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Original and Selected Papers.

ON ACETUM SCILLÆ, B.P.

BY E. GREGORY.

About a year since, taking up in an idle moment, an old copy of the London *Pharmaceutical Journal*, I read in answer to an inquiring correspondent, a recommendation to prepare Acetum Scillæ according to the formula of the British Pharmacopœia, "carefully avoiding, however, the directions to add one and a half fluid ounces of proof spirit at the end of the process." On theoretical grounds I had long omitted the spirit, but the strangeness of this advice, proceeding from such a source, determined me to open the whole question, and endeavor to satisfy myself by experiment that I had taken a correct view. Accordingly on the 4th of Nov., 1874, four samples of Acet. Scillæ were put into separate four ounce vials, and tightly corked.

No. 1	same as B. P.,		but no spirit.
" 2	"	"	but contained spirit.
" 3	"	"	no spirit.
" 4	"	"	contained spirit.

Nos. 1 and 2 were placed on the inside sill of a window with a western aspect. These were exposed during the winter to a temperature of from about 28° to 65°, and in summer, the direct rays of an afternoon sun would sometimes raise the atmosphere around them

to about 90° or possibly 95° Fahrenheit. Nos. 3 and 4 were placed on a shelf, near a stove; and here the temperature was pretty equable, ranging about 70°, and sometimes in summer going a little over 80°.

When put in their respective positions the four samples had the following appearance. All had been filtered through paper, and had the taste and odour peculiar to Acet. Scillæ.

No 1 was perfectly clear.
" 2 " a little cloudy.
" 3 " perfectly clear.
" 4 " a little cloudy.

It is quite certain that spirit does not improve the appearance of this preparation when freshly made, since Nos. 1 and 3, containing no spirit, were clear and bright, whilst Nos. 2 and 4, containing spirit, were cloudy.

On Nov. 16th the samples were again examined, and presented the following appearance:

No. 1 clear, no sediment.
" 2 cloudy, slight sediment.
" 3 clear, no sediment.
" 4 very cloudy, heavy sediment.

Another examination was made Dec. 3rd, with the following result:

No. 1 clear, no sediment.
" 2 clear, slight sediment.
" 3 clear, no sediment.
" 4 clear, heavy sediment.

The taste at this period showed No. 4 to he slightly "musty," whilst No. 3 seemed deficient in acidity, but I think this last must have been fancy.

From this date the samples were occasionally examined in a superficial manner, but through extreme press of business, results were not particularly noted. It is enough to say that there was a gradual deterioration in all the samples.

On the 20th August, 1875, all were finally examined. Nos. 1, 2, and 4 were unmistakably spoiled, whilst No. 3 was scarcely fit to use, but would pass muster if not examined too critically. It was decidedly less decomposed than the other three. There was a distinct sediment in all, but much the heaviest in No. 4; the rest seemed about equal.

All the samples were then examined volumetrically, for the purpose of determining their relative acidity. Two drachms of No. 1, diluted with six drachms of distilled water, required fifty-three minims of the volumetric solution of soda, B. P., to neutralize it. No. 2 and No. 4 were equally strong in acid, whilst the same quantity of No. 3 diluted with a like quantity of water, required sixty-eight minims of soda sol. to neutralize it. I cannot be quite certain as to the exactness of my acidimetry, since my burette and measuring flasks are of my own construction, from glass tubing and common vials; but as the same solution and apparatus were used throughout, the comparative results will be correct. The volumetric estimates were duplicated to ensure accuracy, and gave very nearly the same results each time.

I would draw the conclusion, from these experiments, that the Proof Spirit ordered to be added to Acet. Scillæ, by the British Pharmacopœia, is worse than useless, since it impairs the beauty of the sample, and renders it less able to resist the inroads of decomposition; and also, that the preparation is best kept in situations having an equable temperature, and not exposed to very strong light. Those samples have suffered most in my hands that have been exposed to the greatest extremes of temperature.

PHARMACY IN RUSSIA.*

BY DR. C. MEHU, OF PARIS.

The larger proportion of Russian pharmacists are of German origin; all their names are either German or Polish. It has been only during the last few years that the Emperor Alexander has permitted a true Russian to become a pharmacist. The Emperor Peter the Great reserved to Germans the pharmacies in his dominions.

The pharmacist who conducts an ordinary pharmacy takes the name of "free pharmacist" *(freier Apotheker)*; others bear the name of "crown pharmacist," *(Krone Apotheker.)* The so-called "crown pharmacies" are those of the civil and military hospitals and benevolent institutions. Of these, there exist twenty-five in St. Petersburg, two or three among them supplying the public with medicaments.

There are also in Russia some pharmacies called "***Filial-***

* From the Journal de Pharmacie et de Chimie, in the Pharm. Jour. & Trans.

Apotheke," or branch establishments. In the district of St. Petersburg, there are two such to fifty pharmacies. As their names indicate, they are dependent upon another pharmacy, and are established in places where an independent pharmacy could not be founded. The branch establishment is within a distance not exceeding fifteen "versts" * from the mother pharmacy, and it is worked at times when there is a temporary augmentation of the population of the district, as during a fair, or during the winter when the roads are rendered impracticable by the snow, or during the fine season for a group of country houses. The branch establishment belongs to the nearest pharmacist; sometimes to several pharmacists residing within a radius of less than fifteen versts. It contains all the medicines of an ordinary pharmacy, but it is not necessary that it should contain a laboratory, a store of drugs, and other additions required by the regulations for a complete pharmacy. It is conducted by a graduate in pharmacy, under the superintendence and responsibility of the proprietor of the normal pharmacy upon which it depends. In the branch establishment, all the prescriptions are registered, as in other pharmacies.

The law compels the pharmacist to enter all the prescriptions he executes, and to pass a special examination in the deciphering of handwriting and the legal prices of medicines.

The annual number of prescriptions in a town is one of the elements which determine the Government in opening or closing a pharmacy. For this purpose, a calculation is made of the average number of prescriptions made up in all the pharmacies of the locality, during the three years last past, the renewal of the prescription being reckoned as a new prescription. In Moscow and St. Petersburg, there is a pharmacy to 12,000 inhabitants, and an average of 30,000 prescriptions. In the principal seats of the Government, there is one pharmacy to 10,000 inhabitants, and 15,000 prescriptions. In the chief places of a district, there is a pharmacy for 7,000 inhabitants and 6,000 prescriptions. Finally, in sea-ports there is one pharmacy to 7,000 inhabitants and 12,000 prescriptions. The military are not reckoned in the numbering of the inhabitants.

In the large cities, pharmacies sell for a sum equal to from three to three and a half times their annual receipts. In the small towns, the price falls to one or one and a half times their annual receipts.

When the opening of a new pharmacy is authorized, it is established in the quarter where the augmentation in the number of inhabitants has become most manifest. If no pharmacy exists in a circuit of 15 versts (= about ten miles), although the number of neither the inhabitants nor prescriptions in the locality comes up to the regulation standard, the medical council is authorized to open a pharmacy.

* About 3,500 feet.

The pharmacies in the large cities are inspected several times each year, and those of the small towns at least once a year, by Government medical officials. More than once, during recent years, grave complaints have been made respecting the manner in which these commissioners do their work, and of their inexperience in pharmaceutical matters. In the case of great negligence, or bad pharmaceutical preparations, the Government can withdraw from the holder of a pharmacy the privilege accorded to him, but not until after he has been fined several times. The withdrawal of the privilege is ordered by the medical department of the minister of the interior, on the recommendation of the medical authority of the Government in which the pharmacist resides. The granting of the privilege, and the penalties for the contravention of the regulations, are all the subject of particular rules.

After satisfying these numerous shackles upon his liberty, it would appear reasonable to expect that the pharmacist would be assured of a comfortable living. This is, unfortunately, not the case, especially in the smaller towns; because every town and village can have a pharmacy which must supply medicines at cost price in the cause of humanity. This pharmacy is placed under the direction of a medical man, who draws from it all the profit possible, to the great detriment of the pharmacist of the town, who, in consequence of the unfair competition, is often compelled to close his pharmacy, whilst his hypocritical competitor, free from the expense of rent and first establishment, takes his ease without running any risk. The limitation of the number of pharmacies, moreover, has only been instituted for the profit of the State. The compulsory legal tariff places the pharmacist at the mercy of commissions in which medical men constitute the majority. On the other hand, the illegitimate competition of the medical men at the benevolent institutions, contributes to place the Russian pharmacist in a position little to be envied.

Education.—There is no special school of pharmacy in Russia. There are professors of pharmacy in the universities of Moscow, Kiew, Kasan, Charkow, Dorpat, and Varsovie. At St. Petersburg, the teaching of pharmacy is entrusted to the Medico-Chirurgical Academy, established at the ministry of war.

The pharmacist can acquire all his grades in the educational centers. Each of these establishments has a plan of study which is vigorously observed. With the courses of theoretical and practical pharmacy, the student attends also the university courses, particularly those in chemistry, physics, mineralogy, botany, zoology, during three or four semestres.

The pharmaceutical student passes through three successive grades: "assistant" *(Gehulfe)*, "dispenser" *(Provisor)*, and "master" *(Magister.)*

First Grade.—Before being admitted to pass the examination

for assistant, the apprentice *(Lehrling)* must present (1), a certificate that he has entered as apprentice either in a free or a crown pharmacy, and (2), a certificate attesting that he has passed at least three years in a free or a crown pharmacy. The certificate also states the zeal and behavior of the candidate during that time, as well as his progress in the art of pharmacy, and it must be signed by the master, and also the magistrate in whose jurisdiction the master resides. A pharmacist is interdicted from receiving as an apprentice a pupil who does not possess a certificate from a director of a gymnasium or similar institution, to the effect that the young man is suited to enter a pharmacy as an apprentice, and possesses a competent knowledge of the subjects taught in the three lower classes of a gymnasium. The period of three years may be reduced to two years in the case of young men who have completed their courses at a gymnasium before entering a pharmacy.

The examination for the degree of "assistant" includes—

(1) A knowledge of the laws which concern the pharmacist.

(2) Translation of a passage from the national or some other pharmacopœia, written in Latin.

(3) The reading of a medical prescription. The candidate has also to indicate the order in which he would make it up, fix the price according to the legal tariff, and to give practical proof of his dexterity as a dispenser, and his ability to overcome any difficulties the prescription may present.

(4) The recognition of the most usual pharmaceutical substances (simple drugs and commercial products) and the indication of their principal characteristics.

(5) The recognition and description of the more common medical and poisonous plants, especially those that grow in the wild state in Russia.

(6) The method of preparing, the properties, and the constituent elements of two frequently used compound medicines, and of two chemical preparations.

(7) Knowledge of the various names of medicines.

(8) Knowledge of the usual doses of powerful medicines.

(9) The preparation by the candidate, in the laboratory of the university or academy, under the supervision of the professor of pharmacy, of two common products specified by the examiners, one of them to be a pharmaceutical compound, the other a chemical product. The candidate has also to describe the processes of preparation he adopts.

Second Grade.—The candidate for the grade of "dispenser" *(Provisor)* must possess a thorough practical and theoretical knowledge of the subjects pertaining to pharmacy. Upon presenting himself for examination, he must produce a certificate that he has served three years in a crown or private pharmacy, and that he has attended, in a school of medicine or university, complete courses in

the sciences which are the subject of examination (usually four semestres.) The assistant enters the school of medicine, or university, without undergoing an examination, upon the simple presentation of his diploma as assistant. He also brings a certificate he received upon leaving the pharmacy in which he completed his first stage, and this certificate reports upon his conduct and industry. These certificates are regulated by the superior medical authority.

