/32	6 1/2	3/8	5 1/2	4/10	6 1/2	13/32	6	13/32
Acetphenetidin & Salol	6 1/2	13/32	6	13/32	6 1/2	3/8	5 1/2	4/10	7	7/16	6	13/32
Acid Boric 5	5	13/32	5	3/8	5	3/8	6	4/10	5 1/2	3/8	5	3/8
Acetyl Salicylic Acid 5	6 1/5	13/32	6 1/2	13/32	6 1/4	13/32	6	4/10	6 4/5	13/32	6	13/32
Ammonium Chloride 3			3	5/16			3	5/16	3	5/16	3	5/16
Ammonium Chloride 5	5	11/32	5	3/8	5	11/32	5	3/8	5	3/8	5	11/32
Antacid—Roberts			9	7/16	8	7/16	7 1/2	7/16			8	13/32
Anti Asthmatic—Hare			3 1/10	1/4			4 1/2	5/16	8	7/16	6	11/32
Anti Dyspeptic	3 1/2	5/16	3 1/2	5/16	4	11/32	3 1/5	5/16	3 1/2	5/16	2 1/4	5/16
Anti Lithia—Dr. Howish					8 1/2	3/8	8	7/16	9	7/16	8	13/32
Aphrodisiac	4 1/2	11/32			2 7/10	5/16	2 1/2	5/16	5	3/8		
Asafetida 1	1 1/5	7/32										
Asafetida 2	2 3/10	5/16	2 3/4	9/32	2 1/2	9/32	2 1/2	5/16	2 9/10	5/16	2	1/4
Asafetida 3	3 1/2	5/16	3 3/4	5/16			3 2/5	11/32	4 1/2	11/32	3	5/16
Asafetida 4	4 4/5	11/32									5	3/8
Asafetida 5	6	3/8	6	3/8			6	4/10	6 1/2	13/32	5 1/2	3/8
Asafetida & Nux Vomica			3 4/5	11/32			3 35/100	11/32	4 1/2	11/32	3 1/4	5/16
Bismuth Subgallate 5	6 2/5	3/8	6 1/4	3/8	6	11/32	5 1/2	11/32	8 1/4	3/8	6	11/32
Bismuth Subnitrate 5	6	5/16			7	5/16	6	5/16	8	11/32	6	5/16
Blaud 3	3 1/2	5/16	3 1/5	5/16	3 1/2	11/32	3 1/4	5/16				
Blaud 5	5 4/5	11/32	5 1/4	3/8	5 3/10	3/8	5	3/8			5	3/8
Blaud Modified 3					3 1/5	5/16	3 2/5	5/16				
Blaud Modified 5	5 4/5	3/8					5	3/8	5 4/5	11/32	5	3/8
Blaud & Strychnine Co	6	3/8	5 1/2	11/32	5 1/2	3/8	5 1/2	3/8			5 1/2	3/8
Blaud & Sumbul Co	5	11/32					4 1/5	5/16	4 1/2	11/32		
Bronchial			5	3/8	3	9/32			6 2/5	3/8	4	11/32
Brown Mist. Comp							7	7/16			4 1/2	11/32
Buchu Comp	10 1/2	7/16	7	3/8					8	3/8	7 1/2	3/8
Calcium Lactate 5			6	3/8	5 1/2	3/8			5	13/32	7	13/32
Cal. Podo. & Soda							5	5/16			5	5/16
Cal & Soda 2½ ea							5 1/4	5/16	6 1/2	5/16	6	11/32

Compressed Tablets—Continued.

	1	2	3	4	5	6
Camphor Monobrom. 2	3 5/16	2 3/8 9/32		2 3/8 9/32		3 3/5 9/32
Cal. Rhubarb & Soda Co.		6 13/32		6 1/2 11/32		6 1/16 3/8
Camphor Henbane & Val.		3 1/2 11/32			2 7/10 5/16	3 1/4 5/16
Cascara Ext. 2	2 1/2 5/16	2 9/32	2 1/10 9/32	2 1/10 9/32	2 9/32	
Cascara Ext. 3	3 1/2 5/16	3 5/16	3 1/10 5/16	3 5/16	3 1/10 5/16	3 1/2 11/32
Cascara Ext. 5	6 3/8	5 3/8	5 1/10 3/8	5 13/32	5 1/10 3/8	5 1/2 3/8
Cascarin Comp.	1 3/16	1 7/32	1 1/16 7/32		1 7/32	
Cascara Comp.		2 1/4 9/32	2 49/100 5/16	2 68/100 5/16	3 5/16	
Cascara Hinkle		1 1/4 7/32	1 1/40 7/32	1 1/10 7/32		1 7/32
Cathartic Co. U. S. P.	4 5/16	3 9/32	3 1/2 5/16	3 5/16	3 9/32	3 2/5 1/4
Charcoal 5	8 7/16	6 13/32	6 1/2 7/16	7 7/16	6 1/2 3/8	6 1/4 3/8
Charcoal 10	10 1/2	12 1/2	13 5/8	15 5/8		12 1/2
Charcoal & Pepsin	9 1/2	7 7/16		7 2/5 7/16		
Chlorodyne	3 5/16	2 1/2 5/16		5 11/32	3 2/5 9/32	2 9/32
Chlorodyne, ½ strength		1 1/4 7/32			1 9/10 1/4	1 1/8 7/32
Cholera Infantum		1 1/2 7/32		3 1/5 5/16	1 1/2 7/16	
Chromium Sulph. 4		4 1/2 5/16			4 1/5 5/16	4 4/5 5/16
Coryza	2 1/4	2 1/2 5/16			1 9/10 9/32	2 9/32
Creosote 1	2 1/2 9/32	3 5/16		4 7/10 3/8	1 9/10 1/4	2 1/2 5/16
Creosote 2		6 3/8				
Creosote Comp.	3 9/32	3 1/2 5/16				3 5/16
Cubebs Comp.	3 1/2 11/32	5 1/4 3/8		3 3/5 5/16		
Cystitis Acid	7 1/2 13/32	7 13/32	7 13/32	10 7/16	7 1/2 7/16	7 1/4 7/16
Cystitis Alkaline	9 7/16	8 7/16	8 7/16	1 1/5 7/16	7 1/5 7/16	8 1/4 7/16
Digestive Arom.	5 4/5 3/8	5 1/2 3/8		6 3/10 3/8		
Diuretic		4 11/32	5 11/32	4 3/5 3/8	4 3/5 3/8	4 1/4 11/32
Dovers Powd. 2½	2 1/2 5/16	2 1/2 9/32		1 7/10 7/32	3 5/16	2 1/2 5/16
Dovers Powd. 5	5 3/8	5 3/8		5 1/10 13/32	5 3/8	5 3/8
Emmenagogue	6 3/10 13/32	5 1/4 3/8		7 1/5 7/16	5 1/2 3/8	
Endometritis		4 11/32		4 1/2 3/8	4 3/8	4 3/8
Ergotin 1 gr.	1 1/2 7/32	1 1/2 1/4		1 4/5 1/4	1 1/3 7/32	
Febrile Laxative		4 1/4 11/32		4 1/5 3/8	3 1/2 11/32	
Flatulance		4 11/32		3 5/16	3 5/16	3 3/4 11/32
Heart Tonic		3 1/4 5/16		3 4/5 5/16		
Hextet 5 Gr.		5 3/8	5 3/8	5 13/32	5 3/8	5 3/8
Hextet 7½		7 1/2 13/32	7 1/2 7/16	7 1/2 7/16	7 1/2 7/16	7 1/2 13/32
Lithium Citrate 5	15 1/2	15 5/8	12 1/2 9/16			17 5/8
Menorrhagic, Hirst		4 3/4 3/8		5 3/10 13/32	4 1/2 3/8	4 5/8 3/8
Methylene Blue Co.		5 3/8		4 1/2 11/32	4 55/100 3/8	4 11/32
Migraine No. 1	3 1/4 5/16	3 1/2 5/16	3 7/8 3/8	4 1/10 11/32	3 1/2 11/32	3 3/4 11/32
Migraine No. 2	6 11/32	7 13/32	7 1/2 13/32		6 3/5 7/16	
Migraine, Improved	5 3/8	5 1/2 3/8		5 1/10 13/32	5 1/10 3/8	
Mixed Treatment	5 11/32	7 11/32		6 11/32	3 9/32	5 11/32

Compressed Tablets—Continued.

	7	8	9	10	11	12
Camphor Monobrom. 2			2 1/2 9/32	2 1/4	3 1/4 5/16	2 1/2 5/16
Cal. Rhubarb & Soda Co.						7 13/32
Camphor Henbane & Val.	5 3/8		3 1/2 5/16		5 1/2 3/8	4 11/32
Cascara Ext. 2	2 1/5 5/16	2 2/3 5/16		2 7/10 5/16		2 9/32
Cascara Ext. 3	3 1/5 11/32	4 11/32	3 5/16		3 3/4 5/16	3 1/5 5/16
Cascara Ext. 5	5 3/8	6 1/2 13/32	5 3/8		6 1/2 3/8	5 3/8
Cascarin Comp.	1 1/5 7/32	1 7/32	1 1/4 7/32	1 7/32	1 1/10 7/32	
Cascara Comp.		3 5/16			2 9/10 9/32	2 1/4 9/32
Cascara Hinkle	1 7/32	1 1/10 7/32	1 7/32	1 7/32	1 1/5 7/32	1 1/4 1/4
Cathartic Co. U. S. P.	3 5/16	4 11/32		4 11/32		3 1/2 5/16
Charcoal 5	7 1/2 13/32	6 13/32	6 13/32	6 1/2 4/10	10 7/16	6 13/32
Charcoal 10		12 1/2	15 9/16	20 5/8	21 5/8	12 1/2
Charcoal & Pepsin	8 7/16			10 1/2	10 1/2	7 13/32
Chlorodyne	4 1/2 11/32	2 3/4 9/32		2 1/2 5/16	3 3/4 5/16	2 1/2 9/32
Chlorodyne, ½ strength		1 1/2 7/32			1 1/5 7/32	1 7/32
Cholera Infamtum	1 1/2 7/32	2 7/32	1 3/5 7/32	1 1/2 7/32		
Chromium Sulph. 4	5 5/16	4 5/16	4 1/2 11/32	4 3/8	5 11/32	4 5/16
Coryza	3 5/16	2 1/4 5/16		2 1/2 5/16	2 3/4 5/16	
Creosote 1	5 3/8	3 2/5 11/32	2 1/4 9/32	2 1/2 5/16	4 5/16	3 5/16
Creosote 2		4 1/2 13/32		5 1/2 3/8		6 3/8
Creosote Comp.				3 5/16		
Cubebs Comp.				2 9/32		5 3/8
Cystitis Acid	6 3/8	7 13/32		8 4/10	7 13/32	7 1/2 13/32
Cystitis Alkaline	8 1/2 7/16			9 1/2	7 1/2 7/16	7 1/2 13/32
Digestive Arom.			5 1/2 3/8	5 3/8		5 3/8
Diuretic	5 3/8	4 11/32		4 11/32	4 4/5 3/8	5 3/8
Dovers Powd. 2½		1 7/32		2 1/2 5/16	3 5/16	2 1/2 9/32
Dovers Powd. 5	5 3/8	5 1/2 3/8		5 3/8	5 3/4 3/8	5 3/8
Emménagogue	7 3/10 7/16			5 3/8	7 3/4 13/32	6 3/8
Endometritis			4 11/32		6 1/2 13/32	5 3/8
Ergotin 1 gr.		2 3/4 9/32		1 9/10 1/4		1 1/8 7/32
Febrile Laxative						5 3/8
Flatulance		3 1/2 5/16	3 1/2 5/16		3 2/5 11/32	4 1/2 11/32
Heart Tonic				3 11/32		2 1/2 9/32
Hextet 5 Gr.	5 3/8	5 3/8	5 11/32	5 3/8	5 3/8	5 3/8
Hextet 7½	7 1/2 13/32	7 1/2 13/32	7 1/2 7/16	7 1/2 7/16	7 1/2 7/16	7 1/2 7/16
Lithium Citrate 5				15 5/8		14 5/8
Menorrhagic, Hirst		5 1/2 3/8	5 11/32	5 1/2 4/10	5 3/5 13/32	5 3/8
Methylene Blue Co.				6 4/10		5 3/8
Migraine No. 1		3 1/2 5/16	3 3/10 5/16	4 11/32	3 4/5 11/32	3 1/4 5/16
Migraine No. 2				7 7/16	7 13/32	6 1/2 13/32
Migraine, Improved		5 1/4 3/8	4 1/2 11/32	5 3/8	5 1/5 3/8	4 1/2 11/32
Mixed Treatment	5 11/32	4 4/5 11/32		4 5/16		6 3/8

Compressed Tablets—Continued.

	1		2		3		4		5		6	
Myalgic			5	1/2 3/8			6	13/32	5	4/5 3/8	5	1/2 11/32
Anti Nausea			5	1/8 5/16			5	2/5 5/16			5	5/16
Oxgall Comp.			4	11/32			5	1/5 3/8	4	11/32	4	11/32
Pepsin Bis. & Charcoal	7	3/8	6	1/2 3/8	6	1/10 3/8			5	1/2 3/8		
Phenolphthalein 2	5	5/16	2	1/2 5/16			2	7/10 5/16	4	3/10 11/32		
Phenolphthalein 3			3	3/4 11/32			4	3/8				
Phenolphthalein 5			6	1/4 13/32			6	1/5 7/16				
Potass. Bicarb. 5	5	1/2 11/32	5	11/32			5	5/16	5	11/32		
Potass. Bromide 5	5	5/16	5	5/16	5	11/32	5	5/16	5	5/16	5	5/16
Potass. Bromide 10	10	3/8	10	3/8			10	3/8	10	3/8	10	3/8
Potass. Chlorate 5			5	11/32	5	11/32	5	11/32	5	11/32	5	5/16
Potass. Iodide 5	5	5/16	5	5/16			5	5/16	5	5/16	5	5/16
Potass. Permang. 1	1	3/16	1	7/64	1	3/16	1	1/10 3/16	1	3/16	1	3/16
Potass. Permang. 2	2	7/32	2	1/4	2	3/16	2	1/5 7/32	2	7/32	2	7/32
Potass. Permang. 5	5	5/16	5	5/16	5	5/16	5	1/2 5/16	5	5/16	5	5/16
Quinine & Capsicum	2	1/2 5/16	3	5/16			2	4/5 5/16	2	1/5 5/16	2	3/4 11/32
Rheumatic	3	1/2 5/16	3	1/2 11/32			5	3/10 3/8				
Rheumatic, Yokum	6	13/32	6	3/8					6	3/8	5	3/5 13/32
Rhubarb & Ipecac Co. 1	6	1/2 13/32	6	1/4 3/8			7	3/8	6	3/5 3/8	6	1/4 3/8
Rhubarb & Ipecac Co. 2			7	1/2 13/32	8	3/5 7/16	8	1/2 13/32	7	3/5 3/8		
Rhubarb & Soda							3	5/16	5	1/10 3/8		
Salol 2½			3	1/4 5/16	4	3/8	3	1/2 11/32	2	9/10 11/32	3	1/8 5/16
Salol 5	5	1/2 13/32	6	1/2 13/32	8	1/4 13/32	7	1/2 7/25	9/10	3/8	6	1/4 13/32
Saw Palmetto Co.			5	3/8			6	3/5 13/3				
Sedative, Baer	4	1/2 11/32	4	11/32	3	15/100 5/16	6	3/10 13/32	3	1/5 11/32	3	1/4 11/32
Soda Mint	5	1/2 11/32	5	5/16	5	3/10 3/8	5	1/5 11/32	5	1/5 5/16	5	1/10 11/32
Soda Mint & Charcoal	6	11/32	5	5/16	5	1/5 3/8	6	3/8	5	1/5 5/16	6	3/8
Soda Mint & Pepsin	5	11/32	5	5/16	5	1/5 3/8	5	3/10 11/32	4	4/5 5/16	5	11/32
Sodium Benzoate 5			5	5/8 3/8	6	3/8	6	1/2 7/16	5	7/10 3/8	5	3/5 3/8
Sodium Bicarb. 5			5	5/16	6	1/5 3/8	5	3/10 3/8	5	1/10 11/32	5	1/10 11/32
Sodium Bicarb. 10	11	7/16	10	13/32	12	2/5 7/16	10	3/5 7/16	10	2/5 7/16	10	7/16
Sodium Bromide 5	5	5/16	5	5/16	5	11/32	5	5/16	5	5/16	5	5/16
Sodium Bromide 10	10	3/8	10	3/8	10	7/16	10	3/8	10	7/16		
Sodium Salicylate 5			6	1/2 3/8	7	3/8	7	2/5 7/16	6	3/8	5	3/4 3/8
Sodium Sulphocarb 5			5	11/32			6	3/8			5	1/4 11/32
Strontium Salicylate 5			6	3/8			6	13/32	5	7/10 3/8	5	1/2 3/8
Sumbul Comp.	5	5/16	5	1/2 3/8	4	1/2 11/32	4	4/5 3/8	4	1/5 11/32	4	3/4 11/32
Sulphur 5			6	3/8							6	13/32
Sulphur & Cream Tart	6	1/2 3/8	7	13/32			7	1/2 13/32	7	3/8		
Sulphur Compound			10	1/2			11	4/5 7/16	10	1/2 1/2		
Sun Cholera			3	5/16			3	35/100 5/16	2	2/5 9/32		
Throat			5	1/4 3/8	5	3/10 3/8	8	2/5 7/16	6	3/8	5	3/8
Thyroids 1			2	1/2 5/16			2	1/2 9/32				
Thyroids 2			5	3/8			5	1/10 3/8				

Compressed Tablets—Continued.

	7		8		9		10		11		12	
Myalgic											5 1/2	3/8
Anti Nausea			5	5/16			5	11/32	5 1/4	5/16	5	5/16
Oxgall Comp.	5	3/8	4 3/4	3/8	4 1/2	3/8	4	11/32	5 2/5	3/8	5	3/8
Pepsin Bis. & Charcoal	6 1/2	13/32					10	1/2			6	3/8
Phenolphthalein 2			3	5/16			7	7/16			3	5/16
Phenolphthalein 3			4	11/32			6	7/16				
Phenolphthalein 5			6 1/2	3/8								
Potass. Bicarb. 5	5		5 7/8	3/8	5 3/10	11/32					5	11/32
Potass. Bromide 5	5	5/16	5	5/16	5	11/32			5	5/16	5	5/16
Potass. Bromide 10	10		10	3/8	10	3/8			10	7/16	10	13/32
Potass. Chlorate 5	5	5/16			5	11/32	5	11/32	5	5/16	5	11/32
Potass. Iodide 5	5	9/32	5	9/32	5	5/16			5	5/16	5 1/8	5/16
Potass. Permang. 1	1	3/16	1	5/32	1	5/32	1	3/16			1	3/16
Potass. Permang. 2	2	7/32	2	7/32	2	7/32	2	7/32			2	7/32
Potass. Permang. 5	5	5/16	5	1/4	5	5/16					5	5/16
Quinine & Capsicum					3	5/16	3	5/16			3	5/16
Rheumatic	3 1/2	11/32					3 1/2	5/16			4	11/32
Rheumatic, Yokum			6 1/3	3/8	6	7/16	5 1/2	4/10	6 2/5	13/32	6	13/32
Rhubarb & Ipecac Co. 1	6 1/2	3/8	6 1/4	3/8	6 1/2	3/8	8	7/16	6	3/8	6 1/4	3/8
Rhubarb & Ipecac Co. 2	7 1/2	3/8	7 1/2	13/32	8	13/32			8	13/32	7 1/2	13/32
Rhubarb & Soda			5 2/5	3/8	3 3/5	5/16	3	5/16			3 1/4	5/16
Salol 2½			3 1/2	5/16	3 1/2	5/16	3	11/32	3 2/5	11/32	3	5/16
Salol 5	6	3/8	6 1/2	13/32	7	3/8	7	7/16	6 4/5	7/16	6	13/32
Saw Palmetto Co.							5	4/10	7	13/32		
Sedative, Baer	4	3/8	4 3/4	3/8			3	5/16	5 2/5	13/32	3 1/2	5/16
Soda Mint	5 1/5	5/16	5	5/16	5 3/4	11/32	5	11/32	5	11/32	5	11/32
Soda Mint & Charcoal							6	4/10			5	11/32
Soda Mint & Pepsin	5	5/16			5	11/32	6 1/2	11/32			4 1/2	11/32
Sodium Benzoate 5			6	3/8	5	3/8	6	4/10	6	13/32	6 1/2	3/8
Sodium Bicarb. 5	5 1/4	11/32	5	5/16	5 2/5	11/32	5 1/2	3/8	5	11/32	5 1/4	11/32
Sodium Bicarb. 10			10	7/16	10 7/10	3/8	11	1/2	10	7/16	10	13/32
Sodium Bromide 5	5	5/16	5	5/16	5	11/32	5	5/16	5	5/16	5	5/16
Sodium Bromide 10			10	3/8	10	3/8	10	4/10	10	13/32	10	13/32
Sodium Salicylate 5	6 1/2	13/32	6 1/2	3/8	7	3/8	8	7/16	8 1/2	7/16	7	13/32
Sodium Sulphocarb 5					6 1/2	3/8	6	4/10	6 4/5	3/8	6	3/8
Strontium Salicylate 5			7	13/32	6	3/8	6	4/10	6 1/2	13/32	6	3/8
Strontium Salicylate 5	4 1/2	3/8	5 1/4	3/8	5 1/2	3/8	7	4/10	6 1/3	13/32	4 1/4	11/32
Sumbul Comp.							6	3/8			5	3/8
Sulphur 5							6 1/2	3/8				
Sulphur & Cream Tart							10	7/16	8 1/4	3/8	10	1/2
Sulphur Compound	3	5/16	3	11/32			3 1/2	5/16	3 1/3	5/16	3 1/2	5/16
Sun Cholera			5 1/3	3/8			5	3/8			5	11/32
Throat	2 1/2	9/32	2 1/2	5/16	4	5/16			4 9/10	3/8	3 1/4	5/16
Thyroids 1	5	3/8	5	3/8	5	3/8			6 1/2	3/8	3	5/16
Thyroids 2												

Compressed Tablets—Continued.

	1		2		3		4		5		6	
Tonsillitis Gargle			10	1/2			9 1/2	1/2	10	7/16		
Triple Bromides 2½ ea	7 1/2	3/8	7 1/2	11/32	7 1/2	3/8	7 1/2	3/8	7 1/2	5/16	7 1/2	5/16
Triple Bromides 5 ea	15	9/16	15	13/32	15	7/16	15	7/16	15	3/8	15	3/8
Uterine Astringent			14 1/2	9/16			13 4/5	9/16			15	9/16
Viburnum Comp			4	11/32			5	3/8	3 1/5	5/16	4 1/4	3/8
Zinc Sulphocarb. 2	2 1/2	9/32	2	9/32			3 2/5				2 1/2	9/32
Zinc Sulphocarb. 5	5 1/2	3/8	5	11/32			5 2/5	3/8	5	3/8	5 1/4	3/8

	7		8		9		10		11		12	
Tonsillitis Gargle					11	1/2	11	1/2			10	1/2
Triple Bromides 2½ ea	7 1/2	3/8	7 1/2	11/32	7 1/2	3/8	7 1/2	11/32	7 1/2	3/8	7 1/2	3/8
Triple Bromides 5 ea			15	13/32	15	3/8	15	7/16	15	1/2	15	1/2
Uterine Astringent			15	9/16	17	9/16	16	5/8	19	9/16	15	9/16
Viburnum Comp			5 1/4	3/8	4 1/2	11/32	4 1/2	11/32	5 1/5	13/32	4 3/4	3/8
Zinc Sulphocarb 2			2 1/2	9/32			2	1/4	2 3/4	5/16		
Zinc Sulphocarb. 5			6 1/4	3/8			5 1/2	4/10	6	3/8	5 3/4	3/8

Compressed Lozenges

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Amonium Chloride & Licorice	12	20	....	20	.....	.....	.....	20	....	15	.....	....	20	....	20	.....
Bismuth & Charcoal	....	20	....	20	.....	....	20	12	....	25	24 1/2	....	20	20	20	.....
Broncihal	12	24	....	14	.....	....	22	....	20	25	21	25	20	....	20	12 1/2
Bronchial, Improved	24	24	....	20	.....	25	24 1/2	26	20	25	.....	25	20	....	....	.....
Bronchial, Mentholated	....	24	....	20	20	21	.....	26	20	25	.....	....	20	....	20	.....
Brown Mixture	12	24	20	20	.....	20	.....	20	....	25	.....	25	20	....	....	12 1/2
Brown Mixture, No Opium	12	24	20	20	20	20	.....	....	15	25	18 1/2	25	20	....	19	.....
Brown Mixture & Ammonium Chloride	12	24	20	20	.....	20	20	20	....	25	21 1/2	25	20	20	....	12 1/2
Brown Mixture & Ammon. Chlor., No Opium	12	24	20	20	.....	20	.....	....	15	25	21 1/2	25	20	....	20	12 1/2
Charcoal, 10 gr	12	12	....	15	10	11	11	15	....	25	21	....	20	20	20	.....
Charcoal & Soda	.....	.....	....	10 1/2	.....	.....	.....	14	....	25	.....	.....	.....	.....	20	.....
Elm Bark, 5 gr	12	15	....	20	.....	15	23	20	20	25	.....	21	20	....	20	.....
Guaiac Resin, 2 gr	15	20	....	20	.....	20	20	20	20	25	.....	21	20	....	20	.....
Licorice Powder, 20 gr	15	20	....	20	.....	....	20	20	....	25	24	26	20	....	....	16
Pepsin & Bismuth	.....	20	....	15 3/10	.....	.....	20	20	....	25	.....	....	20	....	20	.....
Pepsin Bismuth & Charcoal	15	20	....	20	.....	20	.....	10	20	25	22 1/2	21	20	....	20	.....
Pepsin & Charcoal	15	20	....	20	.....	.....	.....	14	....	25	.....	21	20	....	20	15
Pepsin Charcoal Magnesia & Ginger	....	20	....	20	.....	20	.....	16	20	25	22	21	20	....	20	16
Potassium Chlorate, 2 gr	.....	.....	....	20	.....	.....	20	20	....	25	.....	21	.....	.....	.....	12 1/2
Red Gum	12	10 1/2	....	10	.....	.....	.....	10	....	15	.....	10	10	.....	.....	13
Santonin, 1/2	.....	.....	....	29	17 1/2	20	20	20	....	25	.....	....	20	.....	.....	.....
Santonin & Calomel, 1/2 ea	12	.....	....	29	17	12	20	20	20	25	21 1/2	21	.....	....	20	12 1/2
Sulphur & Cream Tartar	32	26	....	31	20	30	20	16	20	25	.....	24	25	....	20	32

PROF. R. W. PROCTOR, *Chairman.*

DRUG EXTRACTS

Report of the Subcommittee on Drug Extracts read before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers Association, Hotel Biltmore, New York City, June 5-8, 1922.

