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Canadian Druggist

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

VOL. VII. TORONTO, MAY, 1895. No. 5

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.

New advertisements or changes to be addressed

Canadian Druggist,

20 Bay St. TORONTO, ONT.

EUROPEAN AGENCY:

BROCK & HALIFAX, Aldermary House, Watling St., LONDON, E.C., ENGLAND.

CONTENTS.

Ontario College of Pharmacy.

The final examinations of the Ontario College of Pharmacy have been in progress at the college building during the last few days. One hundred and four candidates presented themselves for examination, ninety-nine of them offering on all subjects. The class this year has been a remarkably good one, and the results, which will be known in the course of a few days, should show a very creditable percentage of successful candidates. The oral examinations were specially thorough, and the papers, which we publish, show the character of the examinations undergone, and should be somewhat of a criterion as to the ability of the students who succeed. Objections have sometimes been taken as to the advisability of publishing these papers, but we believe it is due to the druggists of the province that they should see and judge as to the work being done in the college, and also as to what the graduates' qualifications are who may apply for positions as assistants.

SEMI-ANNUAL EXAMINATIONS, MAY, 1895.

CHEMISTRY.

Examiner:—B. JACKES.

Time allowed, two hours.

1. Write equations illustrating the action of H_2S on: (*a*) Sol Caustic Potash. (*b*) Chlorine Gas. (*c*) Nitric Acid. (*d*) Ammonium Hydrate. Value 9.

2. Illustrate the statement that Sulphur in various compounds apparently plays the part of a Monad, Dyad, Tetrad, and Hexad. Value 11.

3. When Zinc is added to Sulphuric Acid and water Hydrogen is given off, does the gas come from the acid or the water? Give reasons for your answers. Value 10.

4. Write a short note on the chemistry of Iron and a few of its compounds. Value 9.

5. Explain change of yellow Phosphorus to red variety. Give chemical formulæ of Ortho, Pyro, and Meta-Phosphoric Acid, and distinguish by chemical tests. Value 11.

6. Give method of determining the proportions of C and H in an organic compound. Value 9.

7. How much Nitrous Oxide measured at a tem. of 50° C., and 780^{mm} Bar., may be obtained from 250 grams Ammonium Nitrate? Value 11.

8. Describe two methods of Soda manufacture on a large scale, giving by-products.

(*a*) Explain the action of artificial refrigerating machines. Value 10.

9 and 10. Oral examination and recognition of samples. Value 20. Total 100.

PHARMACY.

Examiner:—F. T. HARRISON.

Time allowed, two hours.

1. What menstruum would you employ if given a drug containing.

(*a*) Gum, Sugar, Alkaloids, Albuminoids, Chlorophyll, Resin? Value 3.

(*b*) Volatile Oil, Chlorophyll, Resin, Tannin, Dextrine, Albuminoids? Value 3.

(*c*) Glucosides, Alkaloids, Tannin, Sugar, Albuminoids, Fixed Oil? Value 3.

In each case it being desired to extract the first four principles and reject the balance.

2. Give a brief outline of the Assay of Opium, stating reasons for each step. What per cent. of Morphine is required to be present in the Powdered Opium. Value 10.

3. State how the following Medicated Waters are prepared, and describe briefly all necessary apparatus: Aq. Menth. pip., Aq. Camph., Aq. Rosæ, Aq. Chlorof. Value 12.

4. Give strength, menstruum used, and method of extraction employed for the following: Tincture of Opium, Tincture of Aconite, Ammoniated Tincture of Valerian, Strong Tincture of Ginger. Value 12.

5. Describe fully the preparation of Liq. Potass. If, on testing the sample, it be found to have a specific gravity of 1.100 and to effervesce with Diluted Hydrochloric Acid, how would you proceed to make it correspond to the B. P. requirements? Value 10.

6. Describe the preparation of Saccharated Carbonate of Iron. State why sugar is used, how it should be kept, the per cent. of Ferrous Carbonate which ought to be present, and what are its ordinary impurities? Value 10.

7. I have a sample of alcohol. Sp. gr. .8172, consequently containing 92% by weight of absolute alcohol, and is 65.98 O. P

(*a*) How many fluid ounces will be required to make 1 pint Imperial of Rectified Spirits? Value 6.

(*b*) How many fluid ounces will be re-

quired to make 1 pint Imperial Proof Spirits? Value 4.

8. Describe a Hydrometer. What is the principle on which it works, and for what is it used? Value 7.

9, and 10. Oral and recognition of Specimens. Value 20.

PRESCRIPTIONS.

Examiner:—W. MURCHISON.

Time allowed, two hours.

Write the following in abbreviated form:

1. Recipe:

Quininæ Sulphatis, grana sexdecim,
Strychninæ Sulphatis, grani duas quintas partes,
Acidi Hydrochlorici diluti, minima octoginta,
Tincturæ Cardamomi Compositæ, drachmas duas cum semisse,
Syrupi, uncias duas,
Aquæ, unciam et drachmas duas.
Misce.

(*a*) If dispensing, what size bottle would you use?

(*b*) State quantity of Strychnine in each drachm. Value 10.

2. Indicate by example, or by setting forth, a number of glaring faults in ordinary prescription writing. Value 10.

3. (*a*) What is meant by chemical incompatibility?

(*b*) To what results may it give rise in prescription compounding and in therapeutic effect?

(*c*) When substances lighter or heavier than the menstruum are ordered in prescriptions, what should suggest itself to the compounder as being a desirable method of effecting satisfactory union? Value 10.

4. Write a prescription for an eight-ounce mixture to contain in each drachm maximum doses of Strychnine, Arsenious Acid, Morphine, Chloral, and Tr. Strophanthus, using B P. compatible solutions of the first two. Value 10.

5. Give the English meaning of the following phrases, words, and abbreviations: Magnitudo hujus chartæ; Usque ad visicationem; Ubi non descendit alvus; Ap tres alias vices; Dosi pedetentim crescente.

Poculum; Pauxillum; Pugillus; Manipulus; Hodie; Heri; Meridies; Cœna; Jentaculum; Prandium; Ad gr. acid; Cont. rem.; C.m.s.; Ejusd.; Si vir. perm.; Value 10.

6. Translate the following prescriptions:

Recipe:

Extracti Colocynthidis, grana sexaginta,
Fiant pilulæ tredecim, Sumat unam, sextis horis, donec commode purgetur.

Recipe:

Pilulæ Hydrargyri, scrupulum dimidium,
Divide in duas partes; sumat unam statim, alteram circa mediam noctem.

7, 8, 9, 10. Oral.

MATERIA MEDICA.

Examiner:—J. TOLBERT PEPPER.

Time allowed, two hours.

1. What is Materia Medica? What is meant by Organic Materia Medica? By Inorganic? Give an example of each. Value 12.

2. What is Benzoin? How is it procured? What varieties are found in commerce? Where is it obtained? Name its properties and uses. What acid is obtained from it? Is this acid, as usually found in drug stores, made from Benzoin? If not, what is its source? Value 16.

3. Give the distinctive appearances of the following starches, making drawing to a scale if you prefer it: Maranta, Maize, Oat, Potato, Turmeric. Value 10.

4. Give, in a tabular form, the full Latin and common names, habitat, part used, and medicinal uses of Triticum, Hyoscyamus, Camphor, Kola, Galla, Sarsa, Vanilla, Coca. Value 20.

5. What safeguards or precautions would you suggest, so as to prevent deterioration in stock of the following: Powdered Extracts, Camphor, Volatile Oils, Menthol, Orris Root, Cloves, Dandelion Root, Ergot, Cantharides, Valerian Root. Value 10.

6. Give the English names and synonyms, if any, of the following: Cimicifuga, Cetraria, Krameria, Althæa, Spigelia, Colocynthis. Value 12.

7, 8, 9, and 10—Oral examination and recognition of Specimens.

BOTANY.

Examiner:—CHAS. R. SNEATH.

Time allowed, two hours.

1. Describe fully the structure of the stem of a member of the Rose family. Value 12.

2. Describe fully a typical flower. Explain these modifications, viz.: Imperfect, incomplete, achlamydeous. Value 10.

3. What are the characteristics of N. O. Cruciferæ? Note particularly the fruit. Value 10.

4. What are the Bryophyta? What classes are included in this division? Give a general description of plan of reproduction. Value 12.

5. What is inflorescence? How classified? Explain your classification. Explain and properly classify the following, viz.: Raceme, head, corymb, umbel. Value 10.

6. Explain fully the following terms: Monodelphous, plumule, chlorophyll, hypogynous stamens, stomata. Value 12.

7. Describe fully the Venation of the leaf given you. What are the common characteristics of the class of plants to which it belongs. Value 10.

8, 9, and 10—Oral. Value 24.

DISPENSING.

Examiner:—A. R. FRASER.

Time allowed, three hours.

MR. JAS. WHITE.

1. R.—

Mag. Sulph.	℥iss.
Magnes. Carb.	ʒiii.
Aq. Dist ad.	℥vi.
	M

℥i quaque quarta vel sexta hora, pro necessesit.

P.S.—"Graduate the doses on bottle." Value, 20.

MR JOHN BROWN.

2. R.—

Ext. Bellad.	grs. xx.
Zinc Oxyd.	ʒss.
Vaseline	℥ss.
	M. ft. ung.

Appl. more dictu, bis die. Value, 20.

MR. WILLIAM GREEN.

3. R.—

Ol. Morrhuae	ʒii.
Pu. Acacia	Q.S.
Aq. ad	℥iv.
	M. ft. Emulsio.

ʒii. T.D.S. ex aq. ʒii. p.c. Value, 20.

MR. HENRY BLACK.

4. R.—

Camphor	gr. ii.
Ferri Sulph.	grs. iv.
Pu. Aloes B.	grs. iv.
	M. ft. pil ii. Mitte xii.

Unam post prandium et coenam. Value, 20.

MR. JOHN JONES.

5. R.—

Morph. Mur.	gr. ii.
Fiat in Suppos.	iii.

Usus i. o. h. 2 dolore urgente. Value, 20.

Colleges and Graduates.

M. B. Annis, Phar. B., O.C.P., class of '94, formerly with C. D. Daniel & Co., of Toronto, has accepted a position with H. W. Galpin, 6th Avenue, New York city.

A. R. Johnston and T. T. Barnes, both graduates of the O.C.P, have accepted positions as dispensing clerks in Brooklyn, N.Y.

J. H. Seagars, class '94, O.C.P., and formerly with Dr. Slavin, Orillia, Ont., has obtained a good position in Newark, N.J.

One hundred and four candidates presented themselves for examination at the Ontario College of Pharmacy last week, 99 taking all subjects. And now for the University and degree of Phar. B.

Two students of the Montreal College of Pharmacy have entered actions for damages against the College Council for suspension. Those students who apologized for their insubordination were allowed to re enter, but two declined to apologize, and hence were not permitted to attend lectures.

J. J. McLaughlin, graduate of O.C.P., whose mineral water manufactory on Sherbourne street, Toronto, Ont., was blown up a short time ago, has returned from his stay in Aiken, S.C., whither he had gone for the benefit of his health, which, we are pleased to say, has been greatly benefited.

Trade Notes.

Rowan & Co., druggists, Stouffville, Ont., have sold out.

W. J. Morrow has opened a drug store in Vancouver, B.C.

G. H. Williams, druggist, Three Forks, B.C., has removed to Nakusp, B.C.

A. Young has purchased the drug business of Harrison & Co., Neepawa, Man.

W. A. Griffin & Co. have purchased the drug business of T. R. Morrow, B.C.

Dr. Anderson has purchased the drug business of James & Co., St. Thomas, Ont.

Reuben Hill, of Norwich, has purchased the drug business of Dr. J. C. Bell, Tilbury Centre, Ont.

George F. Hobart, of the drug firm of G. S. Hobart & Co., Kingston, Ont., was *married, May 8th, to Miss Louise Fenwick*, of that city.

The sheriff has taken possession of the drug stock of Alonzo Staples, of Fredericton, N.B., on executions issued on judgments recovered by Lyman, Sons & Co., Lawrence A. Wilson & Co., and Davis & Lawrence Co., of Montreal.

A Port Huron (Mich.) merchant has commenced the sale of patent medicines at cut rates, and, in order to meet the competition, the druggists of Sarnia, Ont., have reduced the prices on all proprietaries to cost in order to stop any further cutting.

The proprietors of Hawkers' Remedies, head office St. John, N.B., are about opening an office in New York city. Mr. Bernard, of "Luby's Hair Restorer," is establishing a branch at Boston, Mass., and Dr. J. G. Laviolette, of Montreal, is introducing his Syrup of Turpentine and other remedies through the medium of the Pharmacy Fair, now in progress at Boston.

Prince Edward Island Notes.

Messrs. Johnson & Johnson are the first to introduce white coats for their clerks, *who look very neat in their new garb.*

Mr. Fred de C. Davies expects to move in a few weeks into a new store which is being fitted up for him in "Beale's Corner," opposite Mr. Rankin's drug store.

Mr. Watson, of Charlottetown, has been fortunate in securing one of the very best business stands in the city. Messrs. George Carter & Co., seedsmen and stationers, have purchased the stock, lease, etc., of the Bazaar Store Company, and are moving into their premises, giving place to Mr. Watson, who expects to have his new drug store ready for occupation *early in May. Mr. Watson is to be* congratulated, as the new premises are in the very centre of traffic, and immediately opposite the market. The Charlottetown papers contain friendly and appreciative notices of the popularity of the long-established "Watson's Drug Store."

Mr. J. A. Gourlie, of Summerside, has been burnt out, saving only part of his stock. The loss was fairly well covered by insurance. Mr. Fred Davies, druggist, of Charlottetown, who was visiting Summerside, was one of the first to discover the fire. Mr. Gourlie, who intends building upon the old site, meanwhile occupies the next door premises. Mr. Silver, representative of Messrs. Simson Bros & Co., of Halifax, valued the stock for Mr. Gourlie.

Manitoba Notes.

The annual general meeting of the Pharmaceutical Association of Manitoba was held on the evening of April 5th at the Clarendon Hotel, Winnipeg. *The members of the council and a good representation* of city druggists were in attendance. The principal business transacted was the reception and adoption of reports of officers and examiners. The auditors' report showed the finances of the association to be in a good condition. The examiners reported the following candidates successful at the examinations: Major—Arthur Young, Miami; C. S. Touchbourne, Brandon; W. H. G. Gibbs, Selkirk; Charles Macdonald, Virden. Minor — Miss L. Wooodhun, Hartney; F. Hayes, Deloraine; H. E. Rogers, Winnipeg; W. Hamilton, Neepawa; W. B. Wilton, Morden; H. H. Casselman, Emerson. Mr. Arthur Young was awarded the gold medal for the highest average in the major, and Mr. Hayes the silver medal for the highest average in the minor, examination. Both students presented excellent papers, and were highly commended by the examiners. After the discussion of matters of minor importance the meeting adjourned. After the general meeting of the association the council held a meeting, the principal business transacted being the appointment of a registrar, their choice falling on Mr. W. D. Macdougall, of Winnipeg.

Mr. W. R. Bartlett, of Brandon, and Mr. B. M. Canniff, of Portage la Prairie, members of the Pharmaceutical Council, were in Winnipeg attending the annual meeting of the association.

Mr. W. H. G. Gibbs, who has been clerking for Mr. R. H. Gilhuly, of Selkirk, for the past three years, and a graduate at the recent examinations, has opened a drug store on Main street north, Winnipeg, in the block best known as the Northwest Trading Company's building.

Mr. C. H. Cranston, who has for many years represented leading wholesale houses on the road in western Canada, contemplates opening a drug store on the corner of Main street and Pacific avenue, Winnipeg.

Mr. Arthur Young, a graduate with honors at the recent examinations, left Winnipeg last week for Neepawa, Manitoba, where he will take up his residence.

Mr. E. S. Knowlton, Winnipeg, is removing his drug business from the corner of Main street and Pacific avenue to the Montreal block, Main street south, where he expects to open out with fresh additional stock. Mr. Knowlton has secured one of the best positions for a drug store *in the city.*

Nova Scotia Notes.

Messrs. Copeland & Co., of North Sydney, are about erecting a new drug store, which they propose to fit up in modern style.

Mr. A. A. Boreham, formerly of Halifax, and Mr. D. A. Winterbotham, for some years with Dr. MacGillvary, of Sydney, are entering into a partnership to carry on the drug business in the town of Sydney.

Mr. Clifford Mumford, who was for *several years head clerk with T. M.* Power, druggist, of Halifax, has opened a store on Campbell Road, and with his many friends feels confident he will do a thriving business.

Mr. R. O. Christie, who recently opened a store at Little Glace Bay, has been compelled to abandon business for the present. Mr. Christie has been suffering from ill health for some time, and now proposes to rest and recruit.

A recent issue of the Halifax papers contains the following: "At Delamere, Grand Pre, on April 6th, to Mr. and Mrs. Frank C. Simson, twin daughters."

The marriage took place, on April 23rd, of Walter S. Davison, buyer and stockkeeper for Simson Bros. & Co., to Miss Minnie Wallace, of Halifax. Though the hour was early a large number of their friends assembled to witness the ceremony. The firm presented Mr. Davison with a handsome piece of plate, and his popularity among his associates was attested by the receipt from the employees of Messrs. Simson Bros. & Co. of a silver service.

Messrs. Hattie & Mylius, the well known druggists of Halifax, will shortly move into new premises on the corner of Hollis and Sackville streets. The fittings are now about in, and all the appointments give promise of being equal, if not superior, to those of any drug store in the Maritime Provinces. Their friends are predicting for these gentlemen a prosperous and increasing business. The prescription trade of this firm is already of large proportions.

Mr. Alfred A. Patterson, formerly with Simson Bros. & Co., and who has been for over a year in South Africa, is now on his way home. Mr. Patterson comes, with improved health, to take up his old position.

Our thanks are due the promoters of the Pharmacy Fair, now in progress at Boston, Mass., for complimentary ticket. The fair, which commenced May 1st, will be open until the 25th inst.

Correspondence.

Dispensing Difficulties.

Editor CANADIAN DRUGGIST:

I have on hand a sample of bismuth subnitrate, which, when mixed with ac. hydrocyanic, becomes quite black. What is the impurity in the bismuth?

I have also had sodium salicylate which became quite dark when dissolved in water, and after two or three days the solution became almost as black as ink. What was the matter with this sample?

Toronto, May 5th, 1895. J.A.

[Can some of our readers explain these difficulties?—ED. C.D.]

College of Pharmacy.

The annual graduating exercises of the St. Louis College of Pharmacy took place April 18th, before a large and appreciative audience. The degrees were conferred by Prof. E. P. Walsh, vice-president of the college. The class this year was exceptionally large, numbering no less than forty-six members. The programme was interspersed with musical selections by Saenger's orchestra.

The conferring of degrees was followed by a valedictory on behalf of the faculty, delivered by Prof. H. M. Whelpley. He congratulated the class in well-chosen terms on the intellectual victory which they had achieved. He dwelt at length on the responsibilities of their chosen calling. The commercial side of pharmacy, he said, was fast being superseded by its professional aspects. He closed by exhorting the members of the class of '95 to emulate the greatness of the graduates who had gone before them, and never by word or deed to cast odium upon the fair name of their *alma mater*.

A pleasing feature of the exercises was the presentation to the faculty of a beautifully-engraved class plate by the class of '75, in commemoration of the twentieth anniversary of their graduation.

Suggested B. P. Emulsions.*

By CLAUDE F. HENRY.

The present-day demand for elegant pharmacy and agreeable medicine warrants, at least, the consideration of the claim of emulsions to a place in the next pharmacopœia. The object of the present note is to suggest a few formulæ for the emulsions most frequently in request. Speaking generally, a creamy emulsion is to be preferred to a paste, and as to flavor those I have suggested are what are personally agreeable to myself; but tastes differ, and these can be changed. Gum acacia has been adopted as the emulsifying agent, because of its being ready for use sooner than tragacanth, ghatti, Irish moss, etc., and requiring less preparation.

The following is the suggested formula for emulsio olei morrhuæ:

*Paper read at the Edinburgh Chemists' Assistants' Association.

Take of—	
Gum acacia	1 ounce.
Cod-liver oil	4 ounces.
Elixir of saccharin	40 minims.
Oil of cassia	2 minims.
Hypophosphite of soda	16 grains.
Hypophosphite of lime	16 grains.
Distilled water, *q.s.* to make	8 fluid ozs.