The examination is public, and is held in the large room of the University; it is oral and practical. The subjects for examination are as follows:

Mineralogy.—Terminology and history of the minerals used in pharmacy.

Botany.—Terminology; principal systems of classification; the recognition and description of at least two fresh or dried plants.

Zoology.—The principal systems of the classification of animals; description of one or two animals, parts of which are used in medicine.

Physics.—In its relation with chemistry and pharmacy.

Chemistry.—Principally from a pharmaceutical point of view, and in respect to chemico-legal researches.

Pharmacology.—Doses and pharmaceutical forms of medicines. Also a knowledge of the temporary assistance to be rendered to the sick and wounded in urgent cases.

The candidate has besides (1) to recognize and describe, by their external characters, two pharmaceutical drugs and two chemical products, and to make quantitative and qualitative analyses of the latter; (2) to conduct a chemico-legal research under the supervision of the examiner, and to give a written report; (3) to prepare two pharmaceutical chemicals in a school of medicine, under the supervision of the professor of pharmacy; and (4) to show generally that he possesses the knowledge necessary to fit him to undertake the responsibility of a pharmacy.

Third Grade.—The title of "master" *(Magister)* is the highest that can be obtained by a pharmacist. Before being admitted to the examination for this degree, the candidate must have served at least one year as a "dispenser." The examination is mainly in the same subjects as that for "dispensers," but the candidate must exhibit a more extensive knowledge of chemistry and pharmacy than is required from a "dispenser." He has (1) to make two analyses, or chemico-legal researches, and to render a satisfactory report; (2) to treat in writing of two questions chosen by the examiners—one in pharmaceutical chemistry, the other in natural history or physics. The answers may be written in Latin, Russian or any commonly used European language. The candidate then presents a thesis written in Latin, Russian, or any commonly used European language. The subject of this thesis may be chosen by the candidate, or selected by the examiners. The discussion upon

the thesis, and the annexed questions (six at least) may be taken in any of the before-mentioned languages, at the choice of the candidate. To this test the same rules are applied as regulate the reception of doctors.

The holder of a diploma as "master" takes the pharmaceutical oath, and subscribes his signature at the foot of this oath, printed across the diploma.

SUMBUL AND VEGETABLE MUSK.*

In 1870 this hitherto unknown plant, now defined as *Euryangium Sumbul* (Kauffman), flowered in the Botanic Garden at Moscow; it is now flowering in the herbaceous ground of the Royal Gardens, Kew, for the first time in this country. It yields the drug "Radix Sumbul," introduced to Russia as a substitute for musk about the year 1835, and then recommended as a remedy for cholera. It became known in Germany in 1840, and ten years later in England. It was admitted into the British Pharmacopœia in 1867, and is now prescribed, in the tincture form, as a stimulating tonic. It is said to be a nervine stimulant, like valerian, and to possess antispasmodic properties. Further than above its history has not been found traceable by the authors of "Pharmacographia." The plant was discovered in 1869, by a Russian traveller, Fedschenko, in the mountains of Maghian, near Pianjakent, a small Russian town eastward of Samarkand. The root, as found in commerce, consists of transverse slices, 1 to 2 inches, rarely as much as 5 inches, in diameter, and an inch or more in thickness; the bristly crown and tapering lower portions, oftener no thicker than a quill, are also met with. The Kew specimen is nearly 8½ feet in height. The rootstock is somewhat fusiform in shape, about 3½ inches in diameter at the top, where it is thinly covered with the persistent fibres of the old leaves. Those of the present year commenced to wither soon after the flower-stem became visible, and were quite dead when its full height was attained. They are supradecompound, much as in some species of *Ferula*, especially *F. campestris*, to the leaf segments of which those of the sumbul have a very close resemblance. The panicle is composed of about ten alternate spreading branches, the lowest about five feet from the apex. The umbels are on short stalks with 10-13 umbellules. The stem on being wounded exudes a milky sap, which at first has the exact flavour of Angelica, afterwards leaving a bitter taste. The resin of the root does not fully develop its musky smell until after contact with water. It is hoped that seeds may be perfected, and a

* From the *Journal of Applied Science*.

stock raised for distribution; therefore, the treatment accorded to this plant may be of interest. The root came to hand in a dry and dormant condition, was grown in a pot for the first season, and healthy leaves were produced, but which on the slightest check died away. About three years ago it was planted in its present position on a small hillock of stones, with plenty of good loamy soil, and there it has since flourished without intermission. During winter, the protection of a hand-glass has been given against rain—doubtless an important point of attention; it has also been covered loosely with leaves, though as regards temperature, it is apparently quite hardy. A mulching of litter is beneficial during summer, and when the stem rises, weak manure-water should be given. In a state of rest the roots may be safely sent to a distance, packed quite dry as a bulb would be. They seem to have a very persistent vitality, and are without fleshy ramifications. The root has been used in Russia with considerable success in Asiatic cholera. It is now mainly employed in perfumery, in place of the high-priced musk. As the musk-deer lives in the same regions in which this plant is found, it may account for the strong odour. The musk root contains about 9 per cent. of a soft oleoresin, obtainable by ether, which in contact with water, has the odour of musk. The pilgrims on their return from Mecca, generally import to Salonica, Constantinople, etc., among other articles of trade, various plants with a musk-like odour. It was long considered that the preparation of these vegetable plants was effected by smearing them over with musk-balsam. Thus M. Landerer, of Athens, writing in the "Repert de Pharmacie," some years ago, remarked—

"I received recently a few leaves from Jerusalem with so powerful an odour of musk, that they quite impregnated the wardrobe in which I placed them with their perfume. The preparation of these vegetable substances is said to be a secret among the Hakims, and is effected by smearing them over with musk-balsam; but I could not learn whether this balsam is prepared by digesting musk in spirit, oil, or ether. I have now in my possession a root from Constantinople, with a strong odour of musk, which appears to be that of an iris. If I digest this root several times in spirit, I can deprive it of its odour; and if I then pour ammonia over it, the musk odour is again restored."

It is now well known that there are several plants which have a more or less pronounced musky odour; such are the common musk plant (*Mimulus moschatus*), *Moscharia prinnatifida*, a composite plant of Chili, species of *Moschosma*, and the seeds of *Abelmoschus moschatus*. The latter are imported occasionally pure, under the name of musk-seed, and in the French markets as "Graine D'Ambrette." The bark of *Atherospermum moschatum* has somewhat of a musky flavour. All parts of *Guarea grandiflora*, a native of Guiana, and the French West Indies, smell strongly of musk, so

much so, that the bark, which possesses the property in the greatest degree, may be used for the same purpose as the animal perfume, and the tree is therefore called musk-wood. *Moschosyton Swartzii* and *odorata*, also emit from all parts, when rubbed, a smell of musk, and hence they are called musk-trees in Jamaica.

THE EXAMINATION OF BEER FOR ADULTERANTS.*

BY G. C. WITTSTEIN.

The author first refers to the addition of potash or soda to sour or stale beer. The presence of either can be determined by the proportion of ash yielded, which from Bavarian beer should not exceed one-half per cent. In a foot-note the author observes that this percentage applies only to German beers, and especially Bavarian, since according to the experiments of T. Dickson,† English beers are much richer in ash. Simply testing the ash for the presence of potash or soda would be insufficient, since both the raw materials of beer—malt and hops—contain these alkalies. The author states that some experimenters have been betrayed into this error, and having found these alkalies have declared beer to be adulterated.

The author divides the other possible adulterants into two classes, "sweet" and "bitter." In the "sweet" class he mentions only glucose and glycerine.

The use of glucose would lead to an economy of malt, but of course it can only compensate for the malt sugar. As, however, in the course of fermentation through the formation of alcohol all or almost all the glucose would disappear, such beer would be abnormally poor in extractive. Glycerine not being capable of undergoing fermentation, Dr. Wittstein thinks that its addition does not allow of any reasonable explanation, and that the brewer who would add a sweet syrup solution to his manufacture would prove himself to be wanting in prudence.

The substance included in the "bitter" class are—aloes, buck bean (menyanthin), gentian root (gentipicrin), colchicum root, flowers, and seeds (colchicine), colocynth (colocynthin), cocculus indicus (picrotoxin), nux vomica (brucine and strychnine), picric acid, quassia (quassiin), wormwood (absinthin). All of these substances are or contain bitter principles of so permeating and decided a nature, that smaller quantities of them than are usually used of hops impart great bitterness. They lack, however, the aroma and other import-

* Abstract of a paper in the *Archiv der Pharmacie* for January, 1875, published in the *Pharm. Jour. & Trans.*

† *Philosophical Magazine*, [3], vol. xxxiii, p, 341.

ant ingredients in beer, such as resinous matter and tannin. Moreover, the majority of them possess poisonous properties.

As innocuous amongst these bitter substances may be reckoned buck bean, gentian, wormwood, and perhaps also quassia; more doubtful, because in small quantities violently purgative, are aloes and colocynth. The remaining four—colchicum, cocculus indicus, nux vomica, and picric acid—are decidedly dangerous, and especially the active principles of the first three—colchicine, picrotoxin, brucine and strychnine. Notwithstanding therefore, that in the testing of beer generally the whole of the bitter substances mentioned should receive attention, the latter are the more important because of their peculiar virulence. But the author adds that up to the present time he has no knowledge of any one of them having been positively and with certainty referred to any beer, either because the beers actually examined did not contain them, or because in former years the detection of most of them was especially difficult. This difficulty, however, he considers, has now been overcome through the progress made in organic chemistry.

The author does not appear to think that the use of these bitter substances in beer prevails to any great extent in Bavaria, and he considers that under ordinary conditions of price, hops are still the cheapest bitter for beer. He refers to the prevalent suspicion that cocculus indicus is added to beer by the brewer not only to increase its bitterness, but also to increase its stupefying power. He remarks that the notorious fact that a much larger quantity of cocculus indicus is imported than is used for medicinal purposes has led, as in this country, to the conclusion that the largest portion finds its way into the beer breweries. This inference, however, Dr. Wittstein considers to be a very hasty one, since the greater part is used in the extirpation of vermin and the stupefying of fish.

The author recommends the following process of testing for the above-mentioned bitter substances in beer as one that he has repeatedly proved:

One litre of the suspected beer is evaporated by a moderate heat to the consistence of a thick syrup. This is poured into a tared glass cylinder, capable of containing ten times its volume, and weighed; five times its weight of 93° to 95° alcohol is added, and the whole frequently stirred by means of a thick glass rod during twenty-four hours. By this means all the gum, dextrin, sulphates, phosphates, and chlorides are separated, and a comparatively small portion is obtained in solution. After clearing, this solution is decanted, the residue is again treated with fresh alcohol, the two products mixed, filtered, and the alcohol driven off by a gentle heat.

(*a*) Of the syrupy residue left after this evaporation a small portion is diluted with three times its quantity of water; a strip of white woollen material is then allowed to lie in the solution during an hour, after which it is removed and washed repeatedly with pure

water. If after this treatment the wool remains white the absence of acid is demonstrated; but if picric acid be present the wool will have acquired a yellow color that cannot be removed by washing.

