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In this Number BACTERIOLOGICAL EXAMINATION OF WATER.
AMENDMENTS TO B. C. PHARMACY ACT.

VOL. vii. TORONTO, CANADA, MARCH, 1895 No. 3.

Canadian Druggist

Devoted to the interests of the General Drug Trade and to the Advancement of Pharmacy.

VOL. VII. TORONTO, MARCH, 1895. No. 3

Canadian Druggist

WILLIAM J. DYAS, PUBLISHER.

Subscription, $1 per year in advance.

Advertising rates on application.

The CANADIAN DRUGGIST is issued on the 15th of each month, and all matter for insertion should reach us by the 5th of the month.

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CONTENTS.

The highest mortality in European cities per 1,000 for August is St. Petersburg, 62; and the lowest, Swansea, 10.

Uniform Legislation.

Is it not high time that steps were being taken by our governing pharmaceutical bodies to form an association whose power shall not be confined to the limits of a single province? Here we have in Canada seven distinct pharmaceutical associations, each with powers conferred on them by the legislatures of their respective provinces, still as distinct from each other as though they were not part and parcel of one country. Each legislates for itself, has its own poison schedule for guidance of pharmacists, its own regulations as to who may or may not assume to themselves the title of "chemist" or "druggist," and each one determines what qualification is necessary to earn such a title. And all this in provinces where, we might say, an imaginary boundary line marks the only distinction between several of them. Such a thing should not be, and there is no reason for the present state of affairs, which is, we contend, detrimental to the interests of pharmacy in this Dominion. If we want to conserve any rights that we at present possess, or to obtain any legislation which recommends itself as desirable for the well-being of the profession, it must all be done by united action. There are too many influences at work in some of our local legislatures to make it desirable that matters so important to the pharmacist, and of such vital interest to the public, should be confined to these local limits, and it is through combined action on the part of pharmacists of the Dominion, legislating in the House of Commons, that interests such as we represent can be legislated upon for the benefit of the whole of Canada.

This is a matter that cannot be acted on too quickly. The course of events shows most unmistakably that unless we, as pharmacists of the Dominion, act promptly, and secure Dominion legislation, forming an association, to which powers may be granted to regulate pharmacy throughout all Canada, what rights we even now may have are in danger of being tampered with, and, once lost, when may we hope to regain them? We would urge promptness in taking steps towards the formation of a Dominion Pharmaceutical Association, and in combining the interest of pharmacists in all the provinces for the general good.

The Pharmacopœia.

Suggestions as to alterations and additions to be made to the proposed Imperial Pharmacopœia are being made through the English medical and pharmaceutical press; and although the interest taken seems to be rather of a lukewarm character, yet it appears to be taken for granted that the work will partake somewhat of the "Imperial" character suggested.

The various pharmaceutical bodies of this country, not having been officially asked to formulate any suggestions, nor, in fact, to take any part, have very wisely concluded not to interfere in any way, having no desire evidently to push themselves in where not asked, no doubt feeling the discourtesy shown them by the committee in England who have the matter in charge. Under any circumstances, we believe the better way would be to accept whatever may be the outcome of the deliberations of the committee, and recognize as the official pharmacopœia of the Dominion the volume so prepared; then, if deemed advisable in the interests of Canadian pharmacy, publish an addendum, comprising such things as are considered desirable to incorporate in a work which will be the official text-book for our schools and our guidance in the laboratory.

A FELLOWSHIP, to be known as the "Stearns Fellowship of Pharmaceutical Chemistry and Pharmacology," has been established at the University of Ann Arbor, Michigan, through the liberality of Frederick Stearns & Co., of Detroit. During the coming year the work of the

fortunate candidate will be under the immediate supervision of the dean of the department, Dr. A. B. Prescott. Only a short time ago the Stearns art collection, comprising hundreds of beautiful water-color reproductions of Japanese fishes, executed at great expense by a famous Japanese artist, was given to the university to be placed in the general museum.

To Correspondents.

We have received several anonymous communications asking for formulæ, etc. To these and all correspondents we would repeat: *The name must in all cases accompany the communication, although it will not be published if so desired.*

Manual of Organic Materia Medica and Pharmacognosy.

An introduction to the study of the vegetable kingdom and the vegetable and animal drugs; comprising the botanical and physical characteristics, source, constituents, and pharmacopœial preparations, with chapters on synthetic organic remedies, insects injurious to drugs, and pharmacal botany. By Lucius E. Sayre, Dean of the School of Pharmacy, Professor of Materia Medica and Pharmacy in the University of Kansas. 555 pages. 543 illustrations. Cloth, $4.50. Philadelphia: P. Blakiston & Co.

The absence of a good text book in the English language treating of the subjects Materia Medica and Pharmacognosy together has been increasingly felt each year during the past decade, and of late many teachers of these branches have viewed the idea of combining the subjects in a single text-book as being impracticable, yet Prof. Sayre has in the work before us solved the secret of combination in a very ingenious and satisfactory manner, and pharmaceutical educators have reason to congratulate him upon the successful conclusion of his efforts, in having furnished a new and prominent American text-book, and one which will be consulted for reference by both the pharmaceutical and medical professions.

The present edition, like all first editions, presents many glaring defects, which will undoubtedly be dealt with in subsequent editions, yet the scope, arrangement, and the judicious selection of subject-matter is indeed above comment. The author has divided the work into two parts, and included therewith three appendices.

Part I. treats on Pharmaceutical Botany, and Part II. on Materia and Pharmacognosy.

We cannot refrain from making the statement that in the 82 pages devoted to Part I. the author has scarcely grasped the needs of the pharmaceutical student in this direction, nor has he adjusted his instruction to the accomplishment of the object desired. Though the application of botanical knowledge to the practice of pharmacy is limited, it does not follow that writers are justified in permitting their teachings to be superficial and indefinite. The curtailment of botanical instruction to the pharmaceutical student should be only as to the amount of the field covered, but the needed portions should be taught and illustrated fully, clearly, and with a simplicity of style all the more marked because the student is deprived of the more enlightening effect of those portions which are here necessarily omitted.

The portion of the book referred to is a mere series of definitions, many of them greatly abbreviated and vague; hence Part I. is mainly synoptical, and can therefore only serve as a guide to the teacher or student previously instructed in structural botany. A little more care should have been observed in the arrangement and naming of the illustrations; thus, Fig. 20 (see Page 28) is not the Pitcher of *Nepenthes distillaoria*, as stated; it is *Sarracenia purpurea*.

In Part II. we meet the ingenious and practicable treatment of Materia Medica and Pharmacognosy.

The drugs are arranged, first, according to their most prominent physical characters, but we doubt if the method adopted will prove as efficient as that used in Maisch's work, owing to indefinite characterization by reference to taste only in the headings.

The second method of arrangement of this portion of the work is according to botanical relationship, the only satisfactory method of teaching the subject scientifically and practicably to the pharmaceutical or medical student. Here the drugs are taken up separately, after a brief description of the characteristics of the natural order, and a synopsis of the drugs belonging to the particular order. In treating of the drugs separately the official name (according to the U.S.P.) is presented with synonyms in English and German, then follow, in order, the definition botanical characteristics, sources, related and similar articles, description of drug, important constituents, action and uses, and a summary of official preparations, with strength and doses. There is generally included a cut of the plant and of the drug, gross and structural, thereby aiding the student greatly in familiarizing himself with the pharmacogostical characteristics. The animal drugs are similarly treated under their several zoological orders.

The careful student should note the following misleading statements, errors, and omissions which have met the writer's eye in a hasty examination of this part of the book:

Page 138—Omission, Habit of Podophyllum, United States.

Page 149—The statement is made that *sinalbin* is, by the action of the ferment *myrosin* and water, converted into volatile oil, glucose, etc., which can scarcely be considered correct, as the volatile oil of mustard cannot be prepared from the constituents of white mustard.

By the above mentioned reaction the glucoside *sinalbin*, $C_{30}H_{44}N_2S_2O_{16}$, of white mustard, yields *acrinyl sulphocyanate*, C_7H_7CNSO (which is not the volatile oil of mustard); also sinapin bisulphate, $C_{16}H_{23}CNO_5H_2SO_4$, and glucose, $C_6H_{12}O_6$. Volatile oil of mustard is obtainable only from *Sinapis nigra*, which contains *sinigrin* (a potassium glucosidal salt, $KC_{10}H_{18}NS_2O_{10}$), and which, under the influence of the ferment myrosin and water, becomes *allyl sulphocyanide* or *volatile oil of mustard*, C_3H_5CNS, glucose, $C_6H_{12}O_6$, and potassium acid sulphate, $KHSO_4$.

Page 182—Strength of spir. aurantii compositus should be 5 p.c.; under oil of Bergamot, 8th line, read potassium hydrate for potassium.

Page 194—Read anacardieæ for anacardiaceæ.

Page 210—Last line read 20 p.c. for 30 p.c.

Page 214—Dose of copaiba should be ¼ to 1 drachm, not 5 to 10 grs.

Page 221—Strength of aq. amygdalæ amaræ should be $\frac{1}{10}$ p.c., not 1 p.c.

Page 231—Read hamamelaceæ for hamamelideæ.

Page 250—Strength and doses of preparations of oil of anise omitted.

Page 254—The statement that oil coriander "is one of the most stable of the volatile oils," etc., is incorrect; it develops a terebinthinate odor.

Page 266—Dose of ipecac omitted; expectorant, 3 to 8 grs.; emetic, 15 to 60 grs.

Page 267—Read 2.5 p.c. quinine for 25 p.c., 5th line.

Page 297—Ol. gaultheriæ, composition, dose, and preparations omitted.

Page 316—Read hydrophyllaceæ for hydrophylleæ.

Page 339—Doses of all drugs on this page omitted.

Page 347—Read polygonaceæ for polygoneæ.

Page 349—Dose of rheum omitted. Tonic ½-1 gr., cathartic 20 to 30 grs.

Page 359—Acetum opii omitted.

Page 363—Oleum cinnamomi, preparations: Acid. sulph. aromat. omitted.

Page 385—Extract juglandis omitted.

Page 395—Preparations of ol. juniperi omitted.

Page 441—Read *acid* for *alkaline*.

In "Appendix A," the author gives an important contribution on "Insects injurious to drugs," while "B" treats on organic remedies formed by synthesis. The latter is decidedly out of place, and might have been omitted entirely without detracting in the least from the merits of the book.

"Appendix C," "Pharmacal Botany," is treated of in too superficial a manner to be found of much value. An exhaustive index concludes the work.

C. F. H.

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TORONTO.

Trade Notes.

P. F. Maddock is opening a new drug store in Guelph, Ont.

There is said to be a good opening for a doctor at Hilton, Man.

Dr. Arthur will shortly open a new drug store at Rossland, B.C

W. T. Junkin, druggist, Fenelon Falls, Ont., has made an assignment.

L. Bentley has purchased the drug stock of the estate of F. Butler, Toronto, Ont.

Charles E. Hooper, the oldest druggist in Toronto, Ont., died last month, aged 63 years.

S. A. Drake, of the Kaslo Drug Co., is about opening a branch store at Three Forks, B.C.

The drug store of G. W. McLaren, Morden, Man., was destroyed by fire last month.

The drug stock of the insolvent estate of James & Co., St. Thomas, Ont., was sold on the 4th inst.

Cochrane & Munn, druggists, Victoria, B.C., are dissolving partnership. John Cochrane will continue alone.

The Hearle Manufacturing Company, toilet soap makers, Montreal, Que., have assigned, with liabilities of $35,000.

A. S. Hopkins, Yonge street, Toronto (H. A. Knowles' old stand), has assigned. We understand the business is in the market.

F. H. Yapp, Hamilton, Ont., has sold his James street north store to Mr. Arthur Ross, who has been assistant with J. W. Spackman for some time.

P. D. Whyte, formerly with W. E. Saunders & Co., of London, Ont., was amongst the successful candidates at the recent pharmacy examinations at Chicago.

Private advices from Prince Edward Island report business very dull—in fact, more so than for many years past, owing principally to the very heavy fall of snow, which completely blocked traffic.

The Sydenham Glass Company (Ltd.), with factory at Wallaceburg, Ont., will begin operations in the course of a week or ten days. They intend manufacturing a full line of green prescription ware, fruit jars, etc.

Mr. T. J. McIntyre, of The Lyman Bros. & Co. (Ltd.), Toronto, has been laid up for the past two weeks with an abscess in his head. We are glad to say latest reports are that he is now slowly recovering.

Robt. T. Kyle, a graduate and gold medalist of the O C.P., has just passed the examination held by the Minnesota Board of Pharmacy, at Minneapolis, where he obtained the highest number of marks secured by any candidate, and captured as high a standing as was ever taken before the board in that state.

Mr. John Henderson, general manager of The Lyman Bros. & Co. (Ltd.), Toronto, met with a nasty accident on Monday evening, February 25th. In stepping from a street car he burst a blood vessel in the calf of his leg. He has been confined to the house for a week, but hopes to be about in a few days.

Robert R. Martin, at one time in the retail drug business in Toronto, Ont., and subsequently manager of the New York house of Sharpe & Dohme, and who was appointed a little over a year ago to manage the London (Eng.) house of Oppenheimer & Co., manufacturing chemists, has been obliged, on account of his health, to seek a warmer climate. He will, in future, represent his firm in South Africa, making his headquarters at Cape Town.

Dr. Frank Langiliere, of the National Pharmacy, Montreal, Que., has just returned from a trip to Baltimore. He came back *via* Boston, and left with James W. Tufts an order for soda fountains, one for cold soda and one for hot. The former is a magnificent apparatus, composed of white and gold tiles, which were made especially for Mr. Tufts in Bavaria, and is the only one of its kind on this side of the ocean. The latter is also in white and gold, and the tile in this, too, was made in Germany on Mr. Tufts' special order, and is an exclusive design.

British Columbia Notes.

Sufficient interest is probably taken in the doings of druggists in this province to warrant the printing of the amendments to the Pharmacy Act, which passed the Local House, February 11th. There can be no doubt now that the B.C.P.A. mean business, and that they intend to elevate pharmacy. It was claimed, and with truth, that the old Act was practically unworkable, and hence all energy was strained to remedy the defect. Much credit is due the M.PP. (H. D. Helmcken, Q.C.) who kindly took charge of the bill, and also to the committee, Messrs. Henderson, Cochrane, and Schotbolt, who laid the question very clearly before each individual member.

The School of Mines referred to will be opened up early in June of the present year.

The council of the B.C.P.A. will meet, as far as is known at present, on Thursday, March 14th. This will be a very important meeting, as the by-laws of the association will need some alteration in order to reconcile them with the Act as now amended.

It is reported that the firm of Cochrane & Munn, of Victoria, will likely dissolve, the business being conducted in future by Mr. John Cochrane, an O.C.P. graduate.

Langley & Co., of Victoria, have decided to extend their wholesale business to the mainland, and have entrusted their Mr. J. A. Teporten with the management of the branch to be established on Carrall street, Vancouver. Mr. White has been promoted to drummer for the firm in place of Mr Teporten, and Mr. Martin, late of Winnipeg, will take the position in the laboratory vacated by Mr. White.

Pharmaceutical Association of the Province of Quebec.

Notice to Students.

The semi-annual examinations for major and minor candidates will commence on Tuesday, April 16th, 1895, at 9 a.m., and will be held in the College of Pharmacy, 595 Lagauchetiere Street, Montreal. Candidates must file their applications, duly certified, with the Registrar, on or before April 6th. Printed regulations and form of application must be obtained from the Registrar, and must be duly signed by the applicant.

Candidates who have failed more than once in their examinations will be required to pay the full examination fee.

No applications for examination will be received after April 6th.

E. MUIR,
Secretary-Registrar.

595 Lagauchetiere Street,
Montreal, March 5th, 1895.

At a meeting of the council of the Pharmaceutical Association of the Province of Quebec, held on March 5, the following resolution was unanimously passed, namely:

"That this council having heard with deep regret of the death of Mrs. Paul Mathie, Quebec, wife of our esteemed and honored ex-vice-president, ex-examiner and member of the council, desire to place on record our sympathy and condolence, in this the great bereavement of our confrère, and that the secretary be requested to send a copy of this resolution to Mr. Mathie and the press."

British Columbia Pharmacy Legislation.

In another portion of this month's issue we give the amendments to the British Columbia Pharmacy Act as they passed their final reading in the Legislature. Some of these clauses are very important, and have a distinctive bearing on the needs of the pharmacists in that province. One of the clauses provides that any persons approved of by the examiners, who have obtained diplomas from the Pharmaceutical Society of Great Britain, or certificates from any pharmaceutical society in Canada, whose standards and requirements are equal to those of the British Columbia Association, may be registered in British Columbia without further examination.

Further regulation has also been made as to the sale of poisons, and the right is granted to medical men to associate themselves in business with druggists.

If you neglect your business, you will soon have no business to neglect.

When you get a good thing hang to it like a nigger preacher to a striped watermelon.

Pharmacy in England.

A Hitch in the Matter of the "Imperial" Pharmacopœia—The Epidemic of Influenza—Proprietary Remedies and their Names—Exposure of a Nostrum—Trouble in the Research Laboratory of the Pharmaceutical Society—Death of S. M. Burroughs.

(From Our Own Correspondent.)

Already there are indications of a revolt amongst pharmacists against the methods adopted by the General Medical Council to secure a revision of the pharmacopœia. The appointment of Professor Attfield as editor is postponed, and every one anticipates that the upshot will be the association of one or two therapeutists with Professor Attfield. At the Edinburgh meeting of the Pharmaceutical Society, the qualification of Professor Attfield to judge botanical questions was openly challenged, and it was plainly stated that pharmacists do all the work, whilst others reap the reward. So far, the only attempt to make a start has been the usual complimentary letter from Sir Richard Quain to the President of the Pharmaceutical Society, inviting the assistance of the Council and members, and pharmacists generally, in the production of a new pharmacopœia. The council evidently did not regard the matter very seriously, as they merely nominated the same committee again as assisted in the production of the Addendum, 1890. It is true they actually invited one new pharmacist, Mr. P. W. Squire, to join them, but, of course, Mr. Squire would not consent. I have repeatedly pointed out in these columns that if the work of revision is to be undertaken in earnest, a far larger committee than the half-dozen men above mentioned will be absolutely necessary. As it is, most of the members of this committee do little or no actual work, but relegate it to their assistants or the managers of their laboratories. In the production of the miserably deficient addendum, this committee took nearly eighteen months, and groaned over the work. There is some tendency in medical ranks at a concerted attempt to introduce concise therapeutic notes about each drug, or its preparation, although Dr. Lauder Brunton's scheme to make it a prescriber's companion has been generally derided. Incompatible and solubilities might well be stated, but hints upon the proper combinations for a prescription are surely out of place.

Influenza, or la grippe, has begun to pay us its annual visit, somewhat delayed, but undoubtedly rendered more severe by the prolonged frost. Already the death rate has doubled, jumping in three weeks from seventeen to thirty five per thousand. There has been a steady rush for ammoniated tincture of quinine and other recognized remedies, but eucalyptus oil appears to have lost its value in the eyes of the majority of the public. As a general disinfectant and prophylactic, it was unquestionably overrated during the 1890 scare, but in the first stages of the epidemic, when the coryza is severe and the fauces swollen and painful, inhalations of eucalyptus oil with steam are very useful, and afford rapid relief. Doctors and chemists have been very busy ever since the frost broke up, and the development of coughs and colds by the public has been wonderful. Soon we shall have the convalescent period with its cod liver oil emulsion, syrup of the hypophosphites, and other recognized remedies.

Why do manufacturers of proprietary preparations so often saddle their specialties with uncouth and unpronounceable names? It was bad business for the proprietors to cling to the title, "Gérandel's Pastilles," as it is not a pastille at all, but a compressed pellet or tablet. The way the public, in obedience to the extensive advertising, have tried to grasp M. Gérandel's name is most amusing. Now a new soap has been launched, with the highly euphonious title of "Myrospermum." One can easily imagine Mary Jane coming into the shop for a cake of Myra's-journal soap! If proprietors would only grasp the elementary fact, which would be forced on their notice a dozen times a day if they were behind the retail counter, that they often suffer from the absolute inability of the public to grasp and remember their extraordinary titles, they would be more careful in future. Be distinctive, by all means, but do not let the word be long, or capable of about two dozen different methods of pronunciation.

Writing about proprietary preparations reminds me very forcibly that they have their Nemesis. Occasionally it is a trade journal that offers a formula which is stated to produce exactly the same article as that on which a proprietor may have spent much money and time before completion. Against that form of Nemesis, I have not much to say except that it is hardly an honorable proceeding. But we have in London a journal, called *Science Siftings*, that has thrown down its gauntlet against quackery. It assisted in the exposé which took place a couple of years ago of Harness and his confrères, who were selling so-called electric belts ingeniously contrived so that even the smallest quantity of electricity could *not* pass to the wearer. This journal has turned its attention to proprietary preparations, and this week announces an exposure of "Koko" for the hair. This is a comparatively young proprietary, but has been extensively boomed, and, during a discussion at the Chemical Society on the subject of analytical reports, it came in for some criticism. On that occasion the report of a well-known analyst was quoted, and from the carefully-guarded language in which the report was framed it was stated that the preparation might consist of distilled water. Now we understand the reason for this, as *Science Siftings* finds the composition to be, glycerine 60.6 grains, borax 15.35 grains, in each six ounces. A small quantity of rose water is present to give a little odor, but the bulk of the preparation is water. There was an impression abroad that it contained pilocarpine, but, as *Science Siftings* points out, this alkaloid is exceedingly dear just now, so perhaps this accounts for its absence. There was the usual highfalutin reference to a tribe of Indians, the Coco-Maricopas, who had discovered this extraordinary remedy, and who were never known to go bald, etc. It will be interesting to learn the sequel. Harness attempted to put the law in motion on the question of libel, but was unsuccessful. We might almost safely presume that Koko is doomed, and those who have large advertisement contracts running had better gather in the shekels.

What looks like a concerted attack by the trade journals here upon the Research Laboratory of the Pharmaceutical Society has taken place this week. Both journals attack the director, Professor Dunstan, rather viciously, and directly charge him with committing the unpardonable sin of *suppressio veri*. There is also an artful alliteration concerning priority prigging. But Professor Dunstan is perfectly capable of taking care of himself, and if he condescends to notice the attacks, and it is to be hoped he will, as they call for answers, will probably hit out straight. His reply to a criticism of Mr. P. W. Squire on the melting point of aconitine was a masterpiece, and his sweet suggestion that, as Mr. Squire had no acquaintance with elementary research work, his blunders were therefore pardonable, was specially delightful to those who know the pompous manner of Mr. Squire. Someway or other, however, there appears a hitch in the work of the laboratory, as since March of last year we have had no communication on the aconite investigation.