Make mucilage by dissolving the gum acacia in two ounces of the water. To this gradually add two ounces of cod-liver oil, stirring constantly until a thick emulsion is formed, then add two ounces more water, in which the hypophosphites have previously been dissolved, and stir in as before the remainder of the oil. Add next the saccharin elixir and the oil of cassia, mix thoroughly, and make up to eight fluid ounces with distilled water. A 50 per cent. white creamy emulsion is thus produced. 75 per cent. of oil can easily be incorporated, but such an emulsion requires more flavoring, and is not so well tolerated by the stomach.

In preparing the emulsion the whole gum, which can be broken up in a mortar to facilitate solution, should be used in preference to the powder, and the mucilage should be prepared fresh when required, the tendency to acidity being thus prevented. The formula would necessitate the inclusion of elixir of saccharin and oil of cassia in the B.P. The former is a very useful preparation, and that suggested by the B.P.C. unofficial formula committee should be chosen. The emulsio olei morrhuæ of the B.P.C. is not so good as the above. Its sickly color is an objection, and eggs are not well suited for pharmaceutical manipulation even when they can be obtained fresh. A satisfactory castor oil emulsion is also, I think, a B.P. want. The mistura olei ricini of the present B.P. is, I think, objectionable, because of its being prepared with liquor potassæ, and because of the quantity directed to be used, the maximum dose, 60 drops, being required for each six drachms of oil; of course this may not do much harm in the form in which it is taken, but it is an emulsion that is wanted, not a soap.

From the following formula a perfect emulsion can be made containing 50 per cent. of oil:

Take of—	
Gum acacia	½ ounce.
Castor oil	1 "
Elixir of saccharin	20 minims.
Oil of almonds	2 "
Oil of cloves	3 "
Distilled water, *q.s.* to make	8 fluid ozs.

Malt and cod-liver oil is now frequently prescribed, and a good thick emulsion can be made from this formula:

Take of—	
Gum acacia	1 ounce.
Cod-liver oil	4 ounces.
Liquid malt extract	4 "

Mix the malt extract with the gum acacia, let the mixture stand for four hours, then gradually stir in the cod-liver oil. No flavoring is required, but a few drops of saccharin elixir may be added. A more liquid preparation may be made by dissolving the gum in two ounces of water, adding one ounce of liquid malt extract, and stirring in slowly one ounce of cod-liver oil.

The only other emulsion in much demand is cod-liver oil with eucalyptus, which might be termed emulsio eucalypti co., or emulsio olei morrhuæ cum eucalypto, or cremor. eucalypti co. From the following formula a satisfactory preparation can be made:

Take of—	
Gum acacia	¾ ounces.
Cod-liver oil	4 "
Oil of eucalyptus	2 drachms.
Elixir of saccharin	1 drachm.
Oil of cassia	2 drops.
Distilled water, *q.s.* to make	8 fluid ozs.

Prepare in the same way as cod-liver oil emulsion, adding the eucalyptus oil after the cod-liver oil. The flavoring may be left out entirely; in fact, there is a danger of over-flavoring emulsions with the idea of making them very palatable; but disagreeable eructations are apt to occur after swallowing too highly flavored preparations. In closing this fragmentary note, I should like to say that some of the formulæ given are not quite suitable for stock preparations. They are merely suggestions for B.P. preparations, which, when prescribed, pharmacists can make up fresh, as ought always, in these instances, to be done.—*Pharmaceutical Journal and Transactions.*

Creosote Syrup.

Von G. Vulpius (*Suedd. Apoth. Ztg.*, 1895, No. 16) recommends the following procedure for making a syrup containing 10 per cent. of creosote: Triturate 10 parts of beechwood creosote with 3½ parts of calcined magnesia; let it stand, well covered, for several days, mixing it every hour for a few minutes; then pour upon it gradually, with constant stirring, a mixture of 16½ parts of peppermint water and 70 parts of simple syrup. The odor and taste can still more be covered by the addition of 10 drops of spirit of peppermint. Another, more convenient though not more expedient, process is this: The magnesia and creosote in the above proportions are put into a bottle and moistened with the peppermint water; then the simple syrup is added, and the whole is vigorously shaken. This is repeated at intervals of a few hours. At the end of two days the mixture will have become thick, so as to be unable to flow; but by vigorous shaking, or stirring with a glass rod, it can be rendered liquid again, after which it will not solidify again. On the contrary, the mixture becomes more limpid every day, but remains homogeneous, separating only after long standing, or not at all.—*Merck's Report.*

Messrs. Archdale Wilson & Co. report that their advance orders for fly pads are much larger this year than ever before.

READ THIS

Dear Sirs, St. Marys, August 3rd, 1892.
The following may be of use to you: "A customer of mine, who keeps a butcher shop in this town, bought a 10 cent package of your Fly Pads from me and in two days killed over A BUSHEL MEASURE OF FLIES" Yours truly,
F. G. SANDERSON.

IT WOULD TAKE OVER 300 SHEETS OF STICKY PAPER TO HOLD THIS BUSHEL OF FLIES

WILSON'S FLY PADS

SOLD BY ALL DRUGGISTS

Caution

It is unsafe to sell Fly Poisons not distinctly marked "**Poison**" on each sheet. Some of the many imitations of

Wilson's Fly Poison Pads

are put up in this cheap and dangerous way. In order to protect yourself in case of accident see that every sheet of Fly Poison you handle is labelled

Poison!

Wilson's Fly Poison Pads Kill 150 times as many flies for the money as sticky paper.

ARCHDALE WILSON & CO.,

WHOLESALE DRUGGISTS,

HAMILTON, - - ONTARIO.

FREDERICK STEARNS & CO.'S

PREPARATIONS OF KOLA

Preparations of the Fresh (Undried) Nut.

Kolavin A delicious wine, each tablespoonful representing 30 grains of the fresh (undried) Kola nuts. In full pints, $8.00 per dozen.

Kolabon Elegant confections or bonbons, each representing 10 grains of fresh (undried) Kola. $4.00 per dozen boxes.

Fluid Kola A concentrated liquid extract, each minim representing one grain of fresh (undried) Kola. Per pint, $3.50.

Preparations of the Dried Nut.

Stearns' Kola Cordial (The Original.)

A delicious cordial, each teaspoonful representing 15 grains of dried Kola. In 12 oz. bottles at $8.00 per dozen.

Compressed Tablets of Kola

Compressed Tablets of dried Kola, 10 grains each. Per 100, 25 cents.

Fluid Extract of Kola

Each minim representing one grain of dried Kola. Per pint, $3.50.

Our Claims on Kola.

1. We introduced Kola commercially in America in 1881 (see New Idea, April, 1881).

2. We *introduced the first palatable preparation of Kola* in the form of Stearns' Kola Cordial in 1893.

3. We originated the first and only preparation of fresh (undried) Kola in 1891, when Kolavin was introduced.

4. We to day are the only importers of fresh (undried) Kola from Africa.

5. We have done more scientific work on Kola than any other American house. (See our 80 page monograph issued last year, 1894.)

6. We have done more by liberal advertising in the pharmaceutical and medical press to call Kola to the attention of these professions than all other houses combined.

THEREFORE we consider ourselves headquarters for Kola and its preparations, and believe the profession will endorse our position

Frederick Stearns & Co., Manufacturing Pharmacists,

(The introducers of Kola in America)

Windsor, Ont, London, Eng. New York. DETROIT, MICHIGAN.

Pharmacy in England.

Quinine Lemonade—Cinchona Wine and Syrup—Filters and Radam's Microbe Killer—The Assistant Lecturer at School of Pharmacy Provincial Enterprise—Messrs. Richardson of Leicester.

(From Our Own Correspondent.)

During the recent outbreak of influenza the Chemists' Aerated and Mineral Waters Association introduced quinine lemonade as a certain preventive and useful tonic for this disease. The evidence in favor of the prophylactic properties of quinine, in large doses, is unquestionably very strong, and the introduction of a pleasant and palatable preparation, that could be safely recommended, was most opportune. The ammoniated tincture of quinine has obtained a very wide notoriety as a useful preventive, but has the drawbacks of not mixing clearly with water, and its taste is simply nauseous. Mr. Lunan has pointed out that it will mix clearly with plain aerated or "soda" water, but this does not affect its unpalatability. An easy and effectual method of disguising the extreme bitterness of quinine has yet to be suggested, and would come as a boon to many patients. It is well known that by dissolving quinine one increases its nauseousness, and that Anglo-Indians and others, who consume large doses of ten and twenty grains, *simply suspend it in* water. Recent attempts have been made by manufacturers of gelatine capsules to enclose the quinine with carbonate of ammonia in capsules, but the ammonia salt is a very troublesome addition. Certainly capsules of quinine are about the most satisfactory method we have at present of exhibiting the drug.

Under royal letters patent, Messrs. Fletcher, Fletcher & Co. have prepared a liquid extract of cinchona bark which is stated to possess certain advantages over the official preparations. Hydrobromic acid is employed for the purpose of extracting the whole of the alkaloids, and the acid liquid is evaporated at a low temperature and standardized so as to yield 5 per cent. of total alkaloids. The intimate combination of the alkaloids with hydrobromic acid is claimed to possess the advantage of enabling patients to take this preparation of bark, when the ordinary liquid extract of quinine itself produces the unpleasant symptoms of cinchonism. A further step in the elaboration of the pharmacy of this new extract has lately been taken by Messrs. Fletcher. They have successively introduced a syrup and wine of cinchona, each prepared from the liquid extract. These articles are palatable and effective tonics, and, introduced just after the influenza epidemic, they were seasonable and have already caught on.

We live in an age when reputations that have taken years to build up are shattered in a moment. Something of this reflective nature must have passed through the enraged mind of more than one filter manufacturer when the *British Medical Journal* brought the merciless skill of bacteriological examination to bear upon the claims put forward in favor of their filters. In the end, as your readers may remember, only three filters, out of more than a dozen of the principal ones advertised, were found to answer the tests imposed, and to effectively do what was claimed for them. Now, another journal has been tilting against Radam's Microbe Killer, and has published an analytical report in which it is stated that the following is the composition:

Analysis in parts per 100,000.

Ash on ignition	52
Sulphurous acid (H_2SO_3)	74.68
Chlorine (as chlorides)	2.82
Nitric acid (as nitrogen)	1.0

The net result, of course, is that it consists of a dilute solution of sulphurous acid in ordinary tap water. The commercial value is stated to be not more than six cents, whilst it is retailed at $2.56 per gallon. If I remember rightly, Dr. Eccles was concerned in a similar exposé in the United States some few years ago.

The school of the Pharmaceutical Society has been particularly unfortunate during the past few years in not securing the services of an acceptable assistant-lecturer in Chemistry and Physics. When Professor Dunstan took the chair of Chemistry, Mr. Dymond was appointed assistant-lecturer and was popular with the *students and a fair lecturer. But, since* then, the succession has been merely from bad to worse. Mr. Harrison, now in the laboratory of Messrs. Brady & Martin, wholesale and retail druggists, of Newcastle-on-Tyne, was also popular, and had a ready, free-and-easy manner that was not unpleasing to students. When he left, Professor Dunstan was anxious to appoint Mr. Carr, one of his colleagues in the Research laboratory, but the council wisely declined, or the matter was not pressed beyond committee. The present assistant-lecturer is neither popular amongst the students nor is his style appreciated. It is reported that in a lecture delivered recently he employed the word "obviously" no less than forty-nine times. Needless to say, it has been utilized as a *sobriquet*. But a short time ago, matters assumed a more serious aspect, as a petition was drawn up and signatures obtained, asking the council to remove him. Some of the ringleaders thought, however, that nothing would result, so the subject dropped. Still, it must have reached the ears of the president or some of the members of council. It is little short of scandalous that an office which each year is becoming more important, owing to the increasing number of appointments held by Professor Dunstan, should be delegated to any one who may be fortunate enough to hold a certain position in the Research laboratory. The relation of the two posts is most remote and an excellent analytical assistant might be an utter failure behind the lecture table. The students settle the matter to their own satisfaction, frequently, by staying away from the lectures. But it is high time that more attention should be paid to the qualification necessary for even subordinate posts in the staff of the official school of pharmacy.

Messrs. Richardson & Co., of Leicester, have fitted up all the requisite machinery to enable them to do their own drug grinding. This is an important and necessary step for all wholesale druggists, as depending upon drug-millers is very unsatisfactory. There was a time, it has been stated on the authority of the late Professor Redwood, when a druggist would send a case of rhubarb to the mill and instruct them to grind case and all! This is probably overdrawn, but in any work of outside manipulation some uncertainty is introduced, and, where it is performed under the supervision of the firm, it is probably more carefully and satisfactorily carried on. Since the light disintegrators have become popular and cheap, a good deal of the coarse grinding is superseded. Gentian is very well reduced by a disintegrator, and numerous other drugs are coarsely ground by means of these machines. As an instance of provincial enterprise, I mention the improvements inaugurated by Messrs. Richardson, as some imagine that only the wholesale houses in the capital can do these things properly. I understand Messrs. Richardson hold the contract for the supply of drugs, etc., for the Royal Navy, whilst for many years their name has figured in all the large contracts where pills are consumed. In accordance with a fashion greatly spreading amongst the wholesale houses, Messrs. Richardson's business was, a few years ago, converted into a limited liability company, but all the shares remain in the family.

Enlarged Faculty of the School of Pharmacy of Northwestern University, Chicago.

Illinois College of Pharmacy, Chicago, has added to its faculty two strong men of national reputation—Mr. Henry Kraemer, well known to the pharmacists of this country as the Reporter on Progress of Pharmacy of the American Pharmaceutical Association, and Mr. Jan B. Nagelvoort, whose name is familiar to the readers of current pharmaceutical and chemical literature. These gentlemen are both apothecaries, and distinguished for their ability and their active participation in the scientific work of their profession.

Mr. Kraemer, after graduating from Girard College, Philadelphia, entered the drug store of Dr. C. B. Lowe, of that city, who was Prof. Maisch's assistant in the Philadelphia College of Pharmacy. He served an apprenticeship in pharmacy extending over five years, and, when he graduated at the college just named, he was awarded the Lee prize and the Maisch Microscope prize. For two years he was assistant to Prof. Sadtler, University of Pennsylvania. Then he was called to the New York College of Pharmacy to teach botany, materia medica, and pharmacognosy, but he resigned his position after

one year to devote himself to an extended course of study at the Columbia College, giving special attention to botany and chemistry, with the fixed purpose of thoroughly preparing himself to make pharmacognosy his life work. In 1892 he was elected Reporter on Progress of Pharmacy of the American Pharmaceutical Association, which position he still occupies with distinguished ability and unselfish zeal. Desiring to pursue further studies in German universities before he enters upon his duties in the School of Pharmacy of Northwestern University, he has been granted leave of absence for one year for that purpose.

Mr. Nagelvoort was born at Amsterdam, Holland. He enjoyed the great advantages of receiving his early education at the hands of private tutors. Then he became apprenticed to an apothecary who was his father's neighbor and friend, and has continued, since that time, faithful to his love of the sciences upon which true pharmacy rests. At seventeen he entered the University of Amsterdam as a student of pharmacy, and graduated upon the completion of the three years' course there prescribed. The compensation received by dispensing pharmacists in Holland being rather meagre, Mr. Nagelvoort accepted an appointment to the position of military apothecary, and in that capacity served for many years in Europe and in India. While in the service of his government he enjoyed unusual facilities for scientific work and study. Then he came to this country, and for some years was a pioneer farmer in Nebraska. In the meantime, he continued sedulously to cultivate his scientific studies. In 1887 he offered his services to Messrs. Parke, Davis & Co. as an analytical chemist, and has been busily engaged since that time in the qualitative and quantitative examination of drugs, chemicals, and pharmaceutical preparations. In an analytical laboratory where every convenience and the most approved apparatus was to be had for the asking, and with a reference library such as few pharmaceutical schools in this country possess, Mr. Nagelvoort was daily accumulating a practical experience in pharmaceutical analysis, assaying, and testing, such as could hardly be acquired elsewhere, until he must now be recognized as one of the foremost experts in this special field of work. His contributions to current chemical and pharmaceutical literature are numerous and valuable. Of his translation of Flückiger's well-known work on the "Reactions" of organic compounds, Prof. Fluckiger himself said: "I fully acknowledge how zealously and intelligently you not only translated, but, in many respects, improved the 'Reactions.'"

Prof. Nagelvoort enters upon his duties at the School of Pharmacy of Northwestern University about the first day of next August, to complete the details of the equipment of the special laboratory assigned to his charge, so as to be thoroughly ready to begin the courses of instruction on the first of October. His entire time will be devoted to the special chemical and pharmaceutical laboratory courses included in the second year's curriculum for the degree of Pharmaceutical Chemist, the most important part of which is pharmaceutical assaying and related analytical work, such as the pharmacists and the sanitary public analysts of the future must be prepared to perform.

The School of Pharmacy of Northwestern University, Chicago, has heretofore required "practical experience in drug stores" for the degree of graduate in pharmacy. It has now abolished this requirement on the ground that it cannot assume the responsibility for any training its students may have received outside of the school.

Pharmaceutical Examinations.

PRELIMINARY.

The preliminary Board of Examiners of the Pharmaceutical Association of the Province of Quebec held their quarterly examinations in Montreal and Quebec on Thursday, April 5th, for the examination of candidates desiring to enter the study of pharmacy. Thirty-one candidates presented themselves in Montreal and three in Quebec. Of these the following passed, and are entitled to be registered as certified apprentices, their names being given in the order of merit, namely: James A. Gillespie, Joseph Victor Murray, Hercule Guerin, Henry St. George, F. W. Kneen, S. A. Lamoureaux, Joseph Pigeon, W. F. Shea, Geo. A. Ricard, Paul Bergeron, A. J. Aubry, A. Bachand, Romeo Cassgrain, and A. Lauzon. Mr. A. Christie passed upon all subjects but geography. The subjects examined upon were, English, French, Latin, arithmetic, geography, and history. The examiners were Professors A. Leblond de Brumath and Isaac Gammell, Mr. A. LaRue, of Quebec, acting as supervisor for that city and district. The next examination will be held July 4th. Candidates must send in their applications at least ten days before the date of examination.

SEMI-ANNUAL.

The semi-annual examinations of the Pharmaceutical Association of the Province of Quebec commenced on Tuesday, April 16th, and closed Friday night, April 19th. Twenty-three candidates for the major and thirty-two for the minor examination enrolled their names for these examinations. Of these three defaulted, and of the remaining candidates the following passed, and are entitled to be registered as licentiates of pharmacy and certified clerks respectively, and are here named in order of merit, namely: As licentiates of pharmacy—D. J. McManamy, A. M. McMillan, James H. Goulden, Phillipe Lupien, W. J. Furse, J. H. E. Brodeur, Frank L. Woolley. As certified clerks—James A. Gillespie, S. Gilbert, Herbert H. Lyons, A. Goyette, Medard Langlois, Joseph Routhier, and J. A. A. Drouin. The examinations were both written and oral, the candidates being examined on materia medica, toxicology, chemistry, pharmacy, botany, practical dispensing, reading of prescriptions, and weights and measures. The examiners were Messrs. S. Lachance, A. E. DuBerger, R. W. Williams, W. H. Chapman, and J. R. Parkin. The next examination will take place in the city of Quebec about the middle of October.

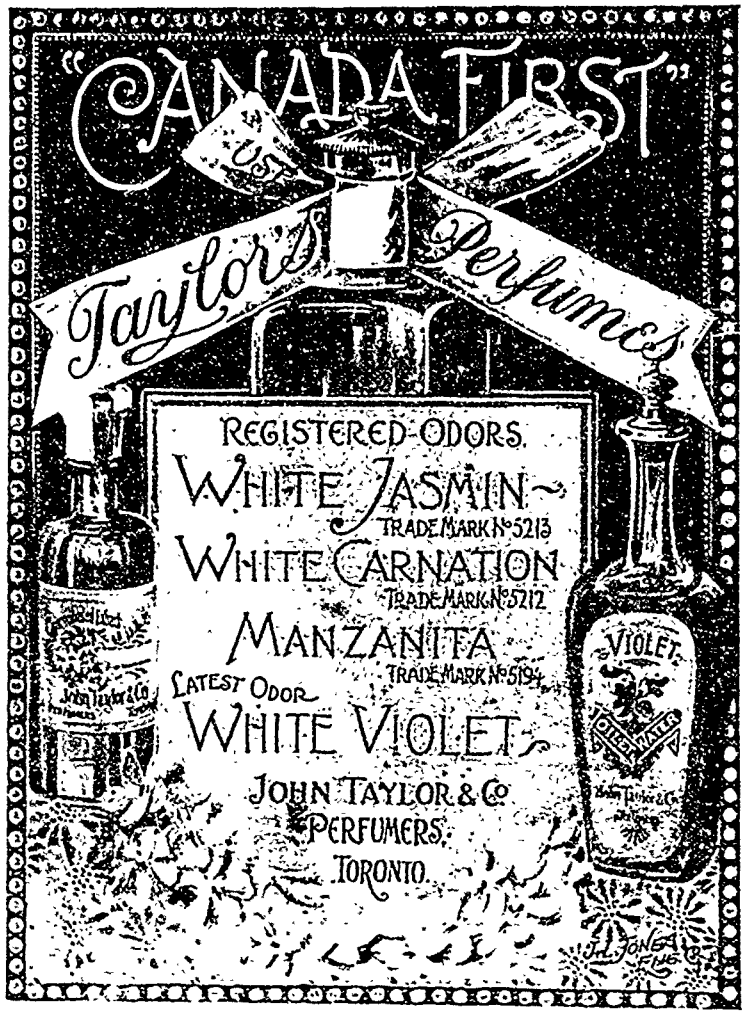
A Polyglot Apothecary.