(*b*) The remaining largest portion of the syrup is agitated for some time with six times its weight of pure colorless benzol (boiling point 80°C); this is decanted off and the operation is repeated with fresh benzol, and the two liquors—the first of which has become yellow, the second having scarcely changed color—are evaporated at a gentle heat. The pale yellow resinous residue thus obtained may possibly contain brucine, strychnine, colchicine, or colocynthin. To ascertain this, three portions of the resin are placed on a porcelain capsule, one is treated with nitric acid (sp. gr. 1·33 to 1·40), another with concentrated sulphuric acid, and the third, after a few morsels of red chromate of potash have been added, also with sulphuric acid. A red color produced by the nitric acid indicates brucine with certainty, and a violet color, colchicine. A red color produced by sulphuric acid indicates colocynthin, and a purple violet produced by sulphuric acid and bichromate of potash reveals strychnine. Resin, in which one or other of these colorations is produced, possesses an extremely bitter taste; that in which the coloration does not take place is also bitter, but the bitterness recalls the well-known hop flavor.

(*c*) The syrup which has been treated with benzol is freed, by gently heating, from the small quantity of benzol remaining and agitated twice with pure colorless amylic alcohol (boiling point 132°C.) The first portion of the alcohol acquires a more or less wine or golden yellow color. It would take up any picrotoxin or aloes if present, and thereby acquire a strongly bitter taste. If neither of these two substances be present, the amylic alcohol does not become bitter, because neither the hop bitter nor the remaining four bitter principles—absinthin, gentipicrin, menyanthin, and quassiin—are soluble in it.

In order to distinguish picrotoxin from aloes a portion of the first obtained amylic alcohol solution is poured upon glass and allowed to evaporate spontaneously. If a fine white crystallization be formed, picrotoxin is present; if not, aloes is present, and can also be recognized by its peculiar saffron-like odor.

(*d*) The syrup which has been treated with benzol and amylic alcohol is freed by means of blotting-paper from the small quantity of amylic alcohol adhering to it—evaporation by heat being impracticable in consequence of the high boiling point of the alcohol—and shaken with anhydrous ether. This takes up the hop bitter yet present and absinthin. After evaporation the latter is easily recognized through its wormwood-like aroma; it also gives a reddish yellow solution with concentrated sulphuric acid which changes quickly to an indigo blue color.

(*e*) After treating with ether the syrup has yet to be tested for gentipicrin, menyanthin and quassiin. As it is now free from the hop bitter, a decidedly bitter taste would point to one of these three substances. Any remaining ether is removed and the syrup is dissolved in water, and filtered; to one portion is added strong ammoniacal solution of silver, and it is then heated. If it remain clear, quassiin would be present; if a silver mirror be formed it would originate either with gentipicrin or menyanthin. Another portion is evaporated to dryness on porcelain, and concentrated sulphuric acid added. If while cold no change of color take place, but in heating it becomes carmine red, gentipicrin would be present; menyanthin would give a yellowish brown color gradually changing to violet.

SALICYLIC ACID FOR THE PRESERVATION OF INFUSIONS, ETC.*

BY J. C. THRESH, PH.C.

The wonderful reports of the conservative properties of salycilic acid led me some time ago to commence a series of experiments to determine the proportions of acid necessary to add to infusions, etc., in order to keep them a reasonable length of time without change. The results I have obtained are not quite as satisfactory as I had anticipated, but probably they will not on that account be less interesting to pharmacists in general.

Before experimenting with the infusions I sought a suitable solvent for the acid, and several weeks ago found that solution of borax was its best solvent; but this does not take up a sufficient quantity to allow of its being added to medicinal preparations for the purpose of preservation. Boiling water dissolves the acids in proportions sufficiently large for the purpose, and does not deposit it again on cooling: therefore I made the infusions, etc., upon which I experimented with water in which I had previously dissolved the requisite proportion of the salicylic acid. The following are the results of the investigation:

Infusion of cascarilla, without acid kept two days, with acid (five grains to pint) kept five days. Another infusion made of double strength with water containing ten grains of acid to the pint has now kept over a fortnight and is perfectly fresh.

Infusion of quassia.—A quart of concentrated infusion (one to seven) was prepared, having forty grains of the acid dissolved in it: this has kept now over a month and is as nice as when first made. One part of it was diluted with seven of water and kept for compari-

* From the *Pharmaceutical Jour. & Trans.*

son with a simple infusion, the latter was unfit for use on the fourth day, whereas the former kept for six days.

Infusion of orange made with water containing five grains of the acid to the pint kept perfectly bright and fresh for eleven days, but then gradually became turbid.

Infusion of calumba went bad in three days, and a sample with three grains of acid to the pint only kept four days. A stronger infusion with ten grains to the pint was put into an uncovered beaker and was clear and good at the end of the week, but spots of mould then began to form upon its surface though it still remained bright.

Infusion of senna with eight grains of acid to the pint kept seven days, being four days longer than one without acid.

Infusion of malt (two ounces to pint).—A simple infusion was quite sour in three days, but with eight grains of acid to the pint, a portion of the same infusion retained its odor upwards of fourteen days, and even now at expiration of twenty-one days the odor might be distingished.

Tragacanth mucilage.—The addition of acid in the proportion of eight grains to the twenty ounces causes this to keep for a length of time, a sample prepared nearly a month ago being quite fresh, whilst a mucilage without this addition had acquired a repulsive odor in about eleven days.

Mucilage of acacia also appears to keep well with this addition.

Lemon juice will retain its dark odor for weeks, and will not turn mouldy, even if kept in an uncovered vessel, if five grains of salicylic acid are added to each pint.

Having read that this acid would keep leeches healthy and prevent the water in which they were kept becoming foul, I added ten ounces of acid solution (eight grains to pint) to half a gallon of water into which fifty leeches were put. Previous to this addition we had found two or three dead leeches every week when the water was changed, but since we have not lost a single leech and the water keeps fresh for weeks. I forgot to note that by adding ten grains of acid to each pint of syrups of red and white poppies, violets, etc., fermentation is effectually prevented. The addition of a little yeast to several of the samples produced no effect.

THE PREPARATION OF MEDICINAL SYRUPS BY COLD PERCOLATION.†

BY ROBERT HUNSTOCK.

Ever since pharmacy has been promoted to the standard of a profession, it has been the desire and effort of the enthusiastic phar-

* See *Pharm. Jour.* [3], vol. v., p. 1035.

† From the *American Journal of Pharmacy.*

macist to have syrups possessing not only official strength but also pleasant appearance, perfect consistence and stability. During the past ten years there have been innumerable processes presented, but none, I believe, has thus far appeared which thoroughly answers the above demands. The process that I am about to describe is originally the invention of Mr. L. Orynski, and was published in the "Druggists' Circular" of March, 1871. The process which he there suggested is much easier and economical than the process of the "Pharmacopœia," and, I think, fills all the vacancies which the latter cannot possibly approach, namely, *syrups of official strength, transparent appearance, perfect consistence* and *unlimited stability*.

Having paid much attention to the modification and improvement of the valuable invention of Mr. Orynski, I feel confident in recommending the following process to the perusal of the readers of the Journal, and sincerely hope they will try the improved process as laid down; if the directions are strictly followed, success alone can be the result.

The kind of sugar to be used is the so called "crushed," or even coarsely granulated; but very finely powdered will not answer, as the pressure of the solvent exerted on the sugar has the tendency of bringing the particles in such close contact as to render it impenetrable by it. The quantity to be used is, in all cases, the same as prescribed by the "Pharmacopœia."

In the preparation of all syrups, it is very essential to provide for the transparency of the menstruum. For simple syrup, only the purest and clearest water obtainable should be used; *the purer and clearer the menstruum, the more crystal-appearing the product.*

The first step in the process is to procure a conical percolator of the required size. Introduce lightly in the lower orifice a loose piece of sponge previously moistened with water. The sugar is then to be placed into the percolator, a well-fitting cork inserted at the mouth of the lower extremity, and the liquid to be converted into syrup poured on. The percolator is then securely covered and set aside in a moderate temperature until the sugar has melted down to less than half its former bulk. Then the cork can be removed and the liquid allowed to drop. It is always best to return the first four or eight ounces that pass to the percolator, in order to guard against impurities which may exist in the sponge. If the sugar is not all dissolved when the liquid has passed, return the quantity percolated, until that end is perfected. It is hardly ever necessary to return the percolated syrup more than once if the sponge is properly inserted. The time consumed is not as long as if it were made by boiling on the gas furnaces generally found in the laboratory, and the product is a transparent syrup of a fine consistence and possessing treble the stability of the syrups made the usual way.

In preparing the various syrups of the "Pharmacopœia" by the foregoing process, it is advisable to note the following particulars: The syrups of gum arabic, orange peel, and flowers, tolu, lemon, rhatany, wild cherry, garlic, sarsaparilla, ginger, and squill are all treated according to the "Pharmacopœia," till that part where boiling the sugar in the menstruum is directed is arrived at; here the menstruum, impregnated with the medicinal or fragrant virtues of the drug, is poured on the sugar and treated as above directed.

For syrup of red rose, I would suggest that the sugar be first percolated with the mixture of extract and water, obtained as per "Pharmacopœia," and the first portion of the tincture added lastly to the prepared syrup.

A practical and economical process for syrup of iodide of iron is as follows:

Take of Iodine, ... 3 troy ounces.
Iron (in wire and cut in pieces), . . 300 grains.
Distilled water, a sufficient quantity.
Sugar, ... 13⅓ troy ounces.

Mix the iodine, iron and three fluid ounces of distilled water in a suitable glass vessel; when the reaction has ceased, filter, and add six fluid ounces of distilled water to the filtrate; pour this on the sugar previously deposited in a percolator, as directed in the general process. When the liquid has passed, and the sugar is all dissolved, add sufficient distilled water to make the whole measure twenty ounces. While proceeding with the above process, care must be taken to complete it as quick as possible, and to carry it on in a dark-glass percolator. Lastly, it may be filled into small (two or three ounce) dark-glass bottles* and a bit of iron wire added to each.

Thus far we have been bordering on an impossibility to procure, by the formulas formerly in vogue, a compound syrup of squill that will stand unaltered by time and temperature. The formula that I am going to present does not even claim to be perfection on these material points, but it does claim to far exceed the present official formula in attaining that end. The drugs (squill and senna) are powdered, macerated and percolated, evaporated, mixed with water and filtered according to the "Pharmacopœia." The sugar is then dissolved by percolation in the menstruum thus obtained; the tartrate of antimony and potassium dissolved in a small quantity of boiling water and added to the syrup; lastly, the quantity required is made up by the addition of pure cold water.

If the above general process is strictly adhered to, nearly all syrups (official and officinal) can be made by it. It will also be seen, on the first application of the process, that it is the *cleanest, handsomest, and most economical of all the processes thus far placed before the profession*, and it adds largely to the filling of a vacancy in the art of pharmacy so long admitted to be an impossibility.

* The syrup is decomposed by the atmospheric air, but not by light.