FLUID EXTRACT OF IPECAC

A continuation of experimental work to develop a menstruum which would more thoroughly exhaust Ipecac drug and at the same time permit the resulting fluid extract to be miscible with syrup has not been productive of a solution of the problem.

No Satisfactory Substitute for U. S. P. Menstruum Found

At present we can offer no more satisfactory menstruum than that designated in the U. S. P.

In the course of our investigation of fluid extract of Ipecac it has been pointed out on several different occasions that the standard for Alkaloids of the fluid extract, namely, from 1.8 gms. to 2.2 gms. per 100 cc. is too high, particularly in view of the fact that ordinary Ipecac of commerce averages only about 2 per cent alkaloids, and also due to the extreme difficulty in exhausting the drug with the menstruum now official.

Excess of Drug Required to Meet U. S. P. Standard

In order to assist the committee in arriving at a decision on this point it was agreed that we would submit to our membership these two questions:

1. What do you find to be the average amount of Ipecac drug required to produce one pint of fluid extract of Ipecac after reviewing your records?

2. Do you think it advisable to return to the standard of fluid extract of Ipecac given in the U. S. P. VIII?

Upon analyzing the replies we find that there are in all eighteen who manufacture this product. Fifteen replied that it required an excess of drug to produce one pint which would meet the present U. S. P. alkaloidal standard. This excess varied with different manufacturers from 9 to 40 per cent and averaged 18.6 per cent.

Two replied that it required one pound or less. Fourteen stated that they are in favor of returning to the standard in the U. S. P. VIII

of 1.5 gms. per 100 cc. Two were of the opinion that a reduction was desirable, but suggested an average standard of 1.75 gms. per 100 cc. rather than 1.5 gms. Two replied that they felt that there should be no change.

It is evident from the replies that difficulty was experienced in practically all of the manufacturing laboratories and that the fluid-extract can only be brought to the present U. S. P. standard by the use of a rather large excess of drug.

Members Favor U. S. P. VIII Standard

It furthermore is the consensus of opinion of the committee as well as a large majority of those replying to the questionnaire that a reduction be made in the alkaloidal strength of the fluid extract. Also a majority favor a return to the standard given in the U. S. P. VIII of 1.5 gms. per 100 cc.

FLUID EXTRACT OF ERGOT

At our 1921 meeting this committee reported that fluid extract of Ergot made by the official U. S. P. process gave considerable trouble on account of precipitation, and that some little experimental work indicated that this was caused by the fats normally present in Ergot. By removing these fats it was stated that this difficulty could be overcome, and that since the present U. S. P. directed such a process in the manufacture of solid extract of Ergot it would seem logical to have the fluid extract prepared similarly.

However, someone raised the point that these fats may possess considerable therapeutic activity and that it might be unwise to eliminate them. After some little discussion it was thought advisable to again refer the subject to the committee and have them thoroughly investigate it from this angle.

Effect of Defatting F. E. Ergot

To accomplish this every member of the committee was directed to prepare three fluid extracts of Ergot from the same lot of drug as follows:

1. By the U. S. P. method.
2. By the U. S. P. method defatting after completion by agitation,

while warm with melted paraffin and making up to volume with diluted alcohol.

3. By defatting the drug by percolation with Carbon Tetrachloride or Petroleum Benzene dissipating the solvent from the drug by exposing it to the air and converting the resulting defatted drug into fluid extract by the U. S. P. process.

It was thought advisable to suggest the use of Carbon Tetrachloride as well as Petroleum Benzene which is used for defatting purposes in the U. S. P. IX on account of the fire hazard connected with the use of the latter. After completion of these three fluid extracts it was suggested that they be examined with these points in mind:

1. Does the removal of the fats from the fluid extract of Ergot improve physical appearance of the preparation?

2. What is the relative amount of precipitate found in fluid extract of Ergot from which the fats have been eliminated in comparison with that made by the U. S. P. process?

3. Which is the more advantageous method for removal of the fats, the use of an immiscible solvent such as Carbon Tetrachloride or Petroleum Benzene or the paraffin method?

4. Do the fats normally found in Ergot possess any therapeutic activity?

5. What effect does the removal of the fats have upon the deterioration of fluid extract of Ergot?

In the laboratory of the chairman three fluid extracts of Ergot were prepared from drug of average quality. In each instance the evaporation was conducted in under vacuo at the lowest possible temperature.

Immediately after completion, the three fluid extracts were tested by the blood pressure method with these results:

Therapeutic Effect of Different Defatting Methods

1. U. S. P. fluid extract gave a rise of 18 mm. when injected into the femoral vein of a dog in dose of 0.04 cc. per Kgm. weight of dog.

2. U. S. P. fluid extract of Ergot defatted with melted paraffin gave a rise of 16 mm.

3. Fluid extract of Ergot manufactured from drug defatted with Carbon Tetrachloride gave a rise of 19 mm.

The standard which we have adopted at our laboratories for fluid

extract of Ergot is that when injected into the femoral vein of a dog in doses of 0.04 per Kgm. weight of dog it is required to give a rise of not less than 16 mm. therefore, I find all three fluid extracts to meet this requirement. In fact there is very little difference between them. The one made by defatting with paraffin gave slightly lower results and as heat is very destructive to Ergot the temperature necessary to keep the paraffin melted during defatting process may have had this slight effect.

Precipitation as Affected by Different Defatting Agents

Five hundred cc. of each of the fluid extracts were transferred to cylinders of that capacity and after standing one month the fluid extract made by the U. S. P. process and that prepared by defatting with paraffin both showed a decided precipitation, while the one made by first defatting the drug with Carbon Tetrachloride is entirely free from precipitate.

After standing four months that produced by the U. S. P. process showed a decided precipitate while that defatted with melted paraffin contained almost as much. The fluid extract manufactured from drug defatted with Carbon Tetrachloride contained only a slight film of precipitate. From the standpoint of physical examination the latter was considered highly satisfactory, while the former two were felt to contain entirely too much precipitate.

Deterioration as Affected by Different Defatting Agents

To determine if any of the fluid extracts had deteriorated to any appreciable extent they were again tested at this time by the blood pressure method with these results:

1. U. S. P. fluid extract gave a rise of 17 mm.
2. Defatted with paraffin gave a rise of 16 mm.
3. Prepared from drug defatted with Carbon Tetrachloride gave a rise of 18 mm.

I therefore find that defatting the drug with Carbon Tetrachloride overcomes the precipitation difficulty and that the solvent does not extract any of the fluid extract.

These conclusions are based upon the blood pressure method for assay for Ergot as it has been my experience that the physiological valuation of this drug by this method is an indication of the therapeutic activity of Ergot.

Blome Obtains Best Results with Paraffin

Dr. Blome, a former member of our committee, reports as follows:

For the purpose of these experiments we purchased a quantity of drug, specifying as high grade an article as the broker was able to supply and upon receipt, ground and tested it in the usual way (Cock's comb method) and found it to be of good quality. From this, then, we made the several fluids reported upon below.

U. S. P. Method—We found that the finished fluid extract was active but rather faintly so. Another portion of the same fluid from which the oil had been extracted with melted paraffin proved to be very active.

Ergot extracted in the first place with Carbon Tetrachloride, dissipating the latter from the drug by continued exposure to a draught of warm air and then percolated to produce a fluid extract, when tested showed a fair degree of activity.

The fluid extract prepared by first extracting the drug with gasoline was, physically the most desirable of the lot. That made by extracting the oil from the fluid with paraffin was not quite so good, while that prepared by removing the oil from the drug by percolation with Carbon Tetrachloride seemed to show as much if not more precipitate.

It is rather difficult and unsatisfactory to make comparison between several fluid extracts of Ergot, all of which are active according to the method we employed and say that one is better than the others. There is probably variation in the degree in which different animals respond to the test, so that differences in results may be attributed to the animal rather than to differences in actual therapeutic value of the drug under examination. However, as far as we were able to judge the paraffin method yielded a fluid extract testing better than any of the others. But, as already stated, this may be more apparent than real.

In reference to the paraffin method would state that there appears to be decided objection to its use in actual manufacturing operations because the entire fluid has to be warmed up to the temperature of melting paraffin and kept at this temperature until very thorough agitation has been effected in order that the paraffin may take up the maximum amount of oil. This difficulty is obviated by the other methods.

The writer suggests the advisability of looking into the matter of using a mixture of gasoline and carbon tetrachloride for exhausting the

drug previous to percolation, the proportions being such that the mixture will be non-inflammable. The objection to gasoline, of course, is that it is dangerous to have it about in such quantities as would be needed for this purpose. This objection can at least be partially overcome by mixing it with sufficient carbon tetrachloride to make it non-inflammable.

Patch Prefers Carbon Tetrachloride as Defatting Agent

Professor Patch reports that he is in favor of defatting the Ergot in the preparation of fluid extract by use of Carbon Tetrachloride.

Francis Finds Fat-free F. E. Ergot as Active as U. S. P. Product

Dr. Francis reports as follows:

We have had three lots of Ergot made from the same batch of drug in accordance with instructions which have been sent out, that is to say, we have used the regular official menstruum and process except that the samples were made as follows:

1. Fluid made by the official process without separation of the fats or oils from either the drug or the fluid.

2. Fluid made by the official process from drug from which the fat had previously been extracted by the use of a low boiling-point purified gasoline—the drug being exposed in a warm situation and all the gasoline odor being allowed to escape by evaporation before being transferred to the percolator.

3. Fluid made in the usual way, then heated and treated with a low melting-point paraffin; the fluid subsequently allowed to cool and the paraffin combined with the oil being allowed to separate to the top and solidify.

4. Fluid extract made in the usual way and treated thoroughly by the use of a low boiling-point purified gasoline, by which the fats and oils are *washed out* by using an immiscible solvent.

These four fluids were then submitted to a series of careful pharmacological tests, and our pharmacologist was not able to demonstrate that one was appreciably stronger or weaker than the other. All three of the fluids which had been treated for removal of the fat, appeared to be just as active as the fluid extract made by the official process.

I should say, therefore, that it is a matter of individual preference as to which process shall be employed in removing the fat from fluid extract of Ergot.

Committee Concludes Fat-free F. E. Ergot is Satisfactory

It therefore appears to be the consensus of opinion of the committee that removal of the fats from the fluid extract of Ergot overcomes the precipitation difficulty and that the fats do not possess any therapeutic activity. Also the removal of the fats have no effect upon the deterioration of the product.

Our experiments indicate that there are various solvents and methods adapted for the removal of the fats and that each may be used to advantage in the hands of a competent operator.

Alcoholic Percentages

The Committee on Drug Extracts were requested to prepare a table showing the comparative alcoholic strength of non-official fluid extracts, tinctures and fluids made by members of our Association.

Accordingly a questionnaire was sent to each member of our Association requesting them to submit a list of the non-official fluid extracts and tinctures prepared by them together with the percentage of alcohol stated upon the label.

The response to this was general from which your committee has tabulated and submitted tables.

J. P. Snyder, *Chairman.*

A List of the Non-Official Fluid Extracts, Tinctures and Fluids, together with Alcohol percent stated upon the labels. Compiled from the records of members of the American Drug Manufacturers' Association, by the Committee on Drug Extracts.

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Abscess Root	38														38				
Absinthe	38	40		40				42	35	44			40		43				
Aconite Leaves	38	35			45			42	50			40	39		62	72			
Adrue	38																		
Aesculus																51			
Agrimony	25				43				36						28				
Alder Bark Black	25																		
Allspice									38										
Aloes and Myrrh	50	60			47				65				56	71					
Aloes Compound	17																		
Aloes for B. P. Tinct	47																		
Aloes for U. S. P. Tinct	36	30			35				35	40				30	28				
Alterative Comp		30		16	24			30					16						
Althea	41	35								43						31			
Ambrosia					40														
American Ash					40										30				
American Cannabis	78																		
American Centaury	31																		
American Colombo	38																		
American Ivy	44							41											
American Saffron	35	50												31	27				
American Sarsaparilla	40															26			
Anise	83	65		85	90			68	40				85						
Anise Soluble	38								15										
Angelica Seed	38													60	64				
Angustura	40																		
Anthemis	25				43			85	40						90				
Apple Tree Bark	31																		
Arbor Vitas	25				85														
Arbor Vitæ Fresh Leaves									75										
Areca Nut	37															41			
Arnica Root	63	35		65	65			24	43	45			38		42				62
Aromatic for U. S. P. Tinct		75																	
Asafetida		75		73	80				68			70			64				
Asarum					42											72			
Ash Bark Black	38																		
Asparagus	35																		

Firm and Alcohol Per Cent.

NAME	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Asparagus Root												50			30				
Aspidium	75	50		80	80			75	84				84			82			
Avena Sativa	42	20		36	27			45	25			20	30		46	86			26
Ball Fruit	25																		
Bamboo Brier	40	35		42				38	35				30			29			
Bamboo Brier Root Green															25				
Balm Gilead Buds															53				
Balmony	25	40		40					35				43		26	25			
Balsam Fir	39																		
Balsam Opodeldoch					20														
Balsam Poplar Buds	65	60		62	65				75	60									
Baptisia					43														
Barberry	40				40			38	34						30	49			
Bayberry Comp									35										
Bay Laurel									53										
Bay Laurel Concen	65	70			65											69			
Bears Foot	17									55					42				
Beech Drops	40																		
Belladonna B. P					70														
Belladonna Leaves	38	60		60				46	65	40		40	60	35	66	69	56		58
Benzoin for U. S. P. tincture		65	67		55				58	58			52	40		46			
Benzoin for U. S. P. Tr		65	67		55				58	58			52	40		46			
Benzoin Co. for U. S. P. Tr		60	67		60				68	60			60	60		46			
Bitter Orange Peel	50																		
Bitter Root	36											40							
Blackberry	37																		
Blackberry Arom	38				45														
Black Cohosh Co	35				30											60			
Black Cohosh Fresh Root									58										
Black Haw Fresh bark									55										
Black Hallebore	52	50						48	48			40	44		62				
Black Pepper	62																		
Black Walnut Bark										42									
Black Walnut Hulls																22			
Black Walnut Leaves	25															22			
Black Willow Bark	40	35		40	40			40					38		40				
Black Willow Buds	40	35		39	45			42	35	45		40	36		25	27			
Blessed Thistle	40	40																	
Blue Cohosh Comp	60				45											31			
Broom Corn Seed	44	35		46				43	35				44		42				
Broom Weed	41								80										
Bryony	40	75		45	85			56	80	43			65	65		43			61

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Buchu Comp		50																	
Buchu Long Leaf												65							
Buchu Juniper & Potass. Ac.	48	55		50	50			50		60			65	40		48			
Buchu & Pareira Brava								57											
Buchu & Pareira Brava Co.		50																	
Buchu, Pareira Brava & Uva Ursi								45											
Buckeye Bark	24																		
Bugle Weed	25	35						40	35	43			42		26	26			
Burdock Seed	38	40		54					66				45		60				
Button Snake Root	38																		
Cactus	65	65		65	70				63	55		80	45		63	66			58
Calamus				64	65			55	54	65			64		64	65			
Calabar Bean	40	70		70	85				53			60			70	87			88
Calendula Aqueous		15		10	10														
Calendula Flowers															55				
Calumba	55														72				
Camphor Comp	45																		
Canada Snake Root	38	35		41				43	40	45			45	55	45				
Canella	40							80											
Cannabis American	78				85							80							
Cantharides	72							80											
Capsella																83			
Capsicum	75	85		70				76	76	85		80	80		75		82		
Capsicum U. S. P. 8																70			81
Capsicum & Myrrh	75	85			75			68					80						
Caraway	86							73											
Cardamon	82	70		52	88			52	45	45		50			60	47			80
Cardamon Co. for B. P. Tr.	40																		
Cardamon Co. for U. S. P. Tr.	45	40		44	45				41	45			40			47	56		41
Cascara Amorga	25	40		58	60			52	50				44		38				
Cascara Sagrada					24														18
Cascara Sagrada Aromatic		5			18				18					8	18			22	9
Cascara Sagrada Bitterless		20		23	24									22	23				
Cascara Sagrada B. P					23														
Cascara Sagrada Co	27			20				35	18				19	8					
Cascara Sagrada detannated	23																		
Cascara Sagrada Soluble										19									
Cascara Sagrada Special			20		18														
Cascara Sag. w/Podophyllin																12			
Cascarilla Bark	38	50		60				45					54		45				
Castor Leaves	40																		

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Catechu		40		45	35				32						52				
Catechu Comp		30																	
Catechu Co. for Tr. 1870								36											
Catechu Co. for Tr. 1890								40											
Catolico for Balsam					50														
Cedron	42														84				
Celandine	25																		
Celery Co. for N. F. Elix	50																		
Celery Fruit																	56		
Celery Seed Soluble								33											
Centifolia	36																		
Chamomile								32											
Chamomile German	25	35		42				42						35	35				
Chamomile Roman		35						38							30				
Chaparro Amargoso								42					40		42				
Chekan	38																		
Chelidonium		40		40				42	40	43			40		37				
Chenopodium	56	35		56				62	34	44			44		84				
Chikory	19				23														
Chikory & Rhubarb Co					32														
Cimicifuga Comp	35				30											60			
Cinchona Aromatic	55																		
Cinchona Co. for U. S. P. Tr	52	40		53	60				60	55			60	47		43			48
Cinchona Detannated	25	65		23	18			40	30										
Cinchona Pale	56							46	50										62
Cinchona Red	56	25		56	51			60	50	60				60	54	54			56
Cinnamon									80			55							
Cinnamon Cassia		55			85			56		63					86				
Cinnamon Ceylon	65															86			
Cinnamon Sargon		55						63		63					88				62
Cinnamon Soluble	38	50							15										
Cleavers	38														27				
Clover Tops													38						
Cloves	55	70						70	38				39		68	73			
Coca Leaves	36												38						
Coca Soluble	23				20														
Cocculus Indicus	42	34		77	73			48					39	80	42				36
Coffee					23														
Coffee for Syrup		15														60			
Colchicum Corm																			
Colocynth	17	40		60	60			41	38	67			67	52	25	47			45
Collinsonia					45											48			

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Colts Foot	20							38		42									
Colts Foot Leaves		40													25				
Comfrey	25	35												65	58				
Condurango												40							
Conium Leaves	36								35						75				
Coptis	39																		
Coriander Seed	35	85		87				60	40				45			73			
Corn Ergot	23								20					40					
Corn Silk		20			28									18					38
Corn Silk Green				26						30									
Cotton Root Bark																46			
Cotton Root Bark Fresh Drug									75						48				
Cotton Root Bark B. P					65														
Crataegus		35																	
Cramp Bark Comp		70		50	60			43					39						
Cusso	85																		
Dandelion Comp	40											40							
Dandelion & Senna	38																		
Deer Tongue	60	40																	
Dracontium																39			
Drosera					39														
Dwarf Elder Bark	17				40			43							30				
Echinaceæ																52			
Echinaceæ Fresh Root									75										
Elecampane	40	35		40				38	35	40			54		23				
Elder Flowers	34	35		40	45			38	35	24			39	40	25	27			
Ergot B. P					32														
Eriodictyon Arom										24									
Euphorbia					40														
Evening Primrose	35																		
Fabiana																62			
False Bittersweet	24																		
False Unicorn	35																		
Fennel	86	55						73	70				60		80				
Fever Few	22																		
Figwort	33																		
Fiorvante for Balsam					80														
Fire Weed	25																		
Fish Berries	42	35		77	73			48					39	80	42				36
Five Roots					22														
Fleabane	60																		
Galangal	36	35											69		70	85			

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Galega	39																		
Galls	31																		
Gambir	18									19					35	18			
Gambir Comp	38	30			35											45			
Gambir Co. for U. S. P. Tr				40				40		45									
Garden Celendine		40		40				42	40	43			40		37				
Garlic					65										65				
Garlin								42											
Gaultheria	71	36			45			52											
Gelsemium fresh Root								75											
Gentian Comp	42		41	35	40	46			36	42			40	40			34		35
Gentian Co. for B.P. Infusion	42																		
Gentian Co. for B. P. Tinct	31																		
Gentian Detannated	16	15		15	40		38			19						24			
Ginger African																			
Ginger Soluble	42	25		25	25				19	40									25
Ginseng									40						42				
Glycyrrhiza																19			
Glycyrrhiza Comp					12														16
Glycyrrhiza for Quinine Mixt					12					10									
Golden Rod	30												40						
Golden Seal Aqueous				7															
Golden Seal Colorless		5		0										0					
Gravel Plant	41	40		35	43			42	35	43			40		32				
Green Osier Bark	36																		
Grindelia Soluble	23	20		26	24			17	23	30		20				23	11		22
Grindelia Robesta Comp	28																		
Guaiac Ammoniated					35														
Guaiac Resin		45			50				58	55			48		56				65
Guaiac Wood	55														58				
Hair-cap Moss	40							42	44	45	40		38		31				38
Hamamelis B. P					35														
Hamamelis Cortex	20							32					39						
Hawthorne Berries	38	35		39				39	40	40					33				38
Hedeoma	36							40			45				39				
Helonias Comp		40		40	41			48		43	40								
Hemlock Spruce Bark	36							39	23						33	19			
Horehound	22	40						25	25				43	40	38				41
Horehound Comp	17	45		30				38	35				20						
Horse Chestnuts															66				
Horse Chestnut Bark	36				45			40	67						35				
Horse Nettle													38		25				50

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Horse Nettle Root					45										40				
Horse Radish	38																		
Horse Radish Iodide					23														
Hydrastis B. P.					45														
Hyssop		40		22	45										22				
Ignatia	63	50			70			70	35				68		67	87			
Indian Hemp White								43											
Indian Turnip	35														32				
Inula					65														
Ipecac																60			
Ipecac B. P.					80														
Ipecac Soluble		20			24				30	19									
Ipecac for Syrup		60																	
Ipecac & Senega	18				35														
Ironwood	60													61					
Jambul Seed		35		56	58			46					56		55				
Jamaica Dogwood	68	40		70	73			80	64	70		55	54		68	62	43		37
Jersey Tea	34													35	25				
Johnswort	35																		
Kamala	85	35											69		80				
Kava Kava													25						
Kola Detannated					60														
Kola Fresh					48														
Krameria U. S. P. 8																33			
Lactucarium	25	35		30	35			32		32					35				
Larkspur Seed	20	50	60	66	75			76	78	43		70	82	90	73	76			68
Lavender Comp	60	60			65					63			75	65		74			67
Lavender Co. for B. P. Tr.	89																		
Lavender Flowers															63				
Lemon Peel	58							48											
Lettuce								42							36				
Lettuce Wild	40	35		40	45							40				47			
Licorice Aromatic	17																		
Licorice B. P					18														
Licorice Comp																			16
Licorice for Quinine Misct.	8	5		0					23										
Licorice for Syrup									12					15					
Life Everlasting	39	35		28				40		44			39		27				
Life Root												40							
Linden Flowers					42														
Lippia Mexicana	50														68				
Lithium & Hydrangea Comp.																40			