On the sign board of a drug store on Salem street, Boston, and on the back of the prescription blanks furnished by the proprietor, he states that no less than twelve languages are spoken in his shop, namely, English, French, German, Italian, Greek, Turkish, Spanish, Russian, Hebrew, Hungarian, Roumanian, and Portuguese. That an apothecary should find it necessary to advertise his ability to speak English in Boston is a curious indication of the way in which a foreign population has monopolized certain districts in the city. The changes which have taken place in the character of the population of the North End are shown by the fact that this drug store is within a stone's throw of the Cushman School, which stands on the site of Charlotte Cushman's birthplace, on Parmenter street. . . . Mr. Kronberger, the proprietor, is, we believe, a Turk (from Turkey), and a handsome Tufts soda fountain graces his store, and soda as well as prescription can be furnished in any language.—*Boston Medical and Surgical Journal.*

The Action of Diastase on Cold Starch Paste.

By H. T. Brown, F.R.S., and G. H. Morris, Ph.D.

In a paper by Brown and Heron (*Trans. Chem. Soc.*, 1879, p. 627) it is mentioned that during the early stages of the action of diastase upon starch paste in the cold, the optical activity is lower than it should be on the assumption that only maltose and dextrin are present. After standing some hours, or on boiling, this discrepancy disappears, and the optical cupric-reducing powers show the same relationship that they do in conversions made at higher temperatures. An observation made by O'Sullivan and Thompson in an other direction suggested an explanation of these abnormal results, and in the present paper the authors show that the lower angle of rotation observed during the earlier stages is due to the maltose being liberated in the state of "half rotation," a condition which freshly-prepared solutions of pure maltose always show. When freshly dissolved the optical power of maltose bears the relation to that of a boiled or old solution of about 133° to 150°, and the authors show that this relationship holds good in the case of freshly-prepared products from cold starch paste. *Proc. Chem. Soc.*—*Pharmaceutical Journal.*



Emulsions.*

The emulsions are liquid preparations consisting of oily, fatty, resinous, or otherwise insoluble substances suspended in watery liquids by the intervention of gum, mucilage, or other viscid material called emulsifying agents. They may be divided into (1) natural and (2) artificial emulsions.

Natural Emulsions.—In natural emulsions are included all products of animal or vegetable origin, consisting of oily or resinous substances so combined with gum or albumen as to be readily miscible with water without separation.

Of animal products milk and egg yolk are the most typical emulsions, since their fat globules are so finely divided and so perfectly distributed in the watery liquid as to require considerable agitation to separate them from the albuminous envelope in order to obtain the fat. The operation of "churning" milk to produce butter is a good illustration of this, and is the reverse of the process of emulsification.

The milk-juice of many plants, consisting of oil and gum or albumen, is deposited in fruits and seeds upon evaporation of the water. The nuts, especially almonds, are rich in this mixture, which, upon trituration with water, is restored to its original form of milk-juice or emulsion. The official almond emulsion is a good example. Associated with resin, and sometimes with ethereal oil, the milk-juice of many plants exudes and dries into semi-solid masses or tears. Examples of these we have in the gum-resins, ammoniac, and asafœtida, which furnish official emulsions by beating them in a mortar with water. The amount of gum contained in a gum-resin is not always sufficient to emulsify the other constituents, resin and ethereal oil, and it is then necessary to add gum artificially in order to produce complete emulsification.

These natural products are the most perfect emulsions, and to simulate them is the object of pharmacal art. A natural emulsion may be greatly diluted with water without causing separation of the oil. This is the best test to indicate that an emulsion is perfect.

Artificial Emulsions.—These are made by mixing the oil with a certain proportion of the emulsifying agent, adding water and trituration of the mixture in a mortar or agitation in a flask. There are various methods, but these are general rules:

The emulsification of the oil should be *complete* before the mixture is made up to the required measure. When alcoholic liquids are to be added, they should first be *diluted* as much as possible. Salts should be *dissolved* before being added. No heat should be employed, as the oil *separates* in an emulsion when heated. Emulsions should be *freshly* prepared, and be prepared in a *cold* place.

* Lecture from the Course of the National Institute of Pharmacy.

The most common emulsifying agents, in the order of their general value, are:

Powdered Gum Acacia.—With the powdered gum contained in a capacious flat-bottomed wedgewood mortar the oil is gradually incorporated. To this *one and a half times as much* water as of gum is added *at once*, and the mixture rapidly triturated with a rotary motion of the pestle. Soon the mixture becomes stiff and assumes a milk-white color, the pestle-motion producing a characteristic "crackling" sound when the emulsification is complete. This so-called "mother-emulsion" may now be diluted to the required measure, and other substances, flavors, etc., be added.

The *proportion* of gum required varies with different oils, an oil rich in gum, such as castor oil, requiring less gum than an oil poor in natural gum, as cod-liver oil. The following proportions hardly ever fail to produce complete emulsification: Oil, 4 parts; gum, 2 parts; water, 3 parts. Whenever a lesser proportion of gum is used, water must be decreased in proportion, viz.: One and a half times as much water as of gum employed. The ethereal or volatile oils require a much larger proportion of gum than the fixed oils.

Powdered Tragacanth.—This may be used in the same way, or in the form of mucilage, but it does not produce as permanent emulsions as does gum acacia.

Mucilages of Acacia or of Irish Moss (N.F.).—These are not as satisfactory as powdered gum; while they produce good emulsions, the division of the oil-globules is not as thorough as in the preceding; emulsification being incomplete, the mixture more rapidly separates into a heavier, watery liquid and a lighter, thick gelatinous emulsion, which requires thorough mixing before use.

Extract of Malt.—Extract of malt is an excellent emulsifying agent, when its use is admissible. The oil should be added to the malt extract contained in a capacious mortar and incorporated in small quantities at the time. A good article will emulsify an equal volume of cod-liver oil.

Condensed Milk and Egg-yolk.—These produce the most perfect emulsions and also the most palatable, but they rapidly ferment and spoil.

Glycerin and sugar added to emulsions for the purpose of preservation and palatability induce separation, and their use is not advisable.

Emulsification by "intervention" is the best and only reliable method to be employed with ethereal oils and all substances of themselves not emulsifiable. It is illustrated in the official chloroform emulsion. Oil of turpentine, for example, is emulsified by dissolving the turpentine oil in twice its volume of a bland fixed oil (almond oil), incorporating an equal weight of powdered acacia, adding water and proceeding as with an ordinary emulsion.

Pancreatin.—Pancreatin emulsionizes fats in preparing them for digestion, but it does not produce a permanent emulsion when used artificially. While, therefore, not a reliable emulsifying agent, it aids the assimilation of oils, and its addition to emulsions is sometimes therapeutically desirable. As it is only active in alkaline media, the emulsion should be prepared with a little sodium bicarbonate.

The addition of alkalies to emulsions should be avoided. Soaps are not emulsions; neither is the use of soap-bark to be recommended.—*Western Druggist.*

Chemistry for the Pharmacist.

By Wm. B. Thompson.

There are many reasons why pharmacists, who seek avenues for the application of scientific knowledge, should make especial study of the chemistry of agriculture and the chemistry of soils. Soil analysis is wholly within the possibility of scientific investigation. In the growth of plants and trees, soil loses nothing appreciable of its ponderous material. The elementary substances which enter into it are exhausted by absorption and the processes of vegetable growth. Nature has, it is true, her own occult method of supplying these, but art is a most valuable factor in supplementing or aiding the operations of natural causes. Science has done much, and there is yet much to be done, and agriculture much needs the principles and theories of science applied to its practice. Themes for study are to be sought in determining the action of manures and other animal and mineral fertilizers—the terms or periods necessary for the proper recuperation in cleared and open lands, where the chemical elements are only to be derived from the air, artificial treatment not being feasible; the character of the subsoil as it affects top soil; the action of infiltration and absorption; the upward and downward movements of moisture. In cattle manures the important office of the saturating urines, which, by a species of fermentation, gradually develop the ammonias, these, in turn, combining with acids, and thus oxidation forms less volatile and more soluble salts.—*American Journal of Pharmacy.*

Should Doctors Dispense?

Under this heading a correspondent of the *Birmingham Daily Mail* says: "Such a monstrous state of things is not for a moment allowed on the continent, and why the English Government should allow a man the privilege of writing out death certificates, and yet at the same time sanction his dispensing the medicine for his patients, is beyond all conception. I would submit three important suggestions why doctors should not dispense, and these, I think, must appeal to any intelligent person as reasonable: (1) Their

right to give certificates of death and dispense medicine at the same time. (2) Their insufficient knowledge of dispensing; the knowledge of pharmacy and practical dispensing required for their examinations not being a tenth part of that required by the Pharmaceutical Board of Examiners from their candidates. (3) Their liability to substitute cheaper medicines than those which would be of greatest value to the patient in order that their drug account may be kept down. Now, these are not fanciful ideas, but bare facts, which my own impartial experience indicates, and of which I have constantly seen the result. Of course, the patient is the sufferer, and I, for one, always take great care that my medicine is never dispensed in the slobbery manner carried out in so many of our doctor's surgeries."

Rhubarb.

The use of this root in medicine dates from earliest times. It is mentioned in a Chinese herbal, believed to date from 2700 B.C. However, that may be, from very early years the superiority of the Chinese rhubarb was acknowledged.

In the fourteenth century the root appears to have found its way into Europe by way of the Indies and the Red Sea, and thus became known as Turkey rhubarb. Afterwards, when China permitted Russia to trade on her frontiers, Chinese rhubarb reached Europe by way of Moscow, and in 1704 the trade became a monopoly of the Russian Government, in consequence of which the term Russian, or crown, rhubarb came to be applied to it, and the chief depôt was Kiachta, where it was rigorously examined and all inferior qualities rejected, to such an extent that the quantity rapidly dwindled, and after some years Russian rhubarb ceased to be an article of European commerce. The great expense of carrying the root across the continent of Asia, and the difficulty of keeping it from the attacks of insects, caused it to become one of the most costly of drugs, for in an old price list, dated 1657, it is there quoted at 16s. per pound.

There are, however, several species of rhubarb, the roots of all of which possess medicinal properties. The *palmatum* is that which yields the article of commerce. This latter, though a native of Bucharia, grows spontaneously in the Mongolian empire, on the confines of China. In all, there are thirteen different kinds, all growing in the cold parts of the world, such as on the Altai Mountains in Siberia, Thibet, North China, and on the great Himalayan range. The imports of this country of Chinese and Turkey rhubarb differ considerably in quality. Most of it is brought from the Chinese town of Sini, or Selim, by the Bucharians. It grows on the neighboring chain of mountains, which stretches to the lake Kokonor, near the source of the river Chorico. A very good kind, however, comes from the very heart of Thibet, exclusively from the wild plants in the high mountains of Western Sze-chuen, between the sources of the Hoang-ho and the rivers Keang, and comes into trade under the name of Shen-ze rhubarb; and it is this kind that the Chinese esteem as being the best, that coming from Kansu being most prized of all.

Sze-chuen rhubarb has a rougher surface and not much flavor, and only fetches half the price. In the province of Kansu the flora is rich and varied, the climate being exceedingly damp, especially in summer, part of autumn, and spring; and it is this moisture, and consequent richness of soil, which make the conditions exceedingly favorable to the development of plant life.

But the most noted is the medicinal rhubarb, which, as a plant, is remarkable. Little or nothing appears to be done with the other parts of the shrub, save the root, which is cylindrical, having a number of slender offsets, the length and number of which depend upon the age of the plant. When full-grown the root is about twelve inches long, and the same in thickness; its exterior covering is a brown, rough rind, which is cut off when dry. The root is considered fit for medicinal purposes in spring and autumn, and that when the plant is in flower, it is said to become porous. The Tangutans and Chinese dig it up in September and October. The plant grows at an elevation of about 10,000 feet above sea level, very rarely above that limit, mostly preferring the ravines with a rich, loamy soil and a north aspect. After it has been dug up the root is cleared from the earth, cut into pieces, strung with the bark on strings, and exposed to dry under cover for twelve months, when it is again cleaned and prepared for exportation.

In Bhutan the root is hung up in a drying-room, in which a moderate heat is maintained. The effect produced by these two drying processes is very different; when dried by artificial heat the exterior of the pieces becomes hardened before the interior has entirely lost its moisture, and, consequently, the pieces decay in the centre, although the surface may show no change. These are known as kiln-dried and sun-dried. In consequence of this practice at Kiachta, on the Russian frontier, it is received by an apothecary for examination; the bad is burnt, and the good is freed from its bark, woody parts, and all impurity in the most careful manner, and where necessary a hole is bored in the centre as a further test of its quality. It is then sent to Moscow and St. Petersburgh, where it undergoes a further examination.

This Russian rhubarb is considered of very fine quality, and may be known by the size of the hole bored, which is large enough to admit the end of the little finger, by its surface having been sliced off, and by its structure resembling that of East Indian rhubarb, which is of smaller size, dark color, and the holes of a singular shape (often filled with stout string), by the outer surface being marked with white markings, and by the transverse surface showing a number of star like marks, but no cortical layers. The very best root occurs in moderate-size pieces of a yellowish color externally, more or less marked with whitish veins, the surface being convex and smooth. Internally, it is compact, marbled with reddish-brown and white mixed with iron gray. Inferior qualities are shrunken on the surface, and of a brown tint, showing traces of the darker bark, and, when broken, are sometimes decayed in the centre. Good rhubarb should form a powder of a fine bright yellow, having the peculiar nauseous aromatic smell, and a bitter and astringent taste, and when chewed feeling gritty under the teeth, speedily coloring the saliva, and not mucilaginous.

A kind of rhubarb has been cultivated in England, most of which, however, is exported. It was first attempted at Banbury, in Oxfordshire, in 1777, by an apothecary named Hayward, the plants having been raised from seed sent from Russia, and with so great a success that Hayward received the Society of Arts' silver medal in 1789, and the gold medal in 1794. The cultivation was attempted in other parts of the country, and in the neighborhood of Edinburgh much has been produced, but in no case have they yielded such medicinal strength as that from the far East.

France commenced the cultivation some few years ago; but with the exception of a small quantity grown at Avignon, the culture has almost entirely ceased.

The prejudice which always existed, and still continues, for the foreign article has militated against any attempt to produce it nearer home, and the demand for such has scarcely proved an encouragement for further cultivation. It is on record that the culture of *Rheum compactum* was begun in Moravia in the early years of the present century by Prikyl, an apothecary, of Austerlitz, and until a few years ago the root was largely exported to Lyons and Milan, where it was used for dyeing silk. As a medicine, five parts are stated to be equal to four of Chinese rhubarb. The root is also grown at Auspitz, in Moravia, and at Ilmitz, Kremnitz, and Frauenkirchen, in Hungary. *R. emodi* is cultivated for the same purpose in Silesia. The rhubarb, used as a vegetable, consists of the leaf stalks of several hybrids. The petioles of *R. officinale* have also been proved to be edible, but this plant is chiefly grown on account of its ornamental foliage. The complete history of rhubarb is a most interesting one, and might be gone into at great length. It is remarkable that the first European who visited the rhubarb-yielding countries of China was the famous Venetian traveller, Marco Polo, who, speaking of the province of Tangut, says: "Et par toutes les montagnes de ces provinces se treuve le *reobarbe* en grant habondance. Et illec l'achatent les marchans et le portent par le monde."—*G.D., in British and Colonial Druggist.*

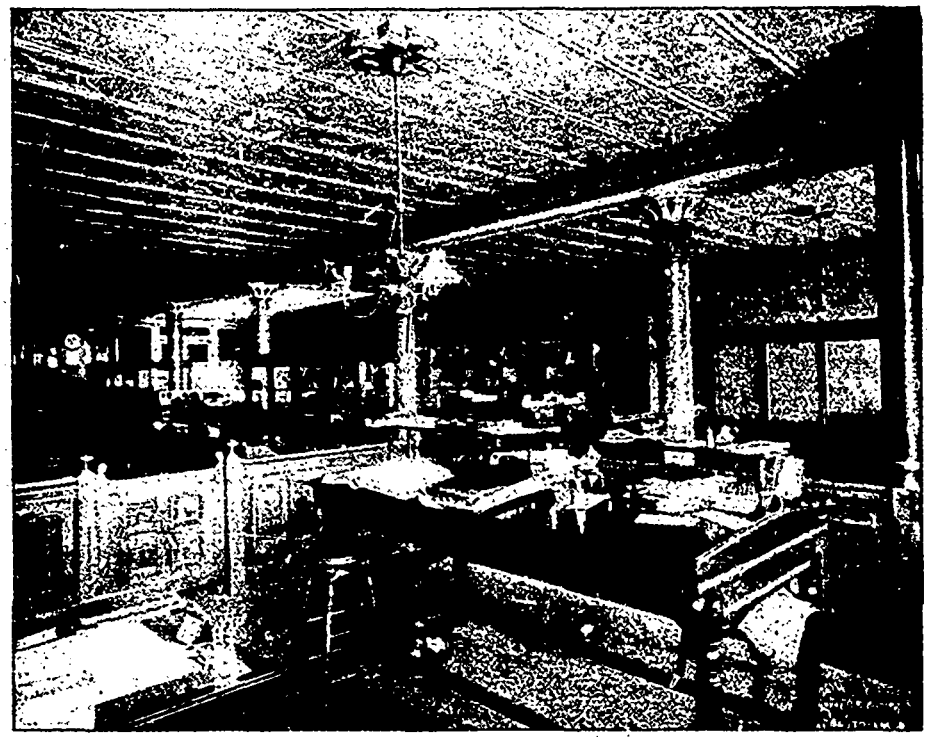
A Successful Firm.

The present wholesale drug house of J. Winer & Co. was established in the year 1830 in Hamilton, then a village of 1,000 inhabitants, by the late John Winer. From the first he did a limited jobbing trade, which was greatly enlarged after the fire that destroyed his property in 1845. Just recently, on the death of one of his oldest customers, the firm came into possession of several old invoices, one dated February 11th, 1846, in which prices are charged that would make modern jobbers' mouths water. The business, however, did not become exclusively wholesale till 1862, when the retail department was disposed of and the firm moved into part of the present premises. Since that time (apart from the retirement of the senior partner in 1884) there has been little change in the personnel of the firm, whose members now are Messrs. George Rutherford, John Mc Haffie, and Wm. C. Niblett.

Since they purchased the original building successive additions have been made as the business grew, till it comprised the present extensive premises, which cover the ground extending from King street, 300 feet in depth, to Prince's Square, with a total width of 40 feet throughout, an alleyway separating the front and rear warehouses. Last summer it was decided to remodel the King street building, and accordingly the two adjoining stores were thrown into one, a substantial modern front erected, and many improvements introduced, with the view of increasing the capacity and convenience of the warehouse.

There is in the five flats of the two buildings a floor space of nearly 50,000 feet (considerably over an acre), all of which is utilized to the fullest extent. The laboratory and rough workrooms are situated on the main street (Prince's Square) front; while the offices, showroom, and city delivery open on King street. A cut of the interior of these latter is given above, and they are so fitted up as to be not only commodious and convenient, but also handsome, and in this respect are said to be unexcelled (if equalled) by any other drug establishment in the Dominion.

The long experience of this firm as cash buyers in the primary markets, and their exceptional facilities for handling goods with cheapness and dispatch, have made them favorites with careful buyers in the territory they cover. They are not ambitious of a very widespread trade, soliciting orders by travellers only in Western Ontario, but they have old customers in all sections of the country who do not forget them. They also aim to confine their sales to the retail drug trade as far as practicable. They do not aspire to brilliance or novelty in their business methods, but continue to rely, as they have done through a long and moderately successful business career, on the old-fashioned, but not yet outworn, qualifications of intelligence, economy, and probity.