The death of S. M. Burroughs, of the enterprising firm of Burroughs, Wellcome & Co., is a severe loss for pharmacy in this country. His energetic support and aid was ever ready for all schemes intended to benefit druggists and their assistants. His philanthropy was also well known, and it it is only a short time ago that he gave $5,000 to found a cottage hospital in the little town of Dartford, where the firm's works are established. The progress of the firm is a remarkable illustration of the value of persistent and large advertising. So much success have they achieved that nine medical men out of ten use the registered trade mark of the firm, "tabloid," in preference to the English word, tablet, when they want to describe compressed goods. The firm seem to have been perpetually hankering after something new, and it is well known that they will go to any expense and trouble in perfecting the ideas of medical men. But as to their exact value to pharmacists as a class, there is no mistaking the fact that they have done more mischief than a dozen ordinary proprietary manufacturers. They calmly suggest to doctors that they should prescribe their compressed tabloids, and the chemist will only have to soak off the ordinary label and fix on one with the proper dose and the thing is done. This is reducing the art of dispensing to its lowest depths.

Burroughs would have lived for many more years but for his restless nature. You could never take up a trade journal without learning he was in South Europe, or in Africa, or Asia, or anywhere—but at home. Always on business, with a keen eye to business, he lived mainly for business, and has paid the penalty. Still he was much respected, and many to-day lament the early decease of a large-hearted man.

Rules for the Guidance of the Dispensing Clerk.

By T. W. Richardson.

Be clean and neat about your person and dress. A patient will not care to take medicine put up by a slovenly person, nor to be waited on by one. Do not be afraid of putting yourself about for the sake of obliging a customer. Have a smile and pleasant word for every one; a little kindness done may not mean much to you, but it may do much for you by securing you the good will of your customer.

In receiving a prescription, tell the customer the length of time it will take to prepare it. Enquire if they will wait or call again. If they will wait, politely request them to be seated, or, if they wish it delivered, have it delivered promptly, for although half an hour may not make much difference, yet the suffering patient may be inclined to complain at any delay.

Before commencing to dispense read the prescription carefully, and, if any explanation regarding it is needed, consult with the doctor, but without the patient's knowledge.

Scrupulousness, accuracy, neatness, and dispatch, as well as a thorough knowledge of his business, constitute the necessary requisites of a good dispenser.

There must be no substitution. Use only the best quality of drugs. You get a best-quality price, and you have a perfect right to furnish best quality goods to your customer. Be accurate, fix your mind on what you are doing, and give it your full attention. Be careful of your fraction of a grain—carelessness cannot be tolerated at all. Remember that the patient's health, and even life, is placed frequently in your care, and that carelessness, therefore, in dispensing amounts almost to criminality. Neatness is a great factor towards success. The majority of people dread taking medicine, and should they receive a bottle with the label on askew, and perhaps smeared with a dirty finger, the neck of the bottle sticky, and the cork in crooked, they would be apt to be disgusted. Despatch is very important, and in order that dispensing may be done quickly it is necessary to have everything handy. Have only on your dispensing shelves such things as are frequently used, and so arranged that the least movement will enable you to reach them.

A good arrangement is to have a deep dispensary, and along the back of the counter, and midway from either end, a compartment for the scales, with mortars and graduates on either hand.

Underneath the counter have drawers for paper for wrapping prescriptions, already cut, pill boxes, powder papers, pill tiles, pill machines, corks, etc., also compartments for bottles and ointment pots. Have your gas jet and sealing wax at one end of the dispensary, and your water supply as convenient as possible, for we all know what a necessary commodity "aqua pura" is, and how frequently it is brought into requisition in our "noble and beloved" profession.

In dispensing poisonous lotions or liniments, use a poison bottle, and make it a point of honor to affix a shake, lotion, or liniment label, whenever necessary.

Keep your counter clear and clean, and replace everything when through with it. Having prepared the medicine, take the prescription to the desk and date, number, price, and place any note which you may need for reference upon it. Having neatly wrapped and sealed your package, you are ready to hand it to your customer if waiting. If he is not waiting, write on wrapper the name of patient, designation of prescription, number of price, as follows:

John Thomson,
Lotion, 139540—35c.

The Future City Druggist.

Dear Mr. Editor,—Under the above heading I desire to send you my idea of what the city druggist of the future should be.

The city druggist of the future must be aspiring as to professional reputation. He must be well educated, and possess the Ph.M.B. degree in pharmacy. His professional abilities should be supported by sufficient means to sustain the eminence he should naturally enjoy. His assistants should, if not graduates, be at least matriculants of the university. His stock should be as varied as the wants of his customers, regardless of the profits wasted in maintaining it. He should never give any thought to such low-born institutions as departmental stores, which thrive on commercial rather than professional lines. In his dealings with the public he must impress them with the importance of his profession as a branch of the healing art, and discountenance, publicly at least, collusion with medical men for mutual benefit.

He will, of course, not from necessity, but as an evidence of his obliging nature, continue to afford the public the free use of his telephone, directory, and other mere adjuncts of his calling. Away from the public eye, he will obey patiently any demands made upon him by the medical profession. Being a professional man himself, he must feel it beneath his dignity to charge the doctor for such things as sponges, surgical dressings, etc., which his superior may require, and, even should members of the doctor's family see fit to make trifling demands in the drug sundry line, his sense of professional propriety will deter him from asking or seeking recompense. Above all things, he must never, in the slightest degree, encroach on the rights of the medical fraternity by compounding remedies for the minor ailments of humanity, and, should his customers seek a refilling of prescriptions without the authority of their medical adviser, it will be his duty firmly, but kindly, to refuse the same. Under no circumstances will he return the original prescription or give a copy, as it might inadvertently be dispensed as a new prescription by a confrère, and thus rob the author of the fee which is properly his due. His duty, at all times, will be to protect the medical profession, as far as lies in his power, from the many forms of plagiaristic empiricism which have proven a bane to it in the past, and, although his pocket may suffer somewhat in doing so, the high sense of dignified justice which should pervade him will be ample reward for his disinterested efforts.

Overtheleft.

Crystallization of Syrups, and the Remedy.

Carles (*Repertoire de Pharmacie*), in an article on the crystallization of syrups, states that it is his habit, as soon as he notes a tendency of a syrup to crystallize, to put it on the water-bath and heat it. The separated sugar is at once taken up, and remains in solution. Occasionally, he says, the crystallization will occur only on the bottom of the vessel, and is due to the fact that the latter is standing on some object colder than the surrounding atmosphere. This is especially the case in winter. All that is necessary in such cases is to reverse the jar or vessel, which, by equalizing the temperature, causes the crystals to be again taken up.—*National Druggist.*

Phosphorus Pills.

Yet another method for dispensing phosphorus in pills is suggested by M. Ledoux, of Liège, who heats anhydrous wool-fat, 4 gm., and phosphorus .6 cg., in a capsule, on a water-bath at a temperature about 45°, until the phosphorus is melted. The mixture is then stirred with a slightly warmed pestle until cool, after which powdered marsh-mallow, *q.s.* for 120 pills, is added. The finished pills should be rolled in powdered talc and preserved in the same, sheltered from the light.—*Journs. de pharm. de Liège, et d'Anvers.—Pharmaceutical Journal.*

Perfumed Moth Camphor.

Naphthalin-camphor, says the *Drogisten Zeitung*, now so popular as a moth-preventer, is prepared by melting together, on the water-bath, 2400 parts of naphthalin and 780 parts of camphor. The unpleasant, penetrating odor of the product may be masked and rendered even pleasant by adding to the product, while still fluid, 2 parts cumarin, 1 part nerolin, and 53½ parts of mirbane oil.

An Automatic Process for Aqua Chloroformi.

By William Elborne, B.A.,

Pharmacist at University College Hospital, Demonstrator of Materia Medica at University College.

The B.P. process for preparing aqua chloroformi is to put the chloroform and water into a two-pint stoppered bottle and shake them together until the chloroform is entirely dissolved in the water.

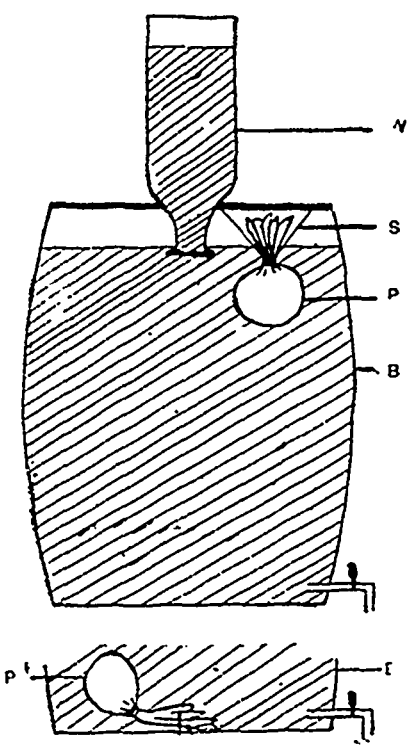
The U.S.P. process is to "add enough chloroform to a convenient quantity of distilled water, contained in a dark amber-colored bottle, to maintain a slight excess of the former, after the contents have been repeatedly and thoroughly agitated. When chloroform water is required for use, pour off the needed quantity of the solution, refill the bottle with distilled water and saturate it by thorough agitation, taking care that there be always an excess of chloroform present."

Now, the B.P. process for aqua camphoræ is one of automatic diffusion of a solid volatile substance into distilled water: "Enclose the camphor in a muslin bag, and attach this to a piece of glass, by means of which it may be kept at the bottom of the bottle containing the distilled water. Close the mouth of the bottle, macerate for at least two days, and then pour off the solution when it is required." In practice it is customary to keep a large excess of camphor in the bag, pouring off and replenishing with water until the whole of the camphor has disappeared — the operation extending possibly over months; this process, substituting stout parchment paper for the muslin bag, may be regarded as having suggested the following process:

In the sense of filtration, parchment paper is impervious to water, alcohol, chloroform, ether, and essential oils, but if such be enclosed in the parchment paper, and the latter suspended in a vessel of water, the enclosed liquids will, by osmosis, diffuse through the membrane into the water until, in the case of liquids freely miscible with each other, equilibrium within and without the membrane is established, or, if they be only sparingly soluble in water, until the latter becomes saturated: thus, if a fluid drachm of chloroform be enclosed in parchment paper and suspended in 25 ozs. of distilled water, in a closed vessel secluded from light, it is found to have quitted the membrane and saturated the water in eight days, and if a large excess of chloroform be used (say, two fluid ounces), retaining the same volume of water, saturation is effected in twenty-four hours.

The process, having been in use for some months, has given every satisfaction. In the accompanying diagrammatic representation of the method adopted, B is an earthenware 4 gallon barrel containing distilled water; P, a pint of chloroform tied up in a bag of stout parchment paper; S, the string passing round through the bung and spile-holes and supporting the bag; W, a dark amber-colored Winchester quart filled with water, inverted and standing in the bung-hole, acting as a replenisher and gauge. The whole being placed in position is allowed to remain intact for seven days, after which period it may be drawn from the tap as required for use. The Winchester, when empty, is to be refilled with distilled water and again placed in position, and the chloroform bag replenished at much longer intervals. A saturated aqueous solution of chloroform is stronger than the B.P. aqua chloroformi, three parts of the former being equivalent to four parts of the latter.

For other medicated waters in considerable requisition, such as aq. menth. pip., the process might prove of general application; but where the specific gravity of the essential oil is less than unity it would be requisite to load the flaps of the parchment with spare glass stoppers, in such a manner as to keep the bag at the bottom



of the vessel, as represented in the lower part of the diagram.

With oil of peppermint thus arranged, the superincumbent water certainly becomes highly impregnated after a week's immersion, but whether it be preferable to enclose the oil pure and simple, or previously rubbed down with calcium phosphate and water, remains a subject for future enquiry; the automatic replenisher in this instance would probably have to be abandoned on account of a possibly unequal rate of diffusion of the several constituents of the oil.

Substituting 1 lb. of slaked lime for the chloroform, and following the same directions, most satisfactory lime water is obtained—the slaked lime to be previously washed with water, after subsidence the supernatant liquid to be thrown away, and the sediment transferred to the bag. It may be worthy of notice that, in the absence of distilled water, clear blocks of natural ice yield a product, after melting, filtering, and boiling, that will stand all the Pharmacopœia tests for impurity; indeed, water, in the act of freezing, becomes completely separated from everything which is previously held in solution, a familiar physical fact of mere theoretical interest to the pharmacist.—*The Pharmaceutical Journal.*

Acetylene as an Illuminant.

We are all interested in new illuminants, and any proposal which has for its object the cheapening and simplifying of existing means of lighting is always deserving of attention. That there is great need for a new illuminating agent is evidenced by the increasing demand in many places, for numerous purposes, of a self-contained source of gas of high illuminating power. It would seem that we are within measurable distance of obtaining this advantage. Professor Vivian B. Lewes has been discussing the synthetic production of acetylene by means of the electric arc. In an exceedingly interesting paper on the subject, he points out that from that simple hydro-carbon can be produced all those bodies which are amongst the most important in our coal gas, and which so far have only been obtained by destructive distillation of coal, hydro-carbon oils, or other organic substances. Recent research, however, has shown that by fusing a mixture of powdered chalk and carbon in an electric furnace a compound called calcic carbide is formed, which is decomposed by water into lime and acetylene. Professor Lewes is of opinion that this process is commercially practicable. Data received by him from America shows that the calcic carbide can be produced at a little under £4 a ton, while the beautifully pure lime obtained by the decomposition would be worth to the gas manager about 10s. a ton. The illuminating power of acetylene is about fifteen times as great as that of London gas, so that the light of 1,000 feet of the latter should be obtained for less than 6d. by the use of acetylene. Professor Lewes points out that acetylene obtained in this way may be used either to give a very high illuminating effect by itself, or to enrich low-grade coal gas. It may be compressed and distributed in steel cylinders, or the calcic carbide may be fused into sticks, which can be decomposed by water, in suitable apparatus, at the place where the gas is required for consumption. Professor Lewes has certainly made out a very clear case for the future success of the new illuminating agent, and should it prove as practicable as he suggests there would seem to be a special field for it abroad, seeing that it can be fused into sticks, and afterwards decomposed by water.—*Foreign and Colonial Importer.*

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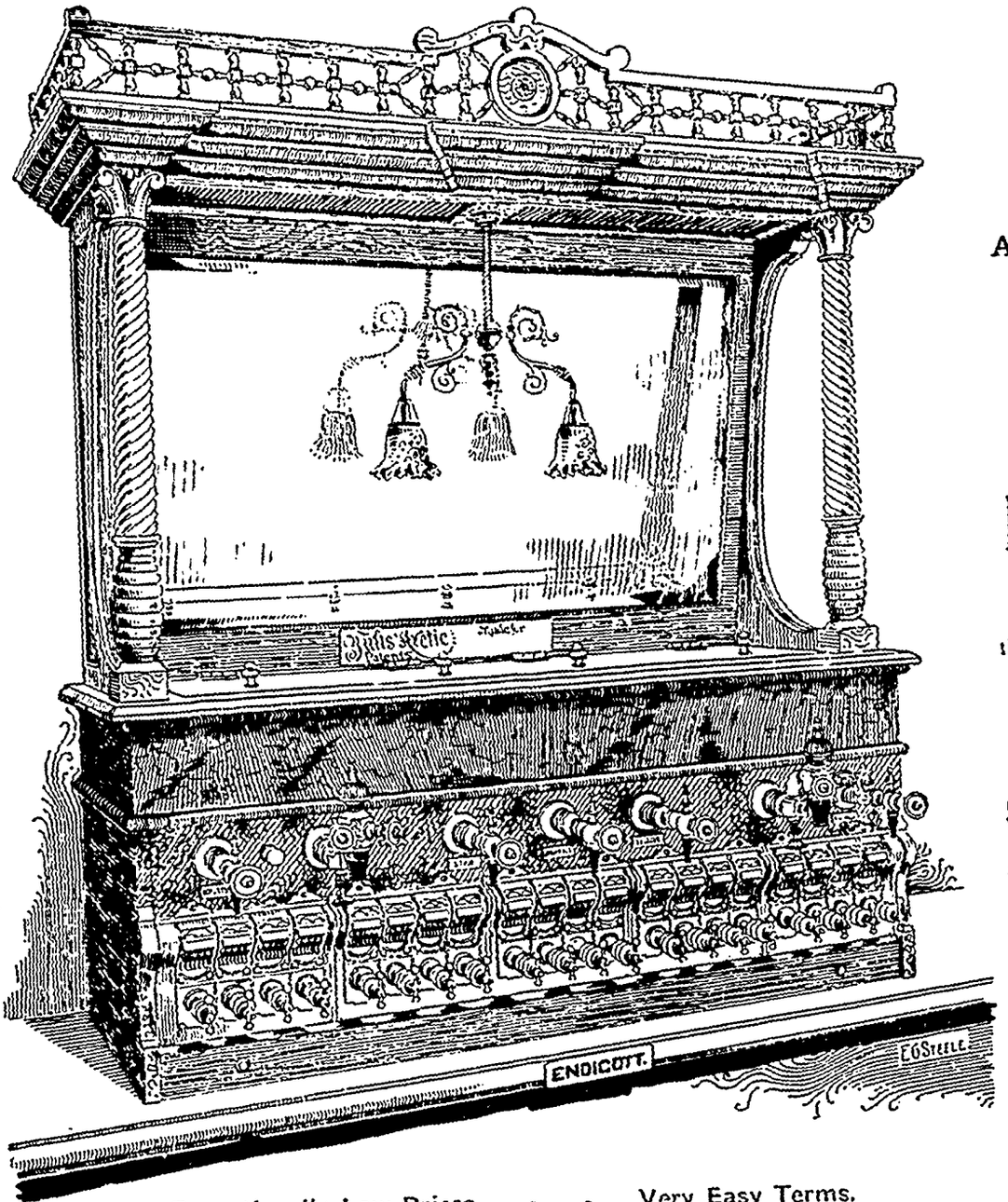

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Red, Yellow, and Black.

ONTARIO COLLEGE OF PHARMACY DINNER.

On the evening of the first of March was held the graduating class dinner, the most important social event in the academic year at the Ontario College of Pharmacy. Over a hundred sat down to the sumptuous repast provided by the Rossin House, and their appreciation of the effort of the *chef* was apparent by the way the victuals disappeared. After the menu the gathering was called to order by the chairman, Mr. Newton H. Brown, who, in behalf of the class, briefly welcomed the guests. The president of the Montreal College of Pharmacy sent greetings and best wishes, and expressed sorrow that they were unable to send a representative. Mr. W. A. Karn, of Woodstock, member of the council, had come down for the dinner, but had been taken ill with grippe, and so was unable to attend.

The chairman then proposed the toast to "The Queen," which was received by the National Anthem, sung by all present. The toast to Canada was followed by the "Maple Leaf." Mr. Geo. F. Campbell, in one of the best speeches of the evening, referred to the character, climate, and resources of Canada, to her educational system, of which Toronto University was the head in Ontario, and to the position of the College of Pharmacy in affiliation with the University, and ably showed reasons why every Canadian should be proud of his native land. This speech was followed by singing "Rule, Britannia." Mr. Lucas was next called upon to propose the toast of the evening—"The College and Faculty." This toast was greeted by the college yell—

"Who are we?
Phar-ma-cy—
We are from
The O—C—P."

Mr. C. D. Daniel, the only member of the council present, replied on behalf of the college. After a few humorous remarks, he spoke of the standing of the college, and said that it stood in absolutely the first place in the colleges of pharmacy in America, and ranked well with those of the old world. Other colleges may have finer buildings than ours, others may have finer equipments, but none turn out students with a better pharmaceutical education. Our diploma is accepted by boards of pharmacy all over the United States, while few of theirs are accepted outside of their own district. This has not been won by reciprocity; for our council would accept no diploma from a college of inferior standing to our own. He added that the council were far from satisfied with the present equipment, and hoped to still improve on the training and education that the college affords the students. The present high examination standard of 66 per cent. for a pass and 75 per cent. for honors was not set to lessen the number of druggists, or to prevent students from entering the business, but solely with the object of maintaining the standard of the college, for it was that very thing that made our diploma so desirable and so valuable to the holder.

Dean Heebner and Dr. Fotheringham then followed on behalf of the Faculty. The Dean evidently thought the boys had enough of his seriousness through the term without having any that evening, for his speech was humorous throughout, keeping the boys in constant laughter till he had finished. He took as his text the quotation which he found on the menu card:

"Think not of our approaching ills,
Nor talk of powders, plasters, pills,
To-morrow will be time enough
To hear such mortifying stuff."

He enlarged on the first two lines, and, at the request of the class, declared the lecture for the next morning off, although he thought the last two lines sounded like a request to leave it on.

Dr. Fotheringham jokingly referred to an "ad." on the programme, which read, "Use Dr. Fotheringham's Anti-fat," and said that the remedy was not for sale. He complimented the class on the success of the evening's entertainment, and said that although they had shown themselves to be fond of recreation and pleasure, yet he did not think a professor in the city could boast of a harder working or more studious lot of students than he could in the College of Pharmacy. Moreover, he did not know of any class of students who were, as a whole, more neat and careful of their personal appearance than the boys of the O.C.P.

The boys then sang "Vive la Pharmacie," a version of "Vive la Compagnie," written for the occasion.

VIVE LA PHARMACIE.

Bring hither a beaker and fill it with wine,
Vive la Pharmacie,
And pledge Alma Mater with ninety times nine,
Vive la Pharmacie.

CHO.- Vive le, vive le, vive le roi,
Vive le, vive le, vive le roi,
Vive le roi, vive la reine,
Vive la Pharmacie.

Here's to the Council who meet twice a year,
To deal out the parchment we're working for here.

The Professors come next, and they're not a bad lot,
There's Heebner and Fotheringham, Chambers and Scott.

Here's to old Isaac, the muscular man,
When he braces himself, shove him over who can.

And now to the Grads. this health we will sing,
For we hope to be Graduates, too, in the spring.

And here's to the Students of Ninety-five—
May they pass the exams. and come out alive.

Mr. E. A. Walters, in proposing the toast to "Sister Institutions," referred to the noble family of colleges which form the University of Toronto, of which the College of Pharmacy is probably the youngest member. If our college is ever moved from its present site we will hope that it may be moved closer to the head of the University—University College—so that our students may imbibe more of the true college spirit from closer relationship with the other students. He also expressed the good will of the class toward the Trinity medical department, and closed by asking the students to drink brotherly love and fraternal affection to the toast of "Sister Institutions."

This toast was responded to by representatives from University College, Toronto and Trinity Medical Schools, School of Practical Science, and the Dental College.