THE DISCOVERER OF THE ANÆSTHETIC PROPERTIES OF CHLOROFORM.*

An attempt to relieve the tedium of convalescence from a severe attack of influenza at the close of last year, led Sir Robert Christison to take up the thread of some former inquiries on the subject of anæsthesia, the result being an interesting contribution to the history of the use of chloroform as an anæsthetic. Having heard vague reports that chloroform had been used in the practice of Sir William Lawrence and Mr. Holmes Coote in the summer of 1847, some months before Sir James Simpson's experiments, Sir Robert Christison in 1870 applied to Mr. Holmes Coote for information. In reply, the latter gentleman confirmed the truth of the report, and stated that the substance was introduced to their notice under the name of "chloric ether," by a Mr. Furnell, who represented it to be a milder anæsthetic than sulphuric ether. It was tried in several cases successfully, and whilst Sir William and he were endeavouring to reduce the amount of spirit and water, so as to condense the preparation, Sir James Simpson made known his important discovery. Sir James Paget also testifies to the use of "chloric ether" at St. Bartholomew's.

Then for a time the inquiry dropped, partly through Mr. Furnell, who is now Surgeon-Major in the Madras Army, and was formerly a student in the School of Pharmacy, Bloomsbury Square, having been erroneously described by Mr. Coote as in the Bengal Army. Sir R. Christison has, however, succeeded in identifying and communicating with Mr. Furnell, who gives the following curious account of his first acquaintance with chloroform. In 1847 Mr. Furnell was a student in St. Bartholomew's, and was also engaged in "putting in a vein of pharmacy" at John Bell & Co's., to enable him to pass at the College of Surgeons. Whilst at the establishment in Oxford street, he appears to have developed so extraordinary a propensity for experimenting upon himself with sulphuric ether, which just then was creating a great sensation in London, that Mr. Jacob Bell became alarmed, and gave orders that no more ether should be supplied to him This led Mr. Furnell to search the store-room to see whether he could discover any ether to which he could help himself. On a back shelf he found a dusty bottle labelled "chloric ether," the contents of which, proving grateful to his sense of smell, were taken up stairs and a portion inhaled from a new instrument which he wanted to try. Mr. Furnell found "chloric ether" was sweet and pleasant, and that it soon produced a certain degree of insensibility, but he was struck by the absence of the suffocating irritation and choking sensation produced by sulphuric ether. He therefore took some down to Bartholomew's Hos-

*Pharm. Jour. and Trans.

pital and introduced it to the notice of Mr. Holmes Coote, with the result mentioned above.

So far had Mr. Furnell gone on the road to discovery when he was overtaken and outstripped by Sir James Simpson.

THE SETTING OF PLASTER OF PARIS.

In a recent note, Mr. E. Landrin, in *Comptes Rendus*, described the so-called *alum-plaster* which *sets* slowly and becomes very hard, and he now discusses, in their practical bearings, the causes that hasten or retard the *setting* of plaster. A microscopical examination gives three stages: 1. On contact with water the plaster takes a crystalline form. 2. The water dissolves a certain amount of the sulphate of lime. 3. A portion of the liquid evaporates by the heat disengaged, a crystal is formed, and this seems to determine the crystallization of the whole. At the end of a certain time after this the plaster acquires its maximum hardness. Its formula is then $(SO_3,CaO)2HO$, as determined by experiment. The best effect is obtained when the plaster contains about twenty per cent. of water. In practice this number is often exceeded on account of rapidity of *setting*. In damp places, where the setting is necessarily slow, as little water as possible should be added.

Causes which Retard the Setting.—This may be done by an excess of water, but as this is inconvenient it is better to use substances like gum, glycerin, gelatin, etc., which serve to separate the crystals. It is a singular fact, that inert materials like sulphate of baryta, sand, oxide of iron, etc., only diminish the solidity of the mass without producing any useful effect. The use of sulphuric acid, or alum, cements, as recommended by the author, will be very useful in this connection.

Causes which Hasten the Setting of Plaster.—Stucco workers often wish to hasten the *setting* of their plasters, and accomplish it by placing on the surface of the mortar, anhydrous salts like sodic chloride, sodic carbonate, cupric sulphate, etc., which absorb water. The *setting* of very dry plasters is determined by a mixture of ordinary plasters. One of the latter *setting* determines the crystallization of the whole.

Influence of Lime.—During the calcining of plaster, a part of the carbonate of lime is changed into lime, and the author finds the effect of the latter to be very favorable in the *setting*. The lime absorbing water raises the temperature, and gives the plaster a greater hardness. Ordinary plasters, containing ten per cent. of lime give very good results, polish well, and resist the action of atmospheric agents. The author has made cements with 75 per cent. of lime, which are very hard, and of small specific gravity, rendering them well adapted to light constructions.

Editorial.

ACTION OF THE COUNCIL IN REGARD TO THE PERCENTAGE SYSTEM.

Up to the time of the last meeting, the attention of the Council had been principally directed to the regulation of its own affairs. Seldom or ever was there a motion introduced affecting outside interests, or touching, however remotely, the conduct of members towards each other, the public, or the medical profession. It was no doubt judicious that the work of organization should be completed, and the various details of internal working arranged, before any other object was attempted. This has now been accomplished, and it now remains for the Council to carry out those purposes for which it was designed.

Not the least of these is that of defining the relations between the prescriber and dispenser; of adjusting any differences which may exist as to what is honourably and honestly due to both parties; and of correcting any evil practices into which they may have mutually fallen.

We are pleased to note that the attention of the College has been turned to this branch of pharmaceutical ethics, and that the motion proposed by Mr. Jordan, at the last meeting, has about it the unmistakable ring of straightforwardness and earnestness.

"Moved by Mr. Jordan, seconded by Mr. Miller, That we discountenance in every way the giving of percentages on prescriptions to medical men, as being not only wrong in principle, but immoral in its tendency." Carried.

We have so often and so fully expressed our views on this subject that we now need do no more than urge upon our readers the necessity of seconding the action of the College, and endeavouring by every means in their power to abolish this pernicious system which is the source of so much discord and ill feeling among brethren, and which constitutes the last remaining link which binds, encumbers and enthralls an otherwise independent and progressive profession.

SIMPLICITY IN PHARMACEUTICAL COMBINATIONS.

In these times one of the principal aims of pharmacy is to render as simple as possible the composition of medicinal compounds. This is as true with officinal preparations as those which originate with the physician, and are dispensed extemporaneously. In order to realize this we have only to turn up one of the Pharmacopœias of the latter part of the last century, and compare it with the British or United States authorities of to-day; or place together the prescriptions of the older physicians and those which are at present on our fyles. In these cases the difference in respect to simplicity is quite apparent; but if we wish to fully comprehend the great changes which have taken place, we must go back to the previous century, or the beginning of that referred to—to the days of the famous *mithridate* and *theriaca*; the *emplastrum diabotonon*, or the *aqua generalis*, which contained over one hundred and twenty ingredients.

About the middle of the last century, or previous to the publication of the London *Pharmacopœia* of 1746, we find a decided tendency towards the simplification of these complex mixtures, and the separation of the more active portions from compositions of the most heterogenous and incompatible character. In the preface to this Pharmacopœia the compilers speak very decidedly upon this subject, and faithfully endeavoured to counteract what they justly considered an evil. "It were certainly," say they, "a disgrace and just approach, if pharmacy should any longer abound with those artificial and irregular mixtures, which the ignorance of the first ages introduced, and the perpetual fear and jealousness of poisons enforced." This work of reformation has been steadily progressing, and the process of simplification has been carried to greater length than ever was dreamed of by the ancient worthies of the London College. The very "simples" themselves have been split up, divided and sub-divided into substances innumerable, and still this work of analysis and elimination goes on.

According to Professor de Mussy, an eminent Parisian teacher, there is a possibility of overdoing this matter, and there is no doubt some force in the following extract taken from his *Clinique Medicale*:

"Because, in bygone times, the most heterogeneous mixtures

were used, or rather abused, in medicine, some physicians cover with ridicule, and seek to crush under the name of poly-pharmacy, the combinations in a prescription of medicines not chemically incompatible, and tending to one end. This exclusiveness, now very prevalent in Paris, does not commend itself to my mind as logical. If you are experimenting on the action of a given remedy, isolate it by all means, as perfectly as possible; but if your object be to benefit your patient by using drugs whose action you believe you know, what possible objection can there be to combining them, if not chemically incompatible, and if the stomach will tolerate the compound? In a battle all sorts of weapons are used simultaneously, and there action is concentrated on the point judged most important. This pharmaceutical purism seems to be exaggerated; but I must not be understood as recommending mixtures when a single drug is sufficient, or as wishing to recur to the age of elixirs and electuaries. *In medio stat virtus.*

MONTREAL COLLEGE OF PHARMACY.

This institution, which is the local educational branch of the Pharmaceutical Association of the Province of Quebec, appears to be in a flourishing state, and is on the eve of commencing its eighth session of lectures. Dr. Kollmyer is announced to deliver a course of fifty-two lectures on Materia Medica and Pharmacy, of which a comprehensive syllabus is given in the annual announcement of the College. The lectures on Chemistry, by Dr. Edwards, embrace twenty-five on inorganic chemistry, twelve on elementary physics, and twelve on organic chemistry. The class in Botany will be held weekly, under Dr. J. B. McConnell. The rooms of the College are at No. 628 Lagauchetiere street, and are commodious, well ventilated, and well heated. A library and complete collection of specimens of materia medica are at the service of the students, and every facility for thorough instruction is afforded.

Editorial Summary.

A NEW APPLICATION FOR BURNS.—Mr. Charles Rice communicates to the *American Journal of Pharmacy*, a number of formulæ for mixtures for burns, and notes the circumstances under which each preparation has been found specially beneficial. Most of these applications have, however, some drawback, and the author gives the result of his researches in order to find a preparation which would combine the essentials of cleanliness, transparency, body, rapidity of drying, and flexibility. The following directions are said to produce such a compound, and the trial of more than a year in the New York hospitals appears to warrant the assertion:—Take of the best *white glue* (extra) 15 ounces. Break it into small pieces, add to it two pints of cold water, and allow it to become soft. Then melt it on a water-bath, add to it two fluidounces of glycerin and six drachms of carbolic acid, and continue the heat on the water-bath until a *glossy, tough skin* begins to form over the surface in the intervals of stirring. The mixture may be used at once, after the glue is melted and the glycerin and carbolic acid are added, but when time allows, it is advisable to get rid of a little more of the water, until the proper point is reached. On cooling, this mixture hardens to an elastic mass, covered with a shining parchment-like skin, and may be kept for any time. When using it, it is placed for a few minutes on the water-bath until sufficiently liquid for application (it should be quite fluid). Should it at any time require too high a heat to become fluid, this may be corrected by adding a little water. It is applied by means of a broad brush and forms in about two minutes a shining, smooth, flexible, and nearly transparent skin. It may be kept for any time, without spoiling, in delf or earthern dishes, or pots, turned upside down.

DETECTION OF OIL OF PENNYROYAL IN OIL OF PEPPERMINT.—There is reason to believe that a considerable quantity of American oil of peppermint is adulterated with fresh oil of pennyroyal. It is said that from ten to twenty per cent. of this fraudulent admixture is often made. In order to detect it the *Shipping List* gives the following test:—One drachm chloral hydrat, half a drachm sulph. acid, chemically pure; rub together in a glass mortar, and add alcohol, drop by drop, until a clear solution results. Method of use: In a watch-glass or scale pan of sufficient concavity, put a few drops of the oil to be tested, and with a glass rod, add an equal quantity of the *test*, rubbing briskly for a moment. After standing

for a few minutes, if there is adulteration with pennyroyal, the mixture will assume a *dirty olive green colour*, which grows darker on standing. The finest samples of oil peppermint under the same treatment will assume a *rich cherry colour*. Samples distilled from plants cultivated with less care as to weeds and grass, will vary in colour from the finest, but, if not intentionally mixed, will show the cherry colour more or less perfectly.