Interior of J. Winer & Co.'s Offices.

The Ointments of the New Pharmacopœia.

Mr. Peter Boa, in an address delivered before the North British branch of the Pharmaceutical Society, said: In his experience only about a third of the official ointments are commonly prescribed, and from inquiry he found that his experience was not exceptional. He proceeded to discuss the probable causes of this neglect of so many of the preparations, pointing out that *ung. acid carbolic.* contains the acid in crystals, because it is only partially soluble in the basis. Aconitine, atropine, and veratrine ointments are highly poisonous and dangerous, and have largely been replaced by preparations of cocaine and menthol. Calamine is inferior to oxide of zinc in ointment; creosote is efficiently and pleasantly replaced by carbolic acid; glycerine and subacetate of lead ointment is meant to be soothing, but any soothing effect which the lead may possess is neutralized by the irritating nature of a paraffin basis. Elemi, resin, savin, and turpentine ointments are relics of a style of practice now in disuse by the best practitioners. Spermaceti and simple ointments are not now so much in use as they have been, the benzoin in the former spoiling it for ophthalmic use; and the readiness with which the latter becomes rancid has brought it into disfavor. The author considers that the official bases are not quite satisfactory. Most of them become rancid, and the paraffins are not always bland, but *adeps lanæ* under certain conditions promise to be a good basis. He is not disposed to regard with favor one common basis. There might be a classification of certain ointments as regards strength and basis. Those which contain insoluble and not very potent substances might be of uniform strength, and made with a paraffin basis, while those with soluble active ingredients, like carbolic acid and eucalyptus, might be made alike in strength and fatty basis. If there were a basis in which the active ingredient is soluble, that basis should be chosen for it, unless objectionable in some other way. In all the official ointments, the ingredients of which are melted together, the directions are to stir till cold. The author has shown that in many of them this is unnecessary, and in some objectionable. Briefly, a stirred ointment is more liable to become rancid than one allowed to cool at rest. A basis of some non fatty substance, which would wash off with water without soap, might be useful. Tragacanth, starch, dextrin, and gum acacia, either alone or together, might be employed. Some more compound ointments of the sort in use now should be introduced. The compound ointments at present official are among the most useless in the book. Bismuth, cocaine, and menthol ointments are now much used in practice, and he suggested their recognition.—*Chemist and Druggist.*

Let trade see you are discouraged, and you discourage trade.

Canadian Druggist

WILLIAM J. DYAS, Editor and Publisher.

MAY 15TH, 1895.

A Dominion Pharmaceutical Association.

We have on several occasions pointed out through these columns the desirability of the formation of an association in the interests of the pharmacists of this country, on lines outside of those now existent, and embracing all the provinces in one organization. In our issue for March we again spoke of this matter, and urged the importance of prompt action being taken in the matter. We are glad to learn that steps are being taken in this direction, and a circular letter has been forwarded to all pharmaceutical associations in the various provinces of the Dominion, asking their co-operation in the matter. The initiative has been taken by the Pharmaceutical Association of the Province of Quebec, the oldest pharmaceutical body in Canada, and in doing so they are endeavoring to carry out a similar proposition which was made by them in 1893, but which, through the apathy of some of the sister organizations, was allowed to drop. A committee, appointed by the council of the association for the purpose of drafting by-laws and a constitution for the guidance of such a body as that proposed, have presented their report, and the council have adopted it, and instructed copies to be forwarded to the various provincial associations for criticism and suggestions. It is to be hoped that the steps now taken will be the means of accomplishing the much-desired aim of the promoters, and that the pharmacists of Canada, both officially through their provincial associations, as well as individually, will do all that lies in their power to further the proposed measure.

The following is a copy of the circular mentioned :

To the Council of the Pharmaceutical Association of the Province of.....

GENTLEMEN,—At the annual meeting of the Pharmaceutical Association of the Province of Quebec, held in June, 1893, the question of the formation of a Dominion Pharmaceutical Association, similar to that existing in the United States, was very fully discussed, and in the following July a circular letter was sent to all the pharmaceutical bodies of the Dominion, asking their co-operation in the object contemplated. Some of the associations responded at once, but it was some time before this association received replies from all the provincial bodies, hence the delay in taking further steps to promulgate the formation of the new association. We may, however, say that, with the exception of one provincial association, all the others offered hearty co-operation. Some four months ago the council of this association appointed a committee to take up the matter, and this committee has drafted a constitution and by-laws which, in their opinion, would be suitable for an association such as was contemplated. This council, at its last meeting, approved of the draft of constitution and by-laws submitted, and instructed their secretary to forward to each provincial association a copy of said constitution, with the request that each association, through its council or president, should consider the draft and return to this association their early reply, with such comments or suggestions as they desire to make. The council of the Quebec association have undertaken to meet the preliminary disbursements in the formation of the new association, with the understanding that if it becomes organized each association shall bear their *pro rata* share of the expenses, which will include the expenses of the preliminary meeting. As the Quebec association has been the prime mover in this undertaking, they naturally suggest that the preliminary meeting for organization be held in Montreal. In the formation of this new association, it is not intended to interfere in any way with the rights of the various provincial associations as they now exist.

In accordance with my instructions, I now have much pleasure in forwarding you a copy of the proposed constitution and by-laws for the new pharmaceutical association, and shall be pleased to receive an early reply from your association, hoping that it will be favorable to an active co-operation on behalf of your association. Yours respectfully,

E. MUIR, Secretary.

Customs Decisions.

Amongst the recent decisions arrived at regarding the duty to be paid on articles not mentioned in the tariff, the following of interest to druggists are mentioned: Medicinal capsules, empty or filled, are 25 per cent.; Fuller's earth (classed as a toilet preparation), 30 per cent.; pumice bricks, 20 per cent.; sheep dip, 20 per cent.; spectacles and eyeglass frames, complete, 20 per cent.; spectacles and eyeglass lenses, finished, 30 per cent.

The Extra-Pharmacopœia.

The publication of the eighth edition of the Extra-Pharmacopœia brings very forcibly to mind the many changes which are constantly taking place in the number and nature of preparations in use by the pharmacist and physician. Since the publication of the seventh edition, scarcely three years ago, the volume of matter which a work of this kind treats of has so increased as to necessitate the addition of over 100 pages. The present volume consists of 580 pages, and is an indispensable guide for the pharmacist who would keep himself thoroughly versed in medico-pharmaceutical literature. It is, in our opinion, the most complete and reliable help for everyday reference in the laboratory and dispensary that is published. H. K. Lewis, 136 Gower street, London, W.C., England, publisher.

An Advertising Story with a Moral.

A writer in one of the journals devoted to advertising recently told how he had entered a pharmacy to buy some shaving and toilet soaps and some brushes. He had never bought anything of the sort before (somebody had done it for him), and he knew nothing of the virtues or qualities of any of the various brands, but bought somebody's shaving soap, some other body's toilet soap, and somebody else's brushes, simply because he had become familiar with the various names from constantly seeing their advertisements in his favorite paper. He had never read one of the advertisements through, but his eye had become accustomed to the articles through thus seeing them. Do you suppose that he or the druggist sat down and wrote to the manufacturer that the sale was made through the latter's advertisement in that particular paper? Not much. And yet there is a class of merchants who, when approached by an advertising solicitor, will answer, "Oh, I've tried papers of your class; they are no good to me. I have never had a call for an article through an advertisement placed in them." How does he, or can he, know this statement to be true? It is simply impossible. Of course, some journals are of more value to every advertiser than others, and this value depends on various circumstances, not alone on the mere number of copies issued. Every astute advertiser knows how to rate journals in this respect; but no continued, well-constructed advertisement is ever lost. The mere sight of it from day to day, from week to week, or from month to month, educates every man, woman, and child to call for that article whenever he has occasion to buy. No advertisement, however, will make people buy what they do not need or want.—*National Druggist.*

A poor digestion is the cause of much financial disaster.

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THE leading Soda Fountains of to-day are the beautiful new designs in Mexican Onyx and Natural Woods, with **PATENT DRAWER SYRUP CANS.**

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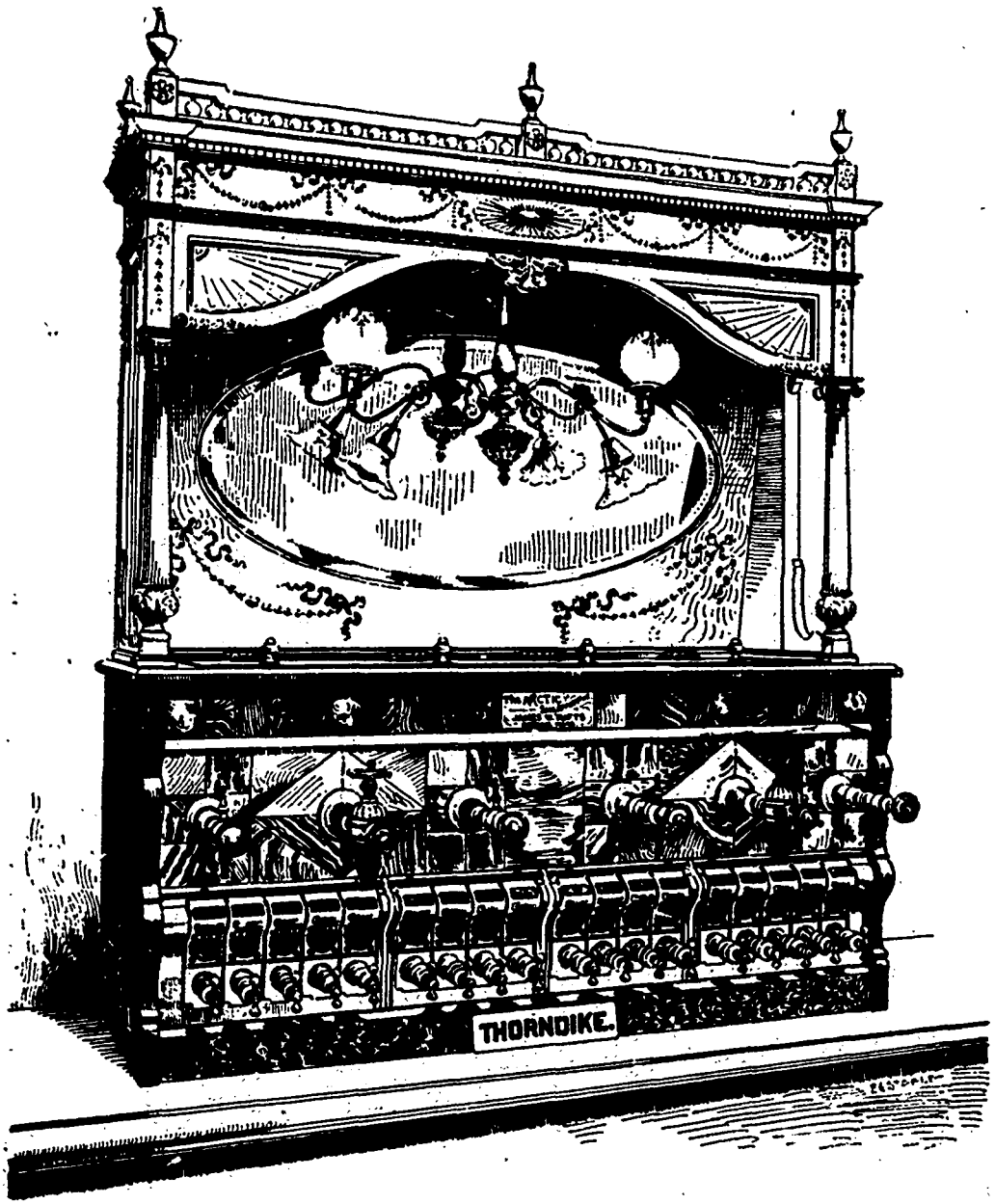

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The Chemistry of Photography.*

By J. R. Burn.

Photo chemistry is really the study of all those chemical changes which are brought about by light when it is absorbed by various substances, and its energy is expended in producing chemical decompositions; but I intend only to speak of it in its relations to the art of photography, and would more correctly have styled this paper with the longer title of "Photographic Chemistry."

The practical illustrations will be necessarily few, and limited to those which can be performed in gaslight, as some of the most interesting and instructive require a non-actinic light and considerable time to perform.

The chemistry of photography encroaches largely upon the domain of physics, perhaps more so than any other branch of chemistry, since nearly all the decompositions involved are at least initiated by the action of light.

The dictionary (Nuttall's) definition of photography is: "The art of fixing images of the *camera obscura* on plates of copper covered with a thin coating of silver." This definition takes us back to the days when photography was in its infancy, in the early part of the present century, since which time the term has come to mean a great deal more; but one point still holds good, and it is this, that all the surfaces employed for obtaining the image in the camera, almost without exception, are still dependent for their efficiency upon the susceptibility of silver salts to the action of light.

I will give but a short sketch of the history of photographic chemistry. Color photography was taken as a subject in a paper on "Recent Advances in Photography," by Mr. E. W. Hill, before the London Chemists' Assistants' Association, in November last, but I will refer to the chemistry of color photography, or, rather, orthochromatic photography, later on under orthochromatic plates.

History.—The action of silver nitrate in darkening the skin is reported as having been noticed as far back as the thirteenth century by Albertos Magnus. In the sixteenth century Fabricius mentioned the fact that horn silver, or native silver chloride, turned darker in color when removed from the mines, and the discoloration of silver compounds was noted by Glauber and Robert Boyle in the seventeenth century, but they do not appear to have attributed this change to the action of light. Schülze, a German physician, appears to have been the first to definitely prove that light and not heat, or action of the air alone, was the cause of the darkening, and he showed it experimentally by pouring silver dissolved in nitric acid upon chalk, and observing that the precipitate darkened upon the side exposed to light. It was not till the middle of last century that it was noticed by Professor Beccerues, of Turin, that precipitated silver chloride turned violet, then brownish violet, on exposing to light, and it is on a simlar change in the chloride, bromide, and iodide of silver, that the principal photographic processes of the present time depend. Two or three simple experiments here will serve to indicate what occurs when the halogen silver salts are exposed to the action of light, and will make my subsequent remarks much clearer.

Experiments.—The first experiment is intended to show the change of color in silver chloride by exposure to light. I form a precipitate of silver chloride in two large test tubes by adding to a solution of silver nitrate some hydrochloric acid. Above each precipitate I suspend bibulous paper moistened with potassium iodide and starch paste, then expose one of the tubes to the light of an electric arc for a few minutes while the other is kept in the dark. It will be noticed that the precipitate has changed color, from white to violet, in the tube exposed to light; also that the paper above it turns blue, indicating that chlorine, or some chlorine-containing gas, has been liberated, while that retained in the dark remains apparently unchanged. This clearly shows that the AgCl has, to some extent, been reduced by the action of light.

Next I form another quantity of silver chloride, pour upon it strong nitric acid, and expose to the electric light (gaslight is not sufficiently actinic or chemically active to serve the purpose) as before, and it will be seen that the change still takes place, although nitric acid is one of the strongest oxidizing agents. I will refer to this later.

At this point I must explain what is meant by the terms "sensitizers" and "restrainers." Any substance which, by its presence and chemical or physical action, causes the reduction of the silver salt by light or a developer to take place more easily and rapidly is called a "sensitizer"; while any substance which, by its presence, retards or prevents the chemical decomposition of the silver or other salt acted upon is known as a "restrainer."

In illustration of restrainers, I have some silver nitrate solution as before, and add to it some gelatine solution, then a few drops of hydrochloric acid. It will be observed that the precipitate is much slower in forming, and this is because the gelatine, by giving viscosity to the solution, acts as a "physical restrainer," yet, at the same time, gelatine is used as a "chemical sensitizer," because it has the power, even when "set," of absorbing the halogen-chlorine, bromine, and iodine.

Collodin is also a "physical restrainer," but it differs from gelatine in that it is not a "chemical sensitizer," *i.e.*, it will not absorb or combine with the halogen.

Ferrous sulphate is used as a developer for collodion wet plates, and acts by reducing the silver nitrate to the metallic state, while the ferrous salt is raised to the ferric condition according to this equation:

$$6FeSO_4 + 6AgNO_3 = 2Fe_2(SO_4)_3 + Fe_2(NO_3)_6 + 3Ag_2.$$

On performing this experiment in test tubes it is seen that the reaction takes place at once, and it is too rapid to be of service in development, but on doing this again in the presence of a little acetic acid it is evident that the reaction takes place much more slowly. It is thus that acetic acid acts as a "chemical restrainer" in development.

After this digression, I will now refer briefly to the more important processes in the order of their discovery which have led up to our present state of knowledge in the art of photography. The first process of copying pictures painted on glass, or profiles cast by a strong light, was devised by Thomas Wedgewood and Humphry Davy in the year 1802, and was performed by placing the transparent picture or the opaque profile in front of paper or leather impregnated with solution of silver nitrate or coated with silver chloride, and exposing to light. A darkened image was produced, but they had no means of fixing this image, *i.e.*, preventing a further darkening of the silver salt by what we call a fixing agent, and consequently the result was not permanent. This is, of course, quite similar to our methods of printing in the printing frame. An imperfect fixing agent was supplied by Fox Talbot, in 1839, who employed a solution of common salt, which acted by removing the greater portion of the silver chloride which had not been acted upon by light, but not all, therefore the resulting picture was not permanent. In the same year Sir John Herschell showed how all the unaltered silver salt might be dissolved by sodium thiosulphate, or "hypo," which is the fixing agent still most generally employed. The prints were called Talbotypes, after Fox Talbot. Joseph Niesse, in 1824, was the first to be successful in fixing a photographic image obtained by means of a lens, and he did this by coating a metallic plate with bitumen, a pitch like substance, and exposing in a camera for *some hours*. His developer was a rather expensive one, viz., oil of lavender, which dissolved the portions of bitumen unaffected by light, and left on the plate a picture of insoluble bitumen. Niesse discovered this method after working on various substances for a period of fifteen years. Niesse died in 1833, and in 1839 Daguerre, who worked along with Niesse a few years before he died, made known what is called a Daguerreotype process. In this process a highly polished plate of silver, or silvered copper, is exposed to the vapors of iodine and bromine alternately, forming a film of silver bromo-iodide, the sensitiveness being judged by the color of the surface. The method of sensitizing was improved until a Daguerreotype plate was prepared, which is as rapid as a wet collodion plate, but the image can only be seen at a certain angle.

The Calotype process, which comes next, was patented by Fox Talbot in 1841, and consists in having a mixture of bromide and iodide of silver on paper

*Read at a meeting of the Liverpool Pharmaceutical Students' Society.

sensitized with silver nitrate and gallic acid, and developed with these latter, and fixed with sodium thiosulphate. Calotype papers subsequently received a better surface by being coated with albumen and gelatine, and after being waxed were used as negatives from which to obtain positive copies to any number by printing in the sunlight. There were many drawbacks to the Calotype process, such as lack of uniformity and transparency, owing to the grain of the paper and its partial opacity to light. Experimenters sought to remove these, and in consequence glass plates were successfully introduced in place of paper as a support for the film in the year 1847, when the Niepceotype process was brought out by Niepce de St. Victor. This consisted in coating a glass surface with a mixture of albumen and potassium iodide, and, when dry, immersing it in a solution of silver nitrate. Sensitive silver iodide was thus formed on a substratum of albumen, and it was found that these plates could be used dry, the albumen acting like gelatine, as an absorbent of iodine, *i.e.*, as a sensitizer. Four years later, in 1851 (scarcely forty-five years ago), the "collodion wet-plate process" was made known in a practicable form by Scott Archer, and this is the process which was practically used by photographers to the exclusion of all others until about fifteen years ago, when the introduction of the "gelatine dry plate," in an improved form, rapidly superseded the collodion wet plate on glass in everyday use, until the latter has now become almost obsolete, the wet collodion film being now little used except by itinerant photographers, who use it for taking positive pictures direct on the enamelled surface of ferrotype tin.

The necessity for preparing the wet collodion plate at the time of using was found especially inconvenient in outdoor and away-from-home photography, consequently efforts were made to prepare plates which could be kept for some time both before and after exposure. The *gelatine* dry plate of to-day was not the first which could be so used, for the collodion wet plate was soon followed by the collodion dry plate, which was first prepared by Taupenot in 1853, but was not brought out in a really practical form until 1861, when Colonel Russell, who experimented much in this direction, introduced a dry collodion plate which would keep, and was fairly free from defects, but not so quick as the wet plate. This collodion dry plate was very similar in mode of preparation to the wet collodion, but I will explain the essential difference later on.