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Liverwort		35		42									34		23				
Lobelia	38													40					
Lobelia Comp	52				40														
Lobelia Seed	78								85	46					65				
Logwood	23				40			32					55		33				
Lovage	36																		
Lungwort	45																		
Lycopus					45														
Mace	80																		
Male Fern	75	50		80	80			75	84				84		82				
Manaca	40	30		64	60			63	55	44		50	54	65	69	59			
Mandrake Comp	55																		
Meyanthea	38																		
Milkweed								52											
Mistletoe	48							50	40				39		35				
Mitchella	40	35		42	42			43	35	42		40	44	45	25	46			
Mitchella Comp									40										
Mountain Laurel	52																		
Motherwort									35						28				
Mugwort	38																		
Murapauma	40	35		71	65			55	85				65		60				
Myrrh	80	55		70	75			66	65	80			80	60	64	85			76
Night Blooming Cereus	65							90						58					
Nutmeg	80														85				
Nux Vomica B. P	58				65														
Oats	42	20		36	27			45	25			20	30		46	86			26
Opium Camphorated		45		60	45				49							45			
Opium Concentrated		35		32	37				40	40									42
Orange Aromatic					43														
Orange Comp	55	80														58			
Orange Peel Arom. for Elix								35											
Orange Peel Soluble for Syrup		40																	
Orange Peel Sweet	40				70			38				45					51		39
Orange Peel Sweet Soluble					37														
Orange Soluble				45															42
Orris Root	87	80		70					40				68		68				
Pansy															43				
Parsley Fruit	52				85					70		50							
Passion Flower	38	30		42	42	25		42	40	42		42		39	42	42	43		41
Pallitory Root	25				43			85	40						90				
Pennyroyal	36							40			45				39				
Peppermint	85	75		70	90			56	42										

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Peppermint Soluble		45		45	22				15										
Physostigma	40	70		70	85				53			60			70	87			88
Phytolacca Fruit	28	35		26	20			45	19	35			45			22			
Pichi	62	60		70	80			76	39	63		65	58	55	68		58		75
Pimenta	78														82				
Pink Root Comp	40																		
Pink Root & Senna		40		39	40			37	33	43		40	39	40					40
Pinus Canadensis Comp. Colorless		3		10	5														
Pinus Canadensis Comp. dark				4	8														
Pinus Canadensis non-alcoholic														0					
Pitcher Plant Root	40																		
Plantain	33														35				
Podophyllum Comp					55														
Poison Oak	35	30		42				44	68	43			39		66				60
Poke Berries fresh berries															42				
Polygonum																38			
Poplar Bark								41											
Poppy Heads	40																		
Prickly Ash Berries	60	50		63				65	65	44	40		43		66				
Ptelia					55														
Pulsatilla	40	35		65	88			60	80	40	40		40	40	65	36			
Pumpkin Seed	72							45				50	40		80				
Pyrathrum	37																		
Queen of the Meadow	42	40		42	45			45	35	45		43	43		37	47			
Quillaja		35			35				40				42	45	46	26			40
Ragweed															40				
Ragweed and Golden Rod					40														
Raspberry Leaves	32							38		67					31				
Red Clover Co. for syr.									22	19									
Red Clover Tops																32			
Red Gum	45	40		13	45										23				
Rhubarb & Senna	50																		
Rhubarb Aromatic for U. S. P. Tr		35			42				37	42			36						38
Rhubarb Comp	33																		
Rhubarb Co. w/Potass		45		54	42				40				45						
Rhubarb for P. B. Syr	25																		
Rhubarb Sweet		45			40														
Rhus Aromatic		40		47	55				35	40					60	55			
Rhus Toxicodendron					40											68			

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Rosa Centifolia	36																		
Rose Soluble		40			30				15							51			46
Rosin Weed		35		40	45			60	35	43			45						
Rosenweed Root															82				
Rosin Wood	40																		
Reel	30	35		40				48		28			39		25				
Rumex	38																		
Safflower		50		37									45						
Sage	38							43											
Salex Nigra	40	35		40	40			40					38		40				
Salvia					40														
Sambucus	34	35		40	45			38	35	24			39	40	25	27			
Sandalwood	83	80		80	84			70	78	65		75	85		65				
Sandalwood Comp										65									
Sanguinaria	35																		
Santal																38			
Santalum Rubrum	50																		
Sarsaparilla Comp	17	15		25	40			36	18	23					83	30		44	41
Sarsaparilla & Dandelion	25																		
Sassafras	39	40		47	45			38	38	62			59			39			
Savin	72	60		76	80			74		75			80		75				
Saw Palmetto Berries					80								39						
Saw Palmetto Comp					31														
Saw Palmetto Fresh									76										
Saxifrage	38							48							25				
Scopola	35				65														
Scouring Rush	35																		
Scullcap Comp	36	35																	
Senna Aqueous	23	15		18															
Senna Comp	32	15			43			52					40						
Senna & Jalap	57																		
Sheep Sorrel	35														35				
Shepherds Purse	35																		
Silkweed	25														23				
Simarubra	35				43														
Skunk Cabbage	35	50		70	45			52	36	45			44		36				
Soap Bark		35			35				40				42	45	46	26			40
Soap Tree Bark		35		40				40				40							
Soapwort	36																		
Solidago					28														
Solomons Seal	35																		
Sourwood Leaves		35		36					80										

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Spearmint	35																		
Spigelia & Senna		40		39	40			37	33	43		40	39	40					40
Squaw Vine	40	35		42	42			43	35	42		40	44	45	25	46			
Squaw Vine Comp		40		40	45								43	35		36			
Squill Comp		50		45	48			43	54	56				47		46			35
Squill U. S. P. 8																0			0
Stillingia Comp					24														
Stine Root		35																	
Stone Root	40			40				48	38	45		40	40						
Stone Root green															47				
Stramonium Seed	58	40			65			37	30						60	45			57
Sumach Bark	22														33				
Summer Savery	40																		
Sunflower Seed	40														42				
Swamp Milkweed	35																		
Sweet Flag		66																	
Sweet Gum Bark	70																		
Sweet Sumach								36											
Symphytum					55														
Tag Alder	27	40		42				42	20	41			42		36				
Tamarock Bark	35														28				
Tansy	38														40				
Tansy Double								36											
Tar Soluble		60		18	20			40	10						35				
Tea	17																		
Thus Aromatic	36																		
Tobacco	40															65			
Tolu Sol. for Syr		25	25		20		55			19									20
Tolu for Tr		65			55			55		56			80						
Tonga	20	35		21				20	40			40	21		27	46			44
Tonka Bean	40	35		75															
Trifolium Comp	16	25		14	10									22			19		18
Trifolium Comp. w/Potass. Iodide					9														
Trillium	48																		
Tulip Tree Bark	60								37										
Tumeric	76														82				
Urtica	35																		
Ustilago Maydis															25				
Veratrum Green									70										
Viburnum Comp	38																		
Viburnum Prunifolium					80														

Firm and Alcohol Per Cent.

Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Virginia Stonecrops	35																		
Wafer Ash	35	60							80	60		40			73				
Water Eryngo	38																		
Water Melon Seed	17																		
Water Pepper	40	35			45			48		43			40		36				
White Ash	32																		
White Byrony		75													42				
White Pine Bark	18	30			42			40	25	64				40	33				41
White Pine Comp			19																
White Pine Comp. for syrup					20			48		30									
White Pond Lily	38														30				
White Poplar	22								34										
White Poplar Buds															37				
White Vervain	40																		
White Willow Bark	39																		
White Pine Bark for syrup without Morphine		25			18			48											
Wild Cherry			56																
Wild Cherry Comp	17				67			33	20					30					
Wild Cherry Detannated	16	16		18				28											
Wild Cherry for Syrup		15	1	10	12				5	8									5
Wild Ginger		35																	
Wild Lettuce	40	35		40	45							40				47			
Wild Yam													65						
Wintergreen	71	36			45			52											
Witch Hazel Bark	20							32					39						
Wood belony	25																		
Wormseed American	56	35		56				62	34				44		84				
Wormwood	38	40		40				42	35	44			40		43				
Xanthorrhiza																			54
Xanthosylum Berries					65														
Yarrow	38								35						25				
Yellow Dock Comp	40																		
Yellow Parilla	35														31				
Yerba Rheuma	60														28				
Yerba Santa	16																		
Yerba Santa Arom	16			18										20		31			19
Xanthorrhiza														0					

Firm and Alcohol Per Cent.

Tinctures—Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Aconite Leaves					50											75			
Aconite B. P					70														
Aloes																			
Ambergris											92								
Ambrosia					46														
Ambrosia & Salidago					45														
Arnica B. P					43														
Arnica Root					63														
Asafoetida					65														
Avena Sativa												47							
Balsam Peru											79								
Balsam Tolu											80								
Belladonna B. P					68														
Belladonna Root					75														
Benzoin											80								
Benzoin Co. B. P					75														
Benzoin Co. Spec			76																
Buchu													67		70				69
Buchu B. P					60														
Cactus Grandiflora					90														
Camphor B. P					60														
Capsicum					60														
Cantharides												90							
Castorium											92								
Catechu		40										50			48				
Catechu B. P					35														
Catechu Comp															50				
Celery Comp														44					
Chirata					63														
Chloroform & Morphine Co					55														
Cinchona B. P					68														
Cinchona Co. B. P					68														
Civette											92								
Colocynth		37													32				
Coniium Fruit					48														
Columba B. P					57														
Colchicum B. P					68														
Colchicum Root									55				54		60				
Cubeb		85																	
Cubeb B. P					85														
Digitalis B. P					65														
Digitalis fat free		50	47	65	70	70										46	68		70

Firm and Alcohol Per Cent.

TINCTURES—NAME	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Digitalis purified								45											
Ferric Chloride B. P.					23														
Gelsemium B. P.					55														
Gentian		56	46	45				45	47			47	45	46	50	50			43
Gentian Comp.					40														
Ginger double str.		86							90										89
Golden Rod					48														
Green Soap				30															35
Guaiac Ammon. B. P.					75														
Hamamelis B. P.					40														
Hydrastis B. P.					55														
Hyoscyamus B. P.					68														
Iodine Comp. U. S. P. 1870																94			
Iodine Mild B. P.					80														
Iodine Strong B. P.					80														
Jalap B. P.					70														
Kino B. P.					45														
Larkspur												47							
Larkspur Seed			70																
Lemon B. P.					75														
Lobelia Comp.									50										
Lobelia Etherial B. P.					55														
Matico					70														
Mandrake													60						
Musk Natural											80								
Myrrh B. P.					85														
Nux Vomica												71							
Nux Vomica B. P.					68														
Opium Ammon. B. P.																			
Opium B. P.					45														
Orris											92								
Podophyllum B. P.					90														
Prickly Ash													75						
Pulsatilla						46													
Quassia B. P.					42														
Quinine Ammoniated B. P.					55														
Rhubarb Co. B. P.					38														
Rhus Toxicodendron					48														
Sabal																94			
Senega B. P.					50														
Serpentaria B. P.					55														
Squill B. P.					55														

Firm and Alcohol Per Cent.

Tinctures—Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Stramonium B. P.					40														
Strophanthus B. P.					70														
Tolu B. P.					85														
Valerian Ammon												65							
Valerian Ammoniated B. P.					50														
Vanilla & Tonka					28														
Viburnum Opulus															62				
Warburgs Modified					60		57	52											
Warburgs Tincture							57												

Firm and Alcohol Per Cent.

Fluids—Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Anise Soluble	38																		
Aloes & Myrrh				50															
Alterative Comp	17																		16
Asafetida	72													75		85			74
Bay Laurel Leaves																			
Benzoin	60			48										40		46			74
Benzoin Co. for B. P. Tr.	64															60			
Benzoin Co. for U. S. P. Tr.				60										60		46			65
Blackberry Aromatic	38																		
Black Cohosh Comp																60			
Blue Cohosh Comp																31			
Buchu & Pareira	38																		
Buchu & Pareira Co	35																		
Buchu Juniper & Potass. Acetate				53												43			48
Cardamon Comp														43		47			41
Cinchona Co. for U. S. P. Tr.				53												43			48
Gamber Comp														39					38
Gentian Co. for B. P. Infusion.	42																		
Glycyrrhiza																11			
Golden Seal														0		0			0
Golden Seal Colorless														0		0			
Guiac	50			40												64			
Helonias Comp	40																		
Ipecac	31																		
Lavender Co. for Tr.				58										65					67

Firm and Alcohol Per Cent.

Fluids—Name	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
Licorice for Quinine Mixt	8																		16
Lithium & Hydrangea Co																40			
Myrcia	72																		
Myrrh																85			
Opium Aqueous & deod	19																		42
Opium Concentrated	35																		
Opium Camphorated	55															45			46
Orange Peel Comp																58			
Pink Root & Senna	18															40			38
Panus Canadersis Co	½																		
Peppermint Soluble	38																		
Rhuoarb Aromatic	35													25		37			38
Rhubarb & Senna	50																		
Rhubarb Comp. w/Potass	32			54															
Rhubarb for U. S. P. Tinct				32															
Rhubarb Sweet	24			40															
Rose Soluble	9			47												51			
Sarsaparilla Co														34		30			20
Spigelia & Senna	18															40			38
Squaw Vine Comp																36			
Tar Soluble	59													40		0			10
Tolu for Tr	50			50										56					53
Tolu Soluble	20													20		20			20
Trifolium Co																24			18
Viburnum Co														40		49			
White Pine Co	35			20															
White Pine Co. without Morphine	25																		
Wild Cherry detannated																12½			
Yerba Santa arom. for syrup		10			10			25											19
Yerba Santa Sol for syrup								17	24										
Zea		20																	
Zedoary Root															30				

J. P. Snyder, *Chairman.*

Fluidextract Ipecac Discussed

Three Problems Relating to Fluidextract Ipecac

Dr. Dohme: It seems to me, Mr. Chairman, you have three problems to try to solve, and they are not compatible ones, exactly. One of them is to try to get a fluid extract that is readily miscible with syrup. The second one is to try to get as much as possible of the alkaloid out of your drug by using the proper menstruum for so doing. The third problem is to try to get a standard that is harmonious as between the drug and the finished product.

The Committee, it seems to me, as the result of their correspondence and their records, ought to be able to try to make a recommendation that will in some way solve, as best we can, these three questions. I suggest that the Committee make a recommendation, which in their opinion tries to accomplish this.

Formula of U. S. P. VIII Revision Recommended

Chairman Proctor: Dr. Snyder, are you ready to make a recommendation?

Dr. Snyder: I would like to see some definite steps taken to get this problem away from this Committee. We have had this subject up here every year and we don't seem to get anywhere. We started in to get a menstruum that was going to exhaust this drug but we were not able to do it.

I am in favor of a reduction of the standard of this fluid extract. My own personal thought in the matter is that if we go back to the product of the U. S. P. VIII it would be a great deal better.

Chairman Proctor: Then you mean that in the absence of some other specific recommendation, the Committee recommend to the Revision Committee that it discontinue the U. S. P. IX Fluidextract of Ipecac and re-establish the U. S. P. VIII.

Dr. Dohme: I desire to say that if we depend upon the Revision Committee to solve this incompatible situation, we may get a solution that compares to the solution we got last time, when they didn't coordinate the fluid extract and the drug. It seems to me it is up to us to try to solve this Ipecac problem and if the Chairman is ready to make such a recommendation, I would be glad to second it: That the alcoholic strength of the U. S. P. VIII be recommended for adoption to the Revision Committee.

Dr. Snyder: I would make such a recommendation.

The recommendation was seconded by Dr. Dohme.

CHAIRMAN PROCTOR: The question is that we recommend to the Revision Committee the adoption of the U. S. P. VIII instead of the U. S. P. IX Method of making Fluidextract Ipecac. Those in favor say "aye;" contrary? It is so ordered.

Ergot Discussed

Precipitation in Fluidextract Ergot

DR. SNYDER: The second subject that we were given for consideration in our Committee this year was Fluidextract Ergot. We brought this up at the last annual meeting and it was thought then that defatting the drug with some substance, or in some manner, would remove quite a little of the precipitation troubles which have been experienced in making the fluid extract.

Removal of Fat Desirable

CHAIRMAN PROCTOR: The first point to establish is that there is a real necessity for the extraction of the fat. There is a precipitation that can be overcome very largely by aging or taking the fat out before you make the fluid extract.

DR. SNYDER: I might state, to go back a little further in the history of this, that it was brought out, I think by Dr. Francis, that this was a very troublesome fluid extract on account of precipitation, and I don't know just how it occurred, but anyway we investigated at our laboratory the ether extractive for Ergot and we found that this ran anywhere from eighteen to thirty per cent and appeared to be practically an oil. I found in our own laboratories that by selecting a drug under twenty per cent you could age it and make a pretty satisfactory product, but if you got much over twenty per cent, such as I did, that it did make an immense amount of trouble and your precipitation seemed to keep coming down for a year or so, and that was the reason for the suggestion of the removal of the fats.

CHAIRMAN PROCTOR: I think that the defatting of Ergot is an advantage and a desirable thing to do *per se*, but would you, after defatting, consider your defatted Ergot as a basis for making a one to one fluid extract, or would you consider that seventy parts of the defatted Ergot would be equivalent to your original hundred?

If you could choose a menstruum, a suitable alcoholic menstruum that would extract the active principles of Ergot, yet reject the fat,

there would certainly be no objection to that method. I can't see that you would be in any different position if you would take the fat out first or after you made the fluid extract, and I think you could very accurately state that one cubic centimeter of your defatted fluid represented one gram of U. S. P. Ergot.

Recommend to U. S. P. Revision Committee Removal of Fat

Dr. Snyder: What I had in mind was to follow out the same procedure that the Pharmacopoeia had in those preparations: take a thousand grams of your drug and defat it, and then make a 1000 cc. of the fluid.

I would be very glad to make a motion that we recommend to the Pharmacopoeia Committee that in the manufacture of Fluidextract Ergot they use a defatted Ergot.

Chairman Proctor: I believe it would be better to word it that in the manufacture of fluid extract the Ergot be defatted.

Dr. Snyder: I think that is a good point and I will amend my motion to take care of that.

Chairman Proctor: If there is no further discussion, the question before us is that the Section recommend to the Revision Committee the extraction of the fat from the Ergot used in the preparation of the fluid extract. All those in favor say "aye"; contrary? It is so ordered.

Miscellaneous Fluidextracts Discussed

Alcoholic Percentages of Fluidextracts

Dr. Snyder: The third subject we have is smply a matter of tabulation of alcoholic percentages. We started this, I think the Chairman will recall, with a little fear and trepidation that the manufacturers might not care to give us these different percentages, but the replies were very general. I think there were eighteen or nineteen who replied and the tabulation in the Committee's Report gives the percentage of alcohol as stated upon the labels of the different fluid extracts.

Chairman Proctor: If Dr. Snyder's Committee will have the time to carry the work further, and it is the sense of this meeting that it should be done, it would be an excellent thing to have them go on with their work, to see, not if a mandatory menstruum can be laid

down, but if a rational menstruum can be prescribed for the different products.

Menstruum of Six Typical Drug Preparations to be Studied

DR. DOHME: As this Committee has done such a splendid piece of work and seems to be a good and willing Committee with a good-natured Chairman as well as an able Chairman, it seems that we might suggest that they take up half a dozen typical preparations of the list that you have read and make a careful study from the standpoint of chemistry as well as of biology, of these six drugs and the various strength of menstrua that are used, or have been used in this compilation. Then after such study, both as to permanence and percentage of extractive, and the various things that go into determining whether one menstruum is better than another for the particular drug, and also being guided to some extent by whatever pharmacological information they can get on the subject as to the basis of efficiency of the preparation; that they make a report as a preliminary to something that may be very important and valuable to us in connection with all this long list. It seems to me preferable to do that rather than to get a large committee to take all of them and simply strike an average.

I offer that as a motion.

CHAIRMAN PROCTOR: I think you all understand the question: That the Committee be requested to take half a dozen of the widest variations and see if they can come into agrement on that list. All those in favor say "aye"; contrary? It is so ordered.

ESSENTIAL OILS

Report of the Subcommittee on Essential Oils read before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8, 1922.

SUGGESTED REVISION U. S. P. IX AND N. F. IV.

Benzaldehyde and Oil of Bitter Almonds

The committee again recommends the addition of the silver nitrate combustion test for the presence of chlorinated products with the following modification.

> "Rinse the interior surface of a 1 liter beaker with distilled water and pass the washings through a small filter until the addition of a drop of silver nitrate T. S. to a test portion acidulated with a drop of Nitric Acid shows no turbidity. Now place 3 or 4 drops of the product to be tested on a small clean watch glass supported on a triangle, ignite and immediately cover the moistened beaker. Wash the products of combustion through the washed filter with 10 to 20 cc. of distilled water acidulate with 1 drop of Nitric Acid. The addition of a drop of silver nitrate T. S. should yield no turbidity as compared with the control." (Absence of chlorinated products.)

This modification explained:—The Committee agrees that this test as modified over its report of last year decreases the liability of contamination through elimination of the products of combustion of an unwashed filter paper, and that it represents the most delicate qualitative test for chlorine known to date. The committee recommends, however that further study of the test be continued.

Oleum Auranti (Oil of Orange Peel) U. S. P. IX.

"The angle of rotation of the distillate thus obtained is equal to or only slightly greater than that of the original oil."

Suggested monograph U. S. P. X:—"The angle of rotation of the distillate thus obtained is equal to or only slightly lower than that of the original oil."

Proposed Oil of Orange Peel revision explained:—This revision only involves a change of one word, viz: "lower" for "greater" the latter being manifestly a typographical error.

Aqua Rosae (Rose Water) U. S. P. and Aqua Aurantii Florum U. S. P.

Recommend replacement of the residue test with an ash determination.

Suggested revision of Rose Water and Orange Flower Water explained:—We have yet to see a sample of either of these waters that does not exceed the limit of residue specified in U. S. P. IX.

Coumarin N. F. 4th Edition

"When heated to between 67 and 68° C. it melts."

Suggested monograph N. F. 5th Edition:—"When heated to between 68.5 and 69 5° C. it melts."

Proposed Coumarin revision explained:—Processes of purification have become so perfected that commercial coumarins irrespective of source now melt one full degree centigrade above the present N. F. maximum requirement, and therefore demands a special label in this respect.

U. S. P. Deletions

The Subcommittee on Scope has recommended that the following articles official in the U. S. P. IX be not admitted to the U. S. P. X·

Aqua Rosae, Aqua Aurantii Florum,
Copaiba, Moscus, Oleoresina,
Petroselini, Oleoresina Piperis,
Oleoresina Zingeberis, Oleum Cubebae,
Oleum Pimentae, Oleum Thymi.

Your committee desires to go on record regarding these proposed deletions as follows:

Aqua Rosae:—Deletion not recommended. Large quantities of rose water are used in face creams and it is believed that it should remain in the U. S. P. on account of the test for heavy metals if for nothing more.

Aqua Aurantii Florum:—Deletion not recommended. For same reasons as given under rose water.

Copaiba:—Do not recommend deletion. It is an important article of commerce employed mainly in medicine and very frequently sophisticated, therefore, needs the official specification protection.

Moschus:—Do not recommend deletion unless tincture of musk is also deleted as it is necessary to have a test for the product used in making the tincture, otherwise the latter is very liable not to be of proper strength. The committee believes that neither Deer musk or tincture of musk has proper place in the U. S. P.

Oleoresins of Parsley, Pepper and Ginger:—As there are no U. S. P. specifications for purity of these products and permits deviation from

the official processes of manufacture, they only take up space and should be deleted.

Oleum Cubebae:—Deletion not recommended. In the absence of accurate data for the determination of adulteration of cubeb berries and the tendency to such adulteration, official recognition is a protection to consumers.

Oleum Pimentae:—Deletion not recommended. Although not used as much internally for medicinal purposes as for flavoring, it is believed that it would be somewhat of a protection to the consumers and an advantage to sellers of the pure oil to have it remain official.

Oleum Thymi:—Deletion not recommended because it is employed somewhat as a flavoring material.