Detection of Artificial Coloring in Brandy.—At a meeting of the Paris Societe de Pharmacie M. Carles read a paper on this subject, and recommended the following methods for distinguishing between caramel coloring and that acquired by age, traceable to the extractive matter derived from wooden casks in which brandy is usually stored. A portion of white of eggs is agitated with a sample of brandy. Upon standing, the turbid mixture separates into two layers. If the upper one be colorless the brandy is free from caramel. Again: if a crystal of sulphate of iron be dissolved in a little water, and a few drops added to the suspected brandy, a greenish-black coloration will be manifested, if the coloring is due to extractive from the cask; but, with caramel, the mixture does not manifest any change.

Presence of Quinidine in the Renewed Bark of Cinchona Succirubra.—Mr. David Howard, F.C.S., communicates to the *Pharm. Jour. & Trans.*, an interesting fact confirmatory of an observation made by Dr. de Vrij (*Pharm. Jour.*, 3rd series, iv, 869), relating to the presence of quinidine in the renewed bark of *C. Succirubra*. Samples of renewed bark from three different plantations in the Neilgherries contained this alkaloid in quantities of 0·1 to 0·2 per cent. The original bark of the same species, from the same plantations, grown either exposed or under moss, has in no case yielded this alkaloid when similarly tested. It is most remarkable that the abnormal growth of the renewed bark should thus develop an alkaloid that does not appear to exist naturally in this bark, either in South America or the East Indies—at any rate in appreciable quantities.

Iodoform Crayons.—According to *The Doctor* these cylinders are made by mixing one and a half drachms of iodoform with seven and a half grains of powdered gum acacia, and sufficient mucilage to form a mass. This quantity may be divided into ten pencils,

each about an inch long. They should be allowed to dry in the air for twenty-four hours; but, after this, should be preserved in a dark and air-tight bottle, as prolonged exposure is followed by disintegration.

GLYCONATED EMULSION OF COD-LIVER OIL.—In the *American Journal of Pharmacy* Mr. G. C. Close refers to the formula contributed by Mr. T. D. M'Elhenie (*Am. Jour. Pharm.*, July, and *Canad. Pharm. Jour.*, Aug., p. 18), and differs from the latter writer in the following particulars: 1st, The use of glycerin, which, Mr. Close says, originated with himself. 2nd. That glyconin, without oil of almonds, rapidly separates: quantities have been kept for five years, and the writer has had double that experience with the preparation. The yolks of the eggs are always beaten with a thin spatula previous to adding the glycerin. 3rd. The proportion of oil of bitter almonds is thought too large to be quite safe in all cases. The writer always keeps a quantity of glyconin on hand. The proportions used are four parts, by measure, of the yolks to five parts of glycerin.

MEDICATED WATERS.—Mr. Maisch, editor of the *Am. Jour. of Pharm.*, reviews the various methods which have been employed for the preparation of medicated waters, and brings together the experiences and statements of those who have criticized these processes. As a result, Mr. Maisch makes the following suggestion for the next revision of the U. S. Pharmacopœia: "That the medicated waters containing volatile oils be prepared by distillation from the drugs, with a supplementary process for the extemporaneous preparation of some of them from the volatile oils, discarding, however, the use of carbonate of magnesium.

NEW METHOD OF MAKING UNG. AQUÆ ROSÆ.—Mr. E. C. Marshall *(Am. Jour. Pharm.)* suggests the use of an egg-beater for the incorporation of the ingredients in this ointment. The manipulation requires less labor and dexterity, and the product is stated to be unexceptionable. The egg-beater, in any of its manifold forms —more especially those in which the motion is rotary—may be usefully applied in the preparation of many of the soft ointments.

CORYZA SNUFF.—The *Phila. Med. & Surg. Rep.* gives from the *Tribune Medicale* the following formula: Tannin, ¾ grain; pow-

dered marsh-mallow, 15 grains; tincture of vanilla, 4 drops. Mix. A pinch administered four or five times a day is said to give considerable relief. An ointment of similar composition, but in which the marsh-mallow is replaced by about a drachm of lard, may be employed instead of this powder. Such a preparation has been found very efficacious in the "snuffles" of infants.

REMOVAL OF INK STAINS.—It is said that a concentrated solution of pyrophosphate of soda will remove ink stains from delicate fabrics without injury to the coloring matter or substance of the tissue.

Students' Department.

Answers to the following questions must be sent in so as as to be received by the editor before the twentieth of each month. Competitors must be engaged in the drug business, not being proprietors or having passed examination, and must furnish, with the answers sent, their real names and addresses. Answers to each of the questions must be written on *separate sheets* or slips of paper, and must be followed by the name and address of the competitor. It is trusted that all answers sent will be the *bona fide* work of competitors, and that no assistance will be sought except such as is afforded by books. Any attempt to copy *verbatim*, or in part, from any published work, will impair or altogether nullify any value which might otherwise have been assigned to such answer.

The same competitor may not carry off more than one First Prize and one Second Prize during the term of six months.

Answers requiring calculation and involving fractions must be given in decimals, which need not be carried beyond the third place.

The following books are offered this month as prizes:

FIRST PRIZES.	SECOND PRIZES.
PARRISH'S *Pharmacy.*	GRAY'S *First Lessons in Botany.*
GARROD'S *Materia Medica.*	WITTSTEIN'S *Pharmaceutical Chemistry.*
GRAY'S *Manual of Botany.*	ROSCOE'S *Chemistry.*
FOWNES' *Chemistry.*	PAREIRA'S *Selecta e Præscriptis.*
ATTFIELD'S *Chemistry.*	*British Pharmacopœia.*
SQUIRE'S *Companion to the Pharmacopœia.*	*U. S. Pharmacopœia.*
BENTLEY'S *Manual of Botany.*	KAY-SHUTTLEWORTH'S *Principles of Modern Chemistry.*
REDWOOD'S *Supplem't to the Pharmacopœia.*	PRESCOTT'S *Proximate Organic Analysis*

Successful competitors may select from any of the above works, and, on notifying the Editor, the book selected will be forwarded by post.

Contestants may forward their answers by book post, at the rate of two ounces for one cent, provided the rules be adhered to of leaving open the ends of the package, or cutting a strip off each end of the envelope; not enclosing any matter which could be deemed correspondence; and endorsing the packet "*Manuscript. By Book Post.*"

Address *Can. Pharm. Jour.*, BOX 517, TORONTO.

QUESTIONS.

1. *Chemistry.*—How many imperial gallons of officinal sulphuric acid are theoretically obtainable from 100 kilos of pyrites, containing 40 per cent. of available sulphur. Describe, briefly, the process of making sulphuric acid from this source.

2. *Pharmacy.*—Enumerate the officinal tinctures which depend for their activity, either entirely or in part, on an alkaloid, and state the name of the alkaloid. Correct the table in "Notes on Last Month's Questions."

3. *Materia Medica.*—Where and how are the following articles obtained? What are the different varieties with doses and properties? Camphor, nitrate of potash, arrowroot, benzoin, balsam copaiba, jalap, colocynth. Give the metalloids of P. B., with doses.

4. *Botany.*—Name the different kinds of buds and of roots with example of each. Describe difference between the head and the glomerule, and give way of distinguishing between determinate and indeterminate inflorescence.

5. *Prescriptions.*—Write a prescription in full Latin for twelve pills, to be composed of the following ingredients:—Blue pill and compound; ext. colocynth, each half a drachm; ext. hyosciamus and ipecac, each three grains. One or two pills to be taken when necessary.

6. *Dispensing.*—Describe exactly the process for making one ounce of cod liver oil into an emulsion; giving quantity of the ingredient necessary to be used.

NOTES ON LAST MONTH'S QUESTIONS.

Chemistry.—There is a simple relation between the specific gravity of a gas and its atomic weight. In the case of elementary gases, and referred to hydrogen as a standard, the densities and atomic weights are identical. In the case of compound gases the density is one-half the molecular weight. Taking advantage of the latter law we may at once ascertain that half the molecular weight of NH_3; (17) is 8·5, which is the specific gravity required. If we wish to obtain the specific gravity on the air-scale—that is, with air regarded as unity—we have only to remember that air is 14.44 times as heavy as hydrogen, and we therefore divide the hydrogen weight 8.5 by this number, and obtain as a quotient the required figures 0.588.

In order to calculate the density of NH_3 from that of its components, we multiply the density of hydrogen by the number of volumes present ($.069 \times 3 = .207$) add to this the figures representing

the density of nitrogen (.972 ÷ .207 = 1.179) and divide by 2 ($\frac{1179}{2}$ = .589). This gives us the calculated density in the air-scale ; in order to bring this to the hydrogen scale we multiply by the figure (14.44) which was employed in the former method and obtain numbers corresponding as nearly as possible with those deduced from the atomic weight.

Pharmacy.—Preparations of opium. The answers to this question were, as a rule, incomplete and incorrect, in some instances disgracefully so. A student should be familiar with the strengths of all the important opium preparations, and should be able to state them promptly, from memory. When reference could have been made to the Pharmacopœia, and ample time was allowed for the search, errors and omissions admit of no excuse.

In framing answers to questions in this department, the student should endeavor to be as concise and exact as possible, and to arrange the several points and details of his answer in a clear and systematic manner. He should bring to bear all the knowledge of which he may be possessed, consult every work to which he may be able to abtain access ; in fact leave no stone unturned. Materials being thus accumulated, let him then arrange and rearrange until he is satisfied that time and ability are thoroughly exhausted, and that he can do no better. If a person has the satisfaction of knowing that he has done his best he is seldom unrewarded in other respects. No better advice can be given to ensure success in the "Students Department,"—as well as in all others—than that of a very ancient authority : "Whatsoever thy hand findeth to do, do it with thy might."

We hope our young friends will take in good part this little bit of sermonizing, and that acting on this advice, which we can assure them is well meant, they will apply it and have the satisfaction of seeing that their efforts are appreciated.

In adopting a system of classification of the proportion of active ingredients contained in the officinal preparations it is difficult to find a universal plan which readily expresses the relative strengths, and, at the same time, conveys the requisite information in a form which can be readily retained by the memory. In the case of opium preparations we think that, as one grain of opium is about an average dose, that this might be made the standard. This would give us the following enumeration :

QUANTITIES OF PREPARATIONS EQUIVALENT TO ONE GRAIN OF OPIUM.

40 gr.	Confectio Opii.	24 gr.	Pil. Ipecac. *c.* Scillæ.	½ oz.	Tinct. Camph. Co.
10 "	Emp. Opii.	8 "	Pil. Plumbi *c.* Opio.	14⅜ min.	Tinct. Opii.
1 oz.	Enema Opii.	6 "	Pil. Saponis Co.	96 "	Tinct. Opii Am.
½ gr.	Ext Opii.	40 "	Pil. Cretæ Arom. *c.* Opio.	5 troch.	Troch. Opii.
11 min.	Ext. Opii Liquid.	10 "	Pulv. Ipecac. Co	11 min.	Vin. Opii.
30 "	Lin. Opii.	20 "	Pulv. Kino. Co.	1 supp.	Supposit. Plumbi Co.
1-10 gr.	Morphiæ Hydrochlor	10 "	Pulv. Opii Co.	14⅜ gr.	Ung. Gallæ *c.* Opio.