In 1864, the first dry plate coated with an "emulsion" was introduced by Bolton and Sayce, the film consisting of silver bromide emulsified in "collodion"; but it was not until 1871 that the practical details of the *gelatine emulsion* dry plate process were made known by Dr. R. L. Maddox, although the use of gelatine as a vehicle was suggested by Gaudin as far back as 1853.

This completes a short account of the *progress of photographic processes up to* the present time, and we will now consider, first of all, the

Chemistry of the Wet Collodion Plate.—This kind of plate was almost universally used fifteen or twenty years ago. The preparation of the plate on which the image is to be obtained, of which I have here a specimen to show you, may be described as follows: A sheet of glass cut to size is made chemically clean. A collodion is then prepared, of which I have here a sample, by dissolving pyroxylin in a mixture of alcohol and ether (it is very similar to that of the Pharmacopœia), and in this collodion some soluble iodide, or generally a mixture of bromide and iodide, is dissolved. The iodides and bromides of Zn., K, NH_4 and Cd. have all been used; but the ammonium and cadmium salts are chiefly employed. When the soluble salts are added to the collodion, along with a little free iodine as a rule, it is said to be "salted." The "salted collodion" is to be dexterously poured over the glass plate, on which it very quickly sets, on evaporation of the ether and spirit, leaving a fine transparent film of salted pyroxylin. The plate is then sensitized by immersing it in a solution of silver nitrate containing a little iodide of potassium. The strength and purity of this silver bath, as it is called, is of great importance, also that it be neutral or only slightly acid. The foregoing operation of sensitizing with silver nitrate must, of course, be performed in the dark or in the ruby light. The plate is placed in the camera whilst wet, and exposed and developed before it dries. An acid developer must be used for a wet plate, since an alkaline developer would immediately cause the precipitation of the silver nitrate as silver oxide. Two typical examples of the developers used are: (1) Pyrogallic acid, gr. 1.; glacial acetic acid, m. 20; alcohol, q.s., and water 1 ounce. (2) Ferrous sulphate, 20 grs.; glacial acetic acid, 10 minims; gelatine, gr. 1.; alcohol, q.s., and water 1 ounce. The chemical reactions are as follows: On immersion of the plate in the silver nitrate solution, the soluble, iodides, and bromides in the film form silver iodide and bromide, thus:

$$NH_4I + AgNO_3 = AgI + NH_4NO_3.$$
$$CdBr_2 + 2AgNO_3 = 2AgBr + Cd(NO_3)_2$$

The sensitive silver salts are thus deposited evenly over the surface of the film, and are superimposed by a layer of silver nitrate solution. On exposing the moist plate in the camera a very small proportion of the iodide and bromide of silver is reduced by the action of the light, which is reflected to it from the object through the lens, and with proper exposure the amount of reduction is proportionate to the intensity and color of the light. I might remark here what will be well known by most of you, that the silver salts are more easily reduced by the violet, blue, and green, or more refrangible rays, than by the orange and red rays, but it will be seen, when speaking of orthochromatic plates, how objects of the latter colors may be photographed quite as faithfully by indirect methods. The change which takes place when the image is transmitted by the lens to the plate has long been represented by this equation:

$$2AgBr = AgBr_2 + Br \text{ or } 2AgI = Ag_2I + I.$$

It is true that Br and I are liberated just as chlorine was seen to be in the case of silver chloride, but there are many arguments which go to show that the reduction product is not simply a subbromide or subiodide, etc., as, for instance, the fact that the change takes place under strong nitric acid, as we saw a little while ago, which is a powerful oxidizing agent, and is known to effectually prevent all similar reactions with other analogous metals, such as copper and mercury. The subject was investigated by Dr. W. R. *Hodgkinson some few years ago (about* 1889), and he states that the reduction product is an oxychloride, bromide, etc., of the probable formula

$$\begin{matrix} AgAgCl. \\ / \\ O \\ \backslash \\ AgAgC \end{matrix} \quad \text{or } Ag_2O,2AgCl.$$

This view is supported by Professor Meldola, and, as it allows for the liberation of halogen (which is replaced by oxygen), it seems to be a more logical view of the change which occurs. Now it is found that this change takes place much more rapidly in the presence of some substance which absorbs the bromine and iodine as soon as it is formed, and in this case the $AgNO_3$ is the sensitizer which thus forms fresh iodide and bromide of silver, and gives off nitric acid, possibly according to this equation:

$$6I + AgNO_3 + 3H_2O \quad 5AgI + AgIO_3 + 6HNO_3,$$

although the $AgIO_3$ may not be formed, but the small amount of oxygen may be liberated. Hence the necessity of having the silver nitrate solution upon the surface during exposure, for the collodion, or, rather, pyroxylin film, has no absorbing power, and takes no part in the chemical reaction.

To follow the changes on developing, we will take the iron developer previously given, and observe what occurs. If the ferrous sulphate solution alone were applied to the plate, the reaction previously explained and shown would take place—$6FeSO_4 + 6AgNO_3 = 2Fe_2(SO_4)_3 + Fe_2(NO_3)_6 + 3Ag_2$, and the metallic silver would be deposited all over the plate. But the acetic acid (also the gelatine, which, by the way, is not altogether necessary) is here to prevent this. It reacts with the silver nitrate, and forms acetate of silver, which is not so readily decomposed by the ferrous sulphate, although the eventual precipitate is of a more suitable kind for forming the image, and thus the precipitation of the silver is retarded according to the quantity of acetic acid present. Other acids could be used in this way, but acetic is found

to be most suitable in every way. The acetic acid thus acts as a "chemical restrainer"; gelatine acts as a physical restrainer by giving greater viscosity to the developer. The alcohol is added to overcome any repellent action offered to the water by the alcohol-ether prepared film, and thus enables the developer to flow evenly over the surface of the film. When the reduction of the silver nitrate is thus retarded, it is found that the portions of haloid silver salt on the film have an attraction for the precipitated silver in proportion to the extent to which they have been previously reduced by the action of light, so that the particles of silver are gradually built up upon these portions. It is extremely interesting and important to note here that in this wet plate process the image is not formed from the film, or even one might say from a portion of the film, but that it is built up on the surface of the film from the silver which is contained in the solutions. After intensifying with additional developer, if necessary, the plate must be fixed, *i.e.*, the unaltered silver haloid salt must be dissolved off the surface of the film, that it may be no longer sensitive to light. For this purpose a strong solution of sodium thiosulphate is used (3 or 4 ozs. to the pint), or a much weaker solution of potassium cyanide (25 grains to the ounce). The reactions in fixing, with equations, respectively, are according to these equations:

$$AgI + 2KCN = AgK(CN)_2 + KI$$
$$AgI + Na_2S_2O_3 = AgNa(S_2O_3) + NaI.$$

The potassium cyanide is preferred as a fixing agent for collodion plates, because it fixes rapidly, and is more easily removed from the surface than hypo by subsequent washing. On looking up the chemistry of the fixing process by sodium thiosulphate, I find that Professor Meldola states the correct formula to be $Ag_2Na_4(S_2O_3)_3$, while Capt. Abney states just the reverse in his "Instruction in Photography," and other books on chemistry do not mention that two double salts can be formed, but I am inclined to think that the formula $AgNaS_2O_3$ is that of the highly soluble salt. The formation of the soluble double salt in a strong fixing solution, and of the insoluble in a weak solution, can easily be shown in test tubes. It is certain that the yellow stains which sometimes occur on prints during toning are formed by this insoluble thiosulphate, owing to a minute trace of hypo getting into the toning bath from the fingers or otherwise. This can also, I find, be easily demonstrated by a simple experiment on ordinary paper.

I will now hastily describe the dry collodion plate, which is never used now, but is the first plate which was prepared to be used when dry. A thin coating of albumen or rubber solution of gelatine is painted on the plate to make the film grip, then a salted collodion is prepared in the same way as for the wet collodion plate, and is flowed over the glass plate, which is then immersed in the silver nitrate solution to sensitize, but the superfluous nitrate solution is afterwards washed away, because, if allowed to dry on, it would crystallize and spoil the film of silver haloid. An organic preservative is then coated over the dried surface, and allowed to set. This preservative prevents the haloid salts from becoming perfectly dry, and, consequently, less sensitive, and protects them from the action of the air. But its chief use is as a sensitizer (or absorbent of the bromine and iodine evolved) in place of the silver nitrate solution, and in this way it acts like gelatine. Many curious substances have been successfully employed as preservatives, among which may be mentioned tea, albumen, coffee, stale beer, and a solution of gallic acid with gum; the latter being, perhaps, the best or equal to any. The developer used is similar to that employed for wet plates, a little silver nitrate solution being added to give density by the further precipitation of silver, and fixing is carried out with cyanide or hypo as usual.

Chemistry of the Collodion Emulsion Plate.—This plate has also been discarded of late years for the more rapid gelatine emulsion plates, but, as its mode of preparation is very similar to that of the gelatine plate, it will be worth while enumerating the chief points in the process.

The silver bromide, or other sensitive haloid salt, is suspended in a very finely-divided state in the collodion, but, of course, water cannot be used alone as a solvent of the reacting salts, because it would precipitate the pyroxylin of the collodion from its solution. The general method of preparing the plate is to dissolve bromide of cadmium, or zinc, or ammonium in alcohol, add to this a few drops of nitric acid, and add the solution to collodion. This constitutes the "salted collodion." A solution of silver nitrate in alcohol is then prepared and very gradually added to the salted collodion, with constant stirring or shaking, the amount of silver nitrate added being sufficient to leave an excess after all the zinc or cadmium bromide has been acted upon. The collodion emulsion of silver bromide thus formed should have a deep orange or ruby tint by transmitted light. These operations need not be performed in the dark room. The reasons why the emulsion is not appreciably sensitive up to this point are because the soluble salts present act as "restrainers"; and, secondly, because the particles of silver haloid formed are so minutely divided. The latter reason I will explain more fully when speaking of the gelatine emulsion. After allowing the emulsion to stand for some hours to "ripen," as it is called, the alcohol and ether are evaporated and the solid mass is washed in several changes of water to get rid of all soluble salts. The mass is then dried, redissolved and flowed over the glass plates. In this film the sensitizer is a very minute quantity of silver nitrate, which is retained by the particles of silver bromide. Note here the difference between the collodion wet plate and the collodion emulsion plate on development. In the wet plate you will remember that the image was formed by silver precipitated from the superincumbent solution of silver nitrate, but here the image is formed from the silver bromide in the film, and the same statement holds good for the gelatine emulsion plates which we now use. The minute quantity of silver bromide, reduced on the surface by the action of light, is further reduced to metallic silver by the developer, which may be an alkaline pyrogallic solution, because in this case no silver nitrate is present in solution. This "nascent" or active silver immediately reduces the bromide below it, and this partially reduced salt, in turn, is further reduced to the metallic state by the developer. Thus an image of metallic silver is embedded in the film.

Chemistry of the Gelatine Emulsion Plate.—The gelatine emulsion is made by methods very similar to the foregoing, gelatine taking the place of collodion, water that of alcohol and ether as the solvent, and potassium or ammonium bromide and iodides replacing the zinc or cadmium salts since water is the solvent.

Method of Preparing the Gelatine Emulsion.—There are many formulas for gelatine emulsions, and perhaps as many different methods of preparing them; but the following rough description will give a fair idea of the general *modus operandi*. A small portion of the gelatine is dissolved in water and mixed with silver nitrate solution; into this a solution of bromide, bromide and iodide, or chlorate of potassium or ammonium in water is carefully poured, with constant stirring or shaking; the remainder of the gelatine solution is then added, and the emulsion is heated for some stated time, or "cooked," as it is called, or else a little ammonia solution is added. This cooking or addition of ammonia is intended to "ripen" the emulsion, *i.e.*, to give it the maximum or the desired sensitiveness to light. The solution is then cooled after a certain time to the solid state, when it is freed from soluble nitrates, bromides, etc., by repeatedly squeezing it through coarse cloth under water, after which it is remelted and coated over glass plates or over films in the usual way. In this emulsion the state of physical aggregation of the silver bromide molecules is very fine, so that the particles come into intimate contact with the gelatine, which, as previously stated, is an absorbent of the halogen. For a good, sensitive emulsion it is found necessary to have an excess of soluble bromide present on mixing. Excess of silver nitrate would cause the formation of a compound of silver and gelatine, not much affected by light, but easily decomposed by the developer, producing "fog," *i.e.*, a film of silver over the plate. The excess of bromide with heat, or the ammonia added in the "cold process," causes a small quantity of the silver bromide so dissolve, and this is reprecipitated on the undissolved particles, thus causing them to grow in size. Up to a

certain point this increase in size gives a vast increase in sensitiveness, and "instantaneous plates" are prepared by prolonged cooking or by treatment of the emulsion with ammonia and slight heat.

In the case of a collodion emulsion, the light transmitted is of an orange or ruby tint, the violet, blue, and some of the green rays being absorbed, and it is just these absorbed rays which most readily reduce the silver salt, the orange and red rays being comparatively inert, and having *even a retarding action on chemical* change in some instances. According to what is known as Draper's law, a chemical change in a substance by the action of light involves the absorption of the chemically active portion by the light of the substance. This leads me on to orthochromatic photography, that is, the production of photographic images in their correct color value. So far this has not yet been quite achieved, but much has been done to that end. The silver salts in the film are not acted upon by the various colors in the same ratio as the eye is impressed by them, that is to say, the "photographic" and visual intensities of light are very different. Thus a blue object looks much less intense for light value to the eye than a red object, yet the light reflected from the blue is much more intense in its chemical action upon a film of silver salt than the light from the red. In showing how to correct this difference, Professor Vogel, in 1873, found that the silver haloid salts were rendered more sensitive to yellow and greenish-yellow rays by tinting them in a collodion film with coal-tar dyes, such as eosin, cyanin, etc., that is, these dyes acted as sensitizers of the silver salts for yellow and greenish-yellow rays. Since then other dyes have been used for these and other colored rays, but the greatest photographic intensity is still, as a rule, possessed by the violet and blue rays, although that is almost surmounted by placing a screen of tinted yellow glass before the lens, which absorbs some of the blue rays and modifies the action of that colored light upon the plate. I have here specimen photographs of flowers in vases taken with an ordinary film and an orthochromatic film with the yellow screen. The difference in gradation of tone will be evident. To prepare the plates they are either dipped for a time in a solution of the dye, then dried, or the dye is added to the emulsion before coating the plate.

The chemistry of orthochromatic photography is still based to a large extent upon theories which have not been corroborated by facts, although much experimental work has been done. The following explanation is based upon a number of interesting experiments by Captain Abney, *which I have not time to give in* detail.

It has been observed that amongst the most sensitive dyes are those which most readily fade. If a dyed plate be exposed for a long time in the spectrum, it is found to be bleached in the region of the yellow and red rays, or that part which is sensitized. If a short exposure be given and the plate be developed, the silver salt is found to be reduced most in the part which would be bleached by a long exposure, although sometimes the region of greatest intensity is somewhat intermediate between the maximum of the silver salt alone and that produced by the dye. Under the action of light of a certain color or wave length, the dye seems to decompose, forming products which have *the power of reducing the silver salts be*low it, so that on development it is further reduced to the metallic state. Eosin, erythrosin, cyanin, and rose Bengal seem most suitable for obtaining a wide range of photographic intensity. Lippmann, by exposing a film of albumen treated with bichromate of potash solution and backed with a mirror of mercury, has obtained a plate which, when wet, shows an image by reflected light, which very nearly approximates to the natural colors. So far as I am aware no nearer approach to direct color photography has yet been made.

I now pass on to the "Chemistry of Intensification of the Image," and what follows must be very brief. One of the best and simplest methods of intensifying or increasing the density of the image is one which was introduced not long ago by Selle, and I mention it first because I wish to intensify half of a plate by this method in order to show the change which is effected. The intensifier consists of uranium nitrate and potassium ferricyanide, and the reactions are probably as follows: Uranium ferricyanide is formed in solution, and this is poured over the plate. The metallic silver on the plate has a reducing action on the ferricyanide causing insoluble ferricyanide of uranium and ferricyanide of silver to be formed, the former salt having a brown color. The color of the intensified image is very pleasing. Lead ferricyanide is used in the same way, and the reaction may be represented thus:

$$2Ag_2 + 2Pb_3Fe_2(CN)_{12} = Ag_4Fe(CN)_6 + 3Pb_2Fe(CN)_6.$$

The favorite method of intensifying consists in bleaching the image with a solution of mercury bichloride, and afterwards changing the color to brown or black with ammonia or the double cyanide of silver and potassium. On treating with the first solution, the silver reduces the perchloride to insoluble white subchloride of calomel, and silver chloride is formed at the same time. On adding ammonia solution, the subchloride of mercury is converted into insoluble black di-mercuros-ammonium chloride, and the silver chloride is dissolved out.

$$Hg_2Cl_2 + 2NH_3 = NH_2Hg_2Cl + NH_4Cl.$$

If the perchloride treatment be followed by the application of the double cyanide of silver and potassium, the black deposit is found to consist largely of silver with some mercury, cyanogen, and a trace of chlorine. The chief reaction might be represented thus:

$$Hg_2Cl_2 + 2AgK(CN)_2 = Ag_2 + 2Hg(CN)_2 + 2KCl.$$

Chemistry of the Toning of Silver Prints. —In albuminized sensitized paper, the salted albumen surface consists of albumen and ammonium chloride. The "salted paper" is floated on a bath of silver nitrate, then dried; a surface of silver chloride and silver albuminate being formed. On toning the silver image with gold or platinic chloride, the reduced silver salts, which constitute the image, in turn reduce the gold or platinum salt in solution, and a fine film of gold or platinum metal is deposited over the surface of the image, changing its color. The silver salts, unaffected by light, are dissolved out on fixing with sodium thiosulphate, as previously explained. Such salts as ammonium sulphocyanide are added to the gold solution in order to form salts of gold, which are more easily reduced than the chloride, and alkaline additions, such as borax, bicarbonate of soda, chalk, etc., are intended to prevent the formation of free acid, which would act as a restrainer and stop the toning process.—*British and Colonial Druggist.*

A Severe Case.

Two weeks ago I was summoned to the bedside of Djoahnne Sdtleometzhler. The involute and labyrinthinate tangle of his symptoms made me suspect at first that he had absorbed his own name. But further examination convinced me that he was the victim of typhomalariopneumophthisicotrychinotetanoataxionephreticosplenitis. Owing to the ubiquity of pathogenic bacilli, antiseptics are always indicated, so I exhibited calcium betanaphtholalphamonosulphonate. As the patient suffered from severe non-localized pain, I gave orthooxyethylanamonobenzoylamidoquinoline combined with salicylaldehydmethylphenylhydrazine. For his insomnia I gave trichloraldehydphenyldimethylpyrazolone.

His wife asked me what ailed him. I told her, and she said "yes," and turned very pale. Upon examining him on the next morning I became convinced that the vital forces had misconstrued the remedies, and that a congeries of retroabsorptions had resulted. I then wrote out the following prescription:

℞. Tetrahydrobetanaphtholamine,
Sodium thioparatoluidinesulphonate,
Orthosulphamidobenzoic anhydride,
Amidoacetoparaphenetidine aa ʒj.
M. Sig.: A teaspoonful every hour.

When the wife presented the prescription to the druggist he instantly dropped dead! The patient is up and about, but something is wrong with his Broca's convolution—he mutters in a multisyllabic *lingo that is intelligible only* to modern pharmacists. I am in hiding where the spiral melody of the woodbine that twineth blendeth ever sweet, low, soothing, murmurous quadrisyllabic rhythmic rune of the gentle polygonum punctatum.—*Dr Cooper, in Medical Gleaner.*

The Early History of Phosphorus.

The term phosphorus was formerly applied to any substance which was luminous, either after exposure to light or after the application of heat, and the "phosphori," which received so large a share of attention, had no connection with the substance now known as phosphorus, and should rather be regarded as the ancestors of the luminous paints of to-day.

The peculiar, light-emitting property of the phosphori, however, secured to them so great a popularity among the dilettanti that when the element was isolated it was sold at a fabulous price, and was regarded by many as an important step towards the discovery of the divine arcanum by which base metals could be transmuted into gold. The value possessed by the so-called phosphorus (a sulphide of barium) of Balduin in the seventeenth century is well shown in a letter from Christianus Adolphus Balduinus to Mr. Oldenburg, sent with a piece of "phosphorus" in a silver-gilt box for "His Majesty the founder of the Royal Society" (*Phil. Trans.*, 1676-7, vol. xi., No. 131, p. 788).