U. S. P. Addition

American Styrax (Liquid Amber Styraciflua) as an official substitute for Oriental Styrax (Liquid Amber orientalis). Experimental evidence indicates that the American species conforms to U. S. P. IX with the possible exception of acid value which is somewhat lower. Since this acid value is due to free Cinnamic acid, a product of decomposition of those ingredients upon which the value of the balsam primarily depends, this is not considered a valid objection. Its inclusion in the U. S. P. will serve to render the American consumer more independent of a foreign source of supply and by its competition will favor a product of more uniform quality.

Future Work of the Committee

Acting on Dr. Kilmer's suggestion (The Secretary's General Letter No. H-22 of August 16, 1920, your subcommittee's activities have been devoted mainly to U. S. P. and N. F. revision questions. The committee's work in this respect is brought practically to a close with the rendering of this report.

Regarding future activity, the committee thinks there is important work to be done, work more in line with its proper function, namely, the scientific advancement of the industry it represents.

The question of standardization of our present methods of assaying Essential Oils, with particular reference to those oils which contain free and combined alcohols, exclusive of those U. S. P. oils already provided for in this respect, has been inaugurated, but is far from being ready for concerted action.

The Essential Oil industry is dependent at the present time on

foreign assay specifications and other more or less indefinite directions for quality control. Lack of uniformity in Essential Oil analysis among domestic manufacturers and consumers exists which is liable to cause differences of opinion between different observers and which may lead to controversy. The committee agrees that any work which has for its object the placing of the analytical control in the manufacture of essential oils on a higher plane, is warranted.

Respectfully submitted,

G. F. RICHMOND, *Chairman.*

Discussion by Membership

Ash Limit For Rose Water

DR. RICHMOND: *Mr. Chairman*, the work of your Committee has been a continuation of last year's work, as is indicated in the printed report, and with the rendering of this report the work in this direction is practically completed.

CHAIRMAN PROCTOR: Dr. Richmond, I would like to ask if your Committee would be in position to recommend an ash limit for rose water? You state that you recommend replacement of the residue test with an ash determination.

DR. RICHMOND: No, we are not in position to state that definitely, Mr. Chairman. Of course, it is made with distilled water and that has no ash in it. There are two rose waters, two orange flower waters, I believe, in the U. S. P. IX: the ordinary and the stronger or fortis. The present residue test, as I recall, is one milligram in 100 cc., and it is always exceeded; at least, I have never seen a rose water or an orange flower water that didn't exceed that. I will have to answer your question in the negative. We are not prepared to suggest a limit for the ash determination at the present time. It came up in connection with our decision to recommend that those two waters be not deleted and it was put in as an afterthought with that statement.

CHAIRMAN PROCTOR: I asked the question because I thought it might have some bearing on what the Section might want to do with the report of this Committee. I feel that it would be well to send it to the Committee of Revision. I think, though, that they would ask us to set ash limits where we suggested that an ash determination be included in the test. The Committee could continue the work, if it would not be burdensome, and secure that information.

Dr. Richmond: I might say, Mr. Chairman, that wouldn't involve any great amount of work to obtain that information. That is the only open question, I believe, isn't it?

Chairman Proctor: That is the only open question.

Benzaldehyde Contains Traces of Chlorine

Mr. Rosin: I would like to ask Dr. Richmond whether he has found benzaldehyde complying with the recommended test? I have had a little work done in connection with other problems and tried to secure a benzaldehyde which would be absolutely free of chloride, and by applying the silver nitrate test we did not find such an article. The test is extremely delicate. It is the most delicate test for chlorine that we have, and as benzaldehyde is made by the use of chlorine, it would seem difficult to eliminate small traces of chlorine on a manufacturing scale.

Dr. Richmond: I would say in regard to that, that there are different ways of making benzaldehyde. You can make benzaldehyde without chlorine.

Mr. Rosin: Yes, but the commercial way of making it is with chlorine. I ask whether the test is not too delicate for a substance which is made by the use of chlorine? It would naturally be expected that it would have small quantities of chlorine: Wouldn't one hundredth of one per cent of chlorine be shown by this test?

Dr. Richmond: Yes, sir.

Mr. Rosin: That means you are eliminating as little as one hundredth of one per cent. Now the question is, can that be attained in a practical sense?

Dr. Richmond: There is technical benzaldehyde, U. S. P. benzaldehyde, benzaldehyde technically free from chlorine, and benzaldehyde f.f.c.

Mr. Rosin: By applying the silver nitrate test to various samples we did not secure benzaldehyde which was entirely free of chlorine; and the question is, is it practical to adopt a test which will exclude even as little as one hundredth of one per cent of chlorine?

A Member: I notice in these notes here it says: "The addition of a drop of silver nitrate T. S. should yield no turbidity as compared with the control." Perhaps that might be an answer to the question. That control should really be a blank test which should give the limit of chlorine, run in similar manner, or a certain amount of hydrochloric acid, similar to the chlorine test under benzoic acid in the

present U. S. P. I notice it says 'control"; I don't know whether it means blank or control. I suppose it means blank in this case because there is no other data about the control test.

Dr. Richmond: The blank should not be distinguishable from so much distilled water. It is absolutely blank. The test of the product should be equally so.

Mr. Rosin: Then you don't allow anything to pass.

Delicate Test For Essential Oils Desired

Chairman Proctor: If there is a difference of opinion on Benzaldehyde, perhaps that should be eliminated as we should be a unit in our recommendations. If it is true that a large proportion of the benzaldehyde on the market contains one one-hundredth of a per cent, or a very minute quantity of chlorine it might be a mistake to ask the Pharmacopoeia to exclude that.

I suppose, Dr. Richmond, that matter came before your Committee?

Dr. Richmond: Yes, sir.

The recommendation that we go back to the VIII Revision with the indicated changes was in the interest of the industry, as the Committee felt it would tend to raise the status. Benzaldehyde is used for adulterating oil of bitter almonds. The more delicate you make the test, the more adulteration you can detect, and we want just as delicate a test as we know how to find. We kept away from a quantitative test, as has been suggested, because it involves tediousness in control operation. This test, if carried out as suggested, will eliminate the possibility of chlorine in any extent that would be deterimental. I do believe that if it were possible to have a practical test whereby you could test more of the material, you might find slight suggestions of chlorine that you didn't get with three or four drops of the material, but the test does not lend itself to the burning of more than three or four drops because you get too much carbon and smoke and you lose a lot of it anyway.

You will notice, however, that the Committee in explaining this modification recommends that further study of this test be continued. As a matter of fact, we are working at the present time on a test that could be applied quantitatively as well as a qualitative test, to actually state the amount of chlorine present in a given amount of the material.

Chairman Proctor: I think it would be wise to do that and

possibly for the time being not attempt to make a recommendation to the Revision Committee on this question. Dr. Richmond, what have you in mind as the best way to dispose of the report?

Recommendations to U. S. P. Revision Committee on Essential Oils

DR. RICHMOND: I think your criticisms are well taken, inasmuch as the Committee recommends further study of that test. The balance of the report is subject to recommendation to the Revision Committee, I believe, if it is agreeable to the Section.

CHAIRMAN PROCTOR: You will make that as a motion?

DR. RICHMOND: Yes.

DR. KILMER: I will second the motion.

CHAIRMAN PROCTOR: That would eliminate the recommendation on benzaldehyde, and leave open the question of ash in rose water, unless Dr. Richmond, that is so small a matter that you could get the information and incorporate it in your report, before it is sent to the Revision Committee.

DR. RICHMOND: That could be done very easily and quickly.

CHAIRMAN PROCTOR: Then it is moved and seconded that the report, with these exceptions, benzaldehyde, and the change or elimination of the recommendation on ash in rose water be adopted and referred to the Committee of Revision.

All those in favor signify by saying "aye"; contrary? It is so ordered.

ALKALOID AND DRUG STANDARDS

Report of the Subcommittee on Miscellaneous Alkaloid and Drug Standards read before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5–8, 1922.

This report is an attempted completion of the program this Committee set up two years ago and published on page 263 of the Proceedings of A. D. M. A. for 1920.

Of the list there given for standardization, the following have been completed in the two years—1920 and 1921:

Arecoline hydrobromide.
Coniine hydrobromide.
Eserine sulphate.
Relative Standards of Ipecac and Fld. Ext. Ipecac.
Assay Process for Cinchona Bark.
Assay Process for Pomegranate Bark.
Assay Process for Mandrake Root.
Assay Process for Cantharides.

To this list we now add:

Assay process for Sparteine sulphate, by H. Engelhardt and Louise Dohme.

Revision of Cephaeline test in Emetine hydrochloride, by H. Engelhardt and Louise Dohme.

Detection of foreign alkaloids in Quinine and its salts and their bearing upon the Kerner Test, by Louise Dohme.

Detection of methyl alcohol in ethyl alcohol, by H. Engelhardt and Louise Dohme.

Standard of purity and identification of Procaine, by Alfred S. Burdick.

Standard of purity and identification of Picrotoxin, by B. L. Murray.

Standard of purity and identification of Hyoscyamine sulphate, by B. L. Murray.

Standard of purity and identification of Morphine Meconate, by B. L. Murray.

Each of these papers is complete in itself and it is suggested that they be discussed and acted upon separately.

Sparteine Sulphate

By H. Englehardt and Louise Dohme.

Report upon suggested estimation and method of assay of Sparteine sulphate: It is generally accepted that sparteine sulphate, being a volatile alkaloid, cannot be estimated by the methods usually applied for estimating alkaloids.

The salt itself or in tablets containing only milk and sugar can be titrated with standardized alkali using phenolphthalein as indicator. But the results thus obtained are found to be generally too high, which fact is probably due to the presence of an acid salt in the commercial product.

A sample of sparteine, which contained only 17.5 per cent of water of crystallization instead of the theoretical amount, viz: 21.2 per cent assayed when titrated with alkali 103.5 per cent purity.

By determining the nitrogen by a modern Kjaldehl method a purity of 96 per cent was found and by estimating the sulphuric acid radical and calculating from the amount of acid found the amount of salt a purity of 97 per cent was obtained.

Then the following methods were applied. 0.2 gm. of the salt was dissolved in water, the aqueous solution was made alkaline with ammonia water, shaken out with ether, the ethereal solution was evaporated, applying gentle heat, and the residue was dried at 60° to constant weight. Thus a purity of 98.2 per cent was found. By titrating the residue in the usual way, the purity was reduced to 96.3 per cent. When allowing the ether to evaporate spontaneously the purity of the salt was 97.5 per cent.

In another experiment the aqueous solution was made alkaline with caustic potash solution and the following results were obtained.

	Ether evaporated with gentle heat	*Ether evaporated spontaneously*
	Per Cent	Per Cent
Grav.	92.2	99.0
Vol.	94.5	

A method applied for the estimation of coniine or other volatile alkaloids was then used.

The aqueous solution of a weighed quantity of the alkaloid was rendered alkaline with caustic potash solution, the liquid shaken out with several portions of ether, the ether was dehydrated with anhydrous sodium sulphate and filtered into a separator containing an excess of N/10 hydrochloric acid diluted with water. The mixture was shaken,

the acid solution drawn off, the ether washed with several portions of water and in the combined aqueous liquids the excess of acid was titrated back in the usual way. Thus a purity of 97.0 per cent was found.

As a last method the dehydrated ether obtained as outlined in the foregoing process was shaken well with an excess of N/10 hydrochloric acid, the ether was evaporated and the excess of acid titrated back with volumetric alkali. Purity 97.2 per cent.

Experiments replacing ether by chloroform gave negative results, because chloroform apparently decomposes the alkaloid.

Experiments to separate any acid salt from the neutral salt by repeated recrystallization were not successful.

The first crystallization assayed when titrated directly with alkali a purity of 110 per cent and by the shaking out method 96.5 per cent while the respective figures for the second crystallization were 109 per cent and 98 per cent.

Judging from these experiments sparteine sulphate should be estimated by one of the two shaking out methods, i. e., rendering the aqueous solution alkaline with caustic potash solution, shaking the alkaline liquid with several portions of ether, treating the dehydrated ethereal solution with volumetric acid and titrating back the excess of acid with volumetric alkali.

Cephaeline in Emetine Hydrochloride

By H. Engelhardt and Louise Dohme

The Detection of Cephaeline Hydrochloride in Emetine Hydrochloride. In the U. S. P. IX test for cephaeline in emetine hydrochloride it is required that molybdic-sulphuric acid does not produce a purple color, by which the absence of cephaeline is indicated.

When this test is carried out very rapidly with a pure salt and the alkaloid is not allowed to remain in contact with the alkaline solution for too long a time, it is negative. When, however, the test is carried out slowly, the emetine is broken down into cephaeline and a doubtful reaction is produced; the color obtained however instead of being a distinct purple, is a reddish brown and can easily be mistaken for purple.

That such cleavage products are liable to be formed can be explained by the fact that emetine is a methyl derivative of cephaeline and as such is liable to be converted into the latter base.

The forthcoming pharmacopoeia will require that not more than four per cent of cephaeline hydrochloride be present in emetine hydro-

chloride, a rather lenient allowance. In order to find out how much cephaeline can be detected by this test, experiments were undertaken by mixing pure emetine hydrochloride with varying quantities of cephaeline hydrochloride. It was found that a distinct positive reaction is obtained with the U. S. P. test, when the emetine salt contains three per cent or more of cephaeline. There is no reason why emetine hydrochloride should contain as much as four per cent of cephaeline because the two alkaloids can very readily be separated from each other.

Foreign Cinchona Alkaloids in Quinine

By Louise Dohme, A. B.

Detection of Foreign Cinchona Alkaloids in Quinine and its Salts: On various occasions it has been pointed out that the present allowance of ammonia water in the well-known Kerner-Weller test official in the U. S. P. is entirely too liberal, and that in no other modern pharmacopoeia is such high allowance made. As for instance:

Allowance of Ammonia Water

	cc.
German Pharmacopoeia	4
Swiss Pharmacopoeia	4.5
Italian Pharmacopoeia	7
Dutch Pharmacopoeia	5
Swedish Pharmacopoeia	4.5
Hungarian Pharmacopoeia	about 3
Japanese Pharmacopoeia	6
Austrian Pharmacopoeia	4
British Pharmacopoeia	6

Contamination of quinine sulphate is due chiefly to the presence of cinchonidine sulphate which is isomorphous with quinine sulphate and therefore is liable to crystallize out together with it in the manufacturing process.

In order to find out the purity of quinine salts, as they are marketed at the present time, experiments were made which showed that the quality of the salts, with the possible exception of the salicylate, has considerably improved, compared with that in former years.

On applying the official test to three samples of commercial quinine sulphate, two of domestic manufacture and one manufactured in Java, it was found that only 4.3 c. c., 4.5 c. c. and 5.2 c. c. of 10 per cent ammonia water respectively were required for redissolving the foreign cinchona alkaloids.

By recrystallizing the sample which required 4.3 c. c. not very much was gained, the recrystallized salt required 4 c. c. of 10 per cent ammonia water for dissolving the foreign alkaloids.

Experiments were then undertaken to find out what influence an admixture of the sulphates of the different cinchona alkaloids to quinine sulphate would have on Kerner's test. For this purpose the recrystallized quinine sulphate was mixed with varying quantities of quinidine, cinchonine and cinchonidine sulphate and also with mixtures of two and all three of these salts. The following results were obtained:

Quinine Sulphate Per Cent	*Quinidine Sulphate* Per Cent	NH_4OH *used* cc.
95	5	19.5
98	2	17.5
99	1	9

Quinine Sulphate Per Cent	*Cinchonidine Sulphate* Per Cent	NH_4OH *required* cc.
95	5	6
98	2	4.5
99	1	4

Quinine Sulphate Per Cent	*Cinchonidine Sulphate* Per Cent	NH_4OH *required* cc.
95	5	6.5
98	2	6.5
99	1	6

Quinine Sulphate Per Cent	*Cinchonidine Sulphate* Per Cent	*Cinchonine Sulphate* Per Cent	NH_4OH *required* cc.
98	1	1	6

Quinine Sulphate Per Cent	*Quinine Sulphate* Per Cent	*Cinchonidine Sulphate* Per Cent	NH_4OH *required* cc.
98	1	1	8

Quinine Sulphate Per Cent	*Quinine Sulphate* Per Cent	*Cinchonine Sulphate* Per Cent	NH_4OH *required* cc.
98	1	1	8.5

Quinine Sulphate Per Cent	*Quinidine Sulphate* Per Cent	*Cinchonidine Sulphate* Per Cent	*Cinchonine Sulphate* Per Cent	NH_4OH *required* cc.
97	1	1	1	10.5

These results show that cinchonine sulphate and cinchoidine sulphate have only slight influence on the test, while for dissolving quinidine comparatively large quantities of ammonia water are required.

The official test when applied to commercial samples of quinine alkaloid and the other official salts of quinine gave the following results:

	cc.
Quinine bisulphate	1.5
Quinine alkaloid	4.7
Quinine hydrochloride	5
Quinine salicylate	5

In the Pharmaceutisch Weekblad of April 12, 1919, I. M. Kolthoff pointed out that while the Kerner test, as generally applied, gives accurate results for quinine sulphate, serious mistakes are liable to happen when this test is applied to quinine hydrochloride, quinine bisulphate and quinine alkaloid on account of the sodium sulphate and sodium chloride, formed when these salts are converted into quinine sulphate, which increase the solubility of quinine sulphate in water and thus render the results too low. Experiments made by him showed that the DeVrij test gives reliable results with these salts as well as with quinine sulphate when modified as follows:

.5 grams of quinine sulphate is boiled with 5 c. c. of normal sulphuric acid and 20 c. c. of 2/n solution of sodium acetate. The mixture is allowed to cool and 3 c. c. of potassium chromate (10 per cent) are added and the test is then carried out according to DeVrij's method.

.5 grams of quinine bisulphate is boiled with 20 c. c. of double normal sodium acetate solution until the liquid has become clear, then 3 c. c. of 10 per cent potassium chromate solution are added and DeVrij's regular process is then applied.

.5 grams of quinine is boiled with 3 c. c. of normal sulphuric acid and 20 c. c. of double normal sodium acetate solution and the test completed as given under bisulphate.

Quinine hydrochloride is treated according to DeVrij's original method, although the sodium chloride formed in the reaction increases the solubility of the quinine chromate, this solubility in the diluted chromate solution is not so great as to form a precipitate with caustic alkali.

It is claimed that by these revised processes the presence of less than 1 per cent of cinchonidine sulphate in quinine sulphate can be proven.

In the Pharmaceutisch Weekblad of December 20, 1919, Van Gelder points out that by Kolthoff's modification of DeVrij's method the presence of not less than 1 per cent of other cinchona alkaloids can be detected.

My experiments show that not less than 2.5 per cent of cinchonidine sulphate can be detected while the test is sufficiently accurate for less than 2 per cent of quinidine and cinchonine sulphate.

Revised DeVrij's Test

Quinine bisulphate	clear solution
Quinine alkaloid	clear solution
Quinine Salicylate	cloudy solution
Quinine hydrochloride (original DeVrij)	cloudy solution

Recrystallized	quinine	sulphate	containing	2%	cinchonine	sulphate	cloudy
"	"	"	"	3%	"	"	cloudy
"	"	"	"	5%	"	"	cloudy
"	"	"	"	2%	quinine	sulphate	cloudy
"	"	"	"	3%	"	"	cloudy
"	"	"	"	5%	"	"	cloudy
"	"	"	"	2%	cinchonidine	sulphate	clear
"	"	"	"	3%	"	"	cloudy
"	"	"	"	5%	"	"	cloudy

Judging from the foregoing results, which are probably not complete up to the present time, it appears that by the modified DeVrij method reliable results can be obtained. The method has great advantages over Kerner's process, in that it is much more easily carried out and does not require as much time and attention as the official test.

In conclusion it may be emphasized again that the allowance of 7 c.c. ammonia water in the Kerner Test is entirely too lenient because quinine and its salts apparently can be produced in a very much purer state as shown by the samples examined, which appear at the present time to be far superior to those marketed ten or twenty years ago.

Methyl Alcohol in Ethyl Alcohol

By H. Engelhardt and Louise Dohme

Detection of Methyl Alcohol in Ethyl Alcohol: Numerous methods have been recommended for detecting and estimating methyl alcohol in ethyl alcohol. Two recent methods seemed to be worth while examining. One is proposed by P. Pfyl, G. Reif and A. Hanner in the Zeitung fur die Unterschung der Nahrungs-und Genussmittel, 1921, 42, pages 218–225, and is carried out as follows:—10 c. c. of alcohol is slowly distilled from a 25 c. c. flask over a small, luminous flame, using an air-condenser, bent twice at right angles and 70 cm. long, and the distillate is collected in a cooled vessel. One c. c. of this is mixed with 4 c. c. of 20 per cent sulphuric acid and the mixture is oxidized by adding 1 gram

of finely powdered potassium permanganate in small portions. The oxidation should take at least fifteen minutes. The mixture is then filtered and the filtrate, which usually is colored pale pink, is allowed to stand at room temperature until colorless. 0.1 c. c. of this colorless distillate is added, drop by drop to 10 c. c. portions of sulphuric acid containing 2 per cent of either guaiacol, apomorphine or gallic acid. It is claimed that if formaldehyde is present guaiacol immediately gives a red, apomorphine a greyish-violet and gallic acid a greenish-yellow coloration.

In testing for traces of methyl alcohol by the oxidation with permanganate the method suffers from the objection that formaldehyde may be obtained from higher alcohols, ethers or other methyl compounds. Furthermore experiments showed that acetaldehyde and therefore pure ethyl alcohol give positive results with all of these reagents, save gallic acid, because when the acetaldehyde was removed from the oxidized liquid by boiling, all three of the tests were negative.

It is generally accepted that on boiling a solution containing both formaldehyde and acetaldehyde the former is polymerized while the latter is expelled. This procedure was directed in the U. S. P. VIII. Upon taking ethyl alcohol containing 5 per cent of methyl alcohol and oxidizing the mixture in the usual way and then heating until the acetaldehyde had been expelled, a positive test with all three reagents was obtained. This appears to contradict the statement, made at various times and by different investigators, that in this method in which morphine is used for detecting formaldehyde, this alkaloid might preferably be replaced by apomorphine because acetaldehyde is claimed not to act on this alkaloid. By this method, when expelling the acetaldehyde by boiling, 5 per cent or more of methyl alcohol in beverages can be detected.

The second method investigated was that recently recommended by Dr. Lyons and published in the January, 1922, number of the Journal of the American Pharmaceutical Association and which is carried out as follows:

One part of the alcoholic liquid is mixed with four parts of water and the mixture is carefully distilled. To 1 c. c. of a 1 per cent solution of potassium permanganate are added. Complete decoloration takes place within a few minutes. The mixture is filtered thru a dry filter until clear. To 1 c. c. of the filtrate, from a pipette that delivers 30 drops per c. c. ten drops of a 1 per cent dried egg albumen solution are added. The mixture is shaken and 1 c. c. of ferrated sulphuric acid (concentrated acid containing .03 grams of ferric ammonium sulphate

in 1 c. c. of water per 100 c. c. of acid) is added. In the absence of methyl alcohol the liquid will be golden yellow, the color remaining unchanged for at least ten minutes. If the solution becomes purple instantly the alcohol contains methyl alcohol.

This method has one great advantage over the first method and also over the one given in Schmidt's Pharmazeutische Chemie in that a solution of permanganate is used for the oxidation of the alcoholic mixture instead of crystalline permanganate, the time for reduction is therefore considerably shortened and excessive heat is avoided. Experiments made with this method gave positive results with alcohol containing 2.5 per cent methyl alcohol.

As a third process Schmidt's method was used, which is carried out as follows: 10 c. c. of the alcohol is distilled and the first c. c. of distillate is collected. 4 c. c. of 20 per cent sulphuric acid are added and 1 gram of finely powdered permanganate. The mixture is filtered and the filtrate allowed to stand until colorless. To 1 c. c. of this colorless filtrate, 5 c. c. of concentrated sulphuric acid are carefully added and the liquid is mixed with a solution of 50 milligrams of morphine sulphate in 2.5 c. c. of concentrated sulphuric acid. In the absence of methyl alcohol no purple color appears even after allowing the mixture to stand for one-half hour.

By this test 5 cent methyl alcohol in ethyl alcohol gave a positive reaction.

Experiments were then undertaken to find out if the solid permanganate could be replaced in this method by a permanganate solution as in Dr. Lyon's method. A mixture containing 5 per cent methyl alcohol gave a negative test when 2 c. c. of a 1 per cent permanganate solution were used for oxidation, the same amount as used in Dr. Lyon's albumen test. But when 10 c. c. of the permanganate solution were added a positive test was obtained immediately. This change from solid permanganate to a permanganate solution appears to be feasible as the above results show. When in this test solid permanganate is used a yellowish red solution is obtained, which on standing turns lavender in the presence of formaldehyde, while when permanganate solution is used the solution becomes lavender immediately, but after standing changes to red.