Mr. T. J. Gledhill made a rather humorous speech in asking the boys who were working for the sheepskin of the college to drink to all owners of sheepskins as being the fortunate members of the drug fraternity. In response to this toast to the graduates Mr. T. Allen made a very happy speech, and wished the boys all possible success at their examinations. Mr. Elliot, jr., of the firm of Elliot & Co., spoke of the commercial outlook of the drug trade, and said that the money to be made in pharmacy of the future lay in the druggists making all their own preparations and in putting into use the higher pharmaceutical processes they were taught at the college.

Mr. Wright, with a burst of eloquence, asked the boys to drink "princely prosperity, perpetual progress, and protracted popularity to the public press," which toast was responded to in one of the best speeches of the evening by Mr. Montgomery, of the *'Varsity*, the student organ of the University.

The toast to the ladies was proposed by Mr. H. A. Rowland, and ably responded to by Mr. Leonidas Rattey, whose love for the fair was manifest. "Ourselves" was proposed by Mr. Urquhart, and answered by Mr. McNichol. After the final toasts to the chairman and the committee, this most enjoyable evening was brought to a close with "Auld Lang Syne." During the speeches numerous songs and solos were rendered, among which was a new version of "Litoria," written for the occasion:

LITORIA.

Ye Pharmacy man goes out to dine—
Swe-de-le-we-dum bum,
But never touches any wine—
Swe-de-le-we-dum bum;
He makes the stock of victuals fly—
Swe-de-le-we-tchu-hi-ra-si,
And tackles all from soup to pie—
Swe-de-le-we-dum bum.

CHO.—Litoria, Litoria—
Swe-de-le-we-tchu-hi-ra-sa,
Litoria, Litoria—
Swe-de-le-we-dum bum.

He sits him down and tries to smoke;
He laughs when e'er he sees a joke;
He drinks the merry toast with glee,
And hollers loud for Pharmacy.

He tries to dance a stag-dance reel,
But in his head he feels a wheel;
He mixes up surrounding scenes,
And isn't worth a hill of beans.

Ye night is past. He wanders home.
No more to dinners will he roam.
He climbs up to his attic den
And rests his loaded abdomen.

Messrs. C. W. McPherson, W. S. McKay, and J. S. Martin took solo parts. The menu card was exceedingly neat and tastefully gotten up, and should prove a fitting souvenir for such an enjoyable event.

Mr. Newton H. Brown occupied the chair, and his committee was as follows: Mr. J. A. Graham, secretary; Mr. W. J. Bauld, treasurer; Messrs. Geo. F. Campbell, E. A. Walters, Frank Ross.

The Opium Trade of Asia Minor.

Opium is perhaps the most interesting, the most valuable, and the most famous product of Asia Minor. This substance, which resembles a resinous gum, is extracted from the capsules of poppy-heads. Incisions are made in the capsules after the fall of the flowers, and the juice which runs from them is then dried and made up into blocks of various sizes. These are covered with leaves and sent in special bales to the market at Smyrna.

The poppy is usually cultivated in the central regions of Asia Minor on firm soil of sandy or chalky clay, richly manured. Several sowings are made throughout the course of the year, but the crops are grouped under two general denominations, the autumn and the spring crops. The autumn sowings are begun towards the end of the month of September, and produce the greater part of the harvest. The seed is sown in fields which have been plowed or dug up, and when the plants have appeared a great many are destroyed in order to assure to each plant a clear space of about 75 centimetres. The earth ought to be stirred and hoed three times over before the time for picking the poppy-heads has come.

After the month of November the snow almost always covers up the young plant, which is thus preserved from frost and the severity of the winter until the snow melts, that is to say, until March. It then grows vigorously until it becomes from 1 to 1½ metres in height. Each plant produces from 5 to 30 globular capsules, which are generally oval in form. The flowers are large, solitary at the top of the ramifications, and composed of four or five petals set in the form of a cross, and crumpled until they expand. They are of all shades from white to red. When the capsule is ripe it takes a pale yellow tint. This is the moment for making the incisions. They are always made at sunset; the juice which oozes from them in the form of tears is collected next morning, at dawn, in shells. It is then dried and moulded into the form of blocks, which are wrapped in leaves of the same plant. From its first appearance until the time of harvest, the plant is exposed to all the intemperance of the weather, excess of rain or drought, of cold or heat, violent winds, etc., and it is thus peculiarly liable to be injured on the nights which precede the incision of the capsule.

*From a report of the French Chamber of Commerce at Smyrna.

The seed is sown two or three times in spring, between the beginning of February and the end of April. This crop requires greater uniformity of weather, especially frequent rains. The consequence is that the spring sowings are more delicate, and their product is sensibly inferior to that of the autumn crop.

The blocks are left to dry, and are then arranged in high baskets containing about 75 kilogs., with certain leaves which have the property of keeping the opium in good condition, and of preventing the blocks from sticking to one another. The bales are then forwarded to Smyrna and Constantinople to be sold there to exporters. Turkish opium has produced during the last fifteen years an average of 6,000 bales. One single year, which was absolutely exceptional, produced 11,000 bales. But this year we have only 3,000, a figure just as abnormal as the preceding.

These are the various varieties of opium and their respective values:

(1) *Malatia, Tokat, Zileh.* Quality extremely fine, and the paste much appreciated by Chinese smokers for its delicate flavor. Amount of morphine very small, varying from 8 to 11 per cent., which is only obtained by means of a special selection.

(2) *Boghadich.* The best quality of Turkish opium, paste delicate and fine, greatly appreciated, especially by the smokers of Central America.

(3) *Yerli.* All opium which is grown in the neighborhood of Smyrna is called Yerli. It is less valued than that of Boghadich, but is as rich in morphine. This is the quality which is used for drugs and in medicine.

(4) *Chaïe.* This kind is so like that of Yerli that it may be included in the same category.

(5) *Salonica.* The cultivation of opium at Salonica is of relatively recent date. It has greatly extended, and produces about 800 bales per annum, half of which, of very fine quality, is more appreciated than even the Boghadich.

(6) *Karatrissar.* This is the district which produces the most opium, and supplies, on a large scale, the trade of England, America, and Holland. The quality of this variety is very good; the morphine varies from 9 to 12 per cent.

(7) *Adeth.* Average quality brought from all parts of the interior. The Turkish word "adeth" means "usual." It represents the ordinary type, which is easily sold for China and America, and the amount of morphine is almost uniformly 9.5 per cent.

(8) *Chinquiti.* This name is given to a quality of opium from various parts of the interior. It is opium mixed with foreign matter; it contains morphine sometimes to the extent of 9 per cent.

(9) *So so.* Under this name are designated those opiums which are bought in the condition in which they arrive from the interior. There is a mixture of five kinds and of Chinquiti. The morphine is from 9 to 11 per cent. It should be noted that mouldy opiums of bad appearance, which are rejected, are often found figuring afterwards in the category of the "So so's."

These are, approximately, the quantities exported each year:

	Bales.
For England	1,000
" North America	2,000
" Central and South America	600
" Spain and her Colonies	500
" Holland	500
" France	300
" Germany	300
" Italy	100
" Other countries	100
Total, about	5 400

or cases representing at the average price of 48 francs the kilogramme, eleven million of francs.

The permanent stock, at the end of the season, which closes on the 15th of June, is valued approximately at 1,000 bales between Smyrna, Constantinople, and the producing districts. The maximum price of opium of late years has been 40 francs the kilogramme, and the minimum price to which it has fallen has been 18 francs; but this fall only occurred once, and lasted but a very short time. In any case we are very far from that period when this article, which used to play a preponderating part in the export trade of Smyrna, sometimes reached very high prices indeed. The price used to go up and down, producing great profits and serious losses. But the speculative spirit which used to mark the opium trade has entirely disappeared, the variations of price are slight, and only follow the normal law of supply and demand, in consequence of the extent of the crops and the requirements of the consumer.—*Board of Trade Journal.*—*Pharmaceutical Journal and Transactions.*

Sodium Carbonate.

Chemically pure sodium carbonate for analytical purposes is prepared by Reintzer (*Chem. Centralbl.*) by taking 250 cc. of water of 80°C., and dissolving in it as much sodium bicarbonate as it will take up. After filtering and cooling to 10°C. a double salt crystallizes out, to which the formula $Na_2CO_3 + NaHCO_3 + 2H_2O$ is assigned. These he separates, washes with a little cold water, and then converts the substance into Na_2CO_3 by heating in a platinum crucible at just below perceptible red heat.

Test for Acetanilid in Phenacetin.

Guasti gives (*L'Orosi*) the following method for detecting acetanilid in phenacetin, when present to the extent of 4 per cent. or more: Boil 0.5 gram of the sample with 10 cc. of water; cool, filter off the deposited phenacetin, concentrate the filtrate, boil with 1 cc. of hydrochloric acid, and treat with phenol and calcium hypochlorite solution. On adding an excess of ammonia, the liquid assumes an indigo blue color if acetanilid is present.

An Act to Further Amend the B.C. "Pharmacy Act, 1891."

The following is the full text of the amendments as certified correct and passed third reading on February 11th, 1895:

Her Majesty, by and with the advice and consent of the Legislative Assembly of the Province of British Columbia, enacts as follows:

(1) This Act may be cited as the "Pharmacy Act Amendment Act, 1895."

(2) Section 10 of the "Pharmacy Act, 1891," is hereby repealed, and the following inserted in place thereof:

"10. The Board of Examiners shall examine the candidates and grant such certificates or diplomas as they may think proper to those whom they deem qualified to be licentiates of pharmacy, certified clerks, or certified apprentices. The said Board of Examiners shall consist of three members of the Association, who shall be appointed annually by the Lieutenant-Governor in Council. In case of any vacancy occurring in such Board, such vacancy shall be filled by the Lieutenant-Governor in Council."

(3) Section 11 of the said Act is hereby repealed, and the following substituted in place thereof:

"11. All persons approved of by the Board of Examiners who by examination have obtained diplomas from the Pharmaceutical Society of Great Britain, or certificates from any Pharmaceutical Association, or in the Dominion of Canada or elsewhere, whose standing and requirements are equal to those of the Pharmaceutical Association of British Columbia, may be registered as members of the Pharmaceutical Association of British Columbia without the examination prescribed by the said Act. Such diplomas or certificates must be accompanied by certificates of good moral character, and shall be subject to such other regulations as may be provided for in the by-laws of the Association: Provided, also, that such persons must have attended two courses of lectures in chemistry, two in materia medica and pharmacy, and one course in botany, in the British Columbia School of Mines, or such other school or college whose standing and requirements are equal to those of said British Columbia School of Mines. Such courses each to consist of not less than fifty lectures: Provided that the by-laws of the Association shall not require on the part of the applicant any previous residential qualifications."

(4) Section 12 of the said Act is hereby amended by adding thereto the following sub-sections:

"(*a*) It shall be unlawful for a certified apprentice to compound prescriptions or sell poisonous drugs or chemicals unless under the direct supervision of a licentiate of pharmacy or certified clerk:

"(*b*) Whenever any city or town in British Columbia is incorporated after the passing of this Act, all persons who have been practising as chemists or druggists on their own account in any such city or town before its incorporation for the period of six months shall be entitled to be registered under this Act without examination, provided application is made therefor within the period of six months after such incorporation."

(5) Section 16 of the said Act is hereby repealed, and the following substituted in lieu thereof:

"16. No person shall, within the limits of any incorporated city or town in this province, keep open shop for the retailing, dispensing, or compounding poisons, or sell, or attempt to sell, any of the articles mentioned in Schedule 'A' or Schedule 'B' to this Act, unless such person is registered as a licentiate of pharmacy under this Act, under the penalty set forth in section 20 in this Act. A certified clerk may, under the provisions of this Act, compound prescriptions or sell poisonous drugs or chemicals while acting in that capacity."

(6) Section 17 of said Act is hereby repealed, and the following substituted in lieu thereof:

"17. Articles named or described in Schedule 'A' or Schedule 'B' shall be deemed to be poisonous within the meaning of this Act; and the said Council hereinbefore mentioned may from time to time by resolution declare that any article in such resolution named ought to be deemed a poison within the meaning of this Act, and thereupon the said Council shall submit the same for the approval of the Lieutenant-Governor in Council; and if such approval is given, then such resolution and approval shall be advertised in the British Columbia *Gazette*, and on the expiration of one month from such advertisement the article named in such resolution shall be deemed to be a poison within the meaning of this Act, and the same shall be subject to the provisions of this Act, or such of them as may be directed by the Lieutenant-Governor in Council."

(7) Section 18 of said Act is hereby repealed, and the following substituted in lieu thereof:

"18. No person shall sell any poison named in Schedule 'A' either by wholesale or retail unless the box, bottle, vessel, wrapper, or cover in which such poison is contained is distinctly labelled with the name of the article and the word 'poison,' and, if sold by retail, then also with the name and address of the proprietor of the establishment in which such poison is sold; and no person shall sell any poison mentioned in Schedule 'A' to any person unknown to the seller unless introduced by some person known to the seller, and on every sale of any such article the person actually selling the same shall, before delivery, make an entry in a book to be kept for that purpose in the form set forth in Schedule 'C' to this Act, stating the date of the sale, the name and address of the purchaser, the name and quantity of the article sold, the purpose for which it is stated by the purchaser to be required, and the name of the person, if any, who introduced him, to which entry the signature of the purchaser shall be affixed, under the penalty set forth in section 20 of this Act: Provided the person actually selling the poison shall be liable to the penalty mentioned in this Act."

(8) Section 19 of said Act is hereby repealed, and the following substituted in lieu thereof:

"19. Any article enumerated in Schedule 'B' to this Act shall not be sold unless the container of such be distinctly labelled with the name of the article, name and address of the seller, and the word 'poison' affixed thereto, under the penalty set forth in section 20 of this Act."

(9) Section 27 of said Act is hereby repealed, and the following substituted in lieu thereof:

"27. It shall be lawful for the Lieutenant-Governor in Council to appoint a fit and proper person to be known as 'Public Analyst,' who must be a member of the Pharmaceutical Association, and who may be allowed to charge such fees in respect of analyses to be made by him as the Lieutenant-Governor in Council may approve. And in any prosecution under the said Act a certificate of such Public Analyst as to the identity of any drug, chemical, or compound shall be deemed good and sufficient evidence of the same."

(10) Section 28 of said Act, and section 1 of the "Pharmacy Act Amendment Act, 1892," are hereby repealed, and the following substituted therefor:

"28. Nothing in this Act contained shall prevent any duly qualified member of the medical profession or surgeon from engaging in or carrying on the business of an apothecary, chemist, or druggist, provided that when any such duly qualified member of the medical profession or surgeon desires to carry on the business of a chemist or druggist, as defined by the said Act, he shall not be required to pass the examination, but shall register as a chemist or druggist and otherwise comply with all the requirements of the said Act. And it shall also be incumbent upon any medical practitioner or surgeon now carrying on the business of a chemist or druggist within the incorporated cities and towns of the province to register annually and otherwise conform to all the requirements of the said Act."

(11) The said Act is further amended by adding thereto the following section:

"29. In any conviction under this Act the penalty may be enforced by distress and sale of the goods of the offender, and in case of there being no sufficient distress found out of which the same can be levied, such offender shall be liable to be imprisoned for any period not exceeding one month. Every such penalty when collected shall be paid to the Treasurer of the Pharmaceutical Association of British Columbia for the general purposes of the said Association."

(12) Section 7 of the "Pharmacy Act, 1891," is hereby amended by striking out sub-section (*f*).

Canadian Druggist

WILLIAM J. DYAS, Editor and Publisher.

MARCH 15TH, 1895.

THE *India Rubber and Gutta-Percha Journal* is authority for the statement that a member of the firm of Messrs. A. & F. Pears, together with an associate inventor, have been successful in manufacturing a perfectly fireproof celluloid from spent fibres from paper mills, which they are proposing to manufacture on a large scale.

THE manufacturers of the new antipyretic and analgesic called "Antitoxin" have announced their determination to take proceedings to prevent the use of this word, except as applied to their product. They claim that the name, as used to designate the diphtheria serum, is an infringement of their trade mark, which was registered some years ago.

THE graduating class of the Ontario College of Pharmacy are to be congratulated on the unqualified success which attended their dinner, held on the evening of March 1st. The menu was good, the speeches witty and enjoyable, and the management excellent. Chairman Brown and the other members of the committee who had the affair in charge showed what the "red, yellow, and black" can do in providing an enjoyable evening. The O.C.P. is always ahead.

Death of Mr. S. M. Burroughs.

Silas Mainville Burroughs, of the firm of Burroughs, Wellcome & Co., Snow Hill, London, England, died at Monte Carlo, whence he had gone but a short time previously for his health, on February 6th.

Mr. Burroughs was an American by birth, having been born in Medina, N.Y., December 24th, 1846, and began his pharmaceutical career in Lockport, N.Y., afterwards entering the house of John Wyeth & Brother, Philadelphia. In 1880 the firm of Burroughs, Wellcome & Co. was formed, and the success of the business then established has been almost phenomenal.

In social, business, and religious circles Mr. Burroughs was a prominent figure, and made hosts of friends by his urbanity of manner, generous disposition, and a distinct personality, which impressed all who came in contact with him. He was a liberal contributor to the Pharmaceutical Society's Benevolent Fund, donated £1,000 to the Dartford Cottage Hospital, and helped to support a number of charitable and religious institutes in his native town. Mr. Burroughs leaves a widow and three small children.

Justice to a Manufacturing House.

There appeared in the Toronto *World* of February 22nd a statement that Parke, Davis & Co., of Walkerville, Ontario, were seeking to introduce low-grade alcohol into their Canadian laboratory for the manufacture of patent medicines, and in the issue of the same paper of February 26th an anonymous letter appeared, alleging that the low-grade alcohol was desired "for the manufacture of pharmaceutical preparations intended to be used for the making up of prescriptions." That a very great wrong had been done this firm in the publication of such false statements every one will admit, and the complete retraction of the charges and insinuations by the *World* in its issue of March 2nd was but an act of justice towards the firm.

Parke, Davis & Co. indignantly deny that their petition to the excise authorities had any bearing whatever on low-grade alcohol. What they wanted was simply permission to introduce pure, standard, rectified spirit in bond for the manufacture of pharmaceuticals designed for export on a large scale to foreign countries. Such standard spirit can be imported in bond at the price of 25 cents per imperial gallon. At present Parke, Davis & Co. are greatly hampered by the high market price of alcohol in the Dominion—$1.17 per imperial gallon in bond, and to this must be added the excise duty of $1.50 proof gallon! Their proposition to the excise authorities was cheerfully complied with; will reduce substantially the cost of producing goods for export; will enable them to compete with European manufacturers in the markets of the world outside the Dominion; and will not involve the slightest sacrifice of quality or potency in the finished preparations.

They also strenuously aver that no low-grade alcohol has ever entered into any preparation of their manufacture, and their petition had no bearing on any save the pure, standard, rectified spirit.

Practically, there is no such thing on the market as "low-grade alcohol," unless this term be applied to dilute alcohol. Inasmuch as every manufacturer is perfectly free to purchase pure spirit (94 per cent.) and dilute it in accordance with the needs of the product manufactured (some preparations require strong alcohol as a solvent, and others require dilute spirit), it would be absurd to talk of low-grade alcohol in this connection. The only other form of "low-grade alcohol" is a certain crude product supplied exclusively to establishments manufacturing vinegar under bond. The well-known "wood alcohol" could not possibly be used in the manufacture of pharmaceuticals, owing to its obnoxious odor.

The charge made that Parke, Davis & Co. desire to employ a low-grade spirit for the manufacture of patent medicines was another gratuitous misstatement. This house has, we understand, no proprietary interest in any patent medicine, nor does it advertise or sell any of its products to the public. It confines its operations entirely to the medical profession, which it reaches through the usual channels of the wholesale drug trade and retail pharmacists.

The reputation of this house throughout Canada is such that no druggist, we believe, would give credence to any such charges; and we feel it a duty towards one of our most enterprising and reliable manufacturing concerns to give the facts as they actually are.

The Ownership of the Prescription.

The question as to whom a prescription really belongs, when it has been made up by a pharmacist, has frequently been raised in connection with French pharmacy. No special rule has been laid down with regard to it, and, consequently, pharmacists have been in the habit of keeping the recipes or not, as they think fit. M. Bogelet, the lawyer of the General Association of French Pharmacists, has expressed the opinion that a general system should be adopted for pharmacists to retain, for the purpose of personal guarantee, all prescriptions containg either active poisons or those that are dangerous. They should, however, undertake to deliver proper copies, bearing the address of the pharmacy, to patients. Article 15 of the proposed new law touches the question slightly by saying: "If pharmacists retain a medical prescription, they ought to deliver an exact copy, if this is asked for."—*Chemist and Druggist.*

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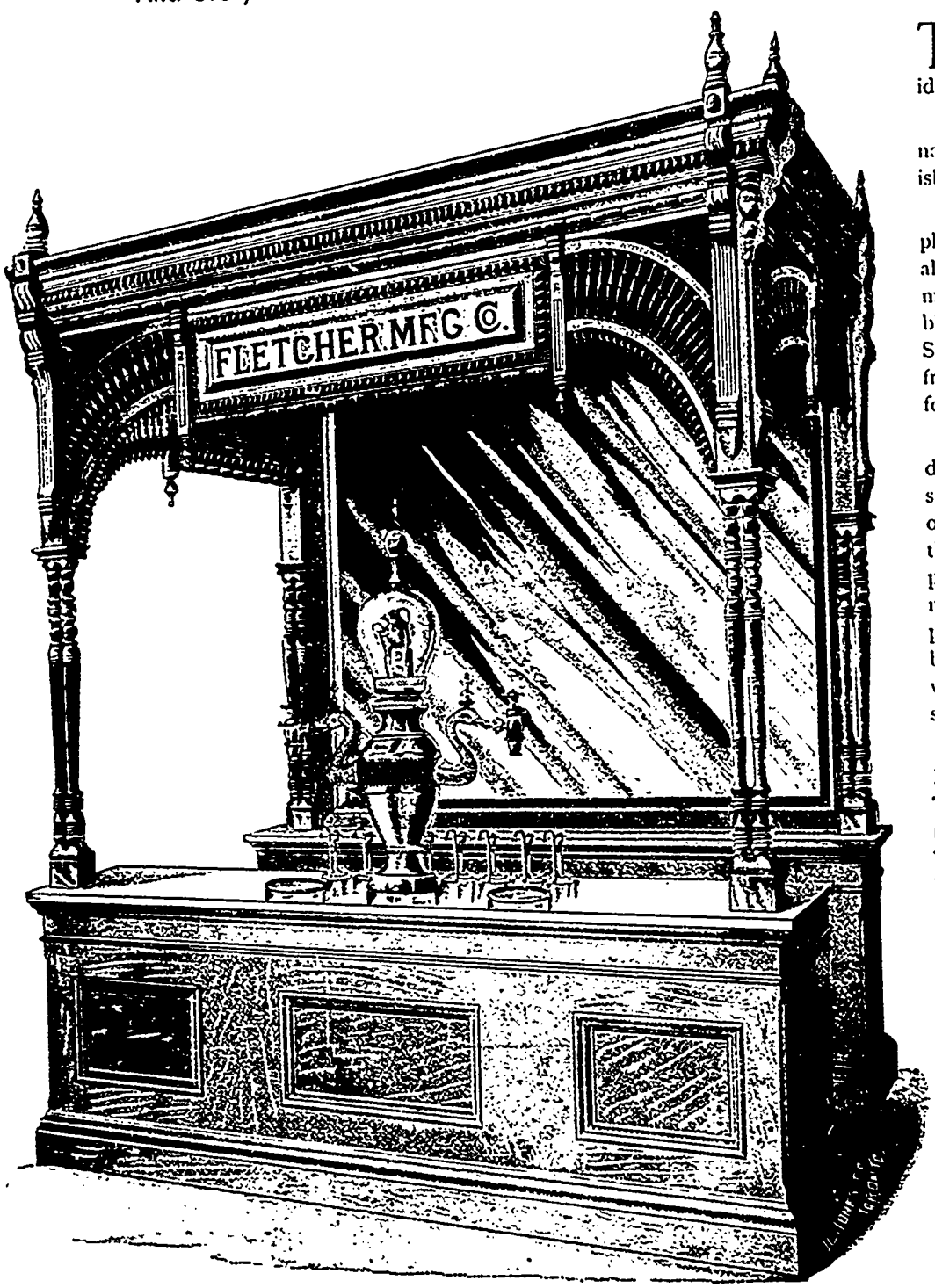

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WRITE FOR CATALOGUE

The Bacteriological Examination of Water.*

By K. A. Cribs, F.I.C.