We propose to submit the correction of this table for one part of this month's exercises so that the competitors may have another

opportunity of familiarizing themselves with this very important class of preparations.

The point to be noticed is the difference between moist and dry opium as no allowance has been made in this respect. In making the necessary calculations, and reducing all to the standard of dry opium, the amount of moisture may be estimated at 15 per cent.

ORDER OF MERIT.

Maximum Number of Marks = 60.0.

No.	NAME.	Chemistry.	Pharmacy.	Materia Medica.	Botany.	Prescriptions.	Dispensing.	Total.
1	A. I. Thompson, Strathroy	10	10	9	9	7	10	55
2	R. McCormick, Ottawa	10	8	10	9	8	9	54
3	J. R. Dodds, Orangeville	10	7	10	9	9	7	52
4	W. McDonald, Hamilton	10	10	9	5	10	7	51
5	J. Parker, Bowmanville	10	9	8	8	8	7	50
6	A. R. Fraser, Toronto	10	7	9	7	7	10	50
7	John Forbes, Fergus	10	5	9	9	7	7	47
8	" Aloes," Pembroke	10	6	8	7	8	7	46
9	W. W. Stephen, Meaford	10	6	8	7	9	5	45
10	" Plumule," Oshawa	10	5	9	9	5	6	45
11	" Syrupus," Galt.....	9	4	10	7	5	8	43
12	G. H. Graydon, St. Catharines..	10	8	7	3	4	10	42
13	W. J. Wilson, Kingston.....	10	7	7	4	7	7	42
14	" Ferri," London.....	10	9	9	10	3	0	41
15	J. Douglas, Owen Sound	10	4	8	5	6	7	40
16	H. Jarmuth, Mitchell.....	10	2	7	7	5	4	35
17	A. H. Cobb, Peterborough.....	0	6	8	7	4	7	32
18	G. R. Sanderson, St. Catharines	0	9	7	4	6	0	26
19	A. J. McDonald, Elora	10	3	7	2	3	0	25
20	" Aurantium," Pembroke	1	8	8	6	0	0	23

The FIRST PRIZE is awarded to Mr. A. I. THOMPSON, Strathroy; the SECOND PRIZE to Mr. R. MCCORMICK, Ottawa.

By a transposition of names in last month's journal, the second prize appeared as having been awarded to "Aloes," Pembroke, while J. FORBES, Fergus, took the second place, and was therefore entitled to the prize.

CHLORAL HYDRATE.—Mr. Ore states: A very small quantity of carbonate of soda is sufficient to remove the acidity of chloral hydrate in solution and to render it alkaline. There is a slight disengagement of carbonic acid, and some chloride of sodium is formed. Comparative experiments have shown that, whilst chloral hydrate retards the coagulation of blood, chloral hydrate, thus rendered alkaline by carbonate of sodium, entirely prevents it. The addition of the soda, he believes, does not at all interfere with the anæsthetic properties of the chloral.—*Journal de Pharmacie* in *Am. Jour. Pharm.*

Transactions of Pharmaceutical Colleges and Societies.

BRITISH PHARMACEUTICAL CONFERENCE.

For the following condensed report of the meeting of this Association we are indebted to the editoral columns of the *Pharmaceutical Journal & Transactions*, August 28th:

During the past week the British Pharmaceutical Conference has held at Bristol its Twelfth Annual Meeting, and a most successful meeting on the whole it has proved. The number of members present apparently equalled the number on any previous occasion; the papers and the discussions which followed them were good and interesting; and although the Conference must now have become habituated to hospitable receptions, the kindness and forethought of the Bristol Local Committee have been such as to leave the pleasantest of souvenirs in connection with this meeting.

The general proceedings commenced with a very favourable report from the Committee, and the Treasurer announced that the balance in hand had increased from a nominal to a very respectable sum. An able address from the President, Mr. Groves, of Weymouth, followed, which, as last year, consisted in part of a *résumé* of the political history of pharmacy during the previous twelve months. It included some valuable remarks upon topics which might profitably be discussed at provincial meetings, and Mr. Groves also lent the weight of his official position to the advocacy of earlier closing. Of course in reviewing the pharmaceutical history of a year, the acts of the Council of the Pharmaceutical Society could scarcely be omitted, and following a tendency which has been manifested sometimes in the Presidents of the Conference to become the critics if not the censors of the Council, Mr. Groves expressed regret at its recent decision as to the establishment of a practical pharmaceutical laboratory, and also that after a "weak protest," the title of "pharmaceutical chemist" should have been conceded to Irish chemists. The correctness of the latter assumption however was afterwards challenged by Mr. Hills. Turning to more strictly scientific subjects Mr. Groves expressed his opinion that the "crowning dignity" of being inserted in the Pharmacopœia awaited two articles that have come into considerable notoriety during the past year, jaborandi and salicylic acid.

The first paper read was on the Linimentum Terebinthinæ Aceticum and was a successful attempt to solve a problem suggested by Professor Redwood at a last meeting of the Conference, namely, how to prepare a more homogeneous liniment than the ordinary

liniment of turpentine with acetic acid. This Mr. Symons has accomplished by taking advantage of the fact that any oil soluble in spirit vastly facilitates the mutual solution of turpentine and rectified spirit, and with this object he uses castor oil in the preparation. As the product was pronounced by Professor Redwood to be a perfectly satisfactory one, it may be that we have here another substance to which the "crowning dignity" will be awarded.

A report from Dr. Wright on the chemistry of the alkaloidal bodies obtained by Mr. Groves from aconite followed. It confirmed the discovery of the comparatively inert alkaloid mentioned in Mr. Groves's paper last year, but showed that it is not identical with Mr. Broughton's "atisine." Neither has Dr. Wright found "pseudo-aconitine" to be isomeric with "aconitine." But beyond this the report appeared to do little more than reveal how extremely little is yet known on the whole subject.

In a paper entitled "Pharmaceutical Experiments on the Bristol Rocks," Mr. Stoddart extended the papers formerly written by him on substances belonging to the organic kingdom to some belonging to the inorganic. How suited the neighbourhood of Bristol is for such experiments may be inferred from the fact that fifteen out of the twenty-three metals mentioned in the British Pharmacopœia may be obtained from its rocks. He mentioned the interesting fact that he had just succeeded in separating silver from a carboniferous limestone, it being, as he believed, the first time that silver had been found in that formation. Minute quantites of gold were also found with the silver.

Mr. Greenish called attention to the microscopy of Natal arrow-root, and pointed out certain peculiar characters which probably on more than one occasion have caused this article, although pure, to be condemned as adulterated. Mr. Greenish considers this arrow-root to be the product of *Maranta arundinacea*, but why it should differ from the product of the same plant grown in another country Mr. Greenish confesses himself unable to explain.

The next paper was by Dr. Tilden on a branch of the subject he has made peculiarly his own, the crystalline constituents of Barbadoes and Socotrine aloes. Dr. Tilden disagrees with Rochleder's suggestion that the aloins form a homologous series, but believes zanaloin to be identical with socaloin, and barbaloin (in the anhydrous state) isomeric with it, whilst nataloin is widely separated from the other crystalline principles.

The possible application of salicylic acid in pharmacy was the subject of a paper by Mr. Benger. A number of pharmaceutical preparations were exhibited, all of them more or less prone to decomposition. Many of them which contained from ¼ to ½ a grain of salicylic acid to the ounce appeared perfectly good, although they had been prepared about four months. The freshly expressed juice of conium, hyoscyamus, and taraxacum proved to be exceptional in

this respect. Some experiments with albumen had shown that salicylic acid does not prevent and only slightly retards the action of pepsine. In the discussion which followed, the antiseptic properties of boracic and benzoic acids were referred to.

In a report upon the magnesium carbonates of commerce, Mr. Thresh stated that the semi-ponderous variety appeared to be seldom met with in this country, that the heavy carbonates are as a rule satisfactory, but that much larger proportions of soluble salts were found in the light carbonates.

Mr. Umney continued his valuable series of suggestions for the improvement of the Pharmacopœia by advocating the substitution of the present official amorphous citrate of lithium by the crystals, which he stated were not deliquescent. In this he was confirmed by Mr. Williams, and Professor Redwood expressed his gratification that manufacturers now admitted that a permanent crystalline citrate of lithium could be prepared.

The first day's sitting was brought to an end by the reading of a paper on the cultivation of saffron in the Abruzzi, by Mr. Henry Groves of Florence. The great fluctuation of the gatherings may be inferred from the fact that one year's harvest has sometimes surpassed in value the soil in which it was grown, while in other years it is almost a failure.

On Wednesday morning, after the election of several members, the President read a paper describing a curious and rapid formation of herepathite in a mixture containing sulphate of quinine, iodide of potassium, and chloroform water. He was unable to suggest any explanation of the reaction except that it might have been caused by an impurity in the chloroform, nor was it accounted for by any person who took part in the discussion.

Mr. Kingzett furnished a further contribution to the history of essential oils, and although the principle object of his research was a chemical one it will probably eventuate in rendering a service to pharmacy. Of a like nature was a paper by Messrs. Beckett and Wright on the camphor of Japanese oil of peppermint.

Mr. Gerrard presented a report on Jaborandi, in which he described his chemical investigation of the plant, from which he has come to the conclusion that it contains one well-marked alkaloid, non-crystalline but forming crystalline salts, possibly a second alkaloid forming acid salts, an aromatic essential oil solid at ordinary temperature, tannic acid, a peculiar volatile acid, and chloride of potassium.

The reading of a paper entitled "The Horsley-Stoddart Method of Estimating Fat in Milk," by Mr. A. H. Allen, led to a lively but rather personal discussion. Irrespective of this unpleasant feature, it is pretty evident that if the field of the Conference be widened so as to include the numerous extra-pharmaceutical subjects which are at present bones of contention amongst public analysts, it will be-

come necessary to prolong the meetings of the Conference. A rumour of the attack brought Mr. Horsley to the defence later in the day, but for details we must refer our readers to the fuller report, which will appear in due course.

In a report on the phosphate of calcium of commerce, Mr. J. E. Brown called attention to the variable nature of the substance sold under this name as official, but there was a general expression of opinion that with so variable and little understood an article as bone ash to work upon it would be vain to expect a definite product at present.

A paper on the use of optical analysis in pharmacy, by Mr. Henry Pocklington, in which he discussed the application of the microscope, polariscope, and spectroscope, followed, and was supplemented, by some interesting remarks on the subject from Mr. Stoddart. Mr. Pocklington's optical bent was also manifested in a paper onBastie's toughened glass, and he stated that a considerable amount of toughness could be imparted to glass by heating it and allowing it to cool between metal plates.

Mr. Williams gave an account of further experiments as to the power of glycerine to prevent the loss of strength in hydrocyanic acid. These appear to have been very successful, though in one case a remarkable change took place, the liquid becoming converted into a solid mass of paracyanogen.

Then followed another report by Dr. Wright on New Derivatives from the Opium Alkaloids, a subject that seems to be practically inexhaustible. The reading of papers was brought to a close by one on commercial compound colocynth pills, by Mr. W. Laird.