From these experiments it appears that for all practical purposes Dr. Lyons test is preferable for two reasons: First because the acetaldehyde, formed in the oxidation of the mixture of the two alcohols, does not act on the mixture of the egg albumen solution and ferrated sulphuric acid,

and secondly because this test indicates the presence of 2.5 per cent and more of methyl alcohol. Schmidt's method gives fairly accurate results but unless one is accustomed to the color produced by acetaldehyde, namely a reddish purple, one is apt to confuse it with the bluish purple color produced by the mixture of formaldehyde and acetaldehyde. It is to be regretted that the method offered by Pfyl, Reif and Hanner does not give trustworthy results, unless the acetaldehyde has previously been removed by boiling, because the colors produced are very distinct and characteristic.

In concluding it may be said again that Dr. Lyons method is probably most suitable for determining methyl alcohol in ethyl alcohol.

All methods whereby it is claimed that the presence of 5 per cent and less of methyl alcohol can be detected in beverages, etc., are more or less liable to lead to wrong conclusions because as already pointed out a positive test for formaldehyde may be given by substances other than methyl alcohol, such as higher alcohols and methyl derivatives.

Procaine

By A. S. Burdick

This is the monohydrochloride of para amido benzoyl-diethylamino-ethanol. Formula—C_6H_4. NH_2. $COOC_2H_4N$. $(C_2H_5)_2$. H cl. Introduced under the name of Novocaine.

It is a colorless, odorless, crystalline substance which produces numbness when placed upon the tongue. It melts at 153° to 155° C.

One gram of procaine is soluble in 0.7 c. c. water and in 20 c. c. alcohol at 20° C. Soluble in chloroform, insoluble in ether. Its aqueous solution is neutral. Alkalies precipitate the free base from aqueous solution in form of colorless oil, which soon changes to a crystalline mass. Sodium bicarbonate does not cause turbidity or precipitation in procaine solutions.

Make a solution of 1 gram procaine in 10 c. c. of water. When added to this solution potass. mercuric iodide solution produces a white ppt.; mercuric chloride solution a white ppt.; iodine test solution a brown ppt.; gold chloride test solution a brown ppt.; picric acid solution a yellow ppt.; when acidified with dilute nitric acid solution silver nitrate test solution forms a curdy white ppt. insoluble in nitric acid.

Dissolve 0.1 gram procaine in 5 c. c. water, add 2 drops of dilute hydrochloric acid and 2 drops of sodium nitrate solution (10%), and mix with a solution of 0.2 grams of betanaphthol in 10 c. c. of sodium

hydroxide solution (10%). A scarlet red precipitate is formed (distinction from phenacaine, which gives a white precipitate).

Dissolve 0.1 gram procaine in 5 c. c. water, add 3 drops dilute sulphuric acid and mix with 5 drops of potass. permanganate test solution. The violet color of the latter disappears immediately (distinction from cocaine). When dissolved in concentrated sulphuric acid no color is produced (absence of organic impurities). Hydrogen sulphide produces in the aqueous solution no coloration or ppt. (absence of heavy metals).

Upon incineration 0.5 gram procaine yields not more than 0.1 per cent residue.

Assay process. Dissolve 0.100 gram or quivalent in tablets in 20 c. c. water and add 5 c. c. of 10 per cent ammonia, shake four times with chloroform using 15, 10 and 5 c. c.. Filter the chloroform washings thru a 7 cm. filter paper and evaporate off the chloroform from a beaker by gentle heat removing beaker as soon as last of the solvent has been driven off. Dissolve residue in 2 c. c. of neutral methyl alcohol, add methyl red indicator and titrate with N/50 sulphuric acid until pink, then dilute with 50 c. c. of distilled water (carbondioxide free) and finish the titration. Each c. c. of N/50 sulphuric acid represents 0.005453 grams procaine.

Picrotoxin

$C_{30}H_{34}O_{13}$

By B. L. Murray

Picrotoxin occurs as colorless, lustrous crystals or a white crystalline powder. It is difficultly soluble in cold water but readily soluble in boiling water or in alcohol; also soluble in ammonia water and solutions of the fixed alkali hydroxides; slightly soluble in ether or chloroform. The saturated aqueous solution is neutral to litmus paper; the alcoholic solution is laevorotary.

Picrotoxin dissolves in sulphuric acid with a golden-yellow color which changes to violet on adding a minute quantity of potassium dichromate and to brown with a larger quantity.

Mix 0.2 gm. of powdered sodium nitrate with 3 or 4 drops of sulphuric acid on a white porcelain surface, sprinkle a minute quantity of Picrotoxin over the mixture and then add by drops an excess of 25 per cent sodium hydroxide solution. A deep red color develops.

Alkaline cupric tartrate V. S., previously diluted with 5 volumes of water is reduced by Picrotoxin, slowly in the cold, more rapidly on heating.

Picrotoxin melts between 198° and 200° C.

On ignition of 0.1 gm. no weighable ash remains.

The saturated aqueous solution yields no precipitate with mercuric chloride T. S., plantinic chloride T. S., tannic acid T. S. or mercuric potassium iodide T. S. (alkaloids).

Hyoscyamine Sulphate

$(C_{17}H_{23}NO_3)_2.H_2SO_4$

By B. L. Murray

Hyoscyamine Sulphate occurs as white, indistinct crystals, white granules or a white powder; it is odorless and, when exposed to moist air, delinquescent. The salt is easily soluble in water and in alcohol, only very slightly soluble in chloroform and in ether. The aqueous solution (1 in 20) is laevogyrate and neutral to litmus paper.

An aqueous solution of Hyoscyamine Sulphate, acidulated with hydrochloric acid, yields a white precipitate with barium chloride T. S.

Mix 0.01 gm. of Hyoscyamine Sulphate with a few drops of nitric acid in a porcelain dish, evaporate the mixture to dryness on a water-bath, cool the residue and add a few drops of alcoholic potassium hydroxide T. S. An intense violet color is produced. Atropine and hyoscine produce the same color.

Gold chloride T. S. produces in a solution of Hyoscyamine Sulphate in diluted hydrochloric acid (1 in 50) a lustrous precipitate (distinction from atropine which yields a lusterless precipitate).

Hyoscyamine Sulphate rendered anhydrous at 100° C., melts between 203° and 206° C.

On igniting 0.1 gm. of Hyoscyamine Sulphate, no weighable ash remains.

About 0.1 gm. of Hyoscyamine Sulphate dissolved in 2 c. c. of sulphuric acid produces not more than a slightly yellow solution (readily carbonizable impurities).

The solution of Hyoscyamine Sulphate (1 in 50) does not yield a precipitate with platinic chloride T. S. (foreign alkaloids).

When dried to constant weight at 100° C., Hyoscyamine Sulphate loses not over 5 per cent of its weight (water).

Morphine Meconate

$(C_{17}H_{19}NO_3)_2.C_7H_4O_7+5H_2O$

By B. L. Murray

Morphine Meconate occurs as a yellowish-white odorless powder, soluble in water and in alcohol. The aqueous solution (1 in 30) is clear and neutral or slightly acid to litmus paper.

An aqueous solution of Morphine Meconate (0.1 in 5) when treated with a few drops of a solution of potassium ferricyanide (1 in 100) followed by a few drops of dilute solution of ferric chloride, yields a reddish violet precipitate.

A solution of 0.1 gm. of Morphine Meconate in 10 c. c. of diluted hydrochloric acid assumes a dark red color on adding dilute ferric chloride solution; the addition of stannous chloride T. S. to the mixture discharges this color and the further addition of potassium nitrite restores it.

A solution of Morphine Meconate in sulphuric acid is slightly reddish; in fixed alkali hydroxide solution, greenish-yellow.

On heating, Morphine Meconate melts with decomposition at about 110° C. On ignition of 0.5 gm. no weighable residue remains.

Dried at 100° C. Morphine Meconate loses not more than 12 per cent of its weight (water).

The solution of 0.1 gm. of Morphine Meconate in 3 c. c. of sulphuric acid is at most slightly reddish (absence of narceine, thebaine and salicin which give a deep red color; pseudomorphine which gives a green color; and cane sugar and lactose which give a dark brown color).

A solution of 0.1 gm. of Morphine Meconate in 10 c. c. of 10 per cent acetic acid yields no precipitate with tannic acid T. S. (foreign alkaloids).

A solution of 0.1 gm. of Morphine Meconate in 5 c. c of sodium hydroxide T. S. is clear (narcotin) and on heating does not evolve ammonia.

On adding a few drops of ammonia water to 5 c. c. of an aqueous solution of Morphine Meconate (1 in 30) a white crystalline precipitate is produced which redissolves completely in sodium hydroxide solution. On shaking this solution with an equal volume of ether and separating and evaporating the ethereal portion, no weighable residue is left (narcotine).

On adding a solution of potassium carbonate to 5 c. c. of an aqueous solution of Morphine Meconate (1 in 30) a white or nearly white,

crystalline precipitate is obtained which does not become greenish on exposure to the air (apomorphine).

A. R. L. Dohme, *Chairman.*

The Report Discussed

Procaine, Morphine, Menconate, Hyoscyamine Sulphate, and Picrotoxin Should Have Standards

Dr. Dohme: Relative to the proposed standard on procaine, Dr. Burdick of our Section, who is a large manufacturer of procaine, very kindly drew this up for me in this work. I don't know that I can elaborate upon it in any way. He says that it is perfectly satisfactory and meets all the requirements of the product. The same applies to Picrotoxin, Hyoscyamine Sulphate and Morphine Meconate, all three of which have been gone over very carefully by Mr. B. L. Murray of our Committee. None of these four substances, of course, have standards at present in the U. S. P. and we felt that in view of the fact that they are of appreciable importance, that they should have standards, and we recommend that these standards be presented to the Revision Committee as a basis for their work.

Chairman Proctor: Would you include Sparteine Sulphate and the cephaeline impurity test also? Do you make that as a motion?

Dr. Dohme: Yes, sir.

Chairman Proctor: Is there a second?

The motion was seconded and carried.

PITUITARY EXTRACTS

Report of the Subcommittee on Pituitary Extracts read before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers Association held at the Hotel Biltmore, New York City, June 5-8, 1922.

Your Committee on the Standardization of the Products of the Pituitary Gland continued the work that was reported upon in 1921 in the hope that sufficiently definite results could be obtained from the study of the problems involved to warrant the making of a definite report as to the process of assay to be recommended for adoption by the members of the Association.

U. S. P. Test of Qualitative Value Only

We desire to report as the result of our studies that we are of the opinion that the standard U. S. Pharmacopeia pituitary test cannot be relied upon as a means of determining the oxytocic value of the products of the pituitary gland. In this opinion we wish to take a stronger position than in our report last year. The standard proposed in the Pharmacopeia; namely, histamine, is entirely unsuitable for the purpose intended, as it does not appear in the pituitary products except as an impurity, it is unstable, and as a test agent it is variable in its activity. Furthermore, the method of assay itself cannot be applied for standardization purposes with uniformity. Variations as great as 500 per cent may occur when the same product is tested with the same standard by different investigators. We do not believe that this is entirely due to the variations in technique.

Finally, we are of the opinion that so far as regards the U. S. P. test of pituitary products, it should be regarded as of qualitative value only.

Potassium Chloride Unsatisfactory Substitute For Histamine

Your committee has investigated the use of potassium chloride in place of histamine as a standard and has finally concluded that it, too, is unsatisfactory.

Recommendations of Committee

As the result of our studies we are not able to recommend for adoption any standard that has been proposed as of sufficient value to warrant its adoption for recommendation in this report.

Two of the members of this committee are of the opinion that the so-called blood pressure method affords a much better method of assay than the so-called U. S. Pharmacopeia method, but at this time as a

committee we are not ready to recommend its adoption as a method of assay to be approved by the Association.

We believe that it would be advisable for this committee to be dismissed as it would seem that further study of the question, in the light of our present knowledge, would not lead to definite results.

E. W. Houghton, *Chairman.*

Discussion by Membership

Test of Pituitary Products

Dr. Houghton: Those of you who have read the report will observe that we have arrived at the conclusion that the U. S. P. test of pituitary products should be regarded as a test of qualitative value only. One of the chief difficulties, of course, in the whole matter, is not alone the question of technique, but also the question of standard, the measuring stick by which we shall determine or compare the value of the unknown product with the known.

All of us have found, I think, that Histamine is entirely unreliable. It never should have gone into the Pharmacopoeia as a standard. Potassium Chloride has been proposed but it, too, is of doubtful value.

Just what may be used as a satisfactory standard it is hard to state. Possibly we might utilize a powdered concentrate extract of pituitary gland which we have been employing in our laboratory some years and had found constant.

It may be that there is some hidden factor in the technique of the method. I know one of the members of the Committee called to my mind today an experience that he has just had, that may throw some light on the subject. However, whatever the factors may be that underlie the difficulties encountered, I feel that it would be well for us to rest the case at the present time, hoping that we may get new knowledge that will guide us in the future; perhaps we ought to send a recommendation to the Committee on Biological Standardization of the U. S. Pharmacopoeial Committee regarding the whole question, stating that we have no satisfactory standard or method for quantitatively measuring the value of pituitary products.

Blood Pressure Method to be Further Investigated by Committee

Mr. Graber: I think you will all agree with me when I say that the reason we are not as a Committee able to recommend any

method of assay is not because of the fact that there has not been a great deal of concentrated effort on the part of members. It has been a means of stimulation, and I am ready to recommend that this Committee be dismissed. One member of the Committee agrees that the blood pressure method is satisfactory and there are several others who believe it is. We have not tried the blood pressure method, because we have had so many problems before us (that of standardization, that of choosing standards, and that of choosing methods) and I think many of the laboratories have been so busy with other problems that they haven't been able to put the time on this subject that they should.

However, I would like to recommend that we take up the subject of the blood pressure method (so-called) for the coming year and see if we can recommend that method as being of more than qualitative value.

Present Test Should Be Discontinued

CHAIRMAN PROCTOR: I concur in your opinion and feel that the Committee should be continued to carry on the work on the blood pressure method.

I presume that the Committee would recommend to the Revision Committee that they discontinue the present method, or refer to it only as a qualitative test?

DR. HOUGHTON: I think it might be referred to as a qualitative test. Perhaps Dr. Dohme would have a word on that since he has been connected with the Pharmacopoeial Revision Committee much longer than I have.

DR. DOHME: I think, Mr. Chairman, they rather look unfavorably upon qualitative tests for something that ought to be quantitative, and I think the wiser thing to do would be to have it eliminated, if you are trying to get rid of it.

CHAIRMAN PROCTOR: What I had in mind was this: The Revision Committee might be more reluctant to throw the test out entirely than to modify it. If they throw it out entirely, then there is no control in anyway for the U. S. P. product.

Histamine of Questionable Value

DR. SNYDER: *Mr. Chairman,* as long as the test is based upon Histamine, it has been conclusively proven by our Committee that Histamine is of no value as a standard, and I don't see the point of retaining that in any form.

U. S. P. Revision Committee Requested to Entirely Eliminate Test

CHAIRMAN PROCTOR: Do we want to ask them to throw the test out entirely or maintain it as a qualitative test?

DR. HOUGHTON: *Mr. Chairman,* in view of the statement made by Dr. Dohme, I would be in favor of modifying that recommendation and having my resolution changed so that it would throw it out entirely. I will put that in the form of a motion.

The motion was seconded.

CHAIRMAN PROCTOR: It has been moved and seconded that the Section recommend to the Revision Committee that the test for standardization of Pituitary Extract be entirely eliminated, which means that they will substitute a test, if they can find one. All those in favor say "aye"; contrary? It is so ordered.

PEPSIN AND PANCREATIN

Report of the Sub-committee on Pepsin and Pancreatin, read before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York, June 5-8, 1922.

Our efforts during the past year have been confined largely to a study of the keeping qualities of both dry and liquid pepsin and pancreatin preparations.

The dry samples were distributed November 1, 1917, and tested five times at fairly regular intervals between that date and April 1, 1922, an interval of about 4½ yers.

Stability of Dry Pepsin Preparations

Four pepsin samples were employed. These samples represent commercial scale and spongy pepsins possessing proteolytic powers ranging from 1:3000 to 1:4000 from four American manufacturers. The names of the makers were withheld and the samples numbered 1 to 4 inclusive. There was no detectable decrease in the digestive power of these samples of pepsin during the 4½ years' time of obseravtion. These findings speak well for the keeping quality of American-made pepsin.

Stability of Dry Pancreatin Preparations

The findings on the four pancreatin samples were not so favorable. The diastasic power suffered losses of from 60-90 per cent during the 4½ years, the greatest decrease—approximately 40 per cent—occurring during the fist 12 months of storing. The tryptic activity remained fairly constant.

Deterioration in Diastasic Enzyme Due to Oxidation

It may be concluded, therefore, that proteolytic enzymes in general, both gastric and pancreatic, are quite stable in dry form, while the diastasic enzyme deteriorates quite readily when kept under ordinary conditions. The deterioration is probably due in part to oxidation and in part to moisture. If atmospheric air is excluded by enclosing freshly made pancreatin in sealed gelatin capsules, the diastase remains active much longer.

Stability of Essence of Pepsin

The liquid preparations, consisting of a sample of essence of pepsin, one of glycerol of pepsin and one of essence of pancreatin, were sent out in April, 1920, and tested on four different occasions during the following two years.

The essence of pepsin contained 11.5 per cent absolute alcohol by volume, 0.30 per cent lactic acid, but no free hydrochloric acid, and showed a proteolytic power of 1:60 when made. The loss in activity of this preparation was gradual and amounted to approximately 40 per cent per year when the liquid was stored at room temperature. When kept in the refrigerator, its digestive power decreased only 20 per cent in 19 months. It is evident that even this small amount of lactic acid has a hydrolyzing effect on the pepsin at room temperatures. The advisability of storing liquid pepsin preparations containing free lactic acid, such as, for instance, Compound Elixir of Pepsin and Rennin, N. F., in a cool place, is obvious and deserves general consideration.

Stability of Glycerol of Pepsin

The glycerol of pepsin was made from high-testing pepsin in such a way that its reaction was "neutral" to methyl orange. This indicates the absence of free acids, but allows for the combined hydrochloric acid associated with commercial pepsin. The sample assayed 1 :1300 when freshly made and 1 :1200 two years later, a decrease of less than 8 per cent. These figures are very interesting and illuminating.

Deteriorating Effect of Free Hydrochloric Acid

It is generally understood that pepsin acts best in a 0.3 per cent hydrochloric acid mixture. This assumption may need a little interpretation. The presence of acid is necessary during digestion to combine with the proteins and in this way promote the process of hydrolysis. Sufficient acid must be added to take care of all the protein in this respect. It is the combined acid which is the important factor in pepsin hydrolysis and not the actual concentration of the hydrogen ions.

That free hydrochloric acid has a strongly deteriorating effect on pepsin solution has been shown very conclusively by Liebmann and Johannessen.[1] These investigators made 5 per cent solutions of pepsin

[1] P. Liebmann and L. Johannessen "Ugeskrift for Laeger," July, 1911, Copenhagen.

containing 45 per cent of glycerine, distilled water and varying amounts of hydrochloric acid. The addition of 0.08 per cent HCl decreased the proteolytic activity of the solution 18 per cent in two weeks, while 0.33 per cent of HCl lowered the strength 36 per cent in the same length of time. A control sample made with pepsin, glycerol and water alone retained its full activity during the experiment.

The hydrolyzing effect of free mineral acid on pepsin, as well as on any other protein, is quite pronounced. Pepsin is not produced or stored in the body in the presence of free hydrochloric acid. The acid should be added at the time of digestion, but not to liquid pepsin preparations intended to remain physiologically active for a reasonable length of time. In order to produce active and stable pepsin liquids, these points must be kept clearly in mind.

Unsatisfactory Character of Liquid Pancreatin Preparations

The essence of pancreatin, although made from high testing pancreatin, was weak from the start, both in diastasic and proteolytic activities, and it seems a very difficult matter to prepare the pancreatic enzymes in liquid and stable form.

Testing Proteolytic Activity of Pepsin by Milk Curdling Power

A method for estimating the proteolytic activity of pepsin by its milk curdling powder under certain specific conditions has been suggested by Mr. H. M. Adams of Frederick Stearns & Co. Some of the laboratories have reported unfavorably on this method, stating that the curdling end point is not as sharp as is featured in the method. Since a slight time varation would have a decided bearing on the final results, this objection is quite serious. It may be possible to overcome this difficulty and the work is being continued to this end.

FREDERIC FENGER, *Chairman.*

Discussion by Membership

Milk Curdling Power of Pepsin

CHAIRMAN PROCTOR: Dr. Fenger, as the proposed test of Mr. Adams has not been published, I think it would be well to state what it was.

DR. FENGER: The milk is acidified with lactic acid or hydrochloric acid to correspond to 0.2 per cent lactic acid with phenalpthalein as indicator. The pepsin solution is made as usual. The time required by the standard to curdle the milk is noted. The curdling

time is stated to be in direct proportion to the concentration of the enzyme.

Chairman Proctor: As I recall the test, it was so arranged that if it took three minutes, it was three thousand pepsin.

Dr. Fenger: A sample of one to three thousand pepsin is used as control, if this curdles the milk in six minutes and the unknown in three minutes, the latter would be twice as strong or 1.6000. I have worked with samples as high as 1:25,000 in proteolytic power. The clotting time does not seem to be directly proportionate to the digestive power. This is particularly true of high testing pepsins.

Mr. Bye: In the development of that method we used it first simply to obtain a relative test of the strength of pepsins as we make them on a manufacturing scale. We found we could cut down the time by hours; we could make any number of these tests in a very short time, and the experiments were easily carried out. While I haven't all this information clearly fixed in my mind, I can say that the processes were carried out with hydrochloric acid, phosphoric acid, lactic acid, etc., to see whether one would give better results than the other. I think hydrochloric acid or phosphoric acid seemed to be preferable, and, while I was not so thoroughly familiar with the work, I know they did get some very interesting results.

I think the time factor, the acid factor and the temperatures were the things that had to be properly controlled, but with a proper degree of control I think you will be able to develop a process that will give you at least relative results that will be far more effective as a practical thing than the present method of pepsin assay.

Neutral Preparation of Pepsin Suggested

Chairman Proctor: The work of this Committee has always been very thorough. It would seem to me that possibly we have accumulated evidence enough against the acid alcoholic liquid preparations. While as manufacturers we will be compelled to furnish such a product as long as a demand exists for it, it seems as though we might consider the possibility of making a neutral preparation, to be prescribed with a dilute mineral acid.

Dry Pancreatin Preparations

Dr. Oakman: I think the Committee's report on dry pancreatin preparations should lead all manufacturers of pancreatin to consider their products very carefully, because if there is an average deteriora-

tion of 40 per cent in a year, there is an instability which we have not all realized. I think investigation could profitably be made along that line, either by the Committee or by individual manufacturers; for instance, how is the stability affected by the kind of defatting agent used; what is the relative stability of pancreatin with and without diluent?

I don't know whether the research of the Committee included any observations of this character or not, but I think every manufacturer will probably of his own accord want to investigate that, because a deterioration of 40 per cent occurring during the first twelve months is quite a serious accusation against a preparation which we have always considered as fairly stable.

DR. FENGER: Forty per cent is the average. Some of the samples deteriorated 65 per cent, I believe, and others only 35 per cent.

Suggested Change in Pancreatin Test

DR. OAKMAN: The second paragraph of this report refers to dry pancreatin preparation. Of course, it is the amylolytic power which has been of predominant interest to all pharmaceutical manufacturers. I think the tryptic power has been of very little interest to manufacturers for a number of years, although I understand that now the test for tryptic power is going to be stiffened up a bit—is that right?

DR. FENGER: We have recommended to the Revision Committee to retain the present strength and test for diastase, and to replace the milk peptonizing test with the Fuld-Gross method. (One part of pancreatin should digest 25 parts of casein when tested according to the Fuld-Gross method.)

Conveniences of Milk Test for Pepsin

DR. OAKMAN: The Fuld-Gross method will undoubtedly give us a better result on the activity.

Regarding the milk test for pepsin, I think more than one laboratory has found it very convenient to apply the milk test, as Mr. Bye suggested, for a preliminary assay in the manufacture of pepsin.

The regular U. S. P. assay for pepsin is a tedious thing and in the process of manufacture it is frequently expedient to test a lot in process before it is completed and rapidity is the thing that is needed; so this test has been found to be useful.