During the last few years the literature of the subject of Bacteriology has become so extensive that anything like a general epitome of the subject is quite beyond the scope of a paper for a single evening. I shall, therefore, restrict my remarks to that department of the subject which has a practical application in the examination of water for drinking purposes.

Before proceeding to the subject proper, it may, however, be well to give a general idea of the characters of the micro-organisms under consideration, so that those who are not already familiar with them may be able to understand more clearly the facts referred to. Those organisms commonly grouped together under the term "bacteria" are unicellular bodies of extremely minute proportions; some idea of their size may be given by the statements that if 10,000 of some of the smaller forms were placed end to end the thread would be only one inch long, and a cubic inch of the organisms in mass would contain ten millions of millions of individuals. These organisms are not all of the same form, and, in consequence, may be arranged into various classes; perhaps Cohn's system is the most convenient for general use:

(1) Coccaceæ, Ball bacteria. Cells spherical or shortly elliptical.

(2) Bacteriaceæ. Rod-bacteria. Cells distinctly longer than broad, straight rods, varying in length,

(3) Spiro-bacteria, Vibrionaceæ. Cork-screw bacteria. Cells curved, often twisted into long or short spirals.

(4) Desmo-bacteria. Thread bacteria. Cells united to form long threads, some being enclosed in sheaths.

The bacterium consists of protoplasm enclosed in a membrane, usually of an albuminous nature. Some species possess flagella, by means of which they have the power of motion, and which may be situated on certain parts of the cell only, or distributed over the whole surface. In some species no flagella have been observed. Of the motile forms some species may be seen to dart rapidly across the field of vision, others move but sluggishly.

Some forms develop distinctive colors, but the majority are colorless or yellowish.

A fact of the utmost importance is that bacteria are unable to rise in air, unless carried upward by a draught, and in water, at rest, most species subside to the bottom.

Many kinds of bacteria produce spores, which are far more resistant to the effects of temperature, etc., than the parent bacteria; these spores often remain as such for a considerable period of time, and then develop when favorable conditions obtain.

*Read at a meeting of the Brighton Association of Pharmacy.

The application of bacteriology to the subject of water supply may conveniently be considered under three sections:

(1) The determination of the efficiency of filters.

(2) The general examination of water as to suitability for drinking purposes.

(3) The special examination of polluted water for individual species of bacilli.

1. THE DETERMINATION OF THE EFFICIENCY OF FILTERS.

The value of bacteriological examination for this purpose has for several years past been recognized, and the system is now in full operation in connection with the water supply of many towns.

For this purpose samples of water must be taken before and after filtration—in such a position that the samples shall fairly represent the water actually running at the time—and the number of bacilli in each sample determined. The bottles in which the samples are taken must be previously sterilized, either by heating for three hours to a temperature of 130°—160° C., or by filling with a solution of bichloride of mercury (1—1,000), allowing to stand one hour, and then rinsing six or eight times with water previously rendered sterile by boiling for an hour in a flask plugged with cotton-wool, and covered with a small, sterilized beaker. Water may also be sterilized by passing through a Chamberland-Pasteur or a Berkefeld filter. The stoppers of the sterilized bottles are tied over with sterilized gutta-percha tissue, and transported in tins or other suitable containers.

When taking the samples, every care must be exercised to avoid the possibility of infection from any external source; the stopper must be removed by grasping between finger and thumb, together with the gutta-percha capping, and not laid down upon the ground, but held until the sample has been taken; the bottle is held in the other hand in such a position that no bacteria from the skin can enter the bottle; this is easily arranged when the supply is a flowing stream, but if a pool or reservoir the bottle should be held by a sterile clamp. The neck of the bottle must be completely immersed, so as to avoid the entrance of any dust which may have settled upon the surface of the water. When full, the stopper is replaced, and tied over as before. If the supply is carried by a pipe, the tap should be turned on for several minutes before taking the sample.

When the test has to be carried out at a distance, it is needful to pack the tins in ice, so that the temperature may not rise above 4° or 5° C. by the time the test is made. The case shown is one in constant use, the temperature twenty-four hours after packing is 0° C. The reason why it is so important to keep down the temperature is that the organisms multiply extremely rapidly at ordinary temperatures, but very slowly, or not at all, when kept at or near 0° C. Unfortunately, however, some species of bacteria are killed at the freezing point, consequently the results obtained may be lower than the truth. Moreover, the development of those which are not killed is much retarded by long continued low temperature. The bacteria in pure water obtained from deep springs usually multiply far more rapidly than those from streams; this is no doubt owing to the fact that the former waters do not contain any of those products of bacterial life which inhibit their further growth, whereas the latter usually do contain such products, and living bacteria in far larger numbers in addition. As an instance of rapid multiplication, Frankland gives the following figures:

Kent Well. On day of collection.....7 bacteria.
" After 1 day at 20° C.....21 "
" After 3 days at 20° C. 495,000 "

The multiplication usually attains a maximum by about the seventh day, in the case of spring waters, but not until the fifteenth to twenty-fifth day in impure water of streams, after which the numbers rapidly decline.

The number of bacteria is ascertained by introducing small portions of the water into a suitable nutrient, and counting the colonies developed. This is commonly carried out in small flat-bottomed glass dishes known as Petri's dishes, which are furnished with covers of the same form. The most convenient medium for cultivation is gelatine-peptone, because this is solid at the ordinary temperature, yet may be liquefied by a very gentle heat, and thus easily and uniformly mixed with the water under examination. For its preparation a pound of lean minced beef is infused with a litre of cold water, and allowed to stand for twenty-four hours in a cold place, then strained and pressed, adding water to the strained liquor to produce one litre, if needed. To this liquid are added 100 grammes of fine white gelatine, 10 grammes of dry peptone, and 5 grammes of salt, and the whole placed in a steam sterilizer for an hour, after which it must be carefully neutralized, or rather rendered faintly alkaline. As the degree of alkalinity has a most important influence upon the growth of bacteria, the best plan is to remove a small portion of the medium and titrate by means of $\frac{N}{10}$ sodium hydrate, using phenol-phthalein as an indicator; having in this way ascertained the amount required for exact neutralization the correct quantity of normal sodium hydrate is added together with 1 gramme (per litre) of crystalline sodium carbonate; this being the degree of alkalinity which gives the best results. To this liquor, when cool, the whites of two eggs are added, and after admixture the whole is placed in the steamer for twenty minutes, when the coagulated albumen is removed by straining through linen, and finally cleared by filtration through white filter paper at a temperature of about 45° C. The filtrate is collected in a flask which is plugged with cotton-wool, previously sterilized at 130° to 140° C. trans-

ferred to steam sterilizer, and heated on four successive days during ten to fifteen minutes. Sterilized test tubes, also plugged with cotton-wool, may be partly filled and sterilized in the same way. Thus prepared, the medium may be preserved in the dark for months.

For the actual tests, at least four dishes are required for each sample, and these together with all other glass apparatus should be sterilized as usual in the air oven, several pipettes divided into $\frac{1}{10}$ cc. will be needed, also glass flasks of 100 cc. capacity for diluting the water.

The dishes having been placed on a level table and the nutrient melted at about 40° C, about 10 cc. is carefully introduced into each dish, removing the cover only so far as to allow of the liquid being poured in, and taking care to avoid infecting the nutrient, by using sterilized forceps for removing the cotton-wool from neck of flask, the lip of which must also be gently heated in Bunsen flame. Before the medium has solidified varying quantities of the water samples are introduced by means of the sterilized pipettes. Convenient amounts are 1 cc., $\frac{1}{2}$ cc., $\frac{1}{4}$ cc., $\frac{1}{10}$ cc., and $\frac{1}{100}$ cc., but with very bad water $\frac{1}{1000}$ cc. (or even less) will be sufficient. These smaller quantities are measured by first preparing dilutions of the original water with 99 or 999 times its volume of sterilized water. The water and medium have now to be thoroughly mixed by tilting the dishes backwards and forwards several times, and then set at rest in a cold place (refrigerated during hot weather) until thoroughly set, when they are transferred to an incubator and maintained at about 20° C. In those dishes which contain a sufficiently small portion of the water, each individual organism is separated from the others by mixing with so large a proportion of medium, and when this solidifies each one is kept in its place, consequently when it multiplies it in time produces a "colony" sufficiently large to be seen by the naked eye or a pocket lens. The dishes are therefore examined from time to time during several days. By the end of the second day, but frequently much earlier than this, some colonies will be seen, and these will increase in number until all are developed, when they must be counted. If few in number this may easily be done, but, if many, a special counting apparatus will be required. That usually employed is Wolfhugel's, which consists of a blackened plate, upon which the dish is placed, and covered with a glass plate divided into squares. The dish is viewed through this divided plate, and the number of colonies in five of the squares (diagonally) is counted. From this the number in the whole dish may be easily calculated. The following figures are given as an instance of results actually obtained:

$\frac{1}{2}$ cc.	contained	230 col's	=	460 bact. per cc.
$\frac{1}{10}$ cc.	"	45 "	=	450 " "
$\frac{1}{10}$ cc.	"	47 "	=	470 " "
$\frac{1}{100}$ cc.	"	5 "	=	500 " "
$\frac{1}{1000}$ cc.	"	1 "	=	1,000 " "

In such a case, where the number of organisms is comparatively small, it is evident that the figures obtained from the smaller quantities are less reliable than those from the larger, and in calculating results it is well to omit them, the actual number to be certified in the above example would be 460, the mean of the first three plates. On the other hand, when the number is very large, the results from smaller quantities are more reliable than from larger ones, where the difficulty of accurate counting is a very real one.

Having thus ascertained the number of bacteria in the water before and after filtration, a simple calculation gives the percentage removed. When working well, sand-filters, as used by most water companies, will remove from 95 to 99.9 per cent. of the bacteria. This remarkable result is explained by the fact that the bacteria at first arrested by the upper surface of sand there multiply, forming a slimy coating, which serves as a very efficient filtering medium for the water. It follows, therefore, that a newly-constructed filter does not purify the water well, but requires a few days to attain its maximum of efficiency. It also follows that the rate of filtration becomes slower as the slimy coating increases in thickness—so much so that from time to time the upper surface of fine sand must be scraped off to the depth of about $\frac{1}{8}$ to $\frac{1}{4}$ inch.

The vast majority of bacteria present in natural waters are of a harmless character, but there is no reason to believe that pathogenic organisms, such as cholera and typhoid germs, will behave in any way differently from the ordinary "water bacteria," in fact, the experience of Hamburg during the cholera epidemic of 1892 shows that they behave similarly. The towns of Hamburg and Altona both drew their supply from the river Elbe. The former received the water from a point above the outfall of the town sewers, and did not filter it before supplying, whilst the latter took its supply below the outfall of sewers of both Hamburg and Altona. The neighboring town of Wandsbeck received water from an inland lake after filtration. The deaths from cholera in the three towns were as follows:

Hamburg.....	12.28 per thousand.
Altona	2.34 "
Wandsbeck.....	2.15 "

2. THE GENERAL EXAMINATION OF WATER AS TO SUITABILITY FOR DRINKING PURPOSES.

The first step in this examination is the same as already described, but it is evident that the bare determination of the total number of organisms present is of practically little value, because the great majority will usually be harmless forms, and the *purest* natural waters are capable of sustaining the life of vast number of bacteria; moreover, as has been before observed, a water naturally very pure bacteriologically becomes teeming with bacterial life a few days after collection, by multiplication. There are, however, other considerations of much greater value, viz., the number of bacteria which cause liquefaction of the gelatine, and the number of different species present. When examining the dishes for the number of colonies it will be apparent that great differences exist between them, some appear within thirty-six hours or even earlier, whilst others do not become visible for several days; moreover, some are found only upon the surface of the gelatine, others are entirely embedded beneath the surface; the color may vary, the commonest being yellowish or white, reddish, brown, or gray. One very important difference is that while some forms cause rapid liquefaction of the gelatine, others liquefy it but slowly; others, again, do not possess this power at all. This liquefaction may extend far beyond the visible circumference of the visible colony, or may be confined to a small radius; the liquid gelatine may be thin or viscid, transparent or turbid. The form of the non-liquefying colonies is also important—round, oval, or irregular, or of characteristic form.

These liquefying bacteria are very frequently the cause of putrefaction, and produce unpleasant odors consequent upon the decomposition of the gelatine; moreover, they are not able to live and multiply in pure waters to anything like the extent that the non-liquefying species do, hence their presence in large numbers is a very bad feature.

A water which becomes polluted by sewage and other household filth is thereby contaminated not only by great *numbers* of bacteria, but by many *species*, whereas a water drawn from a deep spring or other source remote from polluting influences contains comparatively few, and very few, perhaps only three or four, species of bacteria. The gelatines cultures having been made as usual, they are carefully examined, and a minute portion of each form of colony is removed by means of a needle (previously sterilized by heating in the Bunsen flame, and cooled), and transferred to test-tubes of gelatine or other culture media. The inoculation of test tubes is carried out either by "stroke" or "puncture" as follows:

For stroke culture test-tubes are used, containing gelatine, agar-agar, or sterilized potatoes. Agar-agar culture medium is prepared in the same way as gelatine-peptone, substituting for the gelatine 20 grams of agar-agar, which, however, requires prolonged heating to ensure solution. Potatoes are difficult to sterilize; they are first washed, soaked in solution of bichloride of mercury (1-1000) for an hour or two, and then peeled; again placed in bichloride solution for five minutes, washed with sterilized water, and cut into slices about one-third of an inch thick, with a sterilized knife. The slices are then put into sterile cultivation plates or test-tubes (plugged with sterilized wool), and placed in the steam sterilizer for an hour longer.

The wire having been heated in a flame and allowed to cool, without being touched or laid down, a minute portion of a single colony is taken up on its point; the test-tube, containing nutrient solidified in a slanting direction, is held in the left hand, the plug removed between the backs of the third and fourth fingers of the right hand, taking great care that the part of the plug which enters the tube shall not come into contact with any other object, the wire is then passed into the tube without touching the sides, and gently drawn across the medium without injuring the surface. It is now again plugged, and placed in the incubator—if gelatine, a temperature of 20° C.; if agar-agar, or potatoes that of 37° C.—is usually employed. These cultivations show certain peculiarities of growth whereby further differentiation of species may be obtained.

For puncture, the nutrient should be solidified horizontally, and the tube being held mouth downwards the infected wire is pushed upwards through the medium, right to the bottom of the tube. Here, again, differences soon become apparent: the bacteria may grow along the whole track of the needle, or only at or near surface, or at bottom only; the growth may be a fine cord or a thick column, with or without radiating processes; the colony may spread over surface or be confined near the puncture; the gelatine may be liquefied in a funnel-shaped or other depression from surface, or equally over whole surface, etc., etc. Some species produce bubbles of gas, whereas others do not.

Having in this way ascertained that several species are present, small portions of each culture may be examined microscopically, when it is possible that further differences may be observed, e.g., two colonies, otherwise very similar, may be found to be a bacillus or micrococcus respectively. The growth of a colony may be observed by cultivation in the hanging drop; that is, by inoculating with a very minute speck of a colony, a small drop of gelatine or agar-agar on a cover-glass, inverted over a glass slide having a depression in centre, the cover-glass being kept in position by a minute portion of vaseline at one corner.

By these means and other special cultures, when necessary, the number of species may be ascertained. Migula states that no good drinking water contains more than 10 different species.

3. THE SPECIAL EXAMINATION OF POLLUTED WATER FOR INDIVIDUAL SPECIES OF BACILLI.

Pathogenic bacteria frequently find access to water used for drinking purposes, mainly through sewage pollution, and, unfortunately, some of these species are capable of living in water for considerable periods of time, thus giving every opportunity for spreading the disease.

It has been demonstrated that *Bacillus typhosus* is capable of existing in a living condition in sterilized water for some months, but in ordinary water its duration is more restricted; this is probably due to "crowding out" by other and more numerous water bacilli.

The cholera spirillum is rapidly destroyed when introduced into sterilized distilled water, but the addition of small quantities of nitrates or chlorides greatly increases its vitality. Most shallow wells or streams of a polluted character contain these salts in considerable traces, hence the conditions are favorable for the conservation of this bacillus, should it obtain access. The experiments hitherto made upon the vitality of cholera spirillum in ordinary potable water are not very satisfactory, but there is no doubt that it is capable of living for a considerable time. Moreover, the experience of Hamburg and Altona, already quoted, would seem to show this.

The particular bacteria which have usually to be sought are those of typhoid fever and cholera, although others, such as those of anthrax, septicæmia, or tetanus, have occasionally been found. I shall confine my remarks to the detection of the bacilli of typhoid fever and cholera.

The Typhoid Bacillus.

The difficulties surrounding the detection of this bacillus are very great, partly because it is commonly accompanied by far greater numbers of other bacilli derived from sewage, and partly because it is a disease not adapted for physiological test upon the lower animals.

On this account, an ordinary plate cultivation can scarcely ever be successful in giving a culture of the specific organism unaccompanied by other species, particularly the *Bacillus coli. communis*, constantly present in human fæces. Under these circumstances, special methods must be adopted to destroy the other species, after which tests are applied to distinguish between the *B typhosus* and *B coli. communis*, or any other species which may occasionally be met with. The water is first introduced into phenol-broth, or the sediment obtained by filtering a large quantity of the water through a Berkefeld or Chamberland-Pasteur filter, and is cultivated in the same medium. This medium is prepared as follows:—

Some beef-broth is prepared exactly as described for gelatine-peptone, but omitting the gelatine, and making neutral instead of slightly alkaline. A number of test-tubes each receive 10 cc. of the liquid, and in addition three, six, or nine drops of the following solution:—

Pure phenol	5 grms.
" hydrochloric acid	4 "
Distilled water	100 "

These tubes are kept in the incubator at 37° C. for twenty-four hours, whereby any microbes will be destroyed. To these sterile tubes one to ten drops of the water are added, and, after admixture, replaced in the incubator. If the sediment be used, a larger quantity of phenol-broth should be employed. At the expiration of twenty-four hours, and again at forty-eight and seventy-two hours, any of the tubes which appear turbid are to be submitted to plate cultivation, and the resulting colonies carefully examined for resemblance to those of the typhoid bacillus, and if any be present these are tested by (*a*) cultivation on potatoes, (*b*) inoculation into gelatine tubes, (*c*) cultivation in milk, (*d*) indol test, and (*e*) general microscopical characters.

The plate-cultures of typhoid bacillus develop colonies of two forms. Some spread themselves out upon the surface, forming a translucent, almost transparent, film with uneven edges; radiating lines may be seen like medullary rays, and in addition are lines similar to the annular zones of wood. These colonies may become as large as one-third inch in diameter. Other colonies do not grow upon the surface, and are quite small, opaque and yellowish-gray in color, and somewhat lemon-shaped in form.

(*a*) Cultivated upon potatoes at 37° C. these interior colonies produce an almost invisible grayish-white growth after two days, but on touching the surface with a needle, it is found to be covered with a felt-like pellicle. This remarkable appearance is not always shown, depending upon the acidity, or otherwise, of the potatoes.

(*b*) Introduced into gelatine tubes by puncture, it grows chiefly on the surface, producing a thin, grayish-white surface colony. If, however, the gelatine be melted and the bacilli then added, carefully mixed, and allowed to solidify, then cultivated at 20° C. no air-bubbles appear in the mass; this is a very important test, because *B. coli communis* always produces gas-bubbles.

(*c*) Milk is sterilized by heating to 58°-65° C. for an hour or two on five to eight successive days; into this medium some of the bacilli are introduced, and placed in incubator at blood heat; after twenty-four to forty-eight hours the milk is faintly acid and not coagulated, whereas the *B. coli communis* renders it strongly acid with coagulation.

(*d*) The indol test is made, as suggested, by Kitasato. To 10 cc. of the culture in ordinary peptone broth, grown for twenty-four hours, 1 cc. of a solution of sodium or potassium nitrite (.02 grm. in 100 cc.) is added, and then a little strong sulphuric acid; the *B. coli communis* produces indol, yielding a rose or deep red coloration, a reaction not obtained from cultures of the typhoid bacillus.

(*e*) Microscopical Characters.—The typhoid bacillus is about three times as long as broad, with rounded ends, and mostly occurs singly. It is very motile, and has numerous long flagella. The *B. coli communis* is broader in proportion, and is provided with one to six flagella. For examination, it is necessary to stain the bacilli, which is carried out in the following way. A small quantity of one of the colonies having been mixed with a little water on a glass side, a minute drop

of this mixture is placed upon a sterile cover-glass, and allowed to become dry, after which it is fixed by holding over a Bunsen flame between the finger and thumb, until unpleasantly warm; the cover is then placed with the bacilli downwards upon a little aqueous solution of gentian violet for ten minutes, after which it is removed, washed with water, and examined by a high power.