Although, with an unusual extension of the novelist's license, Charles Reade makes one of the characters in the "Cloister and the Hearth" use phosphorus in the fifteenth century, it was not until the year 1667, according to some authorities, or 1669, according to others, that it was actually isolated.

The discovery has been variously attributed to Brandt, Krafft, Kunkel, and Boyle. It would appear that either Brandt or Krafft was the original discoverer, but there is little doubt that Robert Boyle discovered it independently, for Kunkel himself stated that such was the case (see Kunkel's "Laboratium Chymicum," page 660, and Weigleb's "Geschichte des Wachsthums und der Erfindungen in der Chemie," v. i., p. 41). A paper deposited by Boyle with the secretaries of the Royal Society on October 10, 1680, and opened after his death, shows that he really obtained phosphorus from urine while the German process was still a secret (*Phil. Trans.*, 1692, v. 17, No. 196, p. 583).

Godfrey Hanckewitz, Boyle's assistant, appears to have been most expert in the manufacture, and is said by Thomson ("System of Chemistry," 1817, v. i., page 258) to have supplied all Europe for many years. According to Thomson, this phosphorus was known as "English phosphorus," but Hellot, who published the first complete description of the preparation, says that phosphorus was known throughout Germany as "Kunkel's phosphorus" (see "Mémoires de Mathématique, etc., de l'Académie Royale des Sciences," 1737, pp. 342 to 378). Hanckewitz gives a somewhat different version of the discovery of phosphorus, which will be found in the later portion of this article.

Probably the most reliable account of the discovery is that of Godfrey de Leibnitz in the "Miscellanea Berolinensia" (1710, v. i., p. 91 to 98). According to this account, "Brandt had fallen on a chymical process extant in a printed book, which taught how to prepare from urine a liquor fit to ripen a particle of silver into gold; and in laboring on this he found out his phosphorus. He had some acquaintance with Daniel Krafft, of the Council of Commerce to the Elector of Saxony; and, by his means, with Kunkel, one of the said prince's bedchamber, but who, under that character, performed chymical processes. On persuading Brandt that this arcanum might be sold to the great at a high price, and offering him their assistance, they obtained the composition from him. And upon going from Dresden to Hamburgh, they both saw and learned from him the process of the phosphorus. But Kunkel upon his return home had committed some mistake in the process, and for a long time could not hit upon the phosphorus, and he sent a letter to Brandt, complaining that the secret had not been sincerely communicated to him. But Brandt, repenting that he had been so easy in imparting the secret, delayed to satisfy him. Kunkel, in the meantime, after various trials corrected the error himself, whence he pretended to be the inventor, and of this Brandt bitterly complained.

"Krafft, who was a man of good address, undertook to vend the discovery among the great; and, in his way to England, he made a visit at Hanover, and ingenuously mentioned to me both the matter of the process and its author, Brandt; and he likewise showed the experiment of the phosphorus, to the great surprise of Duke John Frederic, and afterwards in England to King Charles II., Prince Rupert, the illustrious Mr. Boyle, and others, of which there is an account by Mr. Hooke. But he never, so far as I know, mentioned himself as the inventor. The phosphorus was first sent into France by me to Huygens, and at length the composition itself was by the illustrious Tschirnhausen, upon his return from Germany into France, communicated from me to the Royal Academy, to whom Huygens had already shown the thing. That Boyle had got but an imperfect description of it appears from his dissertation on phosphorus; for his phosphorus differs from Brandt's only in this, that it is more imperfect.

"But Duke John Frederic, as he was a magnificent and generous prince, ordered that I should send for the inventor. Brandt, therefore, came to Hanover and faithfully communicated to us the process, for whatever he did I imitated in another laboratory. Upon collecting a large quantity of urine, Brandt came to us, and went through the process. Upon Brandt's return to Hamburgh the duke settled an annual pension upon him, which was punctually paid him till the duke's death; and this probably was the only considerable encouragement which he reaped from his phosphorus."

Dr. Kunkel's phosphorus or "noctiluca" was also described in the "Philosophical Collections of Mr. Robert Hooke" (1681, No. 2, p. 8) by Dr. Sturm, who stated that Kunkel could extract phosphorus "out of any kind of terrestrial body whatever, as if it were there naturally placed."

Owing to the singular properties possessed by phosphorus, it occupied the attention of all the principal chemists whose writings are extant in the scientific literature of the period. Among these may be mentioned Tschirnhausen ("Anciens Memoires de l'Académie Royale de Paris," 1682, vol. i., p. 342), Homberg (*loc. cit.*, 1692, vol. ii., p. 135), Hofmann ("In Observationibus," Hall's edition, 1722, p. 336), Theichmeier ("Elementa Philosophiæ Naturalis et Experimentalis," 1724, p. 43), Nieuwentuit ("Existence de Dieu Demontree, etc.," p. 324), who obtained phosphorus from "old urine," which he collected from a hospital; Marggraf who gave in the "Miscellanea Berolinensia" (1743, v. vii., pp. 324 to 344) a plate of figures showing the furnaces which he employed, and others whose work is referred to later.

According to Chambers' "Encyclopædia" (1738), a Mr. Elzholt published in 1676 a special treatise dealing with phosphorus, and the "Aerial Noctiluca" of Boyle (1680), bearing on the subject, is well known.

The process employed by all the earlier investigators consisted in evaporating urine (which contains about 0.032 per cent. of phosphorus) to dryness and distilling the residue until the phosphorus passed over, and, considering that the chemists of the period adopted the process of destructive distillation as the best means of ascertaining the composition of nearly all organic bodies, it is remarkable that the discovery was not sooner made. The most successful workers appear to have been those who were most experienced in the use of furnaces, but some of them laid great stress upon the source of the urine, and that of beer-drinkers appears to have been in especial favor. Boerhaave ("A new Method of Chemistry." Translated by Shaw and Chambers, 1727, p. 196), however, says that the best is that from persons not much accustomed to drink wine.

Homberg mixed the dried urine with red bole, Boyle employed white sand, and Boerhaave powdered charcoal, but a very considerable improvement was introduced by Marggraf, who added lead chloride to the dried urine, and by Giobert, who first precipitated the phosphoric acid with lead nitrate and distilled the lead phosphate so obtained with charcoal ("Annales de Chimie," v. 12, p. 15).

The ignorance which prevailed among chemists as to the true nature of phosphorus is well shown in the following account from James' "Medical Dictionary" of 1745:

"Dr. Wall informs us that Mr. Boyle, being concerned to find how small a proportion of phosphorus was afforded by urine, desired him to look out for another subject that might afford it in greater plenty. The doctor afterwards causing a piece of dry matter to be dug up in the fields where night-men emptied their carts, he observed a great number of small par-

ticles of phosphorus therein. This matter the doctor immediately carried to Mr. Boyle, who set Bilgar, the chymist, to work upon it. But he could obtain very little phosphorus from it till another material was added to it in distillation, and then he procured phosphorus in such plenty that, selling large quantities at six guineas the ounce, he soon became rich, and left England." It should be mentioned that Bilgar was assistant to Boyle before Hanckewitz.

It is probable that, by the end of the seventeenth century, no substance had been so fully and accurately experimented upon, although the explanations of its action and the anticipations of its value were often expressed in almost ludicrous terms. Dr. Frederick Slare (Hooke's "Philosophical Collections," 1681, No. 3, p. 48, and No. 4, p. 84) says that it was then obtained as "transparent as any resin" and melted like wax in warm water. His remarks show that it was even then obtained in a state of great purity, and he finishes his paper by saying "what medical use may be made of this noble concrete time may discover," adding the hope that it may explain "certain phenomena of nature, including the observation of the learned Dr. Croone, who, on rubbing his body with a fresh and well-warmed shift, made both to shine."

An amusing example of the almost religious ceremony with which phosphorus was treated is found in the *Philosophical Transactions* (1733, vol. 38, No. 428, p. 55), where a description and an elaborate drawing of an apparatus employed for burning phosphorus is described by Dr. Frobenius, the companion of Hanckewitz. The phosphorus was ignited in a golden bowl, contained in another golden bowl on a tripod of the same metal, a glass-bell jar being suspended above to receive the "snow" which the combustion produced. The apparatus was described as the "Machina Frobeniana," and each operation was compared with one of the phenomena of nature, the phosphoric anhydride to snow, and its deliquescence to the melting of snow. In this and similar experiments the learned doctor was in the habit of igniting the phosphorus with the heated tip of his sword.

Almost immediately afterwards, Hanckewitz (*loc. cit.*, p. 58) showed that the Machina Frobeniana was unnecessarily elaborate, and repeated the experiment in a "warmed china cup." He mentioned the production of amorphous phosphorus as a "red caput mortuum" and gave a very complete description of his experiments, observing that "this phosphorus is a subject which occupies much the thoughts and fancies of some alcymists who work on microcosmical substances, and out of it they promise themselves golden mountains."

According to him, Kunkel, Krafft, and Brandt were only able to obtain a little "unctuous opaque phosphorus," and not the true hard "glacial" phosphorus. He considered that Kunkel either spoke too much at large or designed to impose upon the world, and stated that, at the time of speaking, he was the only man capable of making real phosphorus. Hanckewitz was undoubtedly the principal maker of phosphorus in his time, and it is interesting to note that he was the founder of the firm of Godfrey & Cooke. A considerable amount of information on the work of Hanckewitz was given in a paper by Mr. Joseph Ince in the *Pharmaceutical Journal* (1859, pp. 126, 157, and 215).

The chemical properties of phosphorus were carefully studied immediately after its isolation, and the discovery that it increased in weight on burning, which is attributed to Marggraf, is said to have been in part responsible for the overthrow of the phlogiston theory, for Lavoisier showed that its increase in weight when burned in oxygen equalled the loss of oxygen. Lavoisier appears also to have been the first to definitely show that phosphorus was an element, and to point out its wide distribution throughout the vegetable kingdom (see Lavoisier's "Elements of Chemistry," translated by Kerr, 1802, vol. i., p. 323).

Priestley also examined its action on burning in air ("Experiments and Observations on Different Kinds of Air," 1790, vol. i., p. 170).

The action of phosphorus on metals was experimented upon by Marggraf, and later by Pelletier, who found that most metals combined with it when heated. Dr. Peter Shaw (James' Medical Dictionary, 1745, article "Phosphorus") says that the "acid of phosphorus proves a menstruum to perhaps all the metals, but when this acid is driven into the pores of the metal by the action of the flame in burning the phosphorus, it seems productive of much greater effects, as is well known to those connected with the sublimer metallurgy."

The production of amorphous phosphorus during the distillation of phosphorus was early known, but it was not recognized as a form of the element, but as an oxide. Aikin ("Dictionary of Chemistry and Mineralogy," 1807) described it as "a brown red powder which diffuses itself in water like clay, and consists chiefly of phosphorus so peroxygenated as to be no longer combustible."

The modern method of preparing phosphorus is beyond the province of this article, but it may be mentioned that Gahn, a Swedish chemist, showed in 1769 that phosphorus was contained in bones (see "Bergmann's Notes," 1796, p. 203), and that the credit of preparing it from them appears to be due to Scheele. In 1775 he obtained it by treating bone-ash with nitric acid, precipitating the lime from the solution by addition of sulphuric acid, evaporating the solution and distilling the residue with charcoal. Nicolas and Pelletier (*Journal de Physique*, vols. 11 and 28) improved upon the process by dispensing with the use of nitric acid, and Fourcroy and Vauquelin (*Journal de Pharmacie*, v. i., p. 9) determined the proportions most suitable for operations on the large scale. Aikin ("Dict. of Chem. and Min.," 1807) mentions, as a good yield, that Pelletier obtained 60 ounces of phosphorus from 576 ounces of bone-ash.

It was also common at the commencement of the present century to prepare phosphorus by precipitating the phosphoric acid from superphosphate of lime with lead nitrate, and distilling the phosphate of lead thus produced, with charcoal (Rees' "Encyclopædia," 1819).—*Pharm. Journal and Transactions.*

Glycerin at $19 a Ton.

This is the present prospect of the cost of crude glycerin in France, according to the dictum of M. A. M. Villon, who is one of the best posted men in that country in matters pertaining to pharmaceutical and chemical industries. M. Villon says (in the *Monde Pharmaceutique*): "Installations are now in progress for the production of cheap glycerin, and we are about to witness a very considerable tumble in the market price of the commodity—in fact, from 300 francs to 100 francs the ton, for crude glycerin." Pure white glycerin costs in England only 300 francs ($57), and the crude article from 80 to 100 francs ($15.20 to $19) the ton. In this country the price is from 13½ cents to 15 cents per pound for ordinary glycerin, or from $270 to $300 per ton. Schering's glycerin, in 10-lb. bottles, six in a box, costs 35 cents per pound, or $700 a ton. Quite a difference!—*National Druggist.*

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Public Misuse of Carbolic Acid.

The Cleveland Pharmaceutical Association has issued a circular bearing the above title. The circular says. "Carbolic acid, U.S.P., is in crystals; and not being convenient in this form for the household or medical use, it is made liquid by the addition of from 5 to 8 per cent. of water; when thus prepared, it *does not strictly conform to the legal* (U.S.P.) standard, yet by common usage it has become recognized by the public and by many physicians, erroneously, as true carbolic acid, and has been so labelled."

Since this conveniently liquefied acid apparently mixes with water, oils, and other liquids, yet solution does not usually take place. The strong, milky, or cloudy acid that remains undissolved acts as a powerful caustic instead of a healing agent.

"If directed to be mixed at home with oil, vaseline, lard, or other fats, the liquefied acid *will not dissolve on account of* the 5 to 8 per cent. of water it contains, thereby resulting in caustic instead of healing actions."

"If swallowed by accident, it is almost universally fatal before assistance can arrive; yet it is not desired or needed in so dangerous a liquid form."

"The Cleveland Pharmaceutical Association, having had its attention called thereto, and believing that it owes a duty to the public to prevent injury as far as possible without depriving the people of the proper use of a valuable drug, have devised and adopted a formula and label *for carbolic acid for general dispensing* purposes, which they hope will do away with much of the injury due to careless use, and respectfully request the co-operation of all pharmacists and physicians to that end.

FORMULA.

Take of carbolic acid crystals.. 16 troy ozs.
Glycerin..... 40 "
Melt the acid and stir in the glycerin.

OR FOR PRACTICAL PURPOSES.

Carbolic acid..... 1 measure.
Glycerin..... 2 measures.

"This formula furnishes a 33 per cent. carbolic acid fluid. The label explains the rest. It is to be popularized as No. 33 carbolic acid, which indirectly instructs the physician as to the strength of the acid and indirectly enables him to tell what strength it is by its directions for making a practically 1 per cent. solution; thus also, by multiplying the amount directed, he can order a 1, 3, 4, or 5 per cent. solution as desired.

"This No. 33 acid mixes readily with water or alcohol in all proportions, and not being as caustic cannot result in as much mischief or fatality if taken accidentally or purposely.

"The Cleveland Pharmaceutical Association have unanimously decided to recommend:

"(1) To all druggists, and especially to their members, not to dispense a stronger carbolic acid than No. 33, except on physicians' prescriptions.

"(2) To all physicians, when desiring to mix carbolic acid with fatty bodies, instead of entrusting such dangerous work to the laity (since such work requires professional skill to suit each case), it will be the best entrusted to the proper professional expert—the pharmacist.

"(3) To all physicians requiring the liquefied carbolic acid as hitherto dispensed, to please specify this article in their prescriptions to avoid error and relieve the druggist of the responsibility for dispensing it, or of embarrassment for refusing to sell without prescription.

"(4) All druggists desiring electrotypes of the label may obtain them by applying to the committee."

The label which accompanies the circular designates the solution as "Strong Carbolic Acid, Fluid No. 33." The antidotes are given, and also the directions for making a 1 per cent. solution by mixing one tablespoonful of the solution with one pint of water.

Paraffin as a Secondary Ingredient in Pomades.

M. E. Cranzel, in the *Bulletin de Pharmacie de Bordeaux*, strongly recommends paraffin as a secondary ingredient to give consistency in pomades, such as the various cerates, cold cream, chloroform ointment, camphor ointment, etc., in place of the dearer white wax, or spermaceti. It is not only cheaper, but better. M. Cranzel says:

It will aid in keeping such preparations, which, owing to the ready oxidation of the fats composing them, are prone to rancidification. The three products—white wax, spermaceti, and paraffin—have a close analogy in their physical properties, density point of fusion, solubility in certain liquids, etc.

In point of stability, and other principal properties, pomades with paraffin as a base are in no whit inferior to those prepared with white wax or spermaceti. Take Galen's cerate, for example, prepared with paraffin in the proportion that white wax is generally used, and it will be found even whiter than the old product, and less unctuous. The same applies to cold cream. The great and real value of paraffin, however, lies in its inalterability, and that quality in cerates, etc., made with it.

In the opinion of M. Cranzel, paraffin is destined to replace wax, both white and yellow, and spermaceti in all preparations in which the latter now enter, even as lard has been supplanted by vaselin in current use--for other reasons, it is true, but for analogous considerations. —*National Druggist.*

On the Determination of Morphine in Opium.

By Lyman F. Kebler, M.S., Ph.C.

As is very well known, the morphine obtained by the official process contains an appreciable quantity of impurity. This impurity is supposed to consist principally of calcium meconate. In order to prove or disprove this supposition, a quantity of the crude morphine was carefully incinerated in a platinum crucible, and the ash examined quantitatively. It was found that more than one fourth of the residue consisted of salts of potassium and sodium. On this analysis the per cent. of pure morphine was based. The per cent. of pure morphine was also *established by titration with a volumetric* acid solution, the lime water method, and the absolute alcohol method. The relative efficiency of the methods is as given in the above order.

Series of experiments were at once undertaken to determine whether the per cent. of impurity contained in the crude morphine was in excess of the per cent. of the morphine lost in the assay. One hundred grams of opium were extracted as in the assay method, and nine assays made. The time allowed the morphine for precipitation varied from 3 to 36 hours. In the portion of aqueous extract remaining, *the amount of substance* precipitated by alcohol alone was estimated.

The per cent. of pure morphine was estimated in each case by the ash method, titration with a volumetric acid solution, and the lime water method. As a final per cent. of pure morphine, the averages of all the percentages obtained, excepting the three hour, was taken as representing the per cent. of pure morphine contained in the crude morphine.

The mother liquors and the aqueous washings were collected in a bottle from eight assays, and the amount of precipitate estimated after allowing the mixture to stand two months. An aliquot part of the above mixture was next treated according to Dieterich's process. It was found that the per cent. of pure morphine ultimately obtained corresponded very closely to the amount of crude morphine precipitated in twenty hours. From the results obtained, it was concluded that the amount of morphine lost in the assay corresponded closely to the per cent. of impurity contained in the crude morphine. If the U.S.P. directions are adhered to closely, the per cent. obtained very closely represents the per cent. of morphine originally contained in the opium.—*British and Colonial Druggist.*

Substitute for a Funnel.

Prof. A. M. Edwards (*Chemical News*) dispenses with the use of a funnel in cases of difficult filtration through paper, replacing it by a piece of celluloid, in which numerous holes have been punched. This is bent into the shape of a funnel, and supported in a retort stand ring. When not in use the celluloid can *be washed and put away flat like a piece* of paper.

Only those who pay their bills have a right to help the poor.

Pharmacy Abroad.