During the war, when Rennin was off the market, and pepsins were sold so extensively to the cheese-making industry, we had to

apply a milk curdling test, and we learned a great many things about it. Among other things we learned that we were dealing with essentially a physiological substratum (milk), it being a variable factor which was extremely difficult to control; even if you went to the original source, the cow herself, you still found variations which it was impossible to control, and when you had to depend upon a city supply of milk, the complications were still greater. In all variations on that test, it should be borne in mind that merely standardizing the milk to a given acidity will not necessarily give uniform results.

Dr. Fenger: We did keep the pancreatin in partly filled amber colored bottles, so as to approach the condition found in the drug store. Some of the experimenters sealed part of the pancreatin in gelatin capsules and tested it along with the other sample. The sealed samples kept better; but we did not try the things which Dr. Oakman suggested.

Deterioration of Digestive Enzymes and Value of Tests

Mr. Fairchild: *Mr. Chairman*, I am very much impressed with the importance of this conference of manufacturers and with the importance in general of conferences of manufacturers.

As the discussion at times involves a wide scope, it seems to me that this morning we have two salient things: First, as manufacturers what can we recommend? Then we have the National Formulary which should conform to the Pharmacopoeia—work out its formularies on lines which are dictated by the Pharmacopoeia.

I should like to just take up seriatim some of these points which have been brought up: First, the deterioration of the amylopsin of pancreatin; this it seems to me is not due to any peculiar susceptibility of this enzyme to oxidation, differing in that respect from other enzymes. When observed in a commercial product, such as pancreatin or dry pancreas extracts, I should consider it as being due principally to the fact that in the presence of moisture the trypsin has a deteriorating influence upon the amylopsin.

If you take a preparation containing these enzymes and keep it absolutely dry, I should say that the amylopsin would probably be as constant as trypsin. Since this meeting began I have had several tests repeated in the laboratory. We have looked up pancreas preparations, dry products, and have found that some made several years ago with a diastasic power of 1 to 135, 1 to 145, 1 to 150, lost scarcely 11 per cent, between 10 and 11; the vials were opened

from time to time, the idea being to see what was happening to the product under these practical conditions. We also have to consider that we have many varied climates, and a preparation which is somewhat hygroscopic requires special care.

In this question of deterioration, of meeting the assay required, we have it in our power as manufacturers to assay beyond the claim, beyond this certain point, if the Pharmacopoeia does not state it too high. But of course this expedient is to be avoided in so far as possible.

My experience would lead me to believe that amylopsin is inherently not especially susceptible to oxidation.

If, however, we take pancreatin, officially defined to contain principally amylopsin, trypsin and steapsin, and place it in any menstruum capable of taking up the enzymes and holding the organic materials in stable form, this product, kept on a shelf in the ordinary way, will be found upon assay not to show the enzymic, digestive, energy of the actual pancreatin used in the preparation. The diastasic energy will gradually deteriorate and it will show practically no lipolytic power.

The incompatibilities of pepsin and pancreatin in liquid preparations are now well understood. And I think it would be well to consider whether a liquid pancreatin as a pharmaceutical preparation can practically be made.

In view of the importance of the enzymes and the extracts of the digestive glands as articles of materia medica, there should be no official preparation which should in any way constitute a defective means of employing them, incapable of affording data in the realization, study, of their therapeutic value.

The milk-curdling enzyme is one of the next things of importance. I believe that the two enzymes as found associated in the gastric juice are distinct substances. We define pepsin as the proteolytic enzyme of the gastric juice; I can see no reason why it should require assay also for milk-curdling power, except of course by the manufacturing chemist in his everyday routine assays of products by a certain process. In fact, I know from experience that it is possible to obtain a dry rennet preparation which will exhibit enormous curdling power, say, 1 to 15,000, and yet a product which will exert little or no proteolytic activity. We cannot consider the milk-curdling activity as affording a criterion for proteolytic power. This seems to me a matter

quite apart from the use of commercial products as milk-curdling agents.

As Dr. Fenger stated, and as there is to my mind no doubt, pepsin and the milk-curdling ferment are two separate and absolutely different things. So it would seem that the milk-curdling power should have no place in the Pharmacopoeia test for pepsin. It would scarcely seem to be in accordance with pharmacopoeial practice. And this would tend to still further give currency to the idea, entirely fallacious, I believe, that pepsin has these two distinct properties—curdling and proteolytic.

In dealing with this matter, perhaps we might now say: "We regard with favor the proposed study of the assay of the milk curdling enzyme."

Committee Will Continue Investigations

CHAIRMAN PROCTOR: Dr. Fenger, have you in mind any recommendation?

DR. FENGER: No, I have not. It may be interesting to take up the suggestions which Dr. Oakman made in regard to the different solvents for the dehydrating process, if it is agreeable to the other members of the Committee.

Dr. Oakman spoke about the diastase being so important to the manufacturers; but how about the patient? It has been shown quite conclusively (I have seen several papers on the subject in good medical journals) that intestinal indigestion is just as often due to tryptic as to diastatic deficiency; so why not give the patient real relief by having both enzymes present in active form in U. S. P. pancreatin?

CHAIRMAN PROCTOR: This has been one of our most active committees and it will be continued.

POISON LABELS

Report of the Sub-committee on Poison Labels presented to the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers Association, Hotel Biltmore, New York City, June 5-8, 1922.

This committee has not made as much progress in its work as was originally hoped as numerous difficulties were encountered. In the first place it was not easy to decide upon a mode of attacking the problem. Then it was thought by some that a definition for a "poison" would have to be decided upon, which was soon given up as a hopeless task. Finally, lists of the several classes of products were made out and votes of the members taken on the poisonous or non-poisonous character of each individual product. In that way some progress was made, although none of our lists are as yet complete, as will be noted from a perusal of the following.

Fluid Extracts

The committee is unanimous in voting the following fluid extracts poisonous:

Aconite leaves
Aconite, U. S. P.
Adonis vernalis
Belladonna leaves
Belladonna root
Calabar bean
Cannabis Indica
Cantharides
Cocculus Indicus
Colchicum Seed
Colchicum Corm
Conium
Conium leaves
Lily of Valley Flowers
Lily of Valley Root
Digitalis
Gelsemium
Henbane
Ignatia
Larkspur seed
Lobelia
Nux Vomica
Opium, Conct.
Opium, Aqueous and Deodorized
Opium, Camphorated
Scopola
Staphisagria
Stramonium seed
Veratrum
Strophanthus
American Cannabis
Stramonium Leaves
Rhus Toxicodendron
Pilocarpus

The committee is unanimous in voting the following fluid extracts non-poisonous:

Ipecac
Mandrake
Phytolacca
Rue

The *majority* of the committee voted the following fluid extracts poisonous:

Canadian Hemp
Colocynth
Ergot
Sanguinaria
Savin
Squill

The committee was not unanimous in its vote on the following fluid extracts, but the majority voted them non-poisonous:

Buckeye Bark
Cereus grandiflorus
Capsicum, U. S. P.
Cotton Root Bark
Scoparius

The committee is not agreed as to whether or not the following fluid extracts should be designated poisonous or non-poisonous:

Mezereum
Pulsatilla

Tinctures

The committee is unanimous in its decision to designate the following tinctures as poisons:

Aconite
Belladonna leaves
Belladonna root
Gelsemium
Hyoscyamus
Indian Cannabis
Iodine
Nux Vomica
Opium Compound
Opium
Opium, Deodorized
Physostigma
Stramonium
Strophanthus
Veratrum Viridi

The committee is unanimous in its decision to designate the following tinctures non-poisonous:

Capsicum

The committee was not unanimous in its vote on the following tinctures, but the majority voted them poisons:

Cantharides
Digitalis
Ipecac and Opium
Lobelia
Sanguinaria
Squill
Colchicum seed
Colchicum root
Larkspur

The committee failed to agree on the poisonous or non-poisonous character of the following tinctures, the vote being evenly divided:

Arnica

Solid and Powdered Extracts

The committee is unanimous in declaring the following to be poisonous:

Aconite root
Belladonna leaves
Belladonna root
Calabar Bean
Cannabis Americana
Colchicum Corm
Colchicum Seed
Conium leaves
Conium fruit
Digitalis
Gelsemium
Hyoscyamus
Ignatia
Nux Vomica
Opium
Poke Root
Stramonium leaves
Stramonium seed

The committee is unanimous in declaring the following non-poisonous:

Jalap	Mandrake

The committee failed to agree as to the poisonous or non-poisonous character of the following:

Arnica	Cotton Root Bark
Colocynth	Ipecac

The majority of the committee voted to call the following poisonous:

Cannabis Indica	Ergot

The following additions were made to the list as originally sent out and on them the entire committee did not vote:

Coca leaves	Veratrum
Lobelia	Apocyanum
Squill	Sanguinaria

It was thought by some members of the committee that further correspondence in regard to the above classes of preparations would get us nowhere and that it would be advisable to have the entire Scientific Section cast its vote as to the poisonous or non-poisonous character of the several products on which the committee was unable to agree. If time permits, it would appear to be a sensible solution of the problem.

Pills, Tablets and Similar Products

These preparations presented real difficulties insofar as they are in many cases combinations of ingredients, formulas for which vary. While the majority of manufacturers of these products have more or less similar formulas, they differ just sufficiently so as to make it difficult, if not impossible, to classify them. Lists were sent out to the several members of the committee to be voted upon, in which individual constituents of pills, tablets, etc., were given, as, for example, in addition to the botanicals listed under Fluid Extracts, were such chemicals as: Acetanilid, Antipyrine, the alkaloids and their salts, beta naphthol, croton oil, creosote, mercury salts, nitroglycerin, silver nitrate and similar compounds. While the committee voted on this list as submitted, the results appear to be of questionable value and are not included in this report. A discussion of this matter may develop opinions and suggestions as to the better method of handling this problem so that the committee, if continued, may attack this problem in a more intelligent manner than was attempted during the current year.

Another matter which has not been decided upon and which the Section might like to discuss is the advisability, or otherwise, of includ-

ing an antidote or antidotes on the label of either all of the substances designated as poisonous, or on the label of those considered more virulent. Some of the committee members seemed to think well of the idea, whereas others thought it unnecessary.

Respectfully submitted,

J. M. Francis,
A. R. L. Dohme,
A. L. Walters,
F. W. Heyl,
W. H. Blome, *Chairman.*

Discussion by Membership

Labels of Poisonous Products

Chairman Proctor: From many standpoints it would be advisable for the members of this Association to agree in labeling their products poisonous or non-poisonous.

Dr. Snyder: I think this Committee would like a motion from our Association, accepting those that they have unanimously agreed were poisons and considering them poisons by our Association. I make such a motion: that we accept them as poisons and label them as such.

Chairman Proctor: Of course, that is going a step further than this Section has gone. We could recommend labeling.

Dr. Snyder: I will make the motion that we accept the different lists on which the Committee has unanimously agreed as poisons, and that we suggest that the different firms label them as poisons.

The motion was seconded by Mr. Bye.

Chairman Proctor: Is there any further discussion?

Dr. Dohme: I would like to ask whether any gentleman here representing different houses could give any valid reasons or real reasons why that suggestion should not be carried out; that is to say, is there any inherent reason why a substance that seems to be generally conceded to be a poison should not be labeled a poison? In other words, are there any ethical reasons, are there any business reasons, or are there any reasons why a preparation which in the opinion of the membership is a poison, should not be in the finished package labeled a poison? That is the question.

Mr. Dunning: Mr. Chairman, there is just one possible reason

which occurs to me. I haven't heard the discussion nor read the paper, I am frank to say. If any of these products go to the consumer, if the product is labeled "poison" and is to be used internally, it creates quite a serious doubt in their minds as to whether they ought to take it or not.

Tinctures and Extracts Seldom Go Direct to the Lay Public

MR. BYE: *Mr. Chairman*, it seems to me that these products are all fluid extracts, tinctures and solid or powdered extracts; they don't go direct to the consumer, they all go to the physician. I think if the consumer did get any of these products the fact that they are extremely poisonous is all the more reason that they should be so labeled, because it would be better for them not to take them than to take too much.

Poison Labels Printed in Red Ink

DR. WALTERS: *Mr. Chairman*, of course the whole object of this thing is to protect the consumer, not ourselves particularly, and they should go to the consumer, even if they are dispensed from this bottle in another bottle, with the word "poison" on them, put on by the druggist.

Another point that has not been mentioned might be spoken of here. The Committee agreed for this same reason, to protect the consumer, that these labels should be somewhat uniform; that they should bear the word "poison" in a prominent way; and they also agreed that these labels should be printed on white paper, the printing to be in red ink, so that a customer in getting a bottle containing a poison from any of these manufacturers would know from the character of the label that it was poison. Some manufacturers, of course, do use a red paper with white ink to designate poisons, but we among ourselves agreed that it would be better to use a white background and red ink.

Uniformity of Poison Labels Desirable

CHAIRMAN PROCTOR: I agree with the Committee, as expressed by Dr. Walters, that a uniform labeling would be desirable if we could bring it about.

DR. SNYDER: *Mr. Chairman*, would not uniformity of label be a good question for this Committee to consider throughout the coming year; see how different members of our Association would look upon that? I feel that it would be a distinct advantage for our As-

sociation to establish such a thing, myself. There may be, on the other hand, objections on the part of some firms, and I think if the Committee looked at it through the coming year they might be able to give us a suggestion by the next meeting.

Committee Recommendation on Poison Labels Adopted by Section

CHAIRMAN PROCTOR: I think the suggestion is very well made. It would be little more work for the Committee to take up that point while they were trying to thrash out those that are in question at the present time.

Are there any further remarks? If not, the question then is that the Section adopt the finding of the Committee on Poison Labels and recommend the labeling of the products accordingly. All those in favor signify by saying "aye"; contrary? It is so ordered.

METRIC EQUIVALENTS

Report of the Subcommittee on Weights and Measures read before the Scientific Section at the Eleventh Annual Meeting of the American Drug Manufacturers Association, Hotel Biltmore, New York City, June 5-8, 1922.

While at first glance it would seem a comparatively simple matter to prepare Metric Equivalents of the ordinary quantities for use upon our labels, the committee finds, however, that there are many different points upon which there appears to be difference of opinion. One point in particular upon which there was a wide divergence was upon the method of expressing fractions of a grain. In order to settle this point the following questionnaire was sent to our members.

Referendum Submitted to Membership

Gentlemen of the Scientific Section:

The committee on Metric equivalents, appointed about a year and a half ago, and at that time directed to prepare tables of metric equivalents, for the common units, as used by our Association, desire to present these tables at our next annual meeting.

While it would appear a relatively simple operation, considerable discussion has arisen and at present there remains a difference of opinion among the members of the committee regarding the correct manner in which to express the metric equivalents of fractions of grains. While it is evident that no recommendations which our committee will make, can in any way prove binding upon members of our Association, it is evident that on the other hand it would be desirable to establish a uniform system of expressing these metric equivalents upon our labels.

The Committee upon Metric Equivalents in preparing these tables desire to carry out the wish of the majority of the members of our Association and accordingly we are requesting you to express a preference for either of the two methods which may be used for the purpose described.

It was first suggested that we prepare tables, expressing the metric equivalents in grams, for example:

¼ grain.....0.0162 Gm.

Objections to expressing small quantities in this manner have arisen due to the fact that it occurs in certain pill or tablet formulae

that occasionally these formulae will call for 1/60 grain of a certain ingredient and 1/65 grain of another. To indicate the difference in this case it requires that the metric equivalent be expressed in grams to the fifth decimal place, for example:

1/60 grain.....0.00108 grams.
1/65 grain.....0.001 grams.

The objections are the appearance of the label where five decimal places are required and to the space occupied which is quite serious in the case of small labels.

To overcome this, it has been suggested that the tables express the metric equivalents of all quantities less than 16 grains in milligrams, for example:

1/60 grain.....1.08 milligrams.
1/65 grain.....1.00 milligrams.

Objections to the latter are based on the unfamiliarity of physicians, nurses and pharmacists with milligrams, while it is claimed that many of these understand the grams or decimal part of a gram.

Also it is claimed that certain countries to whom we export our products used the metric system and would strenuously object to the use of milligrams instead of grams.

The committee will, therefore, prepare these tables in accordance with the wishes of the majority of our Association and in order that we may obtain this we request that you give us your opinion by voting upon the questions asked on the attached sheet and returning the form to the *Secretary of the American Drug Manufacturers Association, 507 Albee Building, Washington, D. C.*

Result of the Referendum

Twenty-two replies were received indicating that fourteen favored the use of grams, while eight desired milligrams. While a vote of 14 to 8 is not overwhelmingly conclusive that the decimal gram is the proper method to use upon our label, the committee in preparing these tables has carried out the desires of the majority of our membership.

Enough Decimal Places to Meet Most Exacting

Another point upon which there seems to be much difference of opinion is the number of decimal places which should be used in expressing the equivalents and it finally seemed wise to the committee in preparing these tables to use a sufficient number of decimal places

to meet the ideas of the most exacting, and those who do not care to use the number of places designated in the table may of course reduce to the number which they think desirable.

Purpose of Table

In submitting this table it is not the idea of the committee that the Association should adopt it and request all members to use it, but simply submit it as an aid in establishing metric equivalents at the different laboratories. If a certain laboratory prefers the use of milligrams or centigrams all that will be necessary to do is to move the decimal point to the proper place. Likewise any member can reduce the number of decimal places to meet their requirements.

Fluid Ounces to cc.

	cc.		*cc.*
1/64 fl. oz	0.462	5 fl. ozs	147.86
1/32 fl. oz	0.924	6 fl. ozs	177.44
1/16 fl. oz	1.848	7 fl. ozs	207.01
3/16 fl. oz	5.544	8 fl. ozs	236.58
1/8 fl. oz	3.697	9 fl. ozs	266.16
3/8 fl. oz	11.090	10 fl. ozs	295.73
1/4 fl. oz	7.393	11 fl. ozs	325.30
1/6 fl. oz	4.929	12 fl. ozs	354.87
1/10 fl. oz	2.957	13 fl. ozs	384.45
1 fl. oz	29.57	14 fl. ozs	414.02
2 fl. ozs	59.15	15 fl. ozs	443.59
3 fl. ozs	88.72	16 fl. ozs	473.17
4 fl. ozs	118.29		

Pints to cc.

	cc.		*cc.*
1 pint	473.17	6 pints	2839.00
2 pints	946.33	7 pints	3312.16
3 pints	1419.50	8 pints	3785.33
4 pints	1892.67	9 pints	4258.50
5 pints	2365.83	10 pints	4731.66

Gallons to cc.

	cc.		*cc.*
1 gal	3785.33	6 gals	22711.99
2 gals	7570.66	7 gals	26497.32
3 gals	11355.99	8 gals	30282.65
4 gals	15141.32	9 gals	34067.98
5 gals	18926.66	10 gals	37853.31

Fluidrams to cc.

	cc.		cc.
1 fluidram	3.697	5 fluidrams	18.483
2 fluidrams	7.393	6 fluidrams	22.180
3 fluidrams	11.090	7 fluidrams	25.876
4 fluidrams	14.786	8 fluidrams	29.573

Minims to cc.

	cc.		cc.
1/64 min	0.00096	80 mins	4.923
1/32 min	0.00193	85 mins	5.237
1/16 min	0.00385	90 mins	5.545
3/16 min	0.01155	95 mins	5.853
1/8 min	0.00770	100 mins	6.161
3/8 min	0.02310	105 mins	6.469
1/6 min	0.10268	110 mins	6.777
1/10 min	0.00616	115 mins	7.085
1 min	0.0616	120 mins	7.393
2 mins	0.1232	125 mins	7.701
3 mins	0.1848	130 mins	8.009
4 mins	0.2464	135 mins	8 317
5 mins	0.3081	140 mins	8.625
6 mins	0.3697	145 mins	8.933
7 mins	0.4313	150 mins	9.242
8 mins	0.4929	155 mins	9.550
9 mins	0.5545	160 mins	9.858
10 mins	0.6161	165 mins	10.166
11 mins	0.6777	170 mins	10.474
12 mins	0.7393	175 mins	10.782
13 mins	0.8009	180 mins	11.090
14 mins	0.8625	185 mins	11.398
15 mins	0.9242	190 mins	11.706
16 mins	0.9858	195 mins	12.014
17 mins	1.047	200 mins	12.322
18 mins	1.109	205 mins	12.630
19 mins	1.171	210 mins	12.938
20 mins	1.232	215 mins	13.246
25 mins	1.540	220 mins	13.554
30 mins	1.848	225 mins	13.862
35 mins	2.156	230 mins	14.170
40 mins	2.464	235 mins	14.478
45 mins	2.772	240 mins	14.786
50 mins	3.081	245 mins	15.095
55 mins	3.388	250 mins	15.403
60 mins	3.697	255 mins	15.711
65 mins	4.005	260 mins	16.019
70 mins	4.313	265 mins	16.327
75 mins	4.621	270 mins	16.635

Minims to cc.—Continued.

	cc.		*cc.*
275 mins	16.943	380 mins	23.412
280 mins	17.251	385 mins	23.720
285 mins	17.559	390 mins	24.028
290 mins	17.867	395 mins	24.336
295 mins	18.175	400 mins	24.644
300 mins	18.483	405 mins	24.952
305 mins	18.791	410 mins	25.260
310 mins	19.099	415 mins	25.568
315 mins	19.407	420 mins	25.876
320 mins	19.715	425 mins	26.184
325 mins	20.023	430 mins	26.492
330 mins	20.331	435 mins	26.800
335 mins	20.639	440 mins	27.108
340 mins	20.947	445 mins	27.417
345 mins	21.256	450 mins	27.725
350 mins	21.564	455 mins	28.033
355 mins	21.872	460 mins	28.341
360 mins	22.180	465 mins	28.649
365 mins	22.488	470 mins	28.957
370 mins	22.796	475 mins	29.265
375 mins	23.104	480 mins	29.573

Ounces avoirdupois to Grams

	grams		*grams.*
1/64 oz. avoir	0.443	5 ozs. avoir	141.75
1/32 oz. avoir	0.886	6 ozs. avoir	170.10
1/16 oz. avoir	1.772	7 ozs. avoir	198.45
1/8 oz. avoir	3.544	8 ozs. avoir	226.80
3/16 oz. avoir	5.316	9 ozs. avoir	255.15
1/4 oz. avoir	7.088	10 ozs. avoir	283.50
3/4 oz. avoir	21.263	11 ozs. avoir	311.85
1/6 oz. avoir	4.725	12 ozs. avoir	340.20
1/10 oz. avoir	2.835	13 ozs. avoir	368.55
1 oz. avoir	28.35	14 ozs. avoir	396.90
2 ozs. avoir	56.70	15 ozs. avoir	425.24
3 ozs. avoir	85.05	16 ozs. avoir	453.60
4 ozs. avoir	113.40		

Pounds avoirdupois to Grams

	grams		*grams*
1 lb. avoir	453.6	6 lbs. avoir	2721.6
2 lbs. avoir	907.2	7 lbs. avoir	3175.2
3 lbs. avoir	1360.8	8 lbs. avoir	3628.8
4 lbs. avoir	1814.4	9 lbs. avoir	4082.4
5 lbs. avoir	2268.0	10 lbs. avoir	4536.0

Fractions of grains to Gram

	gram		*grams*
1/2 grain	0.0324	1/40 grain	0.00162
1/3 grain	0.0216	1/60 grain	0.00108
1/4 grain	0.0162	1/64 grain	0.00101
1/5 grain	0.0130	1/65 grain	0.00100
1/6 grain	0.0108	1/70 grain	0.00093
1/7 grain	0.0093	1/80 grain	0.00081
1/8 grain	0.0081	1/90 grain	0.00072
3/8 grain	0.0243	1/100 grain	0.00065
1/9 grain	0.0072	1/120 grain	0.00054
1/10 grain	0.0065	1/125 grain	0.00052
1/12 grain	0.0054	1/130 grain	0.00050
1/13 grain	0.0050	1/150 grain	0.000432
1/15 grain	0.0043	1/200 grain	0.000324
1/16 grain	0.00405	1/250 grain	0.000259
3/16 grain	0.01215	1/300 grain	0.000216
1/20 grain	0.00324	1/400 grain	0.000162
1/24 grain	0.00270	1/500 grain	0.000129
1/25 grain	0.00259	1/600 grain	0.000108
1/30 grain	0.00216	1/1000 grain	0.000065
1/32 grain	0.00203	1/5000 grain	0.000013
1/36 grain	0.00180		