The flagella are not stained in this way, but they may be stained when obtained from a young agar-agar culture by employing a mordant consisting of

Tannin solution (1 to 4 parts of water).	10 cc
Saturated solution of ferrous sulphate..	5 cc
Saturated aqueous solution of fuchsine.	1 cc
Caustic soda solution.....	1 cc

After fixing, the cover-glass is covered with a large drop of this mordant, and gently heated until it begins to steam, for about a minute: then rinsed thoroughly, if necessary, using a little absolute alcohol to remove mordant. After again allowing to dry, the following stain is used (after filteration):

Fuchsine..... ...	5 grms.
Saturated aniline water.....	100 cc.

Let stand twenty-four hours with frequent agitation, and filter. By this means the flagella are stained pink, whilst the protoplasm of the bacilli is a very deep red.

The Spirillum of Cholera.

Koch recommends the following method for identification of cholera spirilla in water: To 100 cc. of the water add 1 grm. of peptone and 1 grm. of salt, and place in incubator at 37° C. Aga-agar plates are poured after ten, fifteen, and twenty hours, and the mixture is also examined microscopically. Any suspicious colonies, *i.e.*, those which are white and semi transparent with well-defined margin, are examined by microscope, and also inoculated into fresh tubes for the indol reaction, the physiological test, and general microscopical appearances.

Indol Reaction.—This reaction has been described when referring to the detection of typhoid bacteria, but in the case of the cholera spirillum it is unnecessary to add sodium nitrite, because the nitrite has already been formed by reduction of nitrate present in the peptone, the addition of pure sulphuric acid (free from nitrous acid) is alone necessary. It is important, however, that the test should be applied only to a pure culture in order to eliminate the action of other bacteria. The reaction succeeds best in peptone solution (one per cent. peptone, one-half per cent. salt).

Physiological Test.—For this one and one half m.g of the surface growth of an agar culture is mixed with 1 cc. of sterile broth, and injected into the peritoneal cavity of a guinea pig. This quantity should be a fatal dose for an animal weighing 300 350 grammes. Rapid reduction of temperature ensues, resulting in death.

Gelatine Tube Culture.—At 20° C. in puncture cultivations a thin, white thread appears along the needle-track; this thread suddenly widens out just below the surface, causing liquefaction, whilst a bright, glistening bubble of air appears in the funnel-shaped liquefied portion. The liquefaction gradually proceeds until the whole contents of the tube becomes fluid.

Microscopic Examination.—The cholera spirillum is a short, bent, rodlet, with rounded ends, frequently actively motile, and when stained may be seen to possess flagella, either singly, or in pairs at both ends.

In conclusion, great as has been the advance of this young but vigorous science, there is no doubt that we are at present but opening the clasp of a casket filled with some of the choicest gems of knowledge, each of which is enclosed in its own case, the secret spring of which can only be found by patient search, and which will be passed over untouched by the careless experimenter. Much remains to be done in the description of undescribed forms, or the more ready identification of those already known; and I venture to think the chemical side of the subject will be fruitful of much. I mean the study of the products obtained by cultivation of various bacteria in media containing traces of chemical substances of definite composition, more particularly of oxidizing and reducing agents.

To any who wish to commence the study of bacteriology, I would recommend Migula's "Introduction to the Study of Practical Bacteriology," which may be followed by Frankland's "Micro-organisms in Water," and Crookshank's "Manual of Bacteriology."—*British and Colonial Druggist.*

Points on the Making of Pills.

Mr. A. H. Miles writes to the *Bulletin of Pharmacy:*

"I have found it profitable, in my retail experience, to make a good many of the pills called for, and some of the methods followed may be of practical help to any druggist minded to make a trial. Large pills are better left to the manufacturing pharmacist. Many of the small ones, however, may be readily and quickly made, and, with but little experience, well enough made to satisfy the most fastidious.

"I am provided with a copper pill machine with three sets of double plates, from one quarter gram to six grains. My mass diluent is pure cut-loaf sugar powdered in the store, and my excipient is Remington's for all pills which are to be white. I make just enough at a time to fill a single prescription, if the prescription calls for a size or kind not likely to be again wanted. Of the staple pills, however, I make from 500 to 2,000; usually selecting a number which is some multiple of the number my plate will cut, of the size of pills to be made. With but little experience and calculation the weight of each pipe-cut may be ascertained, and the whole mass divided by weighing or cut on the six-grain plate. I have found it very conducive to perfect uniformity to roll all my pill pipes at once, where I am making one thousand pills or less of one kind at a time. I do this by rolling between pieces of plate glass about the size of a small pill tile. Of course it might be accomplished as well by wood rollers if the surfaces were as true. These pipes will vary in length a little, even if weighed. It is not difficult, however, to get them to average the desired length with a little care. The number of pills will not vary more than two or three from this calculation. With pipes thus rolled, it is possible to cut six or even seven at once on the machine.

"My young men can make and finish a thousand pills an hour, and so perfect and uniform as to leave nothing to be desired. This is true of morphia in all sizes, strychnia sulphate and nitrate in the many sizes required, atropia and other pills where the medicament is much less in bulk than the diluent, and in some cases, as in quarter and half-grain morphia, where there is but little sugar required.

"The pharmaceutical manufacturers' products are cheap, and some of them are getting cheaper, but at present prices for most of the small alkaloidal pills any pharmacist who wishes to fill his leisure hours usefully can pay for his outfit, with a good margin beside, if he will undertake pill-making to a limited extent."

Estimation of Spirit of Nitroglycerin.

J. B. Nagelvoort (*American Journal of Pharmacy*) gives the following method: Cool a proper quantity of a 10 per cent. alcoholic solution of nitroglycerin to 15°C. Take 50 cubic centimetres of it; pour this quantity into two litres of water; agitate the mixture, and set it aside in a cool place over night. (In cold weather take care that the water cannot freeze and break the bottle so as to endanger your life.) The next morning siphon off the water, only leaving enough in the bottle to transfer the nitroglycerin—which has separated and lies as a syrupy fluid on the bottom—into a 50 cubic centimetre graduate, which is graduated in 0.5 cubic centimetres. Use a funnel—this insures against loss; let the funnel drain. If the 10 per cent. alcoholic solution of nitroglycerin is of the required (U.S.P.) strength, there should be about 2.5 cubic centimetres of nitroglycerin in the graduate. Since we measure, instead of weighing, our nitroglycerin, its volume has to be multiplied by its specific gravity, which is 1.600, in order to obtain its weight: $2.5 \times 1.6 = 4$. Applying a correction for the solubility of nitroglycerin in a large quantity of water (Allen says it is 1 gram in 800 cubic centimeters), it is a simple calculation to verify the fluid under examination. Dilute, according to the figures found, to pharmacopœial strength.

Simple Tests for Common Drugs.

The increased activity of public analysts, and the, to say the least, unsatisfactory condition in which the retailer is, in respect to responsibility for the sale of defective drugs, render it imperative that he should be able to test for himself the drugs most commonly "found wanting." The majority of chemists and druggists have been content to leave the care of the purity and strength of their drugs in the hands of the wholesale houses if bought from them or, if made by themselves, have trusted to accurate manufacturers to ensure permanent stability. Both of these practices ignore the deteriorating influence of time upon the stock articles, and the consequence is that in so many cases in which chemists are prosecuted we hear the plea of "had a long time in stock." We feel sure that under these circumstances a description of simple tests, sufficiently severe to keep the drugs within safe bounds, yet devoid of too fine operations, will be welcome to the average chemist and druggist. The following is such a description, comprehensible and able to be practically made use of by even those who have never performed a chemical test in their lives. Our selection will be seen to comprise the favorite targets of the public analyst. First, however, we must describe the apparatus and reagents (test solutions) required.

There will be no difficulty in utilizing a small space in the pharmacy for these requirements. Either the chemist will use his dispensing counter when not otherwise engaged, or, if space permits, will erect a screen to protect himself from external observation, and keep a small space clear for use as his "laboratory." Three or four feet of counter, with three rows of shelves fastened to the back of the screen, similar to the ordinary dispensing shelves, with a cupboard below, will be all that is requisite in this direction. If there be a small sink fitted into the counter, he will, of course, locate his "laboratory" in close proximity to this. Having chosen a site for the work, the remaining considerations are small. A few bottles holding about a pint (stoppered), the same number of 4-ounce stoppered, and of small wide-mouthed bottles, together with a small quantity of apparatus, will be all that is necessary. The bottles will hold such reagents as the user may determine upon as being in most common use for his work. The few standard solutions he may use, prepared according to the directions of the Pharmacopœia, must be kept in the larger bottles. With regard to these, the following remarks may be made. Do not make too much of any standard solution, as in certain cases deterioriation occurs with a certain amount of rapidity. This is especially the case in hyposulphite of sodium (thiosulphate), and also, to a certain extent, in other cases. Alkali solution should be kept in a corked bottle, and should be kept as nearly full as possible. If a stopper be used, this will stick in the neck and occasion much annoyance. For general reagents, such as barium chloride, silver nitrate, etc., 5 or 10 per cent. solutions may be used.

The actual apparatus used will not be very expensive. It may be either purchased direct from one of the chemical apparatus makers, or part of it may be made by the ingenious pharmacist, and the glass vessels bought from the makers.

Three pieces of wooden apparatus will be necessary—a test-tube rack, a burette stand, and a filtering stand. None of these are beyond the pocket of any pharmacist or the tools of the ingenious amateur carpenter. The simplest form of test-tube rack is an oblong block of wood about 8 inches long, 3 inches high, and 3 inches broad. A double row of holes, sufficiently large to just take the tubes, are then cut in the block by a bit of the proper size, and the rack is made. A little cutch and varnish will vastly improve it. The burette and filter stand may take any form, so long as they will hold the burette and filter and allow the vessels to stand below them. The most useful filter stand consists of two blocks of wood, about 6 inches high, with a thin piece screwed on to them about 10 inches in length, in the form of a bridge. The top of the bridge, *i.e.*, the thin piece, which should be about three inches wide, is bored with holes varying from one to two and a half inches in diameter, and thus serves as a support for funnels of various sizes, the vessels into which the liquid is to be received being easily arranged below. A good burette stand is not so easy to make, but a couple of shillings will purchase one if wished for.

Next come the water-bath and the drying oven. The water-bath is of great importance, and may be of very varied forms. A copper water-bath is rather expensive, but, of course, very useful. An easily extemporized bath is a beaker, on which rests the dish to be heated; but the most suitable of homemade baths is an ordinary iron pot. Circles of tin are cut out to cover the top of the pot, and holes of various sizes cut in these according to the size of the dishes each is intended to support. This is supported on an iron tripod stand, and a Bunsen burner completes a water-bath which will be as effectual as the most expensive copper bath.

The drying oven is even less expensive. A tin biscuit box or quinine tin is all that is needed. If the ordinary lift-off lid is exchanged for a door, which can easily be run in a pair of grooves, and the box placed on its side on the tripod, the temperature can be easily regulated by the height and distance of the flame and the distance to which the which the door is opened. A small hole may be bored in the top, in which a cork with a thermometer is inserted, and the temperature watched. So much for the metal apparatus, which can present no difficulty to the versatile pharmacist.

Glass apparatus must, of course, be bought, for but few are able to manipulate glass themselves. Of ordinary ungraduated glass and porcelain but little is necessary. A dozen test tubes, a couple of nests of beakers, a few flasks and evaporating dishes are all that are requisite. For work, where the minutest accuracy is not necessary, a very thin porcelain dish or crucible may be substituted for the more expensive platinum. If, however, the funds will allow, a platinum crucible will be found very useful. A small retort will be required—for distillation of spirits from tinctures—and also a condenser. Supports for the retort and condenser (Liebig's condenser is the best form) will be needed, and may take any form desired, or may be obtained from the maker for a very small sum. A specific gravity bottle is also absolutely necessary. This can be obtained for a very small sum, or a very thin flask with as narrow a neck as possible may be used. It should hold 1,000 grs. at least, and the point in the neck to which 1,000 grs. of water fill it at 60° F. is carefully scratched on to the glass. The number of grains which it weighs when filled with the liquid to be examined, minus the weight of the flask itself, will then be the specific gravity of the liquid (with a decimal in the proper place, of course). In the examination of ginger and mustard an exhausting apparatus is necessary. A Soxhlet tube, an apparatus which allows the percolation and recovery of the solvent to go automatically, is obtained for about half a crown, and is well worth purchasing. One or two flasks graduated to hold 1,000 grains, together with ordinary graduated glass measures, and one or two pipettes and burettes, will practically complete the whole of the apparatus required. There will, of course, be a few little things found requisite from time to time, but most of these will be, in all probability, found in the ordinary stock of the pharmacist. To go back to the reagents, the following will be found to come in useful for almost everyday use:

STANDARD SOLUTIONS.

Soda ($NaOH$).
Oxalic acid ($C_2H_2O_4$).
Hyposulphite of soda ($Na_2S_2O_3.5H_2O$).
Silver nitrate ($AgNO_3$).

ORDINARY REAGENTS.

Phenolphthalein (*in proof spirit*).
Barium chloride (for sulphuric acid and sulphates).
Silver nitrate (for hydrochloric acid and chlorides).
Starch water (for iodine).
Sulphuretted hydrogen (for lead).
Chromate of potassium (indicator for hydrochloric acid).
Sodium phosphate (for magnesium).
Magnesium sulphate (for phosphoric acid).
Dilute ammonia.
Dilute hydrochloric acid.
Strong hydrochloric acid.
Dilute sulphuric acid.
Strong sulphuric acid.
Nitric acid.
Oxalate of ammonia (for lime).
Ferric chloride.
Ether.

Alcohol.
Distilled water.

Other solutions may be found necessary, and may be either kept in stock or prepared as required. The elementary apparatus above described will enable the pharmacist to examine the greater proportion of his drugs which are liable to adulteration. Of course, if the pharmacist be a good analyst he will enlarge this in all probability, and will submit his drugs to a more exhaustive examination; but if not, the description of the more simple tests will afford the pharmacist who is not so skilled in analysis sufficient information to attain the end we have in view, namely, the protection of himself against prosecution under the Food and Drugs Act.

There is a mention several times in this article of the specific gravity of liquids. In the enumeration of the apparatus required we have also mentioned the specific gravity bottle. Although it is a simple operation, we may, nevertheless, explain briefly the taking of the specific gravity of a liquid. This is got by *taking the net weight of the distilled* water in the specific gravity bottle when full, and the net weight of the liquid to be tested filling the same bottle. Then divide the weight of the liquid by the weight of the water. We now pass on to our list of drugs.

OLIVE OIL.

For a complete analysis of olive oil, it would be necessary to apply a number of tests of great delicacy, as the adulteration in this article is very judiciously managed in some cases, especially when the oil is intended for medicinal use. However, there are several easily-applied tests which will at least give the chemist a very fair idea of its purity. The specific gravity is of the highest importance, and can easily be taken in the specific gravity bottle above mentioned.

It should never be less than .914, nor more than .918 Any higher gravity than this latter should at once condemn the oil as being adulterated, in all probability with cotton seed, sesame, or arachis oil. In addition to this, the following test, known as Conroy's, should be applied. About 6 fluid drams of the oil are mixed with ½ dram of strong nitric acid in a large porcelain dish, and heated gradually until chemical action sets up, the source of heat taken away, and the mixture is then stirred until the action ceases. If the oil is pure, a pale, straw-colored mass results, which sets *solid in two hours. The other seed oils* commonly used for adulterating olive oil give a deep orange red mass, which does not set like olive oil. About 2 fluid drams of the oil may be heated on the water-bath with the same quantity of alcohol, in which 1 gram of nitrate of silver has been dissolved. If so little as 5 per cent. of cotton seed oil be present, the mixture, which should be shaken from time to time, will become black in a quarter of an hour.

VINEGAR AND ACETIC ACID.

To determine whether a given sample is vinegar or not is a task which involves great difficulties, and skilled analysts often disagree on a given sample; so that the pharmacist must, of necessity, in most cases, confine himself to determining the actual quantity of real acetic acid present. The specific gravity of the vinegar should be taken—it is usually about 1.018. Then a given quantity, say 4 fluid drams, should be diluted with water until the odor is very light, a few drops of solution of phenol-phthalein added, and the liquid titrated in the usual way with standard solution of soda. The 4 drams should require 220 minims of the soda solution. It is possible, however, that the free acid may partially consist of a mineral acid—for example, sulphuric acid. In order to satisfy oneself that this is not the case, a few fluid drams should be evaporated to dryness, when the resulting residue should not refuse to dry, nor begin to char. Further, when dry, the residue should be ignited and a little hot water (distilled, of course) *be added, with* a drop of phenol-phthalein solution, and if the ash is alkaline, as shown by the red color, no free sulphuric acid can have been present. In the case of ordinary acetic acid, the only difference to be observed is that no appreciable ash will be obtained. In the case of vinegar, barium chloride will often give a slight precipitate, but this may be due to the presence of sulphates, not necessarily sulphuric acid itself. A precipitate in acetic acid, however, is indicative of free sulphuric acid, since no bases to combine with the acid and form sulphates should be present.

ALMOND OIL.

Not only is almond oil often adulterated, but it is very frequently entirely substituted by peach or apricot kernel oil, sometimes sold under the name of ol. amygdalæ (exot.). The specific gravity of almond oil should never be less than .914, nor more than .919, and is usually about .917. The two oils above named have gravities of .920 to .923, or even a little higher. With regard to a careful examination of this oil, the same remarks apply as in the case of olive oil. There are one or two simple tests, however, that are easily applied, and which yield useful results. A solution of zinc chloride is prepared by saturating strong hydrochloric acid with zinc oxide. Five drops of this and 10 of the oil are stirred together on a glass plate with a glass rod, and the color resulting is noted. Almond oil gives no color, peach kernel oil gives a purple brown, and apricot kernel oil gives a very similar, but a rather more muddy, brown color. This is a very useful and reliable reaction.

GINGER.

Now that a conviction has been obtained for the sale of partially exhausted *whole* ginger, pharmacists must be careful in their purchases of this drug. The best method for testing this article is a little tedious, but presents no difficulty and requires but little apparatus. A weighed quantity is dried at the water bath temperature for six hours, and the loss in weight is taken. Nearly all this is due to moisture, and it should never exceed 15 per cent. In good ground ginger it is seldom so much. One hundred grains or any convenient quantity are then placed in the Soxhlet's exhausting tube and extracted with ether—which, of course, should be kept boiling with hot water, and not by a naked flame. This is allowed to exhaust for the whole day, and the ether is then allowed

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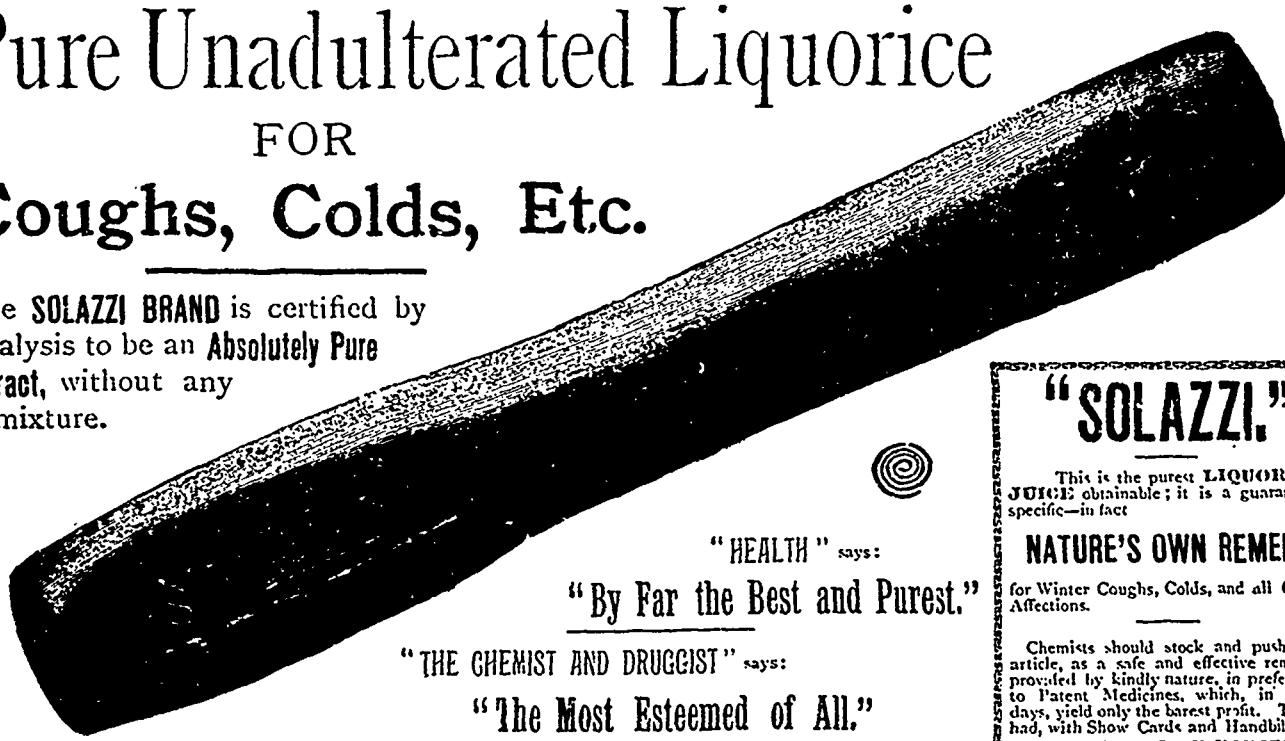

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to condense in the Soxhlet tube, and the flask taken away before it syphons over again. This saves the trouble of recovering the ether afterwards. The flask is now dried at 212°F. till of constant weight. The amount of what is extracted from the ginger thus should not be less than 3.5 per cent. (3.5 grains to the above quantity). It is generally much higher, and rarely goes down to 3 per cent. The same process should now be repeated on the same quantity of ginger, substituting alcohol for ether in the Soxhlet tube, and the alcoholic extract (which takes nearly two days to come out) should be from 2—4 per cent. (2—4 grains). A convenient quantity is then burnt (100 grains), and the ash weighed. It should lie between 3 and 4 per cent. (3—4 grains), and should never exceed 4.5 per cent. It is then treated with hydrochloric acid (1 part acid and 1 water), and raised to boiling point. The insoluble portion is filtered off, the filter paper washed, dried, and burnt, and the residue weighed. This sandy, or siliceous, matter should never exceed 1.8 cent. (100 grains = 1.8 grains), and even when it is as high as this, it is probably due to extraneous matter.

BEESWAX.

The almost daily convictions obtained for this article render it of the highest importance to be on one's guard in offering it for sale. The complete analysis of beeswax is a thoroughly scientific investigation, as very complex adulterations are now practised. There are two simple tests (both of which, however, can mislead one, when the wax is skilfully adulterated), which will, at least, give some aid to the pharmacist, especially in the case of wax adulterated with paraffin and cerasin. These, it will be remembered, are the adulterations on which practically all the convictions have been obtained, although by no means the only ones in common use. These tests are the melting point and the specific gravity. The melting point is taken in the usual method, and should be from 62°—63° C. The specific gravity is best determined by making up mixtures of spirit and water until a small pellet of the wax, evenly cut and free from air bubbles, just remains in position in the liquid without either sinking or floating. The specific gravity of the mixture of spirit and water is then taken in the specific gravity bottle as usual.