THE NEW NORWEGIAN PHARMACOPŒIA.—The third edition of the Norwegian Pharmacopœia is now published, and is official. It is partly in Latin, partly in Norwegian, and in some respects resembles the last Russian Pharmacopœia. The nomenclature and composition of compound remedies are in Latin, whilst the description of single drugs, tests, and preparation of compound galenicals are in Norwegian. As set forth in the preface, 110 old official preparations have been expunged and 89 new ones introduced. Many and important alterations in nomenclature have taken place, more even than in the last Danish and Swiss Pharmacopœias. Both valerian and rhubarb appear as rhizomes.—*British and Colonial Druggist.*

THE GERMAN PHARMACOPŒIA.—In the supplement of the German Pharmacopœia just appearing, the following new medicaments are included: Camphoric acid, hydrobromic acid, cresolated water, basic salicylate of bismuth, bougies, benzoate of soda and caffeine, cresol, formaldehyde solution, solution of cresol "soap," salicylate of lithium, mercuric chloride pastilles, creasote pills, salicylate of soda, and theobromine, tincture of aloes, and cantharides ointment for veterinary use.—*Journal der Pharmacie d'Anvers.*

THE DRUG TRADE IN THE PHILIPPINE ISLANDS.—M. G. de Berard, French consul at Manilla, in the Philippine Islands, reports that the importation of chemicals, pharmaceutical products, and perfumery in his district in the course of 1893 exceeded that of 1892 by about 15 per cent. in value. This increased importation marks a partial return of the prosperity enjoyed by the pharmaceutical trade some years ago. The last increase in the customs tariff of the islands, however, which specially affected the articles named, has considerably injured the business in high-class British and French goods, and assisted the development of the trade in spurious imitations. In 1893 Spain supplied 398 tons, France 36 tons, Britain 1,127 tons, China 3,083, Germany 188, Japan 479, Belgium 12, Singapore 110, and the United States 35 tons of chemicals and pharmaceutical goods. There has been a great increase in the imports from Germany, due, says the consul, to the deliberate imitation, in that country, of British and French goods of high repute. Perfumery is in great demand.—*Chemist and Druggist.*

PHARMACY IN JAMAICA.—In a letter to the *Chemist and Druggist*, Mr. Albert J. Salmon, Apothecaries Hall, Montego Bay, Jamaica, gives the following interesting notes regarding the practice of medicine and pharmacy in Jamaica:

There are several fine pharmacies ("doctors' shops") in Jamaica, many of them fitted up in the European and American styles, especially those in Kingston. The majority of those in the country are miniature emporiums, as nearly every conceivable article is sold, so as to make up a living turnover. Prior to 1881 there was no pharmacy law, consequently any one could keep open shop for the sale and compounding of drugs and poisons; and the writer remembers one of these shops, in a populous district of Kingston, carried on by a pretended disciple of Galen, who was just able to sign his name.

In 1881 the "Drugs and Poisons Law" was enacted, which compelled all persons to obtain by examination a license before they could keep open shop for the sale of drugs and poisons, but no curriculum was enforced, except in the case of apprentices at the public hospital, who were required to undergo three full years' tuition at its dispensing school before presenting themselves for examination.

A new law was enacted last year repealing that of 1881 and its amendment of 1885, and the new Act requires a curriculum of two years, and the second year at least must be under a medical practitioner, or one already licensed. Candidates must be twenty-one years of age, and must pay a fee of £2. Persons licensed under the Pharmacy Acts of Great Britain and Ireland are exempt from examination, but must produce certificates of qualification, and pay a fee of £2. In the case of any one requiring a special examination a fee of £5 is demanded. Licensed druggists of other countries are allowed an examination, provided the superintending medical officer is satisfied with the certificates of their curriculum. Any one licensed under the law is, in case of any conviction as a misdemeanant, liable to have his license suspended by the superintendent medical officer on the approval of the governor.

Patent medicines are in great demand, and American and Canadian proprietary medicines are fast becoming the leading ones—such as Scott's Emulsion of Cod-liver Oil, Ayer's Cherry Pectoral, Pills and Sarsaparilla, Bristol's Sarsaparilla, Northrop & Lyman's Vegetable Discovery and Canadian Healing Oil, Perry Davis' Pain Killer, Morse's Indian Root Pills, Ross' Life Pills, American Specific, etc.—simply from the fact that these firms "work up" the country by means of their travelling agents and advertisements.

Druggists, as a rule, do very little dispensing, as the majority of doctors supply their own medicines. A feeling of strong antipathy exists among a large number of the doctors and druggists, on account of the latter carrying on a prescribing business. Druggists are frequently called "doctors," and this seems to be the cause of the bitter feeling on the part of the regular practitioners. The origin of the appellation "doctor" for a druggist is not generally known, but it arose in this way. During the days of slavery, there was scarcely any system of skilled medical aid provided for the slaves; but there was always at hand some intelligent man who was able to administer medicines to the sufferers, practising a recognized empiricism. These persons were styled "hothouse doctors," and were looked upon by the slaves as great benefactors. The poor creatures not being placed in a position to know the difference between a qualified and an unqualified man got to know no one else but these "doctors," consequently the name has been handed down as a manner of addressing any one who is publicly recognized as having anything to do with preparing or prescribing medicines. And so it will continue, unless the present generation at school are taught to address druggists differently.

Plastic Gelatins.

Under this name M. Dané, chemist and pharmacist at Valence-d'Agen, designates (*Union Pharmaceutique*) a series of magistral preparations, easy to prepare, intended as the excipient of exceedingly active remedies (or others, if desired). The base is gelatin, glycerin, and water, proportioned as follows:

Gelatin (in colorless leaves)	15 parts.
Glycerin (30°)	50 parts.
Distilled water	60 parts.

Melt together in the water bath, and before the mass sets add the medicinal agent in the dose desired, then pour out on the slab or in moulds.

Ovules.—You can use for this purpose either oiled ovular moulds or eyelets. In the latter case all that is necessary is to moisten one side of each moulded half with gelatin, dissolved in water, and unite the two. Ovules are, however, not a good form for commercial purposes, or where medicaments are put up in quantity. They dry too easily, or alter otherwise.

For suppositories the process is the same. The author also prepares other forms—buttons, medicated nipple covers for chapped and sore nipples, etc., and finally he uses sheets of the mass poured out on oiled slabs, in the place of cloths, for spreading plasters on, or as plasters where a simple emollient is wanted. Where a medicated plaster is desired the medicament—morphine, iodoform, etc.—is sprinkled or spread on the surface, the latter being first slightly warmed.—*National Druggist.*

Northwest Territories' Pharmaceutical Association.

The result of the election for the Council of the Pharmaceutical Association of the N.W.T., held in Regina, March 20th, was as follows: W. G. Pettingall, Regina; Robert Martin, Regina; W. W. Bole, Moose Jaw; J. G. Templeton, Calgary; A. D. Ferguson, Wolseley.

A small store well-handled may not pay big but it pays sure.

Formulary.

ACID PHOSPHATE SOLUTION.

The following formula is said to yield a good article :

Phosphoric acid (50 per cent.)....	64 parts.
Precipitated chalk.....	12 parts.
Calcined magnesia.....	1 part.
Potassium carbonate.....	1 part.
Distilled water..... .....178 parts.	

Add the chalk to the acid gradually, and then add the magnesia and stir well. Dissolve the potassium carbonate in 9 fl. oz. of the water, add the solution gradually to the acid liquor, admix the remainder of the water, set aside for one or two hours, and filter.

TO FLAVOR COD LIVER OIL.

Oil of eucalyptus, 1 per cent., is added to cod-liver oil by Duquesnel (*Jour. de Pharm.*), and is said to hide its odor and taste. A more elaborate process is recommended by Paresi (*Presse Médicale*), who mixes cod-liver oil, 400 gm., freshly roasted and ground coffee, 20 gm., and animal black in powder, 10 gm., in a stoppered vessel, and warms it on a water bath at a temperature of 60° for a quarter of an hour. The mixture is then left for two or three days, except that it is shaken from time to time, and, finally, filtered through paper. The product is described as amber-colored, and as having a distinct odor and taste of coffee.—*Pharmaceutical Journal.*

WINE OF CREOSOTE.

E. Dietrich gives the following formula for creosote wine :

Creosote.....	12 parts.
Tincture of gentian.....	30 "
Alcohol....	250 "
Red wine(claret)sufficient to make	1000 "

—*National Druggist.*

BORO-SALICYLIC GLYCEROLE.

Boric and salicylic acids, when heated with glycerine, are dissolved in large quantities. On cooling, however, a thick and granular pasty mass results. If the solution is now heated almost to boiling and a trace of calcined magnesia is added, it remains perfectly limpid on cooling. The product is also quite soluble in water, and it is easy to prepare extemporaneously a solution containing equal quantities of the two acids in a state of concentration not otherwise obtainable. Nor are the antiseptic properties of either body in any way impaired. The proportions are :

Boric acid.....	10
Salicylic acid.....	10
Distilled water.....	10
Glycerine.....	40
Mag. oxid.....	1

—*Repertoire.*

LICORICE LOZENGES.

1.—Extract licorice.....	2 parts.
Starch	1 part.
Powd. orris root.....	1 part.
Powdered saffron.....	1 "
Sugar..... .....32 parts.	

Mix and make into lozenges of the usual shape and size.

2.—Powd. stick licorice.....70 parts.	
Powd. orris root.....	1 part.
Powd. star anise.....	4 parts.
Powdered sugar.....70 parts.	
Mucilage acacia....a sufficient quantity.	

Form into lozenges weighing 8 grains (50 etg.).

3.—Stick licorice.....	2 parts.
Acacia.....	1 part.

Dissolve the licorice in warm water, strain, and in the solution dissolve the acacia. Place over a gentle fire, in a broad pan, and let boil gradually, stirring continually until reduced to a paste. Roll into cylinders of the usual size, and polish by rolling them together in a box ; or cut the mass into lozenges of the desired size.—*Merck's Report.*

CLEANING ELASTIC STOCKINGS

Soap in powder .....av. oz. 32	
Ammonia (10 p.c.).....fl. oz. 7	
Cologne water (or dilute alcohol) ..	" 33
Water.....	" 60

Dissolve the soap in the water, and, when solution is complete, allow to stand for two days; then add the ammonia water and cologne. For use : Dissolve one-half ounce of this soap in a quart of cold water, in which let the stockings steep for 24 hours, then remove and wash well in cold water by shaking.—*Chemist and Druggist.*

COPYING INK FOR TYPEWRITERS.

	Parts.
Soap.....	30
Glycerin.	125
Alcohol.....	721
Water.....	360
Anilin, q. s. to color.	

If the ink is too penetrating, add more soap ; if not sufficiently so, decrease the quantity.—*Bayerische Industrie-und-Gewerbe Blatter.*

COLD LIQUID GLUE.

To make glue liquid in the cold, nitric acid is generally added ; thus we may take

Glue.....	8 parts.
Water ..	8 "
Nitric acid	2½ "

The nitric acid may be replaced by acetic acid. Thus an excellent liquid gum is made by dissolving one part of glue in two parts of vinegar.

Another process consists in dissolving by the aid of heat :

30 parts of glue in
80 " " water,

and immediately adding

5 parts of hydrochloric acid and
7 " " zinc sulphate.

A very strong liquid glue is obtained by the action of caustic soda upon glue. The following proportions are used :

Glue .....1000 parts.	
Water.....1500 "	
Commercial caustic soda, 40 "	

—*Manufacturing Chemist.*

SOLUBLE PYROXYLIN.

By treating nitro cellulose with caustic potash in presence of carbon bisulphide, Cross, Bevan, and Beadle find that it is converted into a gelatinous mass which is soluble in boiling water.

To Color Small Articles of Iron and Steel a Lasting Black.—George Buchner gives the following in the *Paper. Ind. u. Gew. Bl.:* Dissolve 70 parts of copper nitrate in 30 parts of alcohol, and with this solution pencil over the article, having first slightly warmed the latter. Lay the article upon a bit of tinned iron (sheet tin) and heat. The nitrate is decomposed with the formation of copper oxide in exceedingly minute particles, which attaches itself to the iron. Upon cooling, brush off, and the iron will be found a fine steel gray. Upon repeating the operation several times, the iron becomes covered with a beautiful dead-black coating, which is very durable. The addition of an alcoholic solution of manganese nitrate to the copper solution produces a fine bronze color.—*National Druggist.*

Sulphides of Zinc.

A. Villiers shows that precipitated zinc sulphide may be obtained in two varieties possessing the same composition. Each of them may exist in different degrees of hydration, but they are completely distinct, and cannot be directly transformed into each other between zero and 100°. The acid sulphide is obtained in an amorphous form by the action of hydrogen sulphide upon an alkaline solution of sodium zincate. By the action of heat the precipitate appears to assume a crystalline form, but this point is not quite clear, though there is, undoubtedly, some modification effected. The solubility of both forms of the acid sulphide in aqueous hydrogen sulphide solution distinguishes it from the basic sulphide, which may exist in both amorphous and crystalline conditions, and is precipitated from an acid solution of a zinc salt by hydrogen sulphide. The crystalline variety, which is completely insoluble in aqueous hydrogen sulphide solution, is usually precipitated from a solution of zinc sulphate, and the amorphous, which is but slightly soluble, from the acetate. This second form can be transformed into the crystalline variety by the action of heat.—*Comp. rend.*—*Pharmaceutical Journal.*

The sneer of the dead-beat is a high compliment to the merchant.

A hustling employer turns out successful business men.

Don't try to be charitable at the expense of your creditors.

A surly employer spoils all the good work of polite clerks.

Pharmaceutical Notes.

ANESTHYLE.—The above name has been given to a mixture of five parts of ethyl chloride with one part of methyl chloride, the use of which has been suggested by Dr. Bengué, a French physician, for producing local anæsthesia.

SILVER SULPHIDE.—A Ditte (*comtes rendus, Pharmaceutical Journal*) describes how silver sulphide, kept cool and in the dark, changes in a short time in the presence of a saturated solution of potassium sulphide. From black it turns red, forming small crystals, which are but little soluble in the solution, and have, when dried in an atmosphere of carbon dioxide, a composition which may be represented by the formula—$4Ag_2S,KS,2H_2O$. The same compound is formed on boiling together silver and potassium sulphides. It is altered by light and decomposed by water, the latter reaction allowing the silver sulphide to be obtained in the form of grayish-black crystals. A double silver and sodium sulphide can also be prepared, though not in the cold, the red crystals having the composition—$3Ag_2S,Na_2S,2H_2O$, and being at once decomposed by water.—*National Druggist.*

PERUVIAN-BALSAM TESTS. — Recent work in Germany on the nitric-acid test for Peruvian balsam, which is performed by treating the residue from petroleum spirit, shaken with the balsam and filtered with nitric acid, shows that, as directed by the German Pharmacopœia, it is misleading so far as the detection of copaiba and storax is concerned. A spirit less than specific gravity 0.688 should not be used. It has taken German chemists a long time to arrive at this conclusion. The misleading character of the test was clearly pointed out by MacEwan in 1884 (*Chemist and Druggist*, xxvi., 395), who also observed that the German nitric acid is too weak to ensure the reactions, and that a petroleum spirit, specific gravity 0.710 or thereabouts, is most suitable.

NEW PROCESS FILTERING PAPER.—A German by the name of Craemer has introduced a new method for making filter paper for chemical purposes. It is said that he works in a greater or less proportion of nitrocellulose with the cellulose or cotton-wool stuff usually employed, the effect of which is that the filtration is more rapid, since the nitrocellulose has no tendency to felting, and that the paper is only slightly hygroscopic, and that when the filter is burned the combustion is more rapid in proportion to the amount of nitrocellulose present. When the proportion of cellulose is large it is said to be almost instantaneous.—*Monthly Magazine.*

SALIGENIN AS A SUCCEDANEUM OF SALICIN.—Lederer, basing his opinion on the ground that saligenin is probably the active principle of salicin, in which it occurs to the extent of 42 per cent., suggests that it be used in medicine in place of that substance. Saligenin is derived from salicin by the agency of a ferment, which splits the glucoside into saligenin and glucose. By using saligenin in those cases where salicin is indicated, the organism would be spared the labor of the zymotic process. The *Medizinische Wochenshrift*, from which this notice is taken, says that the physiological action of saligenin has not yet been established. —*National Druggist.*

TO RENDER CREASOTE SOLUBLE. — Creasote may be made soluble in water by making a mixture of 80 grams of tincture of soap-bark, 60 grams of water, and 10 grams of creasote. The liquid thus formed is soluble in any quantity of cold or warm water.

MYRONIN, A NEW OINTMENT VEHICLE. —Under the name of myronin a German firm are introducing a mixture of vegetable wax and doegling oil as a nonrancidifying ointment vehicle. In their printed matter they say that if the free fatty acids, which wax of copernicia cerifera 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 one to five is of the consistence 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.—*Western Druggist.*

MAGNESIUM SULPHOPHENATE.—This is one of the series of sulphophenates, of which aluminum sulphophenate (sozal) was the first example. It is prepared by the double decomposition of baryta sulphophenate by magnesium sulphate. It appears as white crystalline needles, almost inodorous and of not unpleasant taste. It is soluble in two parts of water, or five parts of alcohol.

THE PRODUCTION OF OZONE.—As our readers are no doubt aware, the value and importance of ozone, from a medical and sanitary point of view, have led to the invention of several methods—electrical and chemical—of producing it for use as a deodorizing and purifying agent. The most recent system is that of Lieutenant Poulsen, a Danish officer, whose apparatus is of a simple and efficient character. It consists of a wide-necked glass jar, with a double cover of porcelain plates, finely perforated. The upper plate closes in the mouth of the jar, whilst the lower one is inserted in the neck of the jar, about two inches below the other. Through the centre of each of these covers a glass rod passes, terminating at the lower end (which is curved upwards) in a small cup for holding a piece of phosphorus. In the jar is placed a given quantity of acidulated water, the level of which is just above the cup containing the phosphorus, which, when the apparatus is not in action, is always submerged. A small quantity of permanganate of potash is added to the acid solution, and to produce ozone the phosphorus is raised, by means of the glass rod, just to the surface of the water. The chemical action of the system is as follows: Phosphorous acid in the form of fumes is produced by the contact of the phosphorus with the air, and the fumes are seen to rise to a certain height, when they are deflected down upon the solution, into which they are absorbed, and converted into phosphoric acid by being oxidized by the permanganate of potash. In the meantime ozonified oxygen is produced, and, passing out through the perforations in the covers, is distributed in the atmosphere. The first cost of the apparatus is small, and the acid bath only requires renewing about once in three months. The system has been in satisfactory use for some time past in hospitals in Denmark and France. It is employed in the Pasteur Institute, Paris, and in carrying out his experiments on the antiseptic properties of ozone Dr. J. de Christmas, of that institute, used the Poulsen apparatus, and reports very highly of its efficiency. The ozone produced is pure, as is certified by Professor P. Stein, of the Analytical Chemical Laboratory, Copenhagen. — *Foreign and Colonial Importer.*

Boro-Salicylate of Soda.

By M. F. Anaud.

The author finds that by boiling together boric acid and salicylate of soda with water under an inverted condenser a syrupy liquid is obtained which does not become solid on cooling, and which, when evaporated on plates, leaves a transparent amorphous residue, which, on more complete desiccation, is transformed into an opaque mass. This borosalicylate of soda dissolves in four parts of cold water, and in its own weight of water at 40° C. The body is a true compound and not a mechanical mixture, for it does not act upon litmus nor with the ordinary reagents for boric or salicylic acids.

The acid corresponding to the soda compound does not exist in the free state, for when the salt is treated with an acid a mixture of boric and salicylic acids is obtained.—*Manufacturing Chemist.*

Photographic Notes

WATERTIGHT COATING FOR WOODEN DISHES.

Brown resin.....8 ozs.
Beeswax.....2 ozs

Melt together in a tin pan, and, when quite fluid, coat the dish, which should be quite dry and warm.

BLACK VARNISH.

Benzole.....10 ozs.
Turpentine.....1 oz.
Masticated rubber heated to fusing.....100 grs.

Dissolve the rubber in the benzole and turpentine, and then add 4 ounces of asphaltum broken into small pieces.—*Photogram.*

WAXING SOLUTION

Before squeegeeing prints on to glass to obtain a brilliant surface it is usual to give the glass a rub with a solution of wax. A superior preparation is:

Spermaceti .....5ij.
Benzine.....3x.
Dissolve.

1-oz. bottles, with directions, sell at 6d. The addition of a drop or two of citronella oil is not a disadvantage.—*Chemist and Druggist.*

TINTED MATT VARNISH FOR MASKING.

No. 1 ordinary matt varnish.
No. 2 stock color solution.
Malachite green..... 10 grains
Alcohol ..... 1 oz.

1	No. 1 varnish.....	5 oz.
	No. 2 color solution	30 minims
2	No. 1 varnish.....	5 oz.
	No. 2 color solution.....	60 minims

The varnish solution retains the color for some time, but fades after prolonged keeping. It is, therefore, advisable not to prepare more than is required for a month or two's use. The varnish on the negative retains its color well.—*Photogram.*

Inexpensive Photographic Tray.

An inexpensive photographic tray or battery cell, which is practically water, acid, alkali proof, may be made out of a pasteboard box by covering it with a coating made by melting together equal parts of paraffin and gutta-percha chips. The gutta-percha should be melted first over a slow fire, the paraffin is then added, and the whole composition thoroughly mixed and brought to a fluid condition. It is then poured into the box or box cover, which should be dry and warm. The composition should be allowed to run along the edges, so that the entire inside of the box is waterproofed; the excess is poured off, and the box is then allowed to cool. The outside should then be waterproofed in the same manner. In case any spot fails to receive the composition, some of it may be made into sticks and applied to the bare places with the aid of a hot iron, which may also be used to smooth up any unevenness of the surface. Some photographers like ridges in the tray to keep the plate off the bottom and to facilitate in lifting it out. These ridges can be easily built up with the aid of a hot iron. These pasteboard trays are light, and are not liable to be broken by a fall. Old dry-plate boxes may be utilized for this purpose. Wooden trays may be waterproofed in the same manner, and can be used for batteries if desired.—*Scientific American.*

Colors in Photography.