Grains to Grams

	grams		*grams*
1 grain	0.0648	35 grains	2.2680
2 grains	0.1296	40 grains	2.5920
3 grains	0.1944	45 grains	2.9160
4 grains	0.2592	50 grains	3.2400
5 grains	0.3240	55 grains	3.5640
6 grains	0.3888	60 grains	3 8880
7 grains	0.4536	65 grains	4.2120
8 grains	0.5184	70 grains	4.536
9 grains	0.5832	75 grains	4.860
10 grains	0.6480	80 grains	5.184
11 grains	0.7128	85 grains	5.508
12 grains	0.7776	90 grains	5.832
13 grains	0.8244	95 grains	6.156
14 grains	0.9072	100 grains	6.480
15 grains	0.9720	105 grains	6.804
16 grains	1.0368	110 grains	7.128
17 grains	1.1016	115 grains	7.452
18 grains	1.1664	120 grains	7 776
19 grains	1.2312	125 grains	8.100
20 grains	1.2960	130 grains	8.424
25 grains	1 6200	135 grains	8.748
30 grains	1.9440	140 grains	9 072

Grains to Grams—Continued.

	grams		*grams*
145 grains	9.396	295 grains	19.116
150 grains	9.720	300 grains	19.440
155 grains	10.044	305 grains	19.764
160 grains	10.368	310 grains	20.088
165 grains	10.692	315 grains	20.412
170 grains	11.016	320 grains	20.736
175 grains	11.340	325 grains	21.060
180 grains	11.664	330 grains	21.384
185 grains	11.988	335 grains	21.708
190 grains	12.312	340 grains	22.032
195 grains	12.636	345 grains	22.556
200 grains	12.960	350 grains	22.680
205 grains	13.284	355 grains	23.004
210 grains	13.608	360 grains	23.328
215 grains	13.932	365 grains	23.652
220 grains	14.256	370 grains	23.976
225 grains	14.580	375 grains	24.300
230 grains	14.904	380 grains	24.624
235 grains	15.228	385 grains	24.948
240 grains	15.552	390 grains	25.272
245 grains	15.876	395 grains	25.596
250 grains	16.200	400 grains	25.920
255 grains	16.524	405 grains	26.244
260 grains	16.848	410 grains	26.568
265 grains	17.172	415 grains	26.892
270 grains	17.496	420 grains	27.216
275 grains	17.820	425 grains	27.540
280 grains	18.144	430 grains	27.864
285 grains	18.468	435 grains	28.188
290 grains	18.792	437.5 grains	28.350

Inches to Meters

	meters		*meters*
1/64 inch	0.000396	3½ inches	0.0889
1/32 inch	0.000794	4 inches	0.1016
1/16 inch	0.001587	4½ inches	0.1143
3/16 inch	0.004762	5 inches	0.127
1/6 inch	0.004233	5½ inches	0.1397
1/4 inch	0.00635	6 inches	0.1524
3/4 inch	0.01905	6½ inches	0.1651
1/2 inch	0.0127	7 inches	0.1778
1 inch	0.0254	7½ inches	0.1905
1½ inches	0.0381	8 inches	0.2032
2 inches	0.0508	8½ inches	0.2159
2½ inches	0.0635	9 inches	0.2286
3 inches	0.0762	9½ inches	0.2413

Inches to Meters—Continued.

	meters		*meters*
10 inches	0.2540	23 inches	0.5842
10½ inches	0.2667	24 inches	0.6096
11 inches	0.2794	25 inches	0.6350
11½ inches	0.2921	26 inches	0.6604
12 inches	0.3048	27 inches	0.6858
13 inches	0.3302	28 inches	0.7112
14 inches	0.3556	29 inches	0.7366
15 inches	0.3810	30 inches	0.7620
16 inches	0.4064	31 inches	0.7874
17 inches	0.4318	32 inches	0.8128
18 inches	0.4572	33 inches	0.8382
19 inches	0.4826	34 inches	0.8636
20 inches	0.5080	35 inches	0.8890
21 inches	0.5334	36 inches	0.9144
22 inches	0.5588		

Feet to Meters

	meters		*meters*
1 foot	0.3048	6 feet	1.8288
2 feet	0.6096	7 feet	2.1336
3 feet	0.9144	8 feet	2.4384
4 feet	1.2192	9 feet	2.7432
5 feet	1.5240	10 feet	3.0480

Yards to Meters

	meters		*meters*
1 yard	0.9144	9 yards	8.2296
2 yards	1.8288	10 yards	9.1440
3 yards	2.7432	15 yards	13.7160
4 yards	3.6576	25 yards	22.8600
5 yards	4.5720	50 yards	45.7000
6 yards	5.4864	75 yards	68.5801
7 yards	6.4008	100 yards	91.4401
8 yards	7.3152		

DR. J. P. SNYDER, *Chairman.*

The Report Discussed

CHAIRMAN PROCTOR: The work of the Committee has been very thorough and I think that their conclusion is rational.

Dr Snyder, have you a recommendation as to what disposition we make of this report?

DR. SNYDER: The only thing that I had in mind was just really what has been accomplished: That it be distributed amongst the

members and if they find it of value, of course use it accordingly. I don't know that any definite recommendations are necessary.

Dr. Dohme: *Mr. Chairman,* I think we might put this thing in some definite shape.

I move you, sir, that it is the sense of this Section that a definite question be propounded to the membership of this Association, between now and next year's meeting, to be answered by "yes" or "no", that decimals in these equivalents be limited to two figures on the right hand of the decimal and ciphers.

The motion was seconded by Dr. Snyder.

Chairman Proctor: Any further discussion? If not, all those in favor say "aye"; contrary? It is so ordered.

Dr. Snyder, you will carry that out.

SURGICAL DRESSINGS AND PLASTERS

Report of the Sub-committee on Surgical Dressings and Plasters Read Before the Scientific Section at the Annual Meeting of the American Drug Manufacturers' Association, Hotel Biltmore, New York City, June 5-8, 1922.

Dr. Fred B. Kilmer: I would state, Mr. Chairman, that we have no report. The condition of our Committee has been very unfortunate in the last year, in fact, for the last two years. One of my colleagues, Dr. Hynard, has been quite ill during a portion of that time, and another very esteemed colleague, Mr. Williams, of Bauer and Black, died during this last year, and at the time of his death he had some work under way. Coupled with that, in my own case, my laboratory staff got down to one. It was very easy to manage a laboratory with one; some complications were avoided, but you couldn't get much work out of him. Therefore, our work that we had taken up had to be held entirely in abeyance, and I so reported to the Chairman that we would have no report. However, within a few days there has come from the other side a supplement to the British Pharmaceutical Codex, giving a series of standards for surgical dressings. The receipt of the official copy was so recent that I did not have a chance to confer with my colleagues, and with the permission of the Section simply report that supplement for future action or consideration.

SURGICAL DRESSINGS IN THE BRITISH PHARMACEUTICAL CODEX

By Dr. Fred B. Kilmer

In April, 1922, a Supplement to the British Pharmaceutical Codex was issued covering the standards for surgical dressings. This event is worthy of notice. In Great Britain, the issuance of this Supplement has brought out a considerable discussion in the pharmaceutical journals.

Surgical dressings began to assume importance in the early eighties. Since that time, the practice of surgery has undergone many changes, and surgical dressings have, in a great measure, varied with the surgical art.

The modern era of surgery began with Listerism. The first dressings were of the antiseptic type but, after many modifications, were

to a considerable extent replaced by what were known as septic dressings, that is, dressings which contained no antiseptics.

Possibly, by reason of these rapid changes no authoritative standard for surgical dressings has been promulgated during these years, except in a few instances. In the early years, surgical text-books and manuals gave formulas for dressings; Bellevue, and other hospitals, likewise issued certain formulas. The French Codex of 1894 gave formulas largely for the guidance of pharmacists. The National Formulary of 1888 and 1896 contained formulas for iodoform and carbolized gauze, and prescribed a standard for gauze fabric. Since 1880 the United States Pharmacopoeia has prescribed a standard and tests for absorbent cotton. It will be recalled that this Association, through its Sections, considered and endorsed a standard for Absorbent Cotton which was presented to the Revision Committee for use in preparing the Tenth Revision. The Bureau of Municipal Research of New York have a series of standards for surgical dressings which are largely adapted to their particular needs. In order to secure uniformity of supplies and bidding during the World War, the Army and Navy authorities established standards and tests for certain types of dressings. These standards are still adhered to for Government requisitions.

Thus, in this country, except in the case of absorbent cotton, we have no authoritative standard for surgical dressings.

The British Codex Supplement has been devised to meet the British needs, surgical practice in Great Britain still requiring the antiseptic type of dressings. They are large users of lint and jute dressings, hence a large number of the preparations included in the Codex would be of no value in the United States, but would have a bearing upon the goods exported into Great Britain.

Our understanding of the status of the Codex is that it does not have the legal or official standard accorded to the British Pharmacopoeia, but is recognized as an authority similar to that accorded to the National Formulary prior to the enactment of the Pure Food and Drugs Law.

Preparations not recognized by the British Pharmacopoeia, but when made in accordance with the Pharmaceutical Codex, and so labelled, are judged by that standard. That is to say, preparations made by the formulas apeparing in the Codex, and so labelled are to be judged by the Codex standard.

The line of dressings included in the recent Codex Suplement

are bandages; gauze, medicated and unmedicated; absorbent cotton, medicated and unmedicated; lint, medicated and unmedicated. The Supplement also includes jute, gutta percha, jaconet, oil silk and oil cambric. The standard prescribed for these dressings is as follows:

Bandages

Open Wove, Grey, B.P.C.—Of cotton yarn, warp of count not fewer than 42 per inch, not finer than 36's, and not heavier than 30's, and weft of count not fewer than 28 per inch. Weight of filling material not to exceed 5 per cent of the total weight of the bandage, and the weight of the bandage to be not less than 220 grains per 2 in. x 4 yards. The edges to be trimmed.

Open Wove, White, B.P.C.—Of cotton yarn, warp of count not fewer than 43 per inch, not finer than 36's, and not heavier than 30's, and weft of count not fewer than 27 per inch. Weight of filling material not to exceed 1 per cent of the total weight of the bandage, and the weight of the bandage to be not less than 200 grains per 2 in. x 4 yards.

Crepe, B.P.C.—Normal length, 2½ x 2¾ yards. Extension length, when fuly extended, to be not less than twice the normal length. To contain not less than 33⅓ per cent by weight of wool, the remainder of the fabric to be of cotton.

Muslin (Bleached) B.P.C.—Muslin shall be defined as a fine, thin, cotton fabric, woven plain, filling not to exceed 1 per cent of the total weight of the material. It is known as butter-cloth material. The weight of the muslin to be not less than 190 grains per 2½ in. x 6 yards.

Calico (Bleached) B.P.C.—Of cotton yarn, of total count of not less than 130. Weight of filling material not to exceed 2 per cent of the total weight of the bandage, and the weight of the bandage to be not less than 240 grains per 2 in. x 4 yards.

Calico (Unbleached) B.P.C.—Of cotton yarn, of total count of not less than 125. Weight of filling material not to exceed 10 per cent of the total weight of the bandage, and the weight of the bandage to be not less than 250 grains per 2 in. x 4 yards.

Domette, B.P.C.—Weft yarns to consist entirely of wool, the warp to be of cotton. The total count to be not less than 65. The weight to be not less than 440 grains per 2 in. x 6 yards.

Flannel, B.P.C.—To consist entirely of wool and the weight to be not less than 900 grains per 2 in. x 6 yards.

Plaster of Paris, B.P.C.—Check crinoline impregnated with Plaster of Paris (Exsiccated Calcium Sulphate, B.P.C.) and suitable adhesives. The Plaster of Paris to be incorporated with, and adherent to, the fabric.

Gauze

Gauze (Unmedicated)—To be thoroughly and readily absorbent. Of cotton yarn, warp of count not fewer than 19 per inch, and weft of count not fewer than 15 per inch. To be entirely free from filling material, and the weight not less than 180 grains per square yard.

Gauze (Medicated)—Previous to medication, medicated gauzes must conform with the standards given under Gauze (Unmedicated), and when medicated must contain a percentage amount of medicament within the limits specified below.

	Per Cent	
Boric, B.P.C.	10 to 15	Pure Boric Acid
Carbolic, B.P.C.	5 to 6	Phenol
Double Cyanide, B.P.C.	2 to 3	Mercury and Zinc Cyanide
Iodoform, B.P.C.	4 to 5	Iodoform
Picric, B.P.C.	1.5 to 2	Picric Acid
Sal Alembroth, B.P.C.	0.75 to 1	Alembroth Salt
Sublimate, B.P.C.	0.1 to 0.15	Mercuric Chloride

Gauze and Cotton Tissue—The weft of the gauze used in the manufacture of this dressing to be of cotton yarn of count not fewer than 12 per inch. In other respects, the gauze must conform with the standards given under Gauze (Unmedicated). The absorbent cotton wool used in the manufacture of this dressing must conform with the standards given under Absorbent Cotton Wool (Unmedicated). The superficial area of the Tissue to be not less than 1,800 square inches per pound.

Lint (Unmedicated)—Cotton cloth, from the warp yarns of which a nap has been raised. Superficial area to be not less than 230 square inches per ounce. To be thoroughly and readily absorbent, well bleached, well linted, and readily tearable.

Boric Lint—To contain not less than 36 per cent and not more than 45 per cent of Pure Boric Acid. Superficial area to be 115-142 square inches per ounce. The lint must, previous to medication, conform with the standards under Lint (Unmedicated).

Sal Alembroth Lint—To contain not less than 0.75 per cent and not more than 1 per cent of Alembroth Salt. Superficial area to be

not less than 230 square inches per ounce. The lint must, previous to medication, conform with the standards under Lint (Unmedicated).

Absorbent Cotton Wool (Unmedicated)—To be manufactured of well bleached and carded cotton fibres to be of the same material throughout and to offer appreciable resistance when pulled. The average length of staple to be at least ⅝ of one-inch. To be thoroughly and readily absorbent, to be free from foreign matter, and reasonably free from dust. Ash not more than 0.5 per cent.

Boric Wool—The absorbent cotton must, previous to medication, conform with the standards given under Absorbent Cotton Wool (Unmedicated). To contain not less than 15 per cent and not more than 25 per cent of Pure Boric Acid.

Sal Alembroth Wool—The absorbent cotton must, previous to medication, conform with the standards given under Absorbent Cotton Wool (Unmedicated). To contain not less than 0.75 per cent and not more than 1 per cent of Alembroth Salt.

Tow (Unmedicated)—Jute fibre of good average quality in cheese rolls.

Tow (Carbolized)—Jute fibre of good average quality, in cheese rolls, to contain not less than 5 per cent and not more than 6 per cent of Phenol.

Gutta Percha Tissue—Superficial area to be not less than 650, and not more than 700 square inches per ounce.

Jaconet (Synonym—Waterproofed Jaconet)—A fine, closely-woven cotton cloth covered with a thin layer of caoutchouc and filling of sufficient thickness to render it impervious to water. It should be free from added resins.

Oiled Silk—Pure fine silk, coated with an oily compound and dried until completely waterproof.

Oiled Cambric—Yellow—Fine cotton cloth or cambric closely-woven, having a total count of about 190, made completely waterproof with pure boiled linseed oil.

Standards

The foregoing will be better understood, if we reflect that in a large measure the English practice of surgery follows to a considerable degree what is known as "antiseptic practice," that is to say, they are large users of antiseptic dressings.

Many of the dressings are made along lines following the early Lister formulas, for instance, we have in this list Sal Alembroth An-

tiseptic Gauze which is made with double salts of bichloride of mercury and sal ammonia. We have Double Cyanide of Mercury Gauze made with zinc and mercury cyanide which comes directly from Lister.

In the British practice, large amounts of lint both plain and medicated are called for; there is likewise a considerable use for plain and carbolized jute.

The Industrial Insurance scheme which prevails in England, whereby medical and surgical attendance and medicines and surgical dressings are supplied, necessitated that supplies be furnished at a low cost. This practice is reflected in the Codex Standards, which in many instances call for substances of quite a different grade from those sold in the United States, and indeed not equal to many grades sold in Great Britain. The Codex may therefore be considered as the minimum standard.

The writer is not prepared, at the present time, to recommend that either the United States Pharmacopoeia, or the National Formulary should attempt to establish standards for surgical dressings. The matter, however, is one which is open for discussion and the object of this paper is simply to lay before the Association in its Scientific Section, the Codex Standards for such further action as may be deemed advisable.

British Pharmaceutical Codex Standards to be Carefully Considered by Section

CHAIRMAN PROCTOR: Dr. Kilmer's paper is very interesting and it will be well to have it published in our proceedings. I feel that the Section as a whole should not take action upon the inclusion or exclusion of standards in either the Pharmacopoeia or the National Formulary until the Committee makes definite recommendations along that line.

I suppose, Dr. Kilmer, that is the way you feel about it?

DR. KILMER: Yes, sir, that is the way I feel about it: that it should need careful consideration by the manufacturers and their representatives taking into consideration the condition here.

CHAIRMAN PROCTOR: When the Committee is ready to make recommendations, I am sure the Section will be very glad to receive them.

APPENDIX

Constitution

Preamble

WHEREAS, For mutual advancement and protection there is a national organization of every branch of the drug trade of America excepting that engaged in the manufacture and production of pharmaceuticals, chemicals, biological and other products ultimately employed by the medical and allied professions for the cure, mitigation and prevention of disease, than which no department of the drug trade is of higher or more vital importance to the public; and

WHEREAS, It is desirable, in the manufacture and marketing of such products, to maintain the high standards generally observed by manufacturers individually during many years past; to encourage and promote still greater achievements; to insure to individual members the just and proper reward of initiative, discovery and invention; to prevent fraudulent practices in the drug trade; to encourage the lawful enforcement of sound drug legislation, and effect official observation of the fundamental law of the land; to prevent the subversion of law to factional purposes; to amicably adjust differences; to advance uniform and just drug legislation; and in other lawful ways to promote the welfare of and fraternity among those engaged in the manufacture of therapeutic agents for the use of the medical and allied professions.

THEREFORE, We do form ourselves into an association and agree to be governed by the following constitution and by-laws:

ARTICLE I—NAME

The name of this organization shall be The American Drug Manufacturers' Association.

*ARTICLE II—MEMBERSHIP

Any person, partnership, or corporation in the United States of America or any of its territories or insular possessions, primarily engaged in the manufacture of pharmaceuticals, chemicals, biological, or allied products for the cure, alleviation, mitigation or prevention of disease, may, on recommendation of the Committee on Membership and election by the Association, become an active member of this Association by subscribing to the Constitution and By-Laws and the payment of such part of the annual dues, in accordance with following schedule, as shall cover pro rata that portion of the fiscal year during which he is actually a member.

ANNUAL DUES

1. *Pharmaceutical and Biological Houses*

Class A	Doing an annual business of more than	$3,000,000 — $1,000
Class B	Doing an annual business of more than	2,000,000 — 750
Class C	Doing an annual business of more than	1,000,000 — 500
Class D	Doing an annual business of less than	1,000,000 — 300

*As amended at Eleventh Annual Meeting.

2.	*Medicinal Chemical Houses*		
	Class A Doing an annual business of more than	$5,000,000	$500
	Class B Doing an annual business of more than	3,000,000	400
	Class C Doing an annual business of less than	3,000,000	300
3.	*Surgical Dressing and Plaster Houses*		
		All	$300
4.	*Crude Drug Millers*		
		All	$300
5.	*Essential Oil Manufacturers*		..
		All	$300
6.	*Physicians' Supply Houses*		
	Manufacturing at least one-third of their output	All	$200

Election of members shall be by ballot.

In addition to the regular dues, special assessments may be levied for the purposes of the Association upon a vote of two-thirds of the members of the Association at any regular meeting or at any special meeting called for such purpose.

ARTICLE III—MEETINGS

The annual meeting of the Association shall be held at such place and on such dates as shall be named in a resolution of the Association adopted at the last preceding annual meeting.

Special meetings may be called at any time by the President, upon the written request of five members; a notice of such meeting, specifying the object for which it is called, shall be mailed to every member of the Association not less than ten days prior to the date on which the meeting is to be held.

At all meetings of the Association fifteen members shall constitute a quorum for the transaction of business. Any member may be present at any meeting by an agent, provided with written credentials from the member he represents, and his vote shall be binding on such member; otherwise voting by proxy shall not be permitted.

*ARTICLE IV—OFFICERS

The officers of this Association shall be a President, three Vice-Presidents, Secretary, Treasurer, and an Executive Committee of nine, to be composed of the President, Vice-President, Treasurer, Chairman of the Committee on Legislation, and three members who shall hold their offices for one year or until their sucessors are duly chosen. Such officers and executive committee members, except the Secretary and the Chairman of the Committee on Legislation, shall be elected by ballot at the regular annual meeting; each member shall be entitled to one vote, and the candidate who shall receive a majority of the votes shall be declared duly elected.

The President shall preside at all meetings, appoint all committees, the appointment of which is not provided for either by by-law or resolution creating the committee, and call special meetings on the written request of five members.

In the absence of the President, a Vice-President shall act.

The Secretary shall keep a record of all meetings, and conduct and preserve all correspondence of the Association. He shall also act as Secretary of the Executive Committee and of each committee of the Association and shall also

*As amended at Eleventh Annual Meeting.

assist the Secretary of the Sections created under Article VIII in the same manner as he assists the Committees.

It shall be the duty of the Secretary to conserve and to suggest methods of utilizing the energies of the Committee with the greatest degree of effectiveness and with a minimum demand on the time of their members; also to serve as a medium through which the activities of the Association can be correlated. He shall therefore keep a record of the work of each committee, issue calls to its meetings, and otherwise keep its committeemen informed of pertinent matters; issue bulletins under the direction of the Committee to the members of the Association relative to matters under the Committee's jurisdiction; collect and compile data to further the Committee's work, supply its committeemen with stationery and forms and assist in the work of each Committee in all other ways as the Committee may direct.

It shall be the duty of all officers and all committeemen of the Association to send to the Secretary copies of all letters which they may write in their official capacities in order that the files of the Association may show a complete record of the business of the organization and in order that its different activities may be kept in harmony.

It shall be the duty of every Chairman of a Committee or Section to submit to the Secretary, at least thirty days in advance of the annual meeting, the annual report which it is customary to read at the annual meeting of the Association for consideration by the Executive Committee at its meeting immediately before the annual meeting of the Association. This provision is made in order that the Executive Committee may recommend action on matters contained in the report.

The Secretary shall be responsible to and under the direct control of the Executive Committee.

The Treasurer shall receive all funds and disburse the same under the direction of the Executive Committee or by vote of the Association, and report at each annual meeting. His account shall be audited by a special committee of three to be appointed annually by the President.

The Executive Committee shall regulate, control and dispose of any property belonging to the Association, and transact such other business as may be referred to it for action by vote of the members of the Association; and shall fill all vacancies that may occur in elective offices between the annual meetings. It shall also elect the Secretary and fix his compensation.

The Ex-Presidents of the Association shall be ex-officio members of the Executive Committee, with power to vote.

ARTICLE V—COMMITTEES

There shall be such committees or other working units created from time to time as the Association or Executive Committee may deem necessary, with such titles, duties, terms of office, and method of appointment as the Association or Executive Committee may provide.

ARTICLE VI—AMENDMENTS

Any amendment or addition to this Constitution may be made at any regular meeting by a vote of two-thirds of the members present.

ARTICLE VII—EXPULSION

Any member may be expelled or suspended from the Association upon the recommendation of the Executive Committee, confirmed by a two-thirds vote of

the membership present at any regular meeting, or at any special meeting called to consider such recommendations. Such vote shall be by ballot.

ARTICLE VIII—SECTIONS

Whenever it may deem advisable, the Association may provide a by-law for a section to facilitate the work of the Association as it pertains to a special phase of its activities. Each section when so provided for shall select a chairman and secretary, and may hold such sessions during each year as the members of the Section or the Association may deem advisable. One regular meeting shall be had during the annual meeting of the Association. The powers and duties of the Section shall be provided for in the by-law creating it.

By-Laws

I—RESTRAINT OF TRADE

No member shall be required or expected to be influenced by his membership in this Association in any way in determining to whom he shall sell his products, or at what prices, it absolutely not being the purpose of this organization to create any monopoly or effect any contract, agreement or understanding in restraint of trade.

*BY-LAW II

INDUSTRIAL GROUPING OF MEMBERSHIP INTO SECTIONS

In accordance with Article VIII of its Constitution, the Association hereby creates and provides for the regulation of six Sections to be designated as follows: Biological Section, Crude Drug Section, Essential Oil Section, Medicinal Chemical Section, Pharmaceutical and Surgical Section and Physicians Supply Section.

ARTICLE A—MEMBERSHIP

Membership in each section shall be defined as follows:

1.—Biological Section: Firms who propagate serums, vaccines, anti-toxins and analogous products for the treatment of humans or animals.