TINCTURE OF IODINE.

The chief requirement in this is the proper amount of free iodine, which should be 11 grains in the fluid ounce Consequently, not less than 21 nor more than 22 grains of pure crystallized hyposulphite of soda should be required for decolorization of the blue color produced on adding a little starch water to the ounce of tincture.

COMPOUND TINCTURE OF CAMPHOR.

"Paregoric without opium" is best detected thus: Dilute 1 fluid dram with proof spirit to 1 fluid ounce. add a few drops of perchloride of iron solution (10 grains in 100 minims). If opium is present a red color is produced. Some idea of the strength of the opium can be got by taking a known strength of opium and diluting till it gives the same tint with the chloride as the solution tested.

The presence of the anise oil in this tincture is shown by the turbidity on diluting with water. Of course, other essential oils will do this as well, but it is unlikely that the oil of anise will be left out and another oil put in.

The benzoic acid is found as follows: Render the tincture alkaline; shake with ether, which dissolves out the camphor and essential oil, and separate this solution. Now acidify to set free the benzoic acid; shake out this with ether, and separate as before. Dry the second ethereal solution, and the benzoic acid will be left.

IODIDE OF POTASSIUM.

The presence of iodate of potassium in the iodide is detected by dissolving the sample in water, adding a little of a solution of tartaric acid, when iodine will be set free and color starch blue, if iodate is present. Ten grains of iodide of potassium should give 14 grains of iodide of silver when the precipitate of the latter, obtained by adding silver nitrate to a solution of the potassium iodide, is dried and weighed.

LARD.

In analyzing this the specific gravity ought to be taken, but as this is a difficult operation for the chemist and druggist with limited apparatus we will omit it.

The chief adulterant is water, and this is sought for thus: Heat the sample for two or three hours on a water-bath. If an ounce is taken it should not lose more than 12 or 13 grains. Mineral substances are sometimes added to aid the incorporation of water. These will be shown by sinking when the lard is melted.

Cotton-seed stearin is detected in the lard by applying the following test: To one dram of the fat add 10 fluid drams of petroleum ether and one drop of strong sulphuric acid. Pure lard will give a straw or faint reddish color, which, after some time, clears and almost disappears altogether, while dark red drops separate. If the cotton-seed stearin is present there is at once blackening, or a dark brown color is produced, and this so remains for a long time.

CREAM OF TARTAR.

The common adulterants of this are starch and phosphate of calcium. The starch is easily detected by boiling with water and adding solution of iodine, with which starch gives a blue color. The phosphate is detected by boiling with very dilute hydrochloric acid and adding solutions of sulphate of magnesia and ammonia, when a white precipitate is given with the phosphate. Some samples have even had bicarbonate of soda added. The effervescence on dropping in water shows this.

PRECIPITATED SULPHUR.

From the old milk of sulphur the precipitated is distinguished by a simple test. Heat a little on the end of a knife in a flame. A residue is left with the old variety, the pure precipitated volatilizes completely.

ALCOHOL IN TINCTURES.

The amount of alcohol in tinctures is important. For most, this is shown thus: Take a certain number of fluid ounces, distil off the alcohol, and make the distillate up to the original volume, take its specific gravity, and compare with a table of alcohol and water specific gravities.

If essential oils or very volatile substances are present in the tincture, a little modification must be adopted; for instance, where benzoic acid is present, alkali can be added and then distillation effected. If essential oils are present in respectable quantities, add calcium chloride in strong solution and a little sodium phosphate. The precipitate thrown down brings the oil with it. After this distil as before.

PEPPER.

The great test for this is the total amount of ash got by burning, and the amounts soluble in water and hydrochloric acid.

Black pepper should yield total ash....	4—5 p c.
White pepper should yield total ash...	1.2 "
Black pepper should yield ash soluble in water.....	2—3 "
White pepper should yield ash soluble in water..	.5—.6 "
Black pepper should yield insoluble ash	.3—.5 "
White pepper should yield insoluble ash	.1—.3 "

The solvents are first water, then hydrochloric acid. The amount soluble in hydrochloric acid is got by difference between the total ash and the sum of the other two items given above.

METHYLATED SPIRIT IN TINCTURES.

Distil off the alcohol from the tincture, add to it a little bichromate of potassium and sulphuric acid, and digest for two hours in the cold. Dilute to ten times its volume. Distil off half; make slightly alkaline with sodium carbonate; boil down to half; acidify with acetic acid, and add silver nitrate solution. Heat just to boiling. Pure spirit gives a light brown color, methylated spirit gives a very dark brown color and silver mirror on the sides of the tube.

SPIRIT OF NITROUS ETHER.

The following is reprinted from the *Diary*, which will be found to contain other useful tests: Spt. eth. nit. should have a specific gravity of 0.840 to 0.845; should not effervesce, or but feebly, when shaken up with bicarbonate of soda. The presence of aldehyde is indicated by a brown coloration on heating with caustic potash. It should yield not much less than five times its volume of the gas on keeping. The spirit may be tested with accuracy by the nitrometer, or the following simple method. Prepare two solutions as follows:

No. 1.

℞ Sodii hyposulph ..... gr. iv.
Sodii chloridi..... gr. xl.
Potass. iodid..... gr. xx.
Aq. ad..... ... ... ʒ ii.

Solve.

No. 2.

℞ Spt. æther. nitros..... ʒ ii.
Acid. sulph. dil..... ʒ i.

Misce.

Place No. 1 solution in a small porcelain dish; a two-ounce ointment pot will answer the purpose. Pour into this ʒiss. of No. 2 solution, and stir till effervescence ceases. The mixture should be free from iodine color; if not so, the spirit of nitre is stronger than should be used; if no iodine has remained free after the effervescence has passed off, add another ʒss. of the No. 2 solution. This should now produce a permanent brown color if the spirit of nitre is up to its normal strength. If a second addition of ʒss. (total ʒiiss.) is required, it is below its normal, but not unfit for use, but if this second ʒss. fails to produce a permanent brown color, the spirit of nitre is too weak to be sanctioned.

LIME WATER.

This should contain 10 grams of lime in the pint. Two fluid ounces, tinged blue with litmus, should require the whole of one ounce aqueous solution, containing 2¼ grains of pure crystallized oxalic acid to change the color to a red.

TINCTURE OF OPIUM.

Distil off the spirit from an ounce of the tincture, and dilute the remainder to double its volume with distilled water. Add freshly slaked lime (15 grains), shake well, and stand for half-an-hour, stirring occasionally. Filter and add 36 grain measures (40 minims) of S.V.R., and 166 grain measures (180 minims) of ether, and shake. Next add 13 grains of chloride of ammonium, shake well and frequently during an hour, and set aside for 12 hours; now follow the B.P. directions under "opium," beginning with the counterbalancing of the filters, taking, however, 66 grain measures (72 minims) of ether instead of 200: 33 grain measures (36 minims) instead of 100; and 66 grain measures of water (72 minims) as maximum limit, with which to wash the bottle, instead of 200. The crystals obtained should weigh 3.3 (roughly, 3½ grains).—*British and Colonial Druggist.*

The Stability of Sublimate Solutions.

Vignon pointed out some time ago that 1 per mille solutions of mercuric chloride rapidly decreased in strength, and lost, therefore, their antiseptic power in contact with the air. Tanret now urges that pure air has nothing to do with the matter, and does not cause any precipitation of the mercury. Vignon has taken up the subject again, and now demonstrates that Tanret's conclusions are correct, and that the decomposition is due to traces of alkali, derived either from the water or the glass in which the solutions were kept, and to dust and organic impurities from the air.—*Bulletin.*

Wintergreen Oil.

The artificial methyl-salicylate is constantly gaining ground, although its opponents in America are doing all that lies in their power to bring it into discredit. As an instance of this, we may mention that an attempt was recently made to create a panic among the manufacturers of chewing gum, who use a considerable quantity of the oil, by spreading about a report that the use of the artificial product caused inflammation of the eyes. It was stated that the "chemicals" contained in the synthetical oil were the source of the mischief. Any one who has the least idea what so-called natural and artificial wintergreen oil are will at once agree with us that such statements are the outcome of cross ignorance.

According to the new U.S.P., both the genuine wintergreen oil—which is hardly to be met with any longer in commerce—and the oil prepared from sweet birch, consist almost entirely of methyl-salicylate, presupposing always that both are pure, and not, as is frequently the case, adulterated. Now, can there be any doubt that methyl-salicylate is the only active constituent of both oils? If, then, in view of the fact that the two natural oils are scarcely to be met with in commerce in a state of reliable purity, a pure methyl-salicylate, prepared from pure salicylate acid as used daily in medicine—that is to say, a product of definite chemical composition, $CH_3C_7H_5O_3$—is recommended, the question arises. How is it possible that any one with the least inkling of chemistry can talk of "noxious chemicals" which are said to be present in wintergreen oil. It is impossible to argue against such foolish assertions as are palmed off upon the American consumer.—*Schimmel's Report.*

Bismuth Oxysalicylate.

By D. B. Dott.

This salt is usually simply described as bismuth salicylate, and there is probably no objection to the practice, as the normal salt (if it exists) is immediately decomposed by water into the basic salt and free acid, so that there is little likelihood of it obtaining a place in medicine. The formula of the basic salt is $BiC_7H_5O_3(OH)_2$, or $BiO.C_7H_5O_3.H_2O$). This salicylate has within recent years come considerably into demand for the treatment of gastric catarrh and some intestinal disorders. Like most of the basic salts of bismuth, it is not perfectly white, but possesses a perceptibly grayish hue. It should yield mere traces to ether. This is a most important test.

I have examined a sample commended on account of its whiteness, which gave 47.23 per cent. to ether. Such a salt is irritating and objectionable. When dissolved in two or three parts of boiling hydrochloric acid, it should yield plenty of crystals on cooling. On complete ignition there should remain 61.31 per cent. of oxide, or very near it. If any of the oxide becomes reduced to metal by the ignition, it must, of course, be oxidized by nitric acid or otherwise. The salt must be free from chloride and nitrate, which it is very liable to contain when prepared by the method of double decomposition usually recommended. I have tried the most approved processes of this kind, but with quite unsatisfactory results. Addition of glycerin, of sodium chloride, and of ammonium chloride has been recommended to prevent precipitation of basic salt of the stronger acid. Causse has given detailed instructions for the preparation of the salicylate, using a large proportion of sodium chloride to prevent formation of oxychloride of bismuth. If the figures as given in the "Year Book" are correct, the amount of hydrochloric acid is insufficient to dissolve the oxide (40 c.c. acid to 35 grammes oxide of bismuth). However, I have followed the process exactly, and also tried some obvious modifications of the same, with the result that oxychloride was invariably present in very considerable quantity, salicylate being correspondingly deficient.

In one experiment a large amount of uncombined salicylic acid was found in the product. In the experiment, which was conducted exactly as described in the abstract so far as that could be understood, the resulting compound contained 0.2 per cent. free salicylic acid, and left 94.5 per cent. on ignition, an amount which is far in excess of the proper quantity. These experiments tend to explain the defects of some of the preparations found in the market, and shows the necessity for testing this salt, which will probably take a permanent place in the "materia medica." The tests above described will be found sufficient to practically indicate the purity of the preparation.—*Pharmaceutical Journal and Transactions.*

Peyotline, a New Alkaloid.

At a recent meeting of the Berlin Physiological Society Professor L. Lewis gave an account of some experiments made with an alkaloid obtained from a North Mexican cactus called "Peyotl," which *Nature* briefly reports. This plant has an intoxicating action, and in large doses produces sleep and a state of nervous excitation accompanied by a so-called "power of prophesying," similarly attributed to the sulphurous exhalations of the temple at Delphi. Small doses of the alkaloid when given to frogs produced tetanic cramps and a greatly increased reflex irritability, analogous to strychnine, but with this difference—that by carefully apportioning the dose the effects were permanent for several days. Professor Lewin regarded the new alkaloid as specially adapted to further the study of the nature of tetanus. He further stated that he has found alkaloids with powerful actions in many species of *Cactus* hitherto regarded as harmless by botanists, notably one closely resembling curare.—*Chemist and Druggist.*

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Wine of the Extract of Cod Liver

Sold by all first-class Chemists and Druggists

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This Wine of the Extract of Cod Liver, prepared by M. CHEVRIER, a first-class Chemist of **Paris**, possesses at the same time the active principles of Cod Liver Oil and the therapeutic properties of alcoholic preparations. It is valuable to persons whose stomach cannot retain fatty substances. Its effect, like that of Cod Liver Oil, is invaluable in Scrofula, Rickets, Anæmia, Chlorosis, Bronchitis, and all diseases of the Chest.

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The beech-tree Creosote checks the destructive work of **Pulmonary Consumption**, as it diminishes expectoration, strengthens the appetite, reduces the fever, and suppresses perspiration. Its effect, combined with **Cod Liver Oil**, makes the **Wine of the Extract of Cod Liver with Creosote** an excellent remedy against pronounced or threatened **Consumption.**

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Formulary.

ANTISEPTIC DRESSING FOR WOUNDS.

℞ Hamamelis Extract.....3iv
Glycerine.....3ii
Acid Carbolic.....gttxii.

GUAIACOL WINE.

Guaiacol, crystallized.....150 grains.
Sherry wine.....2 pints.

Mix and dissolve.

OINTMENT FOR CHAPPED HANDS.

Menthol.....gr. xv.
Salol.....gr. xxx.
Ol. olivæ.....3ss.
Lanolini.....3iss.
M.

Apply night and morning, rubbing in well.

BUTTER OF PHOSPHORUS.

The *Bulletin de Pharmacie* suggests the following as a substitute for cod-liver oil in hot weather:

Fresh butter.....17½ ounces.
Potassium iodide.....4 grains.
Potassium bromide.....15 grains.
Sodium chloride.....2 drams.
Phosphorus.....¼ grain.

About one-third of an ounce is to be taken daily, spread on bread.—*National Druggist.*

AROMATIZED COD-LIVER OIL.

Dietrich gives the following formula for aromated cod-liver oil:

Essence of lemon.....50 parts.
Essence of neroli.....20 parts.
Essence of English peppermint.....10 parts.
Vanilline.....1 part.
Conmarin.....1-10 part.
Cod-liver oil.....10,000 parts.

Dissolve the conmarin and vanilline in the essential oils, with the aid of a very gentle heat, and mix the solution with the cod-liver oil.

TOOTH PASTE.

Powdered pumice.....3j.
" cuttle-fish bone.....3iss.
" myrrh.....3iij.
" orris root.....3iiss.
" precipitated chalk.....3vj.
" alum.....3j.
Curd soap.....3viij.
Glycerine.....3xij.
Rose water.....3x.
Otto of rose.....3j.
Oil of cloves.....3ij.

Shred the soap, mix it with the glycerine, and heat on a water-bath till uniform; then add the water, and mix with the powders, finally adding the perfume.

PASTE FOR VARNISHED SURFACES.

The *British and Colonial Druggist* recommends the folllowing:

Rice starch.....2 ounces.
White glue.....1 ounce.
Acetic acid.....4 drams.
Oil of cloves.....20 minims.

Dissolve the glue in cold water, then boil. Mix the starch with a little cold water and pour into the boiling glue. Finally add the acetic acid and oil of cloves.

VARNISH FOR COPPER.

To protect objects made of copper, and to guard them against oxidation, the *Revue de Chimie industrielle* recommends varnishing them with the following:

Carbon disulphide.....1 part.
Benzine (benzol).....1 part.
Oil of turpentine.....1 part.
Hard copal.....1 part.
Methylic alcohol.....2 parts.

The journal quoted declares this varnish to be very resisting, and to protect the metal perfectly, especially if two or three coats of the varnish or lacquer have been given.—*National Druggist.*

SOLUBLE ESSENCE OF TOLU.

Balsam Tolu.....3 fl. oz.
Alcohol.....6 " "
Glycerine.....12 " "
Water,
Alcohol of each enough to make.....32 " "

Dissolve the tolu in the mixture of the alcohol and glycerine with the aid of heat; then add 12 fl. oz. of water, and set aside to cool. Pour off the milky liquid from the resinous precipitate, rub it with a little powdered pumice, and filter, washing the filter with enough of a mixture of 1 part alcohol and 2 parts water to make two pints.

This is said to make an excellent syrup of tolu when mixed with simple syrup.

LIQUID PATENT LEATHER DRESSINGS.

(1)—Aniline black.....1 part.
Camphor.....2 parts.
Shellac.....24 "
Wood alcohol.....73 "

(2)—Glue.....16 parts.
Logwood (in chips).....32 "
Indigo.....1 "
Tragacanth.....2 "
Glycerin.....16 "
Vinegar.....128 "
Water.....64 "

Boil, strain, and bottle.

(3)—Shellac.....2 parts.
Ammonia water.....1 "
Water.....6 "
Aniline black.....to color.
Water.....to make 16 parts.

Boil the first three ingredients together, until the shellac is dissolved; then add the aniline dye and sufficient water to make a pint.

Hager gives the following formula:

Gallic acid.....2 parts.
Borax.....2 "
Extract logwood.....1 "
Aniline black.....4 "
Ammonia water.....4 "
Hot water.....20 "
Shellac varnish.....800 "

The shellac varnish is prepared as follows:

Borax.....2 parts.
Rain water.....45 "
Powdered shellac.....6 "

Heat the borax and water to boiling, and add the shellac in divided portions, stirring well all the while; when cold, strain.—*Merck's Market Report.*

A New Ointment Base.

Eggert and Haeckel, of Berlin, are introducing a new basis for ointments into the trade, under the name of myronin, which is claimed to possess many advantages. Eggert gives the following account of its composition: All fats that contain fatty acids and glycerine combined are liable to rancidity. Fatty or waxy bodies, in which the fatty acids are combined with higher alcohols, keep far better, and are not liable to rancidity to any extent. Such alcohols are cholesterin, ceryl, myricyl, and dodecatyl alcohols. Cholesterin is found to a certain extent in wool-fat, but the relatively difficult purification, etc., render it somewhat expensive. The vegetable wax of *Copernicia cerifera* contains myricyl alcohol, and certain whale oils, such as doegling oil, contains dodecatyl alcohol. He claims that doegling oil is a very suitable body for an ointment basis on two grounds: (1) That it is not liable to quick rancidity; (2) It is easily absorbed into the tissues, without provoking any irritability. The necessity of finding a suitable method for combining this oil with vegetable wax is obvious, and the following method is that adopted: If the free fatty acids which the wax always contains are neutralized by alkalies, the wax is in such a condition that it will easily mix with considerable quantities of other fats or water. In fact, a preparation in which the wax and water are in proportions of 1 to 5 is of the consistency of soft paraffin. After the wax and the doegling oil have been freed from all albuminoids, and have been purified by filtering and washing, the free acids of the wax are neutralized with weak, hot alkaline carbonate solution in the calculated quantity. Doegling oil is then added in sufficient quantity to give the required consistency, as found by experience, and the whole is mixed to a homogeneous mass by mechanical means. The normal product contains 12.5 per cent. of water, but this can be raised or lowered at will. —*British and Colonial Druggist.*

Purification of Ether.

M. Eckenberg states that approximately pure ether for analytical purposes can be obtained from commercial ether by adding to the latter 5-10 per cent. of a liquid paraffin, that boils above 300° C., and distilling at 40° to 50°. The alcohol and oxidation products are retained in the retort by the paraffin, whilst the water, if much be present, will form a layer beneath the latter. Acids and other objectionable impurities may be removed by this method which is also applicable for purifying chloroform, acetone, etc. Subsequent heating to 120° expels the impurities from the paraffin, and renders it fit for further use.—*Chem. Zeit.*

A Strike of Doctors.—Five hundred medical men in Hungary have threatened to go on "strike." They want better State control and higher fees.