It has often been observed that a bright scarlet uniform will, in a good photographic dark-room with ruby-glass windows, appear perfectly white. On this subject Herr H. W. Vogel made some interesting communications to the Physical Society of Berlin at a recent meeting. Experimenting with oil lamps provided with pure red, green, and blue color screens, he found that, when white light was rigidly excluded, all sense of color disappeared to the observers, and nothing but shades of black and white could be distinguished on objects in the room. He further found that a scale of colors illuminated by red light showed the red pigments as white or gray, which abruptly turned into yellow, and not red, on adding blue light. Hence a color was perceived which was not contained in either of the sources. Red and yellow patches appeared of the same color, so that they could hardly be distinguished. But the difference was at once brought out by adding green instead of blue light. How very much the kind of sensation experienced depends upon the intensity of illumination is easily seen in the case of the region of the spectrum near the G. line of Fraunhofer. This region appears violet when its luminosity is feeble, blue when it is stronger, and may even appear bluish-white with strong sunlight, so that the assertion often made that with normal eyes a definite color-sensation corresponds to a definite wave-length cannot be upheld. Herr Vogel comes to the conclusion that our opinion as to the color of a pigment is guided by our perception of the absence of certain constituents. Thus a red substance is only recognized as such when light of other colors is admitted, and we perceive its inability to reflect these.—*Nature.* (*Pharmaceutical Journal and Transactions.*)

COPPER NOT INJURIOUS TO PLANTS.—A. Tschirch recently has repeated his previous assertion that insoluble copper compounds in the soil in no manner are injurious to vegetation. His experiments also include aquatic plants.

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 oils are will at once agree with us that such statements are the outcome of crass 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.*

The Metric System in England.

The metric system is again in the air. Two parties are bringing it before our attention—the one attempting to bring about its legal use in export trading, the other its introduction into the British Pharmacopœia. The whole question of the adoption of metric weights and measures in this country is one in which most people, even of the educated classes, take a very lazy interest. We see no signs of anything approaching a general desire among these for the everyday use of the gramme, metre, etc. Indeed, we must confess that for general trading in Great Britain no practical benefit would be derived from the use of the metric system. . . . There is a factor in the question which would tell against the champions of the metric system, and which has been often left out of consideration. The metric system sounds wonderfully logical and simple, but any teacher of pharmacy could tell of the amazing difficulty found in getting students to understand it thoroughly. The difficulty is chiefly seen in students working calculations in cubic

measure. Our measures of capacity, though not related to the measures of weight in the way in which in the cubic centimetre is, are very simple, being small multiples of each other. You cannot muddle one, not a hopeless dence, on the number of pints in a gallon ; but we have seen fairly intelligent men at sea when asked how many cubic decimetres there are in a cubic metre. The cubic measure is the source of difficulty here. If we were to measure in common transactions by cubic inches, there would be the same difficulty. This, of course, would not apply where multiples and fractions of a litre were used, but it shows how objection would be raised to the exclusive use of the metric system in the B.P. Whilst thus setting forth an objection to the system which seems to have been little noticed, we do not thereby indicate our wish that the metric system should not be used in the next edition of the Pharmacopœia. We only desire to bring up the obstacles in its way.—*British and Colonial Druggist.*

Therapeutic Serums.

The following is the text of the law in France relating to the preparation, sale, and distribution of therapeutic serums and other analogous products, promulgated on the 25th of April last :

Article 1. Attenuated virus, therapeutic serums, modified toxines, and analogous products that may be used for the prophylaxy or therapy of contagious diseases, and injectable substances of organic origin not defined chemically, that are applied to the treatment of temporary or chronic affections, shall not be distributed gratuitously or otherwise unless their manufacture or place of origin shall have been the object of an authorization of the government given with the sanction of the Consulting Committee of Hygiene of France and of the Academy of Medicine. Such authorization shall be temporary and revocable. The said products shall be submitted to the inspection of a commission appointed by a competent minister.

Article 2. These products shall be delivered to the public by a pharmacist upon medical prescription. Each bottle or receptacle shall bear the mark of its place of origin and the date of its manufacture. In urgent cases physicians are authorized to furnish their patients with the said products.

When the said products are destined to be delivered gratuitously to the poor the vials containing these products shall bear, stamped upon the glass, the words, "Public Assistance—Free." They may then be deposited, under the control of a physician, at such public establishments as may be authorized by the administrator to procure these products direct.

The foregoing provisions shall not apply to Jennerian vaccine, either human or animal.

Article 3. The sale and distribution of the substances mentioned in Article 1 shall be regulated by and come within the provisions of Article 423 of the Penal Code and of the law of the 27th of March, 1871. Any fraud as to the nature of the said substances, knowing them to be falsified or adulterated, or any fraud or attempt at fraud in regard to the quality of the article delivered will be punishable in accordance with the provisions of Article 423 of the Penal Code and of the law of the 27th of March, 1871.

Article 4. Any infraction of the present law will be punished with a fine of from 16 to 1,000 francs.

Salts of Potash.

The consolidated industries which mainly supply Europe and America with the various salts of potash are located in an alluvial plain west of the River Elbe, and to the south and southwest of Magdeburg, in the province of Saxony. This mineral region is bounded on the south and west by the Hartz mountains, and for many centuries it was worked as a source of common salt, which was obtained by evaporating the natural brine, pumped up from driven wells that reached only to the upper stratum of the vast deposit. This deposit is now known to have a thickness of nearly 5,000 feet, and is estimated to have been not less than fifteen thousand years in process of formation.—*Foreign and Colonial Importer.*

The Columbia Chemical Works, of Brooklyn, N.Y., write us that the words "Household Ammonia" were registered as their trade mark in Canada, May 11th, 1886. As they believe some dealers in this country are selling preparations under this name, presumably in ignorance of its being copyrighted, they desire to warn them that such infringements will be prosecuted if their manufacture and sale is not abandoned.

Carotin has been discovered by Schrotter in the arillus of the fruit of aspelia luangensis. Schrotter suggests (*Zeit. All. Oest. Apoth.*) the generic name lipoxanthin for all yellow vegetable-coloring principles.

To preserve fresh lemons it is suggested to rub them over thoroughly with a wad saturated with paraffin oil and then to wrap them in tin foil.

A NATURAL TOOTHACHE GUM.—The natives of west Africa use the gum from an undetermined species of combretum as a remedy for toothache. A decoction of the root of the same tree, which is known to the natives as "topp," is used as a remedy in gastralgia.

Bleached wax is now made by reducing the beeswax to powder instead of drawing out into fine threads previous to exposure to light and moisture. To produce the powder the liquefied wax is sprayed by suitable means, into cold water.

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.

Gananoque, April 10th, 1895.

To Dr. Hamill, Toronto.

DEAR DOCTOR,—Allow me to say that only one like myself can appreciate the great benefit a course of optics with you really is. Instead of now guessing what spectacles my patrons require, the whole subject has been so cleared up that I think I can now go about fitting intelligently, with a certainty of results sure to please the buyer as well as the seller.

I shall be glad to give any information to any one writing me about the course you give.

Yours truly,
G. N. ASSELSTINE.

Orangeville, April 26th, 1895.

Dr. Hamill, Toronto.

DEAR SIR,—In reference to the course in optics and refraction I took with you, all I can say is that I was more than pleased that any one of my age should be able to pick up the science so quickly and thoroughly. Your method of teaching is so simple, and yet so complete, that I have no hesitation in stating that any one with ordinary intelligence can, in two weeks under your instruction and guidance, fit spectacles correctly. I would not have missed the course for twice the cost.

Yours truly,
JOHN C. FOX.

P.S.—Should you wish to refer any one to me, I shall be pleased to give them my opinion of your ability as a teacher of optics.—J.C.F.

Brussels, Ont., April 16th, 1895.

To Dr. Hamill, Toronto.

DEAR DOCTOR,—I wish to express my gratitude for the very thorough manner in which you imparted the theory and practical working of fitting spectacles. When I commenced with you, I knew absolutely nothing about spectacles, and, after a two weeks' course under your teaching, I find it very easy to suit customers who before puzzled me entirely.

I shall not fail to recommend your course to any one who may ask me about refraction.

Yours truly,
H. J. McNAUGHTON.

CANADIAN DRUGGIST PRICES CURRENT

Corrected to May 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 37	$4 65
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.	62	70
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
COLLODION, lb.	75	80
Cantharidal, lb.	2 50	2 75
CONFECTION, Senna, lb.	40	45
Creosote, Wood, lb.	2 00	2 50
CUTTLEFISH BONE, lb.	25	30
DEXTRINE, lb.	10	12
DOVER'S POWDER, lb.	1 50	1 60
ERGOT, Spanish, lb.	75	80
Powdered, lb.	90	1 00
Ergotin, Keith's, oz.	2 00	2 10
EXTRACT, Logwood, bulk, lb.	13	14
Pounds, lb.	14	17
FLOWERS, Arnica, lb.	15	20
Calendula, lb.	55	60
Chamomile, Roman, lb.	30	35
German, lb.	40	45
Elder, lb.	20	22
Lavender, lb.	12	15
Rose, red, French, lb.	1 60	2 00
Rosemary, lb.	25	30
Saffron, American, lb	75	80
Spanish, Val'a, oz.	1 00	1 25
GELATINE, Cooper's, lb.	75	80
French, white, lb.	35	40
GLYCERINE, lb.	16	18
GUARANA	3 00	3 25
Powdered, lb.	3 25	3 50
GUM ALOES, Cape, lb.	18	20
Barbadoes, lb.	30	50
Socotrine, lb.	65	70
Asafœtida, lb	40	45
Arabic, 1st, lb.	65	70
Powdered, lb.	75	85
Sifted sorts, lb.	40	45
Sorts, lb.	25	30
Benzoin, lb.	50	1 00
Catechu, Black, lb.	9	20
Gamboge, powdered, lb.	1 20	1 25
Guaiac, lb.	50	1 00
Powdered, lb.	70	75
Kino, true, lb.	1 25	
Myrrh, lb.	$ 45	$ 48
Powdered, lb.	55	60
Opium, lb.	3 75	3 80
Powdered, lb.	5 50	5 75
Scammony, pure Resin, lb.	12 80	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
Horehound, 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	22
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
Burgundy, 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, bichd., 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	25	30
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	8½	10
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	7	8
Powdered, lb	8	9
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 15	1 20
Croton, oz	75	80
CHLOROFORM, lb	60	1 90
CINCHONINE, sulphate, oz	25	30
CINCHONIDINE, Sulph., oz	15	20
COCAINE, Mur., oz	7 50	8 50
CODEIA, ½ oz	80	90
COLLODION, lb	65	70
COPPER, Sulph., (Blue Vitriol) lb	5	6
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, white, 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
Salic ate, 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

A "Reel Comfort."—Have you seen the new fly catcher advertised in this issue, and which, it is claimed, is superior to anything in that line offered? The Canadian agents are Lyman Brothers & Co., Toronto.

A Favorite Brand.—We would direct the attention of the trade to the advertisement of John Labatt, in this issue. Labatt's ale and stout are known throughout Canada as one of the leading brands, and they are specially adapted to the use of invalids and convalescents, and are highly endorsed by the medical faculty. The favor with which they are regarded abroad is shown by the high awards extended to them at the various exhibitions of note. They received the highest award at the World's Fair at Chicago in 1893, the gold medal at the Midwinter Exposition in San Francisco in 1894, besides eight other gold, silver, and bronze medals at the world's great exhibitions.

A Seasonable Request to Druggists in Sheep Districts.

We respectfully ask every druggist to send us at once a list of all owners of sheep in his district, to whom we promise to mail a pamphlet on Sheep Dipping and the Cooper Dip, with his name appended. This never fails to start a demand. A supply of attractive literature will also be sent to the druggist, free of all charge, with his name on.

The Cooper Dip has been the leading dip of the world for fifty years. It is exclusively supplied to the British Government, used on the Royal estates, and endorsed by the Canadian Minister of Agriculture. It is a scientific preparation, highly manufactured, and essentially a druggist's article. It is a concentrated powder compressed into packets, clean, non-combustible, non-corrosive; in fact, a perfect stock article. No deterioration by time or climate possible. Vastly superior to every other. Mail list at once to catch the season to

WILLM. COOPER & NEPHEWS,
Cooper Dip Depot,
Galveston, Texas.

Inquire prices to the trade of Evans & Sons, Ltd., Montreal and Toronto, general agents for the Dominion of Canada.

Books and Magazines.

Frederick Stearns & Co., Detroit, Mich., have issued a treatise on "Wine of Cod-liver Oil," embodying the indorsements of some leading practitioners of this preparation. As is quite naturally the case, the favor with which it has been received has stirred up opposition from rival manufacturers; but the substantiation of its claims, as the result of its use by the medical profession, proves it an article of undoubted merit. A copy of this treatise will be sent free to any applicant.

The Wild Flowers of Canada.—This Dominion will soon be covered with wild flowers as with a carpet. It is interesting to hear that splendid prizes are to be given to those who know the wild flowers of Canada by name, form, and color. European and American judges of floral nature say Canadians should be so carried away with the beauty of their own native bloom as to ensure an acquaintance with the wild flowers of Canada by every man, woman, boy, and girl in the Dominion. In this connection the Montreal *Star* is coming in for much praise for a splendid work it is publishing, entitled "The Wild Flowers of Canada," in portfolio form, sixteen flowers in each portfolio, three hundred plates in all, natural colors and natural size, the whole forming an invaluable treasure for the library. For a limited time these valuable portfolios may be obtained from the Montreal *Star* or local newsdealers at fifteen cents each. Amazingly cheap.

Rudyard Kipling to Revisit India.—Much interest will be felt by the public in the return of Rudyard Kipling to India. He has just agreed to furnish a regular contribution to *The Cosmopolitan Magazine* for the coming year, beginning his work upon his return to India. India has never been critically considered by such a pen as Kipling's, and what he will write for *The Cosmopolitan* will attract the widest attention, both here and in England. Perhaps the most beautiful series of pictures ever presented of the Rocky Mountains will be found in a collection of fourteen original paintings, executed by Thomas Moran for the May *Cosmopolitan*. To those who have been in the Rockies, this issue of *The Cosmopolitan* will be a souvenir worthy of preservation. This number contains fifty-two original drawings, by Thomas Moran, Oliver Herford, Dan Beard, H. M. Eaton, F. G. Attwood, F. O. Small, F. Lix, J. H. Dolph, and Rosina Emmett Sherwood, besides six reproductions of famous recent works of art, and forty other interesting illustrations—ninety-eight in all. Though *The Cosmopolitan* sells for but fifteen cents, probably no magazine in the world will present for May so great a number of illustrations specially designed for its pages by famous illustrators. The fiction in this number is by F. Hopkinson Smith, Gustav Kobbe, W. Clark Russell, Edgar W. Nye, and T. C. Crawford.

The Work of Albert Lynch.—Albert Lynch, whose work is becoming so much more generally known to Americans through his drawings in *Scribner's Magazine*, and his cover designs for *The Ladies' Home Journal*, is a Peruvian by birth, but of English parentage. He is only thirty-three years of age, and of extremely retiring disposition. He is unmarried, and lives in Paris. The young artist commands the highest prices for his work, his smallest water-color paintings readily selling for $600 to $900 each. In 1893 he received the Salon's first prize for his beautiful panel of "Spring," showing a single figure. This picture won the admiration of the French art critics and the public to such an unusual degree that the painting was sold for a fabulous sum to a private Paris buyer. Recently *The Ladies' Home Journal* acquired all publication rights to this painting, and it will serve as one of the cover designs for that magazine. The next issue of the *Journal* will also have a design by Lynch, portraying his conception of a woman's ideal costume. A succession of other cover designs by Lynch will follow these two.

The Delineator for May contains: Dance of the Nymphs, Equestrian Costumes, Artistic Housefurnishing, Commencement Costumes, Fashionable Skirt Decorations, Fashionable Millinery, Stylish Lingerie, Ladies' Fashions, Misses' and Girls' Fashions, Little Folk's Fashions, Boys' Fashions, Illustrated Miscellany, Fancy Stitches and Embroideries, Fashionable Dress Goods, Novelties in Wash Fabrics, Fashionable Garnitures, Stylish Millinery, Tatting (illustrated), Crocheting (illustrated), The Art of Knitting (illustrated), Around the Tea table, Crepe and Tissue Papers, Oberlin (College series), Mayers and Lay Games, The Voice, Modern Lace-making, Venetian Ironwork, The Home, Seasonable Cookery, Experiences of a Training School, Life (No. III.), The Social Code (No. III.), How to be Well, Burnt Work (Part III.), Government Clerkships, Kindergarten Papers (No. IX.), Preservation and Renovation (No. II.), The Dressmaker and Milliner, Answers to Correspondents.

Crystallose is the name of a soluble sodium salt of saccharin. This substance is reported to be 400 times sweeter than sugar.

Drug Reports.

Canada.

Glycerine is higher, and stocks low.

Camphor has advanced about four cents.

Cream of tartar has advanced.

All tinctures advanced from three to five cents a pound, according to the proportion of alcohol.

Perfumery has also advanced.

Imported confectionery advanced one-half cent per pound.

Mercurials are advancing.

Caffeine is abnormally high in the foreign markets.

Opium is easy, and the prospects of a large crop check any tendency towards an advance.

Alcohol, on account of new duty, is higher, $4.60 in five gallon lots is being asked, being an advance of about forty cents.

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	1 75	1 80
PEPSIN, Saccharated, oz	35	40
PHENACETINE, oz	35	38
PILOCARPINE, Muriate, grain	20	22
GLYCERIN, 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
Bitrat (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	36	40
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	85	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	1 75	1 80
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 40	1 45
TURPENTINE, gal	60	65

Spirits nitre has advanced about five cents per pound on account of increase in value of spirit.

Naphthaline balls easier in price.

Borax is easier.

In his recent budget speech the Finance Minister announced the intention of the Government to increase the duty on alcohol by thirty-three cents per imperial gallon, making it now two dollars and thirty cents per gallon. We had trusted that the Government would have seen their way clear to lessening the duty on spirits when used in the manufacture of medicine, and in the arts. The price charged by distillers, $1.17 per gallon, is much in excess of that charged in the United States, where it may be procured in the neighborhood of thirty cents in bond. The law in the neighboring republic grants free alcohol for these purposes, when certain conditions prescribed by the Secretary of the Treasury are complied with, and, were the same allowed here, the cheapening of this class of medicinal products would be the result.

The quotations for Paris Green in the United States are from 20c. to 22½c. per pound in bulk, or from 24c. to 26c. in one-half and one-pound packages. In Canada the price is very much lower, and the retailer certainly cannot complain when comparison is made. The following are about the ruling prices here:

	Cts. per lb.
Paris Green, Extra, ½ lb. cartons	17
" " " 1 lb. "	15
" " " bulk	13
" " " " 100 lb. or over	12½
" " " " 400 to 500 lb. casks free	12

Paris Green is invariably net, due August 1st.

White Hellebore, powdered, 25 lb. boxes	12½
" " " in bbls.	
" " " 1 lb. cartons, 18 lb. in case	15
Insect Powders—	
From closed Chrysanthemum flowers	28
" " " " in 25 lb. boxes	26
Moth Camphor in 1 lb. cartons, 17 cakes to lb. or ball	8
" " in assorted cartons, 12 lb. lots	7

England.

London, April 27th, 1895

Owing to Easter holidays business has been of a more restricted character. There is plenty of movement, however, in the market, and both buyers and holders appear sanguine. Cod-liver oil remains firm after the last month's relapse. Consumption is lessening, and I anticipate a further fall as the summer advances. Balsams of Peru and Tolu have advanced, and caffeine, during the last few weeks, has been run up to famine rates. Quinine is unusually firm. The recent advance in quicksilver has been followed by a slight increase in price of mercurials Tartaric acid and cream of tartar are in brisk demand, and rates have advanced. Opium is steadily tending downward, and morphia is now being offered cheaper. Cocaine has been reduced this week, but the price is still high. A further drop in salicylic acid and salicylates is by no means improbable. The petroleum boom continues, and appears to be a very strong market.