2.—Crude Drug Section: Firms who actually maintain drug mills as the principal part of their business and the products of whose mills are intended to sell to others.

3.—Essential Oil Section: Firms who actually produce essential oils for sale to others as the principal part of their business.

4.—Medicinal Chemical Section: Firms who manufacture chemicals for medicinal and analytical purposes.

5.—Pharmaceutical and Surgical Dressing Section: Firms who manufacture a line of tinctures, fluid extracts, pills and tablets, solid and powdered extracts, elixirs, ethical pharmaceutical specialties, plasters and surgical dressings, or a line of any one or more of these groups.

6.—Physicians Supply Section: Firms whose principal business is to supply dispensing physicians their requirements in pharmaceuticals, surgical dressings, plasters, biologics, medicinal chemicals, etc., who maintain at

*As amended at Eleventh Annual Meeting.

least one representative constantly soliciting business of this character and who manufacture at least one-third of their entire output.

3. The members of the Association who devote all or any of their facilities to the production of products classifiable under a given section or sections shall automatically and without further formality become members of that section or sections; and no manufacturer who is not a member of the Association shall be a member of a section.

4. The members of the Executive Committee shall be members ex-officio of each section and shall have the privilege of the floor at its meetings but not the right to vote. All general communications addressed to the members of a section shall be sent them alone.

5. Membership in a section shall be terminated only by resignation or expulsion from the Association.

ARTICLE B—DUES AND ASSESSMENTS

1. There shall be no extra fee charged for membership in a section, but the section may levy assessments on its members, provided each assessment shall be approved by a two-thirds vote of its entire membership taken by secret ballot at any regular or special meeting of the Section.

ARTICLE C—OFFICERS

1. At the regular annual meeting hereinafter provided for, each section shall elect by ballot a Chairman and a Section Secretary. Those persons shall be deemed elected who shall receive a majority vote of the members present. They shall hold office for one year or until their successors are duly elected.

2. The Chairman shall preside at all meetings of the section and shall appoint all committees of the section whose appointment is not otherwise expressly provided for by act of the section.

3. The Secretary of the section shall keep its minutes. He may also conduct in the name of the section such correspondence pertaining to the business of the section as is necessary and consistent with the Constitution and By-Laws of the Association. He shall also furnish a report on behalf of the section for consideration at the meetings of the Executive Committee, whenever required by the committee to do so.

4. The Secretary of the Association shall bear the same relationship to the sections and their committees as he does to the committees of the Association. Notice of all action of a section and copies of the minutes of all its meetings and of all letters written by the committeemen or officers of a section shall be furnished him for preservation in the files of the Association. When requested to do so, he shall circulate all general letters of a section, conduct all general campaigns under the direction of the Section Secretary and shall send out all official notices of meetings of a section or its committees. He shall also keep officials of each section supplied with stationery and forms.

ARTICLE D—MEETINGS

1. There shall be one regular meeting of each section annually which shall be held at the same place and during the week of the regular annual meeting of the Association.

2. The Chairman of a section shall call special meetings of the section at his discretion, or upon receiving written instructions from the Executive Committee, the Association or three members of the section. A notice of such meetings, specifying the time and place of meeting and the object thereof, shall be mailed each member of the section and the Secretary of the Association not less than ten days prior to the date on which the meeting is to be held.

3. The rules of representation at all meetings of a section shall be the same as are constitutionally provided for representation at meetings of the Association, and a majority of the members of a section shall constitute a quorum for the transaction of business.

ARTICLE E—POWERS AND DUTIES OF THE SECTION

1. Each section is hereby empowered to promote the welfare of its members in any of the directions enumerated in the preamble of the Constitution of the Association and to adopt rules and create committees to facilitate its work, subject to the following provisions:

a. The actions of the Association as a body shall take precedence over the actions of a section.

b. The approval of the Executive Committee or the Association shall be first obtained before any action is taken that involves expenditure of any amount in excess of twenty-five dollars to be paid out of the funds of the Association, or that is reasonably liable to result in pecuniary charges for which the Association will be responsible. In all other cases, a section may act without first obtaining the consent of the Executive Committee or the Association; such action, however, shall be subject to the approval of the Executive Committee or the Association if either sees fit to exercise this prerogative.

c. All actions of a section shall be invalid unless consistent with the Constitution and By-Laws of the Association.

d. A section shall entertain no discussion with reference to prices or to whom a member shall sell his product; it being the policy of the Association to keep itself above the slightest suspicion of any desire to create a monopoly or effect any contract, agreement, or understanding in restraint of trade.

e. A section shall not, because of possible conflict of interests, give public expression on any matter in which any other section may be interested, but in all such matters shall give expression to its views to the Executive Committee through the Secretary of the Association.

f. Each section, through its chairman or secretary, shall make a report at each annual meeting of the Association of conditions affecting the welfare of members of the section and the interests they particularly serve; also a report of any other matters of common and scientific interest the section may deem advisable; together with the recommendation as to what the Association may do as a whole to promote the interests of the section or its members. A copy of this report shall be sent to the Secretary of the Association at least thirty days in advance of the annual meeting of the Association.

BY-LAW III—SCIENTIFIC SECTION

In accordance with Article VIII of its Constitution the Association hereby creates and provides for the regulation of a section to be known as the Scientific Section, which shall endeavor by study and research to advance the progress of manufacturing chemistry and pharmacy in ways that will at the same time benefit mankind.

Article A—Membership

1. The membership of the Scientific Section shall consist of such of the leading technical or scientific research men of each firm in the membership as the firm in question may desire to appoint, but no firm shall have more than one vote on any matter before the Section for decision.

2. Each of a firm's representatives in the Scientific Section shall continue to hold membership in the Section indefinitely subject (a) to his removal at any time at the will of his firm, (b) to the automatic termination of his membership by the resignation or expulsion of his firm from membership in the Association or the severance of his connection with his firm; (c) to his expulsion from the Section by a vote of two-thirds of its entire membership for conduct unbecoming a member of the Section.

3. Other parties connected with member firms shall have the privileges of the floor at its meeting, but not the right to vote.

Article B—Dues and Assessments

1. There shall be no extra fee charged for membership in the Scientific Section and no dues or assessments. The Section shall be financed instead from the funds of the Association.

Article C—Officers

1. The officers of the Section shall be a Chairman, a Board of Control, and a Secretary. The Section Chairman shall be appointed by the President of the Association with the approval of the Executive Committee. The Board of Control shall be appointed by the Section Chairman. The Secretary of the Association shall be Secretary of the Section.

2. The Chairman shall preside at all meetings of the Section and shall appoint all committees of the Section whose appointment is not otherwise expressly provided for by act of the Section, the Executive Committee or the Association. He shall call special meetings of the Section, as provided in Article D, Section 2. He shall also furnish a report on behalf of the Section for consideration at the meetings of the Association.

3. The Secretary of the Section shall keep its minutes. He may also conduct in the name of the Section such correspondence pertaining to the business of the Section as is necessary and consistent with the Constitution and By-Laws of the Association.

4. The Secretary of the Association shall bear the same relationship to the Scientific Section and its committees as he does to the committees of the Association. Notice of all action of the Section and copies of the minutes of all its meetings and of all letters written by committeemen or officers of the Sec-

tion shall be furnished him for preservation in the files of the Association. He shall circulate all general letters of the Section and shall send out all official notices of meetings of the Section or its committees. He shall also keep officials of the Section supplied with stationery and forms.

5. The Board of Control shall consist of the Chairman and the Secretary of the Section, who shall serve as Chairman and Secretary of the Board, and of one representative of each of the following groups of the membership:

(a) Crude drug millers.
(b) Essential oil houses.
(c) Medicinal chemical houses.
(d) Pharmaceutical manufacturers.
(e) Surgical dressing manufacturers.

6. The Board of Control shall serve as the governing body of the Scientific Section in the interim between meetings and is hereby empowered to make such changes in the program of work or in the working organization of the Section as it may deem advisable. It is also empowered to make recommendations to the Executive Committee of the Association with respect to what findings of the Section or any of its constituent parts should be acted upon by the Association or published in the name of the Association.

Article D—Meeting

1. There shall be one regular meeting of the Section annually which shall be held at the same place and within the course of the two or three days immediately preceding the regular annual meeting of the Association.

2. The Chairman of the Section shall call special meetings of the Section at his discretion, or upon request of a majority of the Board of Control, provided their request is approved by the executive committee of the Association. A notice of such meeting, specifying the time and place of meeting and the object thereof shall be mailed each member of the Section not less than ten days prior to the date on which the meeting is to be held.

3. The rules of representation at all meetings of the Section shall be the same as are constitutionally provided for representation at meetings of the Association; ten voting members of the Section shall constitute a quorum for the transaction of business.

Article E—Powers and Duties of the Section

1. The Scientific Section is hereby empowered to provide within itself such an organization as it deems necessary and proper to accomplish the purposes set forth in the preamble of this by-law.

2. The Section is likewise empowered to draft such rules and regulations for conduct of its work as it sees fit, providing only that they be consistent with the Constitution and By-Laws of the Association.

3. The approval of the Executive Committee of the Association shall be first obtained before any action is taken that involves expenditures of more than $25, to be paid out of the funds of the Association, or that is reasonably liable to result in pecuniary charges for which the Association will be responsible.

4. No recommendation shall be made by the Section to outside persons or

bodies and none of its conclusions or proceedings shall be published without first obtaining the consent of the Executive Committee or the Association.

REGULATIONS OF TRADE MARK BUREAU

WHEREAS, It is the purpose of this Association, as set forth in the preamble of its Constitution, to amicably adjust differences between its members, and

WHEREAS, There is a large number of trade-names not eligible to Government registration or which, for some reason, a member does not wish to so register but the prority of right to which fellow-members wist to respect; therefore be it

Resolved, That this Association create and maintain a Bureau for the registration of trade-names in accordance with the following provisions:

A. Registration

I. This Bureau is intended primarily for the registration of those titles not eligible to United States Registration or for which a member does not wish to apply for such registration but the registration of Government protected trade-names shall also be permitted. The only names that shall not be eligible to registration shall be the ordinary pharmaceutical, chemical, and biological titles in common use.

II. Application for registration shall be made on a blank to be furnished by the Secretary, who shall have supervision over the Bureau. This blank shall require the applicant to make a signed statement giving the following data:

1. The trade-name to be registered.
2. As brief a designation of the product or products to which it is applied as will serve to identify the same.
3. The United States Registry Number, if the same is so registered.
4. The date on which the name was first used in actual trade; provided that, if the name has not been used in actual trade, registration may be made subject to the condition that, when finally used, the date of first use shall be reported to the Secretary to confirm the registration and subject to the further condition that, if the name be not used within twelve months of the date of registration, application for an extension of time must be made to the Executive Committee, giving the additional time required to place the product on the market.

III. The privileges of registration shall be extended to members only.

IV. If no protest is received from a member thirty days after the date of the notice of application hereinafter provided for, the Secretary's office shall make out the permanent record provided for in Section E, Article I, providing the Secretary has not seen fit to exclude the trade-name in question from registration on the ground that it is such a title in common use as is declared ineligible to registration in A-1. The official act of registration shall be consummated by the Secretary's signing the permanent record herein mentioned and the registration shall date back to the date of the application. In all cases in which the Secretary shall refuse registration under the exception created in A-1, he shall immediately notify the applicant of his decision in writing and shall state the reasons therefor in detail.

V. All trade-names in use prior to the formal opening of this Bureau of Trade-name Registration shall be registered immediately on receipt of application, subject only to the exceptions made in A-1.

B. Publication of Applications

I. At frequent intervals, to be left to his discretion, the Secretary shall publish a list of applications received since the previous publication of applications, and this shall be distributed among the members. It shall state:

1. The trade-names for which registry is asked.
2. The product or line covered by each.
3. The date when first use is claimed by the applicants.
4. The name and address of each applicant.

It shall also notify the members that the application for registration will be granted if a protest is not received before the end of the thirtieth day following the date of publication.

C. Protests and Action Thereon

I. Any member shall have the right to protest the granting of registration to a trade-name, provided he acts within thirty days of the date of the publication of the application. In the event of any duplication in trade-names registered en bloc, any adjustment shall be between the members interested without the Association being a party thereto.

II. The right of a member to protest may be based either on the ground that the objectionable trade-name infringes on one to which he has prior claim or that it comes within the excepted class in A-1.

III. The decision of the Secretary on protests shall be subject to review by the Executive Committee, to which appeal may be made and whose decisions shall be final.

D. Publication of Registrations

I. At intervals, to be left to his discretion, the Secretary shall publish a list of all the trade-names to which registration in the Association's Bureau has been granted. These lists shall give the following information:

1. The trade-name.
2. The product or products covered by it.
3. The date of first use in actual trade.
4. The date of registration by the Bureau of the Association.

It shall likewise be cross-indexed acording to the system that the Secretary shall provide.

II. A copy of each issue of this list shall be sent to all members of the Association.

E. Records

I. The Secretary shall keep a permanent card record of all trade-names registered, using a separate card for each trade-name. This card shall contain a record of the data specified under Section A, Article 1; and spaces for the date of formal registration and the signature of the Secretary. Space shall also

be provided for a record of all proceedings on appeals to the Executive Committee.

II. All forms and filing systems shall be subject to the approval of the Executive Committee.

F. Rules and Regulations

1. The Executive Committee is hereby authorized to promulgate any rules and regulations that may be necessary to carry out the provisions of this resolution.

MEMBERS OF THE AMERICAN DRUG MANUFACTURERS' ASSOCIATION

Corrected to Jan. 1, 1923.

Abbott Laboratories ..... Chicago, Ill.
Allaire, Woodward & Company ..... Peoria, Ill.
Anderson-Hillier Co., Inc. ..... New York, N. Y.
Armour & Company ..... Chicago, Ill.

Bauer & Black ..... Chicago, Ill.
W. J. Bush & Company ..... New York, N. Y.

Antoine Chiris Company ..... New York, N. Y.
Citro Chemical Company ..... Maywood, N. J.

Davies, Rose & Company ..... Boston, Mass.
Digestive Ferments Company ..... Detroit, Mich.
The Dow Chemical Company ..... Midland, Mich.

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Hance Bros. & White, Inc. ..... Philadelphia, Pa.
J. L. Hopkins & Company ..... New York, N. Y.
Hynson, Westcott & Dunning ..... Baltimore, Md.

Johnson & Johnson ..... New Brunswick, N. J.

Eli Lilly & Company ..... Indianapolis, Ind.
Lloyd Brothers ..... Cincinnati, Ohio.

*McIlvaine Brothers, Inc. ..... Cincinnati, Ohio
Mallinckrodt Chemical Works ..... St. Louis, Mo.
Maltbie Chemical Company ..... Newark, N. J.
Maywood Chemical Works ..... Maywood, N. J.
Merck & Company ..... Rahway, N. J.
The Wm. S. Merrell Company ..... Cincinnati, Ohio.
John T. Milliken Company ..... St. Louis, Mo.
Monsanto Chemical Works ..... St. Louis, Mo.
H. K. Mulford Company ..... Philadelphia, Pa.

National Drug Company ..... Philadelphia, Pa.
Nelson, Baker & Company ..... Detroit, Mich.
New York Quinine & Chemical Works ..... New York, N. Y.
*Norvell Chemical Corporation ..... New York, N. Y.
Norwich Pharmacal Company ..... Norwich, N. Y.

*Elected to membership at Eleventh Annual Meeting.

Parke, Davis & Company ..... Detroit, Mich.
E. L. Patch Company ..... Stoneham Sta., Boston, Mass.
S. B. Penick & Company ..... New York, N. Y.
Chas. Pfizer & Company ..... New York, N. Y.
Pitman-Moore Company ..... Indianapolis, Ind.
Powers-Weightman-Rosengarten Company ..... Philadelphia, Pa.

Roessler & Hasslacher Chemical Company ..... New York, N. Y.

Seabury & Johnson ..... New York, N. Y.
Sharpe & Dohme ..... Baltimore, Md.
E. R. Squibb & Sons ..... New York, N. Y.
Frederick Stearns & Company ..... Detroit, Mich.

Tailby-Nason Company ..... Boston, Mass.
The Tilden Company ..... New Lebanon, N. Y.
A. M. Todd Company ..... Kalamazoo, Mich.

The Upjohn Company ..... Kalamazoo, Mich.

Henry K. Wampole & Company, Inc. ..... Philadelphia, Pa.
Wm. R. Warner & Company ..... New York, N. Y.
Wilson Laboratories ..... Chicago, Ill.

The Zemmer Company ..... Pittsburg, Pa.

OFFICERS, SECTION CHAIRMEN AND COMMITTEES

Corrected to November 1, 1922

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Chas. J. Lynn, Eli Lilly & Co., Indianapolis, Ind.

Secretary.

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Willard Ohliger, Frederick Stearns & Co., Detroit, Mich.
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Memorials to Deceased Members

Dr. A. R. L. Dohme, Sharp & Dohme, Baltimore, Md.
Dr. Caswell A. Mayo, Wm. S. Merrell Co., Cincinnati, O.

Delegates to National Drug Trade Conference

Horace W. Bigelow, Parke, Davis & Co., Detroit, Mich.
A. Homer Smith, 507 Albee Building, Washington, D. C.
J. C. Roberts, Sharpe & Dohme, Baltimore, Md.

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Dr. J. M. Francis, Parke, Davis & Co., Detroit, Mich.
J. Fred Windolph, Norwich Pharmacal Co., Norwich, N. Y.

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Lee Wiltsee, Wm. S. Merrell Co., Cincinnati, O.
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H. A. Burnett, Digestive Ferments Company, Detroit, Mich.
F. W. Keyser, Nelson, Baker & Co., Detroit, Mich.
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Tariff

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B. F. Williams, Norwich Pharmacal Co., Norwich, N. Y.
W. G. Norvell, Parke, Davis & Co., Detroit, Mich.

U. S. P. Synopsis

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Dr. Caswell A. Mayo, Wm. S. Merrell Co., Cincinnati, O.
Harry B. Mason, Parke, Davis & Co., Detroit, Mich.
Dr. A. R. L. Dohme, Sharp & Dohme, Baltimore, Md.

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Dr. Jules Bebie, Monsanto Chemical Works, St. Louis, Mo.
Dr. J. P. Snyder, Norwich Pharmacal Co., Norwich, N. Y.
Dr. F. B. Kilmer, Johnson & Johnson, New Brunswick, N. J.

SCIENTIFIC SECTION PERSONNEL

Corrected to November 1, 1922.

Austin, F. J., Wm. H. Warner & Co., New York, N. Y.

Bauer, G. S., Bauer & Black, Chicago, Ill.
Bebie, Dr. Jules, Monsanto Chemical Co., St. Louis, Mo.
Berg, F., E. R. Squibb & Sons, New York, N. Y.
Bibbins, F. E., Eli Lilly & Company, Indianapolis, Ind.
Biebinger, Otto L., Mallinckrodt Chemical Works, St. Louis, Mo.
Burdick, Dr. A. S., The Abbott Laboratories, Chicago, Ill.
Bye, Mortimer, Frederick Stearns & Co., Detroit, Mich.

Cox, J. H., The Tilden Co., New Lebanon, N. Y.

Davies, W. W., Davies, Rose & Co., Boston, Mass.
Dill, C., Roessler & Hasslacher Co., New York, N. Y.
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DuBois, Dr. Gaston, Monsanto Chemical Works, St. Louis, Mo.
Dunning, H. A. B., Hynson, Westcott & Dunning, Baltimore, Md.

Fairchild, Benj. T., Fairchild Bros. & Foster, New York, N. Y.
Fenger, Dr. Frederic, Armour & Company, Chicago, Ill.
Fiske, F. B., Pitman-Moore Company, Indianapolis, Ind.
Foy, J. H., Maltbie Chemical Co., Newark, N. J.
Francis, Dr. J. M., Parke, Davis & Co., Detroit, Mich.

Graber, H. T., Digestive Ferments Co., Detroit, Mich.

Hamilton, H. C., Parke, Davis & Co., Detroit, Mich.
Heyl, Dr. F. W., The Upjohn Co., Kalamazoo, Mich.
Hillier, Isaac V. S., Anderson-Hillier Co., New York, N. Y.
Hopkins, J. L., J. L. Hopkins & Co., New York, N. Y.
Hoskins, J. D., The Zemmer Company, Pittsburgh, Pa.
Houghton, Dr. E. M., Parke, Davis & Co., Detroit, Mich.
Hynard, E. R., Seabury & Johnson, New York, N. Y.

Kilmer, Dr. F. B., Johnson & Johnson, New Brunswick, N. J.
Klein, Dr. David, The Wilson Laboratories, Chicago, Ill.

Leonhardt, F. H., Fritzsche Brothers, New York, N. Y.
Lloyd, John Uri, Lloyd Brothers, Cincinnati, O.
Lyons, Dr. A. B., Nelson, Baker & Co., Detroit, Mich.
McIlvaine, Herbert, McIlvaine Brothers, Philadelphia, Pa.
McMeans, Miss Elizabeth, Pitman-Moore Co., Indianapolis, Ind.
Molloy, J. J., Hance Bros. & White, Philadelphia, Pa.
Murray, B. L., Merck & Company, Rahway, N. J.

Parker, Wm. H., Chas. Pfizer & Co., New York, N. Y.
Patch, E. L., E. L. Patch Company, Stoneham Sta., Boston, Mass.
Penick, S. B., S. B. Penick & Co., New York, N. Y.
Pittenger, Dr. P. S., H. K. Mulford Co., Philadephia, Pa.
Pratt, George C., National Drug Co., Philadelphia, Pa.
Proctor, Dr. R. W., Wm. S. Merrell Co., Cincinnati, O.
Putnam, M. E., The Dow Chemical Co., Midland, Mich.

Richmond, Dr. G. F., Antoine, Chiris & Co., Delawanna, N. J.
Ritch, A. L., E. R. Squibb & Sons, New York, N. Y.
Roberts, J. C., Sharp & Dohme, Baltimore, Md.
Rosin, Dr. Joseph, Powers-Weightman-Rosengarten Co., Philadelphia, Pa.
Ruddiman, Dr. E. A., John T. Milliken & Co., St. Louis, Mo.

Schaefer, Eugene, Maywood Chemical Co., Maywood, N. J.
Schaefer, Dr. Hugo, N. Y. Quinine & Chemical Co., Rahway, N. J.
Schmidt, Miss E. A., Allaire, Woodward & Co., Peoria, Ill.
Simon, George, Norvell Chemical Corp., New York, N. Y.
Snyder, Dr. J. P., Norwich Pharmacal Co., Norwich, N. Y.
Swinton, R. S., W. J. Bush & Company, Linden, N. J.

Tailby, J. Allen, Tailby-Nason Co., Boston, Mass.
Todd, Paul H., A. M. Todd & Company, Kalamazoo, Mich.

Wallace, George R., Henry K. Wampole & Co., Inc., Philadelphia, Pa.
Walters, Dr. A. L., Eli Lilly & Company, Indianapolis, Ind.
White, W. W., Citro Chemical Co., Maywood, N. J.

SUBCOMMITTEES OF SCIENTIFIC SECTION

Corrected to November 1, 1922.

Board of Control: Proctor, Penick, Richmond, Bebie, Snyder, Kilmer.

1. Alkaloid and Drug Standards: (Includes Male Fern): Dohme, Austin, Bibbins, Burdick, Francis, Heyl, Lyons, Ruddiman, Miss Elizabeth McMeans, Miss E. A. Schmidt.
2. Chemical Tests and Standards: Rosin, Parker, Lyons, Murray, Schaefer, Simon.
3. Control Assays: Francis, Dohme, Fenger, Hynard, Kilmer, Patch, Rosin, Ruddiman, Snyder.
4. Crude and Milled Drugs: Hillier, Francis, Hopkins, McIlvaine, Penick, Todd, Miss E. A. Schmidt.
5. Digestive Ferments: Fenger, Bye, Graber, Fairchild, Francis, Klein.
6. Diluents, Excipients: Proctor, Bye, Davies, Dohme, Francis, Hoskins.
7. Drug Extracts: Snyder, Austin, Berg, Bye, Bibbins, Fiske, Francis, Heyl, Lyons, Patch, Pratt, Roberts, Ruddiman.
8. Essential Oils: Richmond, Austin, Leonhardt, Putnam, Swinton, Todd.
9. Labels: Bye, Dohme, Francis, Heyl, Walters.
10. Pharmacological Assays: Walters, Fenger, Graber, Hamilton, Houghton, Heyl, Klein, Pittenger.
11. Synthetic Organic Chemicals: Bebie, Burdick, Dohme, Fiske, Francis, Heyl, Hoskins, Putnam, Ritch, Schaefer, Simon.
12. Surgical Dressings and Plasters: Kilmer, Hynard, Klein.