Photographic Notes

Mounting Difficulties.—A few days ago I stepped into an amateur's workroom, and found him sweating over mounting difficulties. The mount laid on the table, carefully pencil-marked to indicate where the print should come, and my friend was busy at work applying glue to the edges of the print, "so that it would stay where it was placed." Now, there are several reasons why this is a bad procedure. Glue is hard to spread, and sets very quickly, but it also often contains substances injurious to the print, to say nothing of the fact that it soon decomposes and degrades the print. As a mountant, nothing that I know of is better than thick starch for albumen prints, and starch and fine flour for aristos. In making it up I use an aluminium cup, which does not rust, however long the starch may be left in it. A few drops of oil of cloves will preserve it for a week. I always strain the starch through a salt bag, and it should be thick enough to require considerable pressure to force it through. Now the prints are drawn out of the last wash water on to a large pane of glass, and allowed to drain for a few moments. I then take a towel and roll it up compactly, and roll it over my prints, forcing the moisture out, which is absorbed by the towel. This provides a squeegee which is so flexible that it enters every indenture of the uneven pile of prints. It also dries the prints so that they readily take the paste. My paste brush has the bristles set in hard rubber, which holds them securely. The mountant must be thoroughly rubbed into the pores of the paper. Now comes the rub of placing them on the mount. If it is cabinets, you soon accustom yourself to place them just so far from the sides and top, and you mount so near the edge that little difficulty is experienced. In case of plain mounts, 10 by 12, or larger, greater care is needed, as, for the best effects, you must have plenty of margin around your prints. I will mention two methods. Instead of a glass plate place your prints on oilcloth to receive the paste. This can be readily washed off and rolled up, and laid away when not in use. Now cut a piece of stiff brown paper the size of the mounts to be used, and draw on it in pencil mark an outline the exact size of the print, and just where you will want it on the mount. Now lay the print, face down, on the brown paper inside this outline. The pasted side is up. Stand the mount exactly on the upper edge of the paper, and gradually lower it, and gently press over the print. Now lift up your mount, and then the print is in its place. But the better way is to train the eye to the exact measurement of distance. Take up your pasted print and hold it in both hands, being careful not to touch the corners nor the edges. Hold it before you over the mount, about an inch from its surface, note carefully; is it the proper distance from the upper edge, is it parallel with the upper edge, is it equal distance from the two outer edges? If so, gently lower. Should you find a slight mistake, slip the print into place without delay. In the final rubbing down I use a brown, bibulous paper, which can be used over and over again, and does not wrinkle nor curl up. That's all there is of it. Above all, let me say to the amateur, train the eye fight clear of makeshifts. Photography should become more and more a thing of yourself. A trained eye, a trained hand, and brain and soul, even, for I believe that is where the feeling of art resides. Your photography will bless you in proportion as it makes you more perfect.—*J. H. Bates, in Photography.*

Something New in Photography.—It has been observed that when formic aldehyde is added to the gelatine in solution a compound is formed which is insoluble in water, but which can be melted by heat and made into films. This peculiarity has been taken advantage of by Schering's works, and two patents have been obtained in England by Mr. August Zimmerman to cover the manufacture of a new photographic film. The consists of a layer of the formalated gelatine, upon which is spread the ordinary color sensitive gelatine emulsion, or the hardened gelatine may itself be sensitized or dipped in emulsion. It either case it is obvious that the invention is one of great utility, as the gelatine film can be used for all the purposes for which paper films are now used.—*Chemist and Druggist.*

Photo-engraving with Silver Salts.—At the last meeting af the Royal Photographic Society, Mr. Leon Warnerke gave a demonstration of a process for photo-etching, partly dependent on sensitive silver salts instead of bichromated gelatine. A negative of the original is taken in the usual way through a screen. After the negative is developed and dried, it is given a safe edge. The next step in the process is to place the negative in contact with a sheet of paper coated with gelatine pigmented with a sensitive silver salt, such as the bromide, and making an exposure, the image being developed with pyro-ammonia. After development, the image is pressed or squeegeed in contact with a copper plate previously polished with snakestone and charcoal, the paper backing and the soluble gelatine, together with the unaltered silver salt, being removed by hot water in the same manner as a carbon image is developed. After washing and treatment with alcohol, the plate, when dried, is ready for etching with perchloride of iron in the ordinary way. The process, Mr. Warnerke pointed out, might be adapted to photogravure purposes by commencing with a transparency instead of a negative, and transferring the developed negative in the plate grained with asphaltum, the subsequent operations being as usual. The process is an outcome of the negative paper process brought out by Mr. Warnerke in 1880, and described by him in the paper he read before the society in 1886.—*Journal of the Society of Arts.—Phar. Journal.*

Photographic Contrivances.—J. A. White says he once chanced to place a common eye-glass lens in front of the diaphragm of a single combination lens, and expected to be surprised at the distortion of the picture. The resulting image was, of course, less in size, but he could discover no other difference in the two images. An interior made with that combination of an achromatic landscape lens of eleven-inch focus and an eye-glass lens of seventeen-inch focus showed no curved lines, and the title on a sheet of music taken at a distance of fifteen feet showed up clear and distinct; nor could he distinguish any diffraction of colors. It is best, he states, to have a set of multiple foci lenses, but with the aid of a pasteboard tube (made by rolling up a sheet of paper), his original achromatic lens, a positive spectacle lens of sixteen inches and a negative lens (for near-sightness), he has lenses of seven, eleven, fourteen, and twenty inches. Usually the original lens is preferable, but there is many a time when trying to compose a view on a small plate that the seven-inch lens, covering a half-size plate, comes in handily, or when a distant view loses all detail with the usual lens the "twenty-inch" is very convenient. A front extension is needed for the camera with the "twenty-inch," but is easily made of pasteboard. The achromatic piece is used in front of the lens with the others behind, and the mounting is easily done. Another contrivance is for taking stereoscopic views with one lens. A front board is fitted with one hole for a lens, the centre of the hole to be 1⅝ inch to one side of the centre of the board and equidistant from top to bottom. In use the lens is in position to command one of the halves. After exposing that half of the plate the slide is replaced in the holder, and the front board is reversed in order to expose the other part of the plate. The camera must be clamped rigid that the plate may not be displaced between exposures.—*Photographic Times.*

Sensitive Coating for Half-tone Etching.—In a late number of the *Photo-Beaton* Mr. Le Page gives a formula which has stood the test of three years, and which he recommends very highly:

Glue clarified (Le Page's)	oz.	2
Water	fl. oz.	2
Ammonium bichromate (Merck's)	gr.	120
Water	fl. oz.	2
Albumen, dried	gr.	120
Water	fl. oz.	4
Chromic acid, c. p.	gr.	10

According to the author this prints quickly, develops easily, and gives every detail there is in the negative; the general results being of a high average.

Some men never learn that they are fools until they have passed the age of activity and usefulness.

Safeguards Against Deterioration of Stock.

By Leon C. Fisk.

A large proportion of the materials which constitute the stock of an average drug store are particularly prone to deterioration, and painstaking pharmacists are required to exercise more than ordinary circumspection to prevent exposure of sensitive pharmaceuticals to pernicious influences. In fact, the art of affording such protection is quite as important as the ability to select drugs and prepare medicines properly.

A complete tabulation of all the chemical and physical changes which can modify and injure pharmaceutical preparations is not within the scope of this article, but it is deemed apposite to mention a few exemplary forms of deterioration which will serve to suggest to the minds of intelligent pharmacists others which can occur from similar causes.

The importance of maintaining a uniform temperature, through day and night, in a pharmacy, is apt to be overlooked Remember that your stock is largely made up of fluid preparations holding chemical substances in solution. These are reasonably permanent at a normal temperature, but as the temperature lowers the solvent power of the menstruum is reduced and precipitation of the less soluble ingredients occurs. Results grow gradually worse as the temperature goes down, until disaster comes in the freezing of aqueous solutions and consequent bursting of bottles.

Change of temperature may also cause loss and annoyance from breakage of demijohns through expansion or contraction of liquid contents. If a demijohn is filled with cold liquid, tightly corked, and subsequently transferred to a warm room or climate, the liquid will expand with rise of temperature and blow out the cork or burst the vessel. Tightly corked demijohns filled with hot liquids frequently collapse under atmospheric pressure as the contents cool and contract. It is, therefore, a safe rule never to fill such large glass containers completely, but rather leave an ample cushion of air to allow for expansion and contraction.

Sunlight can do incalculable damage to chemicals, pharmaceuticals, plush goods and toilet articles in general, unless special precautions are taken to prevent its injurious action. Calomel is not altered by the atmosphere if kept in the dark, but, when exposed to sunlight, it gradually turns gray or black, indicating decomposition. Santonin acquires a yellow color by exposure to sunlight. Silver nitrate becomes gray or black on exposure to sunlight in the presence of organic matter. Sunlight darkens yellow mercurous iodide and yellow mercuric oxide in consequence of their partial reduction. Bright green scales of soluble ferric phosphate and soluble ferric pyrophosphate turn dark on exposure to sunlight. Red mercuric iodide is permanent in the air if kept in the dark, but acquires a brownish tint by exposure to sunlight. Quinine bisulphate readily acquires a deep brownred color on exposure to direct rays of sunlight. Quinine sulphate and quinine hydrochlorate are gradually colored yellow by similar exposure. Ferric salts in solution with sugar are reduced to ferrous salts by action of sunlight. Many volatile oils are injured by prolonged exposure to atmospheric oxygen and sunlight, while some are eventually rendered worthless and entirely unfit for use. Perfumes exposed to direct rays of sunlight rapidly degenerate and soon acquire a rank odor; it is apparent, therefore, that they should not be habitually presented in showwindows.

Drugs and chemicals are frequently injured by absorbing moisture or carbonic acid, or both, from the atmosphere. Solids that absorb moisture from the air are called *hygroscopic*. Solids which absorb moisture from the air, and become liquid, or dissolve therein, are called *deliquescent*. Crystalline substances which part with their water of crystallization on exposure to air, thereby losing their crystalline form, are called *efflorescent*.

On exposure to atmosphere, caustic soda absorbs water and is liquefied, subsequently solidifying and becoming efflorescent. This change is caused by the absorption of carbonic acid and the crystallization and efflorescence of the sodium carbonate thus formed. Potassa also deliquesces and absorbs carbonic acid under similar exposure. Chlorinated lime absorbs moisture and carbonic acid from damp atmosphere, with loss of valued properties and formation of a plastic mass; it should, therefore, be kept in a closely covered jar and stored in a cool, *dry* place.

Lime becomes "air slacked" by exposure to ordinary atmosphere, absorbing water and carbonic acid, and being converted into hydrate and carbonate of calcium. Carbonate of potassium is extremely deliquescent in humid air, forming a colorless or yellowish alkaline liquid of an oily appearance. Chloride of zinc, acetate of potassium, and chloride of calcium are also very deliquescent salts which require special protection.

Powdered extracts should be carefully protected from exposure to moist air, in small bottles with mouths wide enough to admit the blade of a spatula. Selected corks should be used, and the bottles should be kept in a cool place—never in a current of hot air from a stove or furnace.

It is particularly essential that granular effervescent salts be kept in securely corked bottles, for, if access of air be permitted, sufficient moisture will soon be absorbed to cause the acid to act upon the carbonated base and gradually liberate carbonic acid. The valued effervescent properties of the preparations will thus be irretrievably lost.

If clear lime water be exposed to the influence of air, a pellicle of calcium carbonate is formed upon the surface; this film sinks to make room for another, until, finally, nearly all the lime is rendered insoluble and the supernatant liquid is comparatively valueless. It is essential, therefore, that a goodly excess of lime be kept in the bottom of the lime-water bottle to maintain the strength of the solution. The container should be kept in a cool place, as cold water dissolves more lime than hot water.

Solution of lead subacetate is decomposed on exposure to air, or on being mixed with water containing air in solution, a white precipitate of insoluble carbonate of lead being formed. When freshly made, it should be divided into two- or four-ounce bottles, kept full and tightly sealed until required for use. Liquor potassa and liquor soda also possess marked affinity for carbonic acid, and should be preserved in securely-stoppered bottles.

Quinine sulphate, like some other alkaloidal salts, does not "lose strength" by exposure to ordinarily dry atmosphere, but rather loses water of crystallization by evaporation and becomes correspondingly richer in quinine. It should be borne in mind also that effloresced carbonate of sodium is stronger than the normal crystallized salt in proportion to the amount of water it has lost. Sulphate of soda, commonly called Glauber salt, contains more than half its weight of water of crystallization, nearly all of which is dissipated on exposure to dry atmosphere, leaving a dry, white powder which is correspondingly richer salt. Sulphate of zinc also effloresces slowly in dry air.

Atmospheric oxygen causes many undesirable changes in chemicals and pharmaceuticals. On exposure to air the color of syrup iodide of iron slowly changes to yellow and subsequently to brown, the change of color proceeding from the exposed surface downward. This color can sometimes be bleached and the syrup restored to its original appearance, but here is a case where an ounce of prevention is worth a pound of cure. Keep the syrup in small bottles, full, and well corked. Syrup bromide of iron is, of course, similarly affected.

Certain fixed oils will remain unchanged for a great length of time in air-tight vessels, but, when exposed to the atmosphere, they attract oxygen and ultimately become concrete. The tendency of linseed oil to dry or harden on exposure to air is typical in the extreme. Exposed to the air, lard absorbs oxygen and becomes rancid; it should, therefore, be kept in well-closed vessels, or procured fresh when required for use; in the rancid state it irritates the skin, and sometimes exercises an injurious reaction upon substances mixed with it.

Phosphorus absorbs oxygen from the atmosphere with sufficient avidity to cause rapid combustion and necessitate its preservation under water. Prolonged exposure to air gradually transforms light green ferrous carbonate into the familiar red-brown "sub-carbonate of iron," which is ultimately little more than ferric oxide,

and can undergo no further change from similar influences.

Not content with ravaging the pharmacist's stock, this belligerent element exhibits a remarkable propensity, in the presence of moisture, for rusting his spatulas and other metallic utensils.

Serious pecuniary loss by evaporation of volatile solids like camphor results from exposure of these substances in ordinary open wooden drawers. Menthol is extremely volatile, and should, therefore, be kept in securely corked bottles to prevent loss. Exposed to the air, carbonate of ammonium partially volatilizes, becomes opaque, and crumbles into a white powder. Iodine is most advantageously kept in securely closed glass receptacles, most ordinary wares are liable to be attacked or permeated by it. Chloral evaporates slowly when exposed to dry atmosphere. Powdered drugs which depend upon volatile constituents for medicinal virtue, like cinnamon, cloves, orris root, and valerian, should, so far as practicable, be kept in bottles, or some other comparatively air-tight container

Stronger water of ammonia should be kept in strong, glass-stoppered bottles, which should be stored in a cool place and opened with extreme care. When warm, the liberated gas frequently forces the stopper out with considerable violence, and many accidents resulting in injury to the sight of operators are on record.

Pressed roots and herbs are more convenient to handle, occupy less space, and are better preserved than crude drugs in bulk form. Furthermore, the danger of error is materially reduced by handling neatly pressed, wrapped, and labelled packages.

Examine your stock of dandelion and rhubarb roots occasionally to be sure that purchasers do not find worms in them and form unfavorable impressions of you and your business methods.

Cantharides should be thoroughly dried and kept in securely closed containers. The vapor of chloroform quickly kills insects which infest cantharides, and their destruction can be accomplished by placing a small quantity of chloroform in a wide-mouth bottle, or other open vessel, upon the surface of the infested drug and securely closing the container. The heavy chloroform vapor will then gradually sink through the drug and destroy the insects.

The modern method of marketing chlorinated lime in hermetically sealed parcels is not only a source of convenience, but affords protection which serves to prevent loss of the loosely combined chlorine upon which the value of the preparation as a disinfectant is almost entirely dependent. The disagreeable odor of chlorine which clings to the hands of the operator is also avoided.

Charcoal is used in medicine chiefly for its absorbent and disinfectant properties. Owing to its absorbent powers, it should not be unnecessarily exposed to the atmosphere of a laboratory or pharmacy, lest it be thus rendered unfit for medicinal purposes.

Fine sponges should be kept in a closed show-case or drawer. Carriage and slate sponges, which are frequently allowed to become soiled and lend an untidy appearance to the store by rolling about in a window or on the floor, can be conveniently kept assorted and conspicuously displayed in the wire basket with separate compartments for different sizes.

Oxalic acid should not be kept in paper parcels, since it soon renders the paper fragile, and in being thus scattered about may, by admixture with other drugs, cause loss of life. Owing to its external resemblance to Epsom salt, and its very poisonous nature, the substances should not be kept in similar drawers. The practice of keeping them in containers of different style and safely remote from each other is less likely to lead to accidental confusion.

Remember that heated atmosphere usually accumulates near the ceiling, and preparations subject to injury by exposure to elevated temperature should not be kept on upper shelves. Several cases are on record wherein chlorinated lime, which is known to greedily absorb water and carbonic acid from a humid atmosphere, was put up in securely corked and sealed bottles, which were then placed upon an upper shelf until the heat of summer, or a very warm apartment, had liberated sufficient gas to cause a startling explosion, sometimes followed rapidly by a succession of similar ones and a cloud of dust.

Lard ointments, cerates, and in fact nearly all animal fats, are liable to grow rancid by prolonged exposure to air, this change in many cases being accelerated by heat and light. Every precaution should, of course, be taken to avoid such decomposition; but when rancidity is apparent, preparations should never be dispensed, for, instead of having the mild demulcent properties which constitute their chief value, they become irritant and entirely unfit to serve as vehicles for medicinal substances to be applied to the skin. Ointment jars should invariably be thoroughly cleaned and freed from rancidity before refilling with fresh stock.

With ordinary drug-store arrangement it is scarcely practicable to entirely protect tinctures and fluid extracts from injurious effects of air, light, and changes of temperature, but any provision which tends to prevent precipitation from these causes is commendable. The stock of tinctures should be placed in charge of one capable employé who should be held responsible for its condition. Haste is apt to make serious inroads upon accuracy in preparing pharmaceuticals.

The danger from leaving bottles insecurely corked is apparent when we consider that, if a fluid extract prepared from a menstruum composed of diluted alcohol be exposed to the air in an open vessel, the alcohol will evaporate much more rapidly than the water. By this change of character in the menstruum, certain resinous constituents of the drug frequently become insoluble and are deposited, rendering the fluid more or less turbid, and materially lessening its medicinal value. Collodion loses ether by evaporation, and becomes comparatively worthless.

The deterioration which can occur in a single drug store from causes indicated here command the constant attention of the manager, and much greater is the problem which confronts the wholesale manufacturer, who must prepare a great variety of products in large quantities, to be distributed in the market in all directions, where they are expected to remain unchanged through the extreme variations in temperature which characterize the severe winters in the north, and the torrid summers in the south; and no less injurious is the improper exposure to which pharmaceuticals are frequently subjected in temperate climates.—*Bulletin of Pharmacy.*

To Hide the Taste of Chloral.

Dr. E. Holland calls attention to the fact that the taste of chloral hydrate is effectively masked by lemonade. Two or three drachms of the syrup should be placed in a tumbler with about 2 ounces of water. If to this is added about 2 ounces or so of gaseous (bottled) lemonade, the mixture may be drunk at leisure, and the soporific action of the drug is in no way impaired.—*Medical Bulletin.*

CANADIAN DRUGGIST PRICES CURRENT

Corrected to March 10th, 1895.

The quotations given represent average prices for quantities usually purchased by Retail Dealers. Larger parcels may be obtained at lower figures, but quantities smaller than those named will command an advance.

ALCOHOL, gal	$4 05	$4 25
Methyl	1 90	2 00
ALLSPICE, lb	13	15
Powdered, lb	15	17
ALOIN, oz	40	45
ANODYNE, Hoffman's bot., lbs	50	55
ARROWROOT, Bermuda, lb	45	50
St. Vincent, lb	15	18
BALSAM, Fir, lb	40	45
Copaiba, lb	65	75
Peru, lb	3 75	4 00
Tolu, can or less, lb	65	75
BARK, Barberry, lb	22	25
Bayberry, lb	15	18
Buckthorn, lb	15	17
Canella, lb	15	17
Cascara, Sagrada	25	30
Cascarilla, select, lb	18	20
Cassia, in mats, lb	18	20
Cinchona, red, lb	60	65
Powdered, lb	65	70
Yellow, lb	35	40
Pale, lb	40	45
Elm, selected, lb	20	21
Ground, lb	17	20
Powdered, lb	20	28
Hemlock, crushed, lb	18	20
Oak, white, crushed lb	15	17
Orange peel, bitter, lb	15	16
Prickly ash, lb	35	40
Sassafras, lb	15	16
Soap (quillaya), lb	13	15
Wild cherry, lb	13	15
BEANS, Calabar, lb	45	50
Tonka, lb	1 50	2 75
Vanilla, lb	6 00	7 50
BERRIES, Cubeb, sifted, lb	30	35
powdered, lb	35	40
Juniper, lb	7	10
Ground, lb	12	14
Prickly ash, lb	40	45
BUDS, Balm of Gilead, lb	55	60
Cassia, lb	25	30
BUTTER, Cacao, lb	75	80
CAMPHOR, lb	60	68
CANTHARIDES, Russian, lb	1 40	1 50
Powdered, lb	1 50	1 60
CAPSICUM, lb	25	30
Powdered, lb	$ 30	$ 35
CARBON, Bisulphide, lb	17	18
CARMINE, No. 40, oz	40	50
CASTOR, Fibre, lb	20 00	20 00
CHALK, French, powdered, lb	10	12
Precip., see Calcium, lb	10	12
Prepared, lb	5	6
CHARCOAL, Animal, powd., lb	4	5
Willow, powdered, lb	20	25
CLOVE, lb	16	17
Powdered, lb	17	18
COCHINEAL, S.G., lb	40	45
Creosote, Wood, lb	75	80
COLLODION, lb	2 50	2 75
Cantharidal, lb	40	45
CONFECTION, Senna, lb	2 00	2 50
Creosote, Wood, lb	25	30
CUTTLEFISH BONE, lb	10	12
DEXTRINE, lb	1 50	1 60
DOVER'S POWDER, lb	75	80
ERGOT, Spanish, lb	90	1 00
Powdered, lb	2 00	2 10
Ergotin, Keith's, oz	13	14
EXTRACT, Logwood, bulk, lb	14	17
Pounds, lb	15	20
FLOWERS, Arnica, lb	55	60
Calendula, lb	30	35
Chamomile, Roman, lb	40	45
German, lb	20	22
Elder, lb	12	15
Lavender, lb	1 60	2 00
Rose, red, French, lb	25	30
Rosemary, lb	75	80
Saffron, American, lb	1 00	1 25
Spanish, Val'a, oz	75	80
GELATINE, Cooper's, lb	35	40
French, white, lb	14	16
GLYCERINE, lb	3 00	3 25
GUARANA	3 25	3 50
Powdered, lb	18	20
GUM ALOES, Cape, lb	30	50
Barbadoes, lb	65	70
Socotrine, lb	40	45
Asafœtida, lb	65	70
Arabic, 1st, lb	75	85
Powdered, lb	40	45
Sifted sorts, lb	25	30
Sorts, lb	50	1 00
Benzoin, lb	9	20
Catechu, Black, lb	1 20	1 25
Gamboge, powdered, lb	50	1 00
Guaiac, lb	70	75
Powdered, lb	1 25	
Kino, true, lb		
Myrrh, lb	$ 45	$ 48
Powdered, lb	55	60
Opium, lb	4 25	4 50
Powdered, lb	6 00	6 50
Scammony, pure Resin, lb	12 50	13 00
Shellac, lb	45	48
Bleached, lb	45	50
Spruce, true, lb	30	35
Tragacanth, flake, 1st, lb	90	1 00
Powdered, lb	1 10	1 15
Sorts, lb	45	75
Thus, lb	8	10
HERB, Althea, lb	27	30
Bitterwort, lb	27	30
Burdock, lb	16	18
Boneset, ozs, lb	15	17
Catnip, ozs, lb	17	20
Chiretta, lb	25	30
Coltsfoot, lb	20	38
Feverfew, ozs, lb	53	55
Grindelia robusta, lb	45	50
Hoarhound, ozs., lb	17	20
Jaborandi, lb	45	50
Lemon Balm, lb	38	40
Liverwort, German, lb	38	40
Lobelia, ozs, lb	15	20
Motherwort, ozs, lb	20	22
Mullein, German, lb	17	20
Pennyroyal, ozs, lb	18	20
Peppermint, ozs., lb	21	25
Rue, ozs., lb	30	35
Sage, ozs., lb	18	20
Spearmint, lb	21	25
Thyme, ozs., lb	18	20
Tansy, ozs., lb	15	18
Wormwood, oz	20	22
Yerba Santa, lb	38	44
HONEY, lb	13	15
HOPS, fresh, lb	20	25
INDIGO, Madras, lb	75	80
INSECT POWDER, lb	25	28
ISINGLASS, Brazil, lb	2 00	2 10
Russian, true, lb	6 00	6 50
LEAF, Aconite, lb	25	30
Bay, lb	18	20
Belladonna, lb	25	30
Buchu, long, lb	50	55
Short, lb	20	22
Coca, lb	35	40
Digitalis, lb	15	20
Eucalyptus, lb	18	20
Hyoscyamus	20	25
Matico, lb	70	75