Finally, it was decided that the Conference should meet next year in Glasgow, under the Presidency of Professor Redwood.

After various votes of thanks were passed the meeting separated, with the understanding that as many members as were able would on Friday accompany the Local Committee on an excursion to the Cheddar cliffs.

MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION.

(Reported by Edmund Gregory.)

The Twenty-third Annual Meeting of the above Association has just closed its session, and it is admitted on all hands that on no occasion has it been more successfully conducted. The number attending has been larger than ever before. The exhibition has been more complete and interesting, and the papers read at the meetings have been fully up to the mark in interest, practical use-

fulness, and in careful scientific research. When we add to this that the entertainment provided by our Boston friends for the visiting members and their ladies was munificent in the extreme, it will easily be imagined that the time of the Ontario delegation was passed in a very pleasant manner. It is unnecessary to say anything of the journey. We left Port Hope at 9.30 on Monday morning, and reached Boston at 10.00 the next morning, meeting at Rochester Mr. Wm. Saunders, of London, Chairman of Committee on Queries, and to whose care the success of the scientific part of the meeting is largely due. In Boston we were billeted at the St. James Hotel, a splendid building with white marble front, six stories high, and with all the modern appliances for the entertainment of guests. At three o'clock, p.m., we reached the Odd Fellows' Hall, on Tremont street, and the meeting was called to order by the President, Mr. Lewis Diehl, of Louisville, Kentucky. The Committee on Credentials having been appointed, they proceeded immediately to their work. In the meantime the President proceeded to deliver his annual address. This was a very able and lengthy document, too long to be included in this report. It may suffice to say that after congratulating the Association, and offering much encouragement and sound advice to its members, the address concluded with a notice of three articles that have much interested the profession during the past year, jaborandi, digitalin, and salicylic acid.

At the conclusion of President Diehl's address, the Committee reported 112 delegates duly accredited from twenty-four colleges and other societies connected with pharmacy.

The Executive Committee then reported the names of 103 persons, who after some discussion were duly elected members of the Association. The committee on nomination to office for the ensuing year, the committee on specimens, and another committee having been appointed, the meeting adjourned.

The same evening at 8 o'clock the Bostonians and their ladies paid us a visit at the St. James Hotel. After numerous introductions and a promenade, enlivened by the strains of a first-rate string-band, we were invited to partake of a substantial banquet in the great dining-hall of the hotel. The hall accomodates about 400 persons, and it was crowded, presenting a very gay scene, with its chandeliers festooned with creeping plants, tables profusely decorated with flowers, and around which were seated gaily dressed ladies and gentlemen, all apparently enjoying themselves to the utmost.

Next morning, business was resumed at 10 o'clock. President Diehl in the chair. The Nominating Committee recommended the following nominations to office, and their report was adopted without change.

President—Professor George F. H. Markoe of Boston.

Vice-Presidents—Fred. Hoffman, of New York; T. Roberts Baker, of Richmond; C. F. G. Meyer, of St. Louis.

Treasurer—Charles A. Tufts, of Dover, N. H.

Permanent secretary—Professor John M. Maisch, of Philadelphia.

Reporter on progress of pharmacy—C. Lewis Diehl of Louisville, Ky.

Executive committee—George W. Kennedy, Pottsville, Pa.; Joseph L. Lemberger, Lebanon, Pa.; William M. McIntyre, Philadelphia; Charles A. Heinitsh, Lancaster, Pa.; John M. Maisch, permanent secretary, *ex-officio*.

Committee on papers and queries—William Saunders, Ontario, Can.; Emil Schaffer, Louisville, Ky.; James H. Taylor, New York.

Business committee—Jacob D. Wells, Cincinnati; Paul Balluff, New York city; William C. Baker, Philadelphia.

The following reports were then read: Report of the Secretary, Report of the Executive Committee, Report of Committee on Unofficial formula, Report of the Treasurer, Report of the Committee on Adulteration. This Report was both interesting and important, but too long for insertion here. The meeting then adjourned, and the Association was invited to dinner by the Bostonians in an upper room of the same building.

In the interval your correspondent inspected the exhibition, which was held in another hall of the same building. It was very complete and afforded us much pleasure, and we hope instruction and food for future thought. It will be impossible to give a list of all the articles exhibited, much less to describe them. We can only mention what most arrested our attention. The first in order was a fountain errected by Joseph Bennett & Sons. and spouting forth the finest Eau de Cologne with the greatest profusion. Turning to the left we noticed a cinnamon plant growing in a large pot. Next came a tea plant, then aloes, then ginger, then uva ursi, and on another stand a vanilla plant, all green and apparently flourishing, and giving a better idea of the appearance and characteristics of the respective plants than many volumes of botanical description could do. It was interesting here to notice an old illustrated Herbarium, printed in the year 1486. Next came a machine for corking bottles. Very ingenious, but we fear not practically useful. There was a very fine display of soda fountains, but these are scarcely of as much importance to us in our colder northern climate as to our brethren on the other side of the water. Mr. Knowlson, of Troy, exhibited a very handsome suppository mould, which would be just the thing, if it were not for the price, $50. A very large and handsome specimen of Ambergris attracted much attention. It was also remarkable for the different values placed upon it. Its worth being variously estimated at $2,000, $12,500, and $20,000, and all

by parties who professed to know. Messrs. Powers & Weightman made a very fine display of chemicals, valued at about $15,000. On their table was a pyramid of sulphate of quinine, two feet square at the base, and about three feet high. A pile of sulphate of morphia, of about the same height, in cakes of agglomerated crystals, eighteen inches long, twelve inches wide, and six inches thick. Samples of iodide and bromide of potassium in cubical crystals of about half an inch in size. Crystals of nitrate of silver, the largest six inches long by four inches broad. And a host of other preparations, completely sustaining the well-earned reputation of that firm.

Messrs. Lehn & Finke, New York, exhibited amongst a host of other rare drugs and chemicals, specimens of the wood, root and leaf of jaborandi. The leaf having something the appearance of those bay leaves which come amongst our extract of licorice. They also exhibited guarana in the lump, looking very much like a German sausage. Also a small sample of dried leaves, much broken up, said to be damiana.

Messrs. Cutler, Bros. & Co., exhibit samples in original packages, of two articles which we fear are rarely seen, genuine Burgundy pitch and Venice turpentine.

But it would be impossible even to mention all the articles worthy of notice. It must suffice to say that the display was both interesting and instructive, and that no pharmacist could go through it without very great profit.

In the afternoon, at three o'clock, the Association resumed its sittings, President Markoe in the chair. The following reports were then received: Report of the Committee on Legislation, Report of the Committee on the Ebert Prize. The prize this year being awarded to Charles L. Mitchell, of Philadelphia. Report of the Committee on Elixirs, recommending some twenty or thirty formulas. This report elicited much discussion, and there seemed a general desire to discourage the use of elixirs. Then followed the great feature of these meetings, the reading of volunteer papers, and of papers in answer to queries proposed last year. First came a paper on the "Ready-made Pills of our Day," by Joseph K. Remington, of Philadelphia. An essay on Paraffin, by B. L. Stacey, of Charlestown, Mass. Another on the same subject by Joseph Lemberger, of Lebanon, Pa. A communication on unusual doses, by Col. Baker, of Richmond, Va. The Association then adjourned.

Whilst the gentlemen were attending the meetings the ladies were not forgotten by their Boston friends. At half-past nine o'clock the ladies accompanying the visiting members, to the number of nearly 100, took carriages for a field-day in the suburbs. About thirty barouches were called into requisition for the purpose, the entire party being made up of quartettes—three visiting ladies and one resident here to act as chaperone. Very few gentlemen

were present. The first trip was to Jamaica Pond, and the first halt was made at the residence of Mr. Joseph T. Brown, where the visitors were cordially welcomed and hospitably entertained. A rest of three-quarters of an hour here, and the party left for the Chestnut Hill reservoir, driving slowly around both basins, and then took the road to the residence of Mr. Alvin Adams, where a stay of sufficient length was made to enable every one to inspect the beauties of the place. Fresh Pond was reached at half-past one o'clock, and at two dinner was served. A social chat on the broad piazzas, and some excellent music from the Germania orchestra occupied the time until four o'clock, when the carriages were again entered, and a visit paid to Mount Auburn, halts being made in front of Charles Sumner's and Colonel Chickerings graves and the Sphinx. The ride around the colleges to Bunker Hill was enjoyed, despite the dust, and at an early hour the carriages passed through the burnt district, on the way to the St. James Hotel. The excursion was in every way a success, a result largely due to the two members of the executive committee who were present—Messrs. S. M. Colcord and E. H. Doolittle.

On Thursday, the 9th, the Association came to order at 10 o'clock. Colonel Baker, of Richmond, in the chair. The minutes of the preceding session having been read, Mr. Miller presented a sample of ground rice which was used to adulterate granulated sugar. The following papers were then read. By Andrew Blair, of Philadelphia, on drug mills. His experiments seem to prove that the Enterprise Mill is the one best adapted for the purposes of the retail druggist. A. W. Miller, of Philadelphia, read a paper on mesquite gum. The report of the Committee on Maximum Doses was then presented. C. Lewis Diehl, of Louisville, presented the report on the Progress of Pharmacy, in a pile of manuscript about a foot high. Fortunately he did not offer to read it to the Association; but those who know say it is full of interesting and useful information, and will well repay perusal. An essay on Emulsion of Phosphuretted Resin was then read. On the same subject by W. H. Walling. On Dilute Phosphoric Acid, by Louis Dohme, of Baltimore. A paper by Prof. Markoe, on the same subject, seemed to us the most important paper of the meeting. It gives a new, safe, and easily practicable process for the manufacture of dilute phosphoric acid, by the intervention of bromine. The bromine being at last driven off by heat. Another paper on the same subject was offered by J. P. Remington. A paper on Hydrobromic Acid, by Prof. Markoe. An essay on Chloral-Hydrate, by S. Robert Baker, of Richmond. The meeting then adjourned.

Dinner was again provided by the kindness of the Boston friends, and at 3 o'clock the Association re-assembled. President Markoe in the chair. A paper was then read by R. F. Matthews, of New York, on Suppository Moulds. C. Rutter, of New York, on Tasteless Iron Combination. By W. McIntyre, on Spts. Ammn.

Aromat. By H. M. Welch, on the Manufacture of Iodoform. By J. F. Hancock, of Baltimore, on a formula for Chlorodyne. By Prof. Maisch, on Artanthe Elongata (Matico). On the Insects which infest Rhubarb, by William Saunders. A number of other papers were then read, after which the meeting adjourned.

At half-past nine o'clock on Friday morning the last session commenced, President Markoe in the chair. After a number of very interesting papers had been read, the committee on the time of the next annual meeting reported, through the chairman, W. J. M. Gordon, of Cincinnati, in favour of holding the next annual meeting on the second Tuesday of September, at three p.m., and the recommendation was adopted. The committee also reported that the invitation extended to the Association by the delegates from Ontario, Can., to hold the meeting of 1877 in the City of Toronto, had been cordially renewed. And we believe it is fully understood by all the leading members of the Association that their invitation will be accepted. After some other business, Wm. Saunders, of London, read a very interesting paper on the Production of Rubber from the Common Milkweed. A number of other papers having been read, the Association adjourned to meet in Philadelphia, in September, 1876.

The closing entertainment provided by the Boston druggists for their friends from other cities, was a harbor excursion, which was arranged upon the same generous scale as has characterized the arrangements of the whole week. The heavy rain prevented as large a number from joining in the trip as had been expected, but soon after two o'clock the steamer Governor Andrew left Rowe's wharf with about five hundred ladies and gentlemen on board, bound for a good time, let the weather be what it would. A roundabout trip to Downer's Landing was made, where at about half-past five o'clock a clam-bake was served, and afterwards an hour or two was passed in dancing, the boat returning from the Landing at half-past eight. On the trip down an informal meeting was held between decks, which was called to order by Dr. Jenks, and Dr. Burnett having been called to the chair. Speeches were made by Messrs. Solomon, Carter, William F.Horton, William B. Blanding, of Providence, James T. Shinn, of Philadelphia, and others, all of which went to prove that the past week has been a pleasant as well as a profitable one for the members of the Association.

An account of this interesting meeting would be incomplete if we neglected to notice the very recherche ball and supper provided by the Bostonians for their visitors. It was held in Arcan's Hall, in the Odd Fellows Hall building, on Wednesday evening, and was in every respect a complete success. Supper was served at 10 o'clock, and dancing was kept up with great spirit till the small hours of the morning. Altogether the visit was one to be long remembered, and must have left a very pleasant impression upon the minds of all the members of the Association.

Varieties.

FERRATED COD-LIVER OIL.—C. Bernbeck proposes for this purpose to prepare oleinate of iron which may be kept for a long time without alteration. A pure olive oil soap, the neutral behaviour of which has been previously ascertained by moistening it with some solution of corrosive sublimate, is dried in thin slices at a temperature of 30° to 40° C. (86° to 104° F.); it will then still contain about 12 per cent. of water. One part of this soap is dissolved in 20 parts of boiling distilled water, strained, and a solution of one part of ferrous sulphate in 10 parts of water added, with continued agitation. The whitish-grey precipitate, which, in contact with the air, speedily turns greenish and finally brown, is rapidly collected upon linen, washed and expressed. This press cake is externally red-brown from ferric oleinate, internally grey (ferrous oleinate), and does not alter on keeping. To prepare the ferrated oil, four parts of this oleinate of iron are fused by means of a steam-bath, when 96 parts of cod-liver oil are added in small quantities, and the heat continued for about 45 minutes; it is then filtered, or, better, allowed to settle in a closed vessel, and decanted. Thus prepared, ferrated cod-liver oil has a mild taste, and contains the iron mainly as a ferrous salt; it contains about 1 per cent. of metallic iron.—*Archiv. d. Pharm.*, 1875, July, pp. 21-23 *in Am. Jour. Pharm.*

Registrar's Notices.

RENEWALS CONTINUED.

Banks, J. H., Weston.
Borland, E. B., Fenelon Falls.
Bray, W. T., Chatham.
Dyke, T. J., Aylmer.
Harding, T. J. B., Brockville.
Margach, J. L., Duffi'ns Creek.
Maxon, G. C., Leamington.
Munro, L. C., Fergus.
McCollum, C. J., Port Burwell.
McCollum, J. H., Port Burwell.
Owen, R., Toronto.
Revell, Robert, Woodstock.
Stark, Robert, Woodstock.
Smith, S. W. B., Whitby.
Stewart, John, Alliston.
Walford, J. H., Renfrew.

NEW REGISTRATIONS.

Laishley, Henry, Elgin.

All cummunications for the Secretary and Registrar, to be addressed to the office 305 Yonge Street, Toronto, instead of P.O. Box 1133 as heretofore.

Drugs, Medicines, &c.	$ c.	$ c.
Acid, Acetic, fort	0 13 @	0 14
Benzoic, pure	0 22	0 27
Citric	1 35	1 50
Muriatic	0 03½	0 05
Nitric	0 10	0 13
Oxalic	0 20	0 23
Sulphuric	0 03	0 05
Tartaric, pulv	0 49	0 50
Ammon, carb. casks	0 22	0 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 40	0 42
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 15	0 17
Tart "	0 52	0 60
Alcohol, 95 per ct. Cash	2 19	0 00
Arrowroot, Jamaica	0 18	0 22
Bermuda	0 50	0 65
Alum	0 02¾	0 03½
Balsam, Canada	0 33	0 38
Copaiba	1 10	1 15
Peru	3 40	3 75
Tolu	2 00	2 10
Bark, Bayberry, pulv	0 18	0 20
Canella	0 17	0 20
Peruvian, yel. pulv	0 35	0 50
" red "	1 60	1 70
Slippery Elm, g. b.	0 18	0 20
" flour, packets	0 28	0 32
Sassafras	0 15	0 18
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Tonquin	0 62	1 10
Beans, Vanilla	18 00	20 00
Bismuth, Alb	2 50	2 75
Carb.	2 65	2 90
Camphor, Crude	0 33	0 40
Refined	0 43	0 47
Cantharides	2 20	2 30
Powdered	2 30	2 40
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 23	0 30
Chloroform	1 10	1 55
Cochineal, S. G	0 58	0 70
Black	0 75	0 90
Colocynth, pulv.	0 60	0 65
Collodion	0 70	0 80
Elaterium	3 20	4 00
Ergot oz	0 70	0 75
Extract Belladonna	1 90	2 00
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 00	0 95
Henbane, "	1 80	1 90
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic oz	0 40	0 50
Opium oz	1 40	
Rhubarb	5 00	5 50
Sarsap. Hon. Co	1 00	1 20
" Jam. Co	3 50	4 00
Taraxacum, Ang	0 70	0 80
Flowers, Arnica	0 17	0 25
Chamomile	0 8	0 32
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
" Socot	0 50	1 35
" " pulv	1 00	0 00
Arabic, White	0 38	0 60
" powdered	0 60	0 75
" sorts	0 19	0 24
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 40	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 00	1 20
Guaiacum	0 45	1 00
Myrrh	0 50	0 85

Drugs, Medicines, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	
Scammony, powdered	5 50	6 00
" Virg. "	14 50	—
Shellac, Orange	0 80	0 85
Gum, Shellac, liver	0 60	0 70
Storax	0 40	0 45
Tragacanth, flake	1 10	1 75
" common	0 53	0 65
Galls	0 22	0 30
Gelatine, Cox's 6d	1 15	1 20
Glycerine, common	0 18	0 23
Vienna	0 25	0 28
Prices	0 60	0 75
Honey, Canada, best	0 16	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Sacchar	0 40	0 55
Citrate Ammon	1 40	1 50
" & Quinine, oz	0 52	0 55
" & Strychine	0 20	0 25
Sulphate, pure	0 08	0 10
Iodine, good	4 30	5 00
Resublimed	5 10	5 50
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 32
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate brl	5 50	—
Chloride	0 05	0 06
Sulphate	0 08	0 12
Lead, Acetate	0 15	0 16½
Leptandrin oz.	0 60	—
Liq. Bismuth	0 50	0 60
Lye, Concentrated	1 50	1 60
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb. 1 oz.	0 20	0 25
" 4 oz.	0 19	0 20
Calcined	0 65	0 75
Citrate gran.	0 60	0 75
Mercury	1 25	1 35
Bichlor	1 30	1 50
Chloride	1 50	1 70
C. Chalk	0 65	0 70
Nit. Oxyd	1 70	1 90
Morphia Acet	3 00	3 20
Mur.	3 00	3 20
Sulph	3 20	3 40
Musk, pure grain oz	25 00	—
Canton	0 60	1 20
Oil, Almonds, swcet	0 45	0 47
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	8 00	8 25
Caraway	3 20	3 50
Cassia	2 00	2 25
Castor, E. I	0 13¾	0 14
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 05	1 15
Cloves, Ang	3 75	3 80
Cod Liver	1 25	1 50
Croton	1 40	1 50
Juniper Wood	0 80	1 00
Berries	2 75	3 00
Lavand, Ang. oz.	0 00	1 00
Exotic	1 25	1 50
Lemon, super	3 80	4 00
ord	3 20	3 40
Orange	3 00	3 25
Origanum	0 65	0 75
Peppermint Ang	15 00	16 00
" Amer.	5 50	7 00
Rose, Virgin	8 50	8 75
" good	7 00	7 25
Sassafras	0 75	1 90
Wintergreen	4 40	4 60
Wormwood, pure	4 00	6 00
Ointment, blue	1 00	1 10
Opium, Turkey	6 25	6 50
pulv	9 00	9 50

DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 35	0 36
" good	0 15	0 20
Pill, Blue, Mass.	1 00	1 20
Potash, Bi-chrom	0 16	0 18
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 35	0 40
Nitrate	8 00	9 00
Potassium, Bromide	65	0 75
Cyanide	0 60	0 70
Iodide	3 60	3 80
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 40	—
Houghton's... doz.	8 00	9 00
Morson's...oz.	0 85	1 10
Phosphorous	1 10	1 20
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 20	—
" 100 oz. case.	2 15	—
" 25 oz. tin..	2 15	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 10	2 25
" E. I	0 75	0 90
" " pulv	1 60	1 10
" " 2nd	0 60	0 70
" French	0 75	—
Sarsap., Hond	0 53	0 60
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 00	1 10
Spigelia	0 25	0 30
Sal., Epsom	2 50	3 00
Rochelle	0 30	0 32
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 17	0 17
Cardamon	2 00	2 10
Fenugreek, g'd	0 08	0 09
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	0 75	0 85
Spanish	10 00	11 00
Santonine	8 50	8 75
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap, Castile, mottled	0 11	0 14
Soda, Ash	0 03½	0 05
Bicarb. Newcastle	5 75	6 25
" Howard's	0 14	0 16
Caustic.	0 05½	0 05¾
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 00	2 20
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 70	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 65	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 09	0 10
Camwood	0 07	0 08
Copperas, Green	0 01½	0 02
Cudbear	0 16	0 25
Fustic, Cuban	0 03	0 04
Indigo, Bengal	2 40	2 50
Madras	0 85	0 90
Extract	0 26	0 30

DYESTUFFS—*Continued.*		
Japonica	0 07	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 01½	0 03
Logwood, Camp	0 02½	0 03
Extract	0 12½	0 13
" 1 lb. bxs	0 15	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 11	0 12
2nd quality	0 10	0 11
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 26	0 28
Cloves	0 55	0 60
Cayenne	0 22	0 28
Ginger, E. I.	0 19	0 20
Jam	0 30	0 30
Mace	1 40	1 60
Mustard, com	0 20	0 25
Nutmegs	1 15	1 25
Pepper, Black	0 20	0 21
White	0 31	0 32
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07½	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 50	1 60
American	0 25	0 35
Whiting	0 1	0 1½
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03¾	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 45	—
" No. 1	2 20	—
" No. 2	1 95	—
" No. 3	1 70	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	3 90 @	4 25
Rosin, Strained	3 80	4 25
Clear, pale	5 75	7 25
Spirits Turpentine	0 45	0 47
Tar Wood	3 90	4 25
OILS.		
Cod	0 65 @	0 70
Lard, extra	1 10	1 20
No. 1	105	1 10
No. 2	0 90	0 95
Linseed, Raw	0 60	0 66
Boiled	0 63	0 55
Olive, Common	1 05	1 10
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 67½	0 70
Straw	0 62½	0 65
Sesame Salad	1 30	1 35
Sperm, genuine	2 65	
Whale refined		