Senna, Alexandria, lb	$ 25	$ 30
Tinnevelly, lb	15	25
Stramonium, lb	20	25
Uva Ursi, lb	15	18
LEECHES, Swedish, doz	1 00	1 10
LICORICE, Solazzi	45	50
Pignatelli	35	40
Grasso	30	35
Y & S—Sticks, 6 to 1 lb., per lb.	27	30
" Purity, 100 sticks in box	75	75
" Purity, 200 sticks in box	1 50	1 50
" Acme Pellets, 5 lb. tins	2 00	2 00
" Lozenges, 5 lb. tins	1 50	1 75
" Tar, Licorice, and Tolu, 5 lb. tins	2 00	2 00
LUPULIN, oz	30	35
LYCOPODIUM, lb	70	80
MACE, lb	1 20	1 25
MANNA, lb	1 60	1 75
Moss, Iceland, lb	9	10
Irish, lb	9	10
MUSK, Tonquin, oz	46 00	50 00
NUTGALLS, lb	21	25
Powdered, lb	25	30
NUTMEGS, lb	1 00	1 10
NUX VOMICA, lb	10	12
Powdered, lb	25	27
OAKUM, lb	12	15
OINTMENT, Merc., lb. ½ and ½	70	75
Citrine, lb	45	50
PARALDEHYDE, oz	15	18
PEPPER, black, lb	22	25
Powdered, lb	25	30
PITCH, black, lb	3	4
Bergundy, true, lb	10	12
PLASTER, Calcined, bbl. cash	2 25	3 25
Adhesive, yd	12	13
Belladonna, lb	65	70
Galbanum Comp., lb	80	85
Lead, lb	25	30
POPPY HEADS, per 100	1 00	1 10
ROSIN, Common, lb	2½	3
White, lb	3½	4
RESORCIN, white, oz	25	30
ROCHELLE SALT, lb	25	28
ROOT, Aconite, lb	22	25
Althea, cut, lb	30	35
Belladonna, lb	25	30
Blood, lb	15	16
Bitter, lb	27	30
Blackberry, lb	15	18
Burdock, crushed, lb	18	20
Calamus, sliced, white, lb	20	25
Canada Snake, lb	30	35
Cohosh, black, lb	15	20
Colchicum, lb	40	45
Columbo, lb	20	22
Powdered, lb	25	30
Coltsfoot, lb	38	40
Comfrey, crushed, lb	20	25
Curcuma, powdered, lb	13	14
Dandelion, lb	15	18
Elecampane, lb	15	20
Galangal, lb	15	18
Gelsemium, lb	22	25
Gentian or Genitan, lb	9	10
Ground, lb	10	12
Powdered, lb	13	15
Ginger, African, lb	18	20
Po., lb	20	22
Jamaica, bleh'd., lb	27	30
Po., lb	30	35
Ginseng, lb	3 00	3 25
Golden Seal, lb	75	80
Gold Thread, lb	90	95
Hellebore, white, powd., lb	12	15
Indian Hemp	18	20
Ipecac, lb	1 30	1 50
Powdered, lb	1 60	1 70
Jalap, lb	55	60
Powdered, lb	60	65
Kava Kava, lb	40	90
Licorice, lb	12	15
Powdered, lb	13	15
Mandrake, lb	13	18
Masterwort, lb	16	40
Orris, Florentine, lb	30	35
Powdered, lb	40	45
Pareira Brava, true, lb	40	45
Pink, lb	75	80
Parsley, lb	30	35
Pleurisy, lb	20	25
Poke, lb	15	18
Queen of the Meadow, lb	$ 18	$ 20
Rhatany, lb	20	30
Rhubarb, lb	75	2 50
Sarsaparilla, Hond, lb	40	45
Cut, lb	50	55
Senega, lb	55	65
Squill, lb	13	15
Stillingia, lb	22	25
Powdered, lb	25	27
Unicorn, lb	38	40
Valerian, English, lb. true	20	25
Virginia, Snake, lb	40	45
Yellow Dock, lb	15	18
RUM, Bay, gal	2 25	2 50
Essence, lb	3 00	3 25
SACCHARIN, oz	1 25	1 50
SEED, Anise, Italian, sifted, lb	13	15
Star, lb	35	40
Burdock, lb	30	35
Canary, bag or less, lb	5	6
Caraway, lb	10	13
Cardamom, lb	1 25	1 50
Celery	30	35
Colchicum	50	60
Coriander, lb	10	12
Cumin, lb	15	20
Fennel, lb	15	17
Fenugreek, powdered, lb	7	9
Flax, cleaned, lb	3½	4
Ground, lb	4	5
Hemp, lb	5	6
Mustard; white, lb	11	12
Powdered, lb	15	20
Pumpkin	25	30
Quince, lb	65	70
Rape, lb	8	9
Strophanthus, oz	50	55
Worm, lb	22	25
SEIDLITZ MIXTURE, lb	25	30
SOAP, Castile, Mottled, pure, lb.	10	12
White, Conti's, lb	15	16
Powdered, lb	25	35
Green (Sapo Viridis), lb	15	25
SPERMACETI, lb	55	60
TURPENTINE, Chian, oz	75	80
Venice, lb	10	12
WAX, White, lb	50	75
Yellow	40	45
WOOD, Guaiac, rasped	5	6
Quassia chips, lb	10	12
Red Saunders, ground, lb	5	6
Santal, ground, lb	5	6

CHEMICALS.

ACID, Acetic, lb	12	13
Glacial, lb	45	50
Benzoic, English, oz	20	25
German, oz	10	12
Boracic, lb	15	16
Carbolic Crystals, lb	18	25
Calvert's No. 1, lb	2 10	2 15
No. 2, lb	1 35	1 40
Citric, lb	50	55
Gallic, oz	10	12
Hydrobromic, diluted, lb	30	35
Hydrocyanic, diluted, oz. bottles doz	1 50	1 60
Lactic, concentrated, oz	22	25
Muriatic, lb	3	5
Chem, pure, lb	18	20
Nitric, lb	10½	13
Chem. pure, lb	25	30
Oleic, purified, lb	75	80
Oxalic, lb	12	13
Phosphoric, glacial, lb	1 00	1 10
Dilute, lb	13	17
Pyrogallic, oz	35	38
Salicylic, white, lb	1 00	1 10
Sulphuric, carboy, lb	2½	2¾
Bottles, lb	5	6
Chem. pure, lb	18	20
Tannic, lb	90	1 10
Tartaric, powdered, lb	30	32
ACETANILID, lb	90	1 00
ACONITINE, grain	4	5
ALUM, cryst., lb	1¾	3
Powdered, lb	3	4
AMMONIA, Liquor, lb., .880	10	12
AMMONIUM, Bromide, lb	80	85
Carbonate, lb	14	15
Iodide, oz	35	40
Nitrate, crystals, lb	40	45
Muriate, lb	12	16
Valerianate, oz	$ 55	$ 60
AMYL, Nitrite, oz	16	18
ANTINERVIN, oz	85	00
ANTIKAMNIA	1 25	1 30
ANTIPYRIN, oz	1 00	1 10
ARISTOL, oz	1 85	2 00
ARSENIC, Donovan's sol., lb	25	30
Fowler's sol., lb	13	15
Iodide, oz	50	55
White, lb	6	7
ATROPINE, Sulp. in ½ ozs. 80c., oz	5 00	5 00
BISMUTH, Ammonia-citrate, oz	35	40
Iodide, oz	50	55
Salicylate, oz	30	35
Subcarbonate, lb	2 25	2 40
Subnitrate, lb	2 00	2 10
BORAX, lb	9	10
Powdered, lb	10	11
BROMINE, oz	8	13
CADMIUM, Bromide, oz	20	25
Iodide, oz	45	50
CAFFEINE, oz	50	55
Citrate, oz	50	55
CALCIUM, Hypophosphite, lb	1 50	1 60
Iodide, oz	95	1 00
Phosphate, precip., lb	35	38
Sulphide, oz	5	6
CERIUM, Oxalate, oz	10	12
CHINOIDINE, oz	15	18
CHLORAL, Hydrate, lb	1 00	1 10
Croton, oz	75	80
CHLOROFORM, lb	60	1 90
CINCHONINE, sulphate, oz	25	30
CINCHONIDINE, Sulph., oz	15	20
COCAINE, Mur., oz	5 75	7 00
CODEIA, ½ oz	80	90
COLLODION, lb	65	70
COPPER, Sulph., (Blue Vitrol) lb	6	7
Iodide, oz	65	70
COPPERAS, lb	1	3
DIURETIN, oz	1 60	1 65
ETHER, Acetic, lb	75	80
Sulphuric, lb	40	50
EXALGINE, oz	1 00	1 10
HYOSCYAMINE, Sulp., crystals, gr.	25	30
IODINE, lb	4 75	5 50
IODOFORM, lb	6 00	7 00
IODOL, oz	1 40	1 50
IRON, by Hydrogen	80	85
Carbonate, Precip., lb	15	16
Sacch., lb	30	35
Chloride, lb	45	55
Sol., lb	13	16
Citrate, U.S.P., lb	90	1 00
And Ammon., lb	70	75
And Quinine, lb	1 50	3 00
Quin. and Stry., oz	18	30
And Strychnine, oz	13	15
Dialyzed, Solution, lb	50	55
Ferrocyonide, lb	55	60
Hypophosphites, oz	25	30
Iodide, oz	40	45
Syrup, lb	40	45
Lactate, oz	5	6
Pernitrate, solution, lb	15	16
Phosphate scales, lb	1 25	1 30
Sulphate, pure, lb	7	9
Exsiccated, lb	8	10
And Potass. Tartrate, lb	80	85
And Ammon Tartrate, lb	80	85
LEAD, Acetate, wh'te, lb	13	15
Carbonate, lb	7	8
Iodide, oz	35	40
Red, lb	7	9
LIME, Chlorinated, bulk, lb	4	5
In pakages, lb	6	7
LITHIUM, Bromide, oz	30	35
Carbonate, oz	30	35
Citrate, oz	25	30
Iodide, oz	50	55
Salicylate, oz	35	40
MAGNESIUM, Calc., lb	55	60
Carbonate, lb	18	20
Citrate, gran., lb	35	40
Sulph. (Epsom salt), lb	1¾	3
MANGANESE, Black Oxide, lb	5	7
MENTHOL, oz	55	66
MERCURY, lb	75	80
Ammon (White Precip.)	1 25	1 30
Chloride, Corrosive, lb	1 00	1 10
Calomel, lb	1 00	1 10
With Chalk, lb	60	65

Business Notices.

As the design of the CANADIAN DRUGGIST is to benefit mutually all interested in the business, we would request all parties ordering goods or making purchases of any description from houses advertising with us to mention in their letter that such advertisement was noticed in the CANADIAN DRUGGIST.

The attention of Druggists and others who may be interested in the articles advertised in this journal is called to the *special consideration* of the Business Notices.

We have pleasure in calling attention to the advertisement of the Royal Oil Company of Toronto, who are offering special lines at close prices. If in immediate need of any of the goods quoted, or will want them shortly, we would advise placing an order at these prices.

Our readers will again recognize the advertisement of the Powell & Davis Co. on another page. Davis' Fly Felts have become a household word throughout the Dominion. The hundreds of bales of Davis' Felts shipped annually to this city alone is sufficient to satisfy any one as to the popularity of Davis' Fly Felts. Powell & Davies are making a reduction in price. See their adv.

We have been using Piso's remedy for catarrh on two cases of long standing, and find it even more effective than it is claimed to be. Each of us have suffered much from catarrh, and had given up a cure after spending large amounts of money for doctors' bills, but now we feel safe to say we expect a permanent cure in a short time; in fact, my catarrh only troubles me a little, and then only when I take a fresh cold. My brother had the worst kind of a case, and the change in him is so great that his friends speak about it, and he tells them that Piso's remedy for catarrh did it.

A. M. ALLEY & Co.,
WM. T. ALLEY, Mgr.
2133 Market St., St. Louis, Mo.

Books and Magazines.

In the March number of *Frank Leslie's Popular Monthly* the wonderful story of the life and inventions of Thomas Alva Edison is set forth, in an article by Henry Tyrrell, with the apparent purpose of contrasting an actual living hero, a modern conqueror of science, with the dark and sinister shadow of Napoleon, as projected anew by the curious contemporary revival of his sanguinary legend. The paper is accompanied with some interesting illustrations, including new portraits of Edison, of his parents, wife, children, and scientific collaborators.

The Delineator for April is called the spring announcement number, and is an excellent specimen of this most popular woman's magazine. Supplementary to the regular issue of patterns there is a timely article on "Bicycling," with illustrations of costumes, which will interest all lovers of the wheel. The papers on "The Voice," which were interrupted by the illness of the author, are resumed; and there is begun a most practical series on "Preservation and Renovation," the first instalment treating of "The Putting Away and Care of Furs." Mrs. Roger A. Pryor writes very entertainingly on "The Etiquette of First Calls and Introductions," giving the accepted usages and formulas; and the second paper on "The Experiences of a Training School Life" increases the interest already felt in the subject.

The American Pharmaceutical Association.

The best reason that can be given for becoming a member of the American Pharmaceutical Association is *because it pays.*

There is no initiation fee. The annual dues are $5, payable after the election of a member, or preferably when application is made. There is no other expense connected with becoming and continuing a member than this $5 per annum.

The American Pharmaceutical Association was founded forty-three years ago, the first meeting being held in the city of Philadelphia on October 6th, 1852.

Its aim was to unite the educated and reputable pharmacists and druggists of America in securing such objects as would elevate pharmacy. By united action it has fully justified the designs of its founders; its roll contains the names of over 1,700 members, drawn from all parts of North America, some of the most distinguished exponents of the art and science having been enrolled.

Its objects appeal to no clique, section, or faction, but it is in the broadest sense a national body. It has from the first encouraged and fostered State Pharmaceutical Associations, receiving delegates from these bodies and extending to them aid, whenever such was sought.

Among the many benefits received in return for annual dues the first to be mentioned is the handsomely bound volume of about 1,000 pages, issued annually gratis to members. It is called "The Proceedings," but this term but remotely expresses the character and value of the work. True, it contains the proceedings of the annual meeting, which are of much interest to members, but it contains, what is of greater value, the interesting discussions and extemporaneous remarks as they drop from the lips of America's most eminent pharmacists and authors, besides all papers read during the meeting, embracing every class of subjects with which the pharmacist is concerned.

Of great practical value to every retail pharmacist is the report on Progress of Pharmacy, which is published in the volume of proceedings. This feature alone will give as great returns as can be derived from five dollars invested in works of reference. The formulas are well worth the price.

With the continued growth of pharmacy in this country it has become of the utmost importance for all organized bodies to work in harmony, and it is earnestly hoped that the members of State Associations will strengthen the parent body, and, in turn, receive the benefits which this powerful organization can bestow, by becoming members of the national association. This may be done by filling out an application, which can be obtained from Dr. H. M. Whepley, 2342 Albion place, St. Louis, Mo., chairman committee on membership. Return the application with $5 to Mr. Geo. W. Kennedy, Pottsville, Pennsylvania, secretary committee. The 1895 meeting will be held in that world-renowned health resort, prosperous city, and hospitable convention place, Denver, Colorado, August 14 to 21.

Reaction of Pure Ether.

H. Thomas (*Berichte d. phil. Gesel.*) finds it impossible to obtain ether that will not restore the color to fuchsin decolorized by sulphurous acid, and show an alkaline reaction with moistened red litmus paper. He comes to the conclusion that these are properties of chemically pure ether, and his opinion is confirmed by the fact that ether obtained in Pictet's laboratory by freezing behaves in a similar manner. The production of bodies thus formed by the action of air on pure ether, such as acetic acid, acetaldehyde, peroxide of hydrogen, etc., is not prevented by the addition of two per cent. of alcohol.

Iodide, Proto, oz	$ 35	$ 40
Bin., oz	25	30
Oxide, Red, lb	1 15	1 20
Pill (Blue Mass), lb	70	75
MILK SUGAR, powdered, lb	30	35
MORPHINE, Acetate, oz	2 00	2 10
Muriate, oz	2 00	2 10
Sulphate, oz	2 00	2 10
PEPSIN, Saccharated, oz	35	40
PHENACETINE, oz	35	38
PILOCARPINE, Muriate, grain	20	22
PIPERIN, oz	1 00	1 10
PHOSPHORUS, lb	90	1 10
POTASSA, Caustic, white, lb	55	60
POTASSIUM, Acetate, lb	35	40
Bicarbonate, lb	15	17
Bichromate, lb	14	15
Birat (Cream Tart.), lb	22	25
Bromide, lb	55	60
Carbonate, lb	12	13
Chlorate, Eng., lb	18	20
Powdered, lb	20	22
Citrate, lb	70	75
Cyanide, lb	40	50
Hypophosphites, oz	10	12
Iodide, lb	4 00	4 10
Nitrate, gran, lb	8	10
Permanganate, lb	40	45
Prussiate, Red, lb	50	55
Yellow, lb	32	35
And Sod. Tartrate, lb	25	30
Sulphuret, lb	25	30
PROPYLAMINE, oz	35	46
QUININE, Sulph, bulk	30	32
Ozs., oz	35	38
QUINIDINE, Sulphate, ozs., oz	16	20
SALICIN, lb	3 75	4 00
SANTONIN, oz	20	22
SILVER, Nitrate, cryst, oz	90	1 00
Fused, oz	1 00	1 10
SODIUM, Acetate, lb	30	35
Bicarbonate, kgs., lb	2 75	3 00
Bromide, lb	63	65
Carbonate, lb	3	6
Hypophosphite, oz	10	12
Hyposulphite, lb	3	6
Iodide, oz	$ 40	$ 43
Salicylate, lb	1 75	1 80
Sulphate, lb	2	5
Sulphite, lb	8	10
SOMNAL, oz	$5	00
SPIRIT NITRE, lb	35	65
STRONTIUM, Nitrate, lb	18	20
STRYCHNINE, crystals, oz	1 00	1 10
SULFONAL, oz	34	35
SULPHUR, Flowers of, lb	2½	4
Pure precipitated, lb	13	20
TARTAR EMETIC, lb	50	55
THYMOL (Thymic acid), oz	55	60
VERATRINE, oz	2 00	2 10
ZINC, Acetate, lb	70	75
Carbonate lb	25	30
Chloride, granular, oz	13	15
Iodide, oz	60	65
Oxide, lb	13	60
Sulphate, lb	9	11
Valerianate, oz	25	30

ESSENTIAL OILS.

OIL, Almond, bitter, oz	75	80
Sweet, lb	50	60
Amber, crude, lb	40	45
Rec't, lb	60	65
Anise, lb	3 00	3 25
Bay, oz	50	60
Bergamot, lb	3 75	4 00
Cade, lb	90	1 00
Cajuput, lb	1 60	1 70
Capsicum, oz	60	65
Caraway, lb	2 75	3 00
Cassia, lb	1 75	1 80
Cedar	55	85
Cinnamon, Ceylon, oz	2 75	3 00
Citronelle, lb	80	85
Clove, lb	1 00	1 10
Copaiba, lb	1 75	2 00
Croton, lb	1 50	1 75
Cubeb, lb	2 50	3 00
Cumin, lb	5 50	6 00
Erigeron, oz	20	25
Eucalyptus, lb	1 50	1 75
Fennel, lb	1 60	1 75
Geranium, oz	$1 75	$1 80
Rose, lb	3 20	3 50
Juniper berries (English), lb	4 50	5 00
Wood, lb	70	75
Lavender, Chiris. Fleur, lb	3 00	3 50
Garden, lb	1 50	1 75
Lemon, lb	2 00	2 10
Lemongrass, lb	1 50	1 60
Mustard, Essential, oz	60	65
Neroli, oz	4 25	4 50
Orange, lb	2 75	3 00
Sweet, lb	2 75	3 00
Origanum, lb	65	70
Patchouli, oz	80	85
Pennyroyal, lb	2 50	2 75
Peppermint, lb	4 25	4 50
Pimento, lb	2 60	2 75
Rhodium, oz	80	85
Rose, oz	7 50	11 00
Rosemary, lb	70	75
Rue, oz	25	30
Sandalwood, lb	5 50	7 50
Sassafras, lb	75	80
Savin, lb	1 60	1 75
Spearmint, lb	3 75	4 00
Spruce, lb	65	70
Tansy, lb	4 25	4 50
Thyme, white, lb	1 80	1 90
Wintergreen, lb	2 75	3 00
Wormseed, lb	3 50	3 75
Wormwood, lb	4 25	4 50

FIXED OILS.

CASTOR, lb	9	11
COD LIVER, N.F., gal	1 25	1 30
Norwegian, gal	2 00	2 10
COTTONSEED, gal	1 10	1 20
LARD, gal	90	1 00
LINSEED, boiled, gal	60	63
Raw, gal	58	61
NEATSFOOT, gal	1 00	1 10
OLIVE, gal	1 30	1 35
Salad, gal	2 25	2 40
PALM, lb	12	13
SPERM, gal	1 75	1 80
TURPENTINE, gal	60	65

Drug Reports.

Canada.

Providence, in the shape of plenty of snow and cold weather, has somewhat interfered with business during the past month, but there is no reason of complaint for this season of the year. The report from those lines of business, in which March 4th is a settling day, has been very favorable this year, and all along the line prospects are bright. These indications will, no doubt, have a set back, pending the elections: therefore it is to be hoped these will come on and be got over speedily, for they have a very unsettling effect on trade.

Bals. Peru is scarce, consequently has advanced fully $1 per pound.

Camphor has made a triple advance lately, and, as the season of large consumption is near at hand, higher prices are looked for.

Cod liver oil (Norway) maintains its high price. It will not likely be lower for a season, with a good prospect of being still higher.

Cocaine muriate higher.

Salicylic acid and salicylate of soda are lower in price.

Green acacias are all tending higher.

Cubeb berries easier.

Castor oil still very low.

Croton oil dearer.

Nitrate silver, another decline.

Acid citric lower; tartaric firmer.

Boschees' German Syrup, and Green's August Flower samples have been withdrawn from the market.

Gibbon's toothache gum has been reduced to 65c. per dozen.

England.

LONDON, February 27, 1895.

There has been some improvement in the drug market during the month, and an extraordinary rise in the price of cod liver oil. Old 1894 oil has doubled in value within a few weeks, and the new season's oil is quoted at a phenomenal figure.

Citric acid is firmer on the spot, as lemon juice is dearer.

Camphor is in a similar position, owing to advance of raw material.

Saffron is moving upward, and cascarilla bark is advancing.

Sulphate of ammonia is lower.

Chlorate of potash continues on the down grade.

Oil of aniseed is also easier.

During the month there has been a complete drop in salicylic acid and salicylates.

Ordinary drugs have been very quiet, and chemicals remain, for the most part, unchanged in value.

Kind Words from Cape Breton.

"I think the druggists of Canada are *deeply indebted to you for the trouble you* take in supplying the trade with such an excellent periodical."

A. D. MACGILLVARY.

Sydney, C.B.