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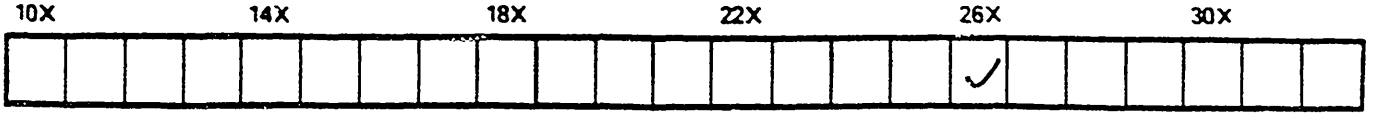

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ESTABLISHED 1890.

A Monthly Journal of Chemistry, Pharmacy and Materia Medica.

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VOL. V—NO. 4. JULY, 1894. $1.00 per annum.

The Montreal Pharmaceutical Journal.

171 *St. James St., Montreal, Canada.*

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MONTREAL PHARMACEUTICAL JOURNAL.
P. O. Box 1144, Montreal.

F. L. BENEDICT, Secretary.

The druggists of District No. 7, at their annual meeting, on May 8th, at Fergus, Ont., passed the following resolution: "That this District recommend to the Ontario College of Pharmacy that this Dominion get up a Pharmacopœia of its own, and separate from that of the British and United States." The language of the resolution is hardly an example of classical English, and although the meaning is rather hazy, still we believe the druggists of No. 7 District desire the O. C. P. to undertake the work of stirring up the druggists of the Dominion to set to work to build up a pharmacopœia distinctively Canadian. The O. C. P. must be congratulated on its high standing with the druggists of No. 7, but we doubt if it has the power to "get up" a Dominion Pharmacopœia, even on the same lines as "that of the British and United States," much less "separate." This is the first distinct demand for a Canadian Pharmacopœia, and it might be as well for other Canadian pharmaceutical bodies to discuss the question, although we believe that the discussion would not be fruitful of results.

In the discussion of this question several points must be thoroughly examined. First, what are the probable gains to be derived from the publication of a Canadian Pharmacopœia?—is the time opportune?—is the medical profession ready for the change, and is this change demanded by the profession?—who will undertake the work when it will have been found that it is required?—and how many pharmacists are there in Canada who have the time to devote to the investigations which will inevitably be required to evolve a Pharmacopœia worthy of the name?

In our opinion, these questions are very easily answered; and although national pride inclines us in favour of a Canadian Pharmacopœia, a calm study of the above questions will show that it is neither probable nor possible that we will have a Dominion Pharmacopœia for many years to come. The possible gains to be derived are that there would not be the present confusion of B. P., U. S. P., and Codex; so, to obviate this, a fourth is to be added—at least, that is what is claimed by supporters of a Canadian Pharmacopœia. but they also claim that, once this standard is adopted no other will be used; but can you compel any physician to use the preparations of only one pharmacopœia? We think not; consequently, instead of remedying the confusion, it would only increase it. Is the time opportune? We do not think it is. The U. S. P. is of recent date, and the General Medical Council is about to issue an invitation to all colonial bodies to take part in the formation of a new British Pharmacopœia Let us wait until this new scheme has been properly developed, and then we can judge whether to fall in with the idea. As regards the demand on the part of the medical pro-

fession, we have heard nothing of it. Most physicians rely on the preparations of the B. P., and occasionally call in the aid of the U. S. P. or the Codex.

As regards the last questions, we doubt if sufficient interest is taken in the matter by pharmacists of the country to warrant us in saying that many would volunteer to do the necessary work, and we doubt that many would have the time to devote to it in these hard times, when expenses must be cut down, and the proprietors are compelled to attend closely to business, and have no time for experimenting; so that, taking everything into consideration, we are inclined to believe the druggists of No. 7 District are recommending the O. C. P. to undertake a rather large contract, and one very difficult of fulfilment.

AN ODD COINCIDENCE.

In our June number we published a translation of an article which appeared in the May number of *Repertoire de Pharmacie*, on the preparation of Phospho-Glycerate of Calcium, which was done for us in this city. In the issue of July 10th of one of our esteemed New York contemporaries we noticed an article on the same subject, which is claimed to have been translated especially for it. A cursory examination of this translation showed a remarkable resemblance to our own, and a more careful study shows it to be identical with ours, even the typographical errors, such as misplacement of decimal points, etc., punctuation, paragraphing, being exactly alike, and in cases where certain French words could have been translated by several English synonyms the very words used in our translation is also used. The deadly parallel could be used to great advantage but we forego it. Odd, isn't it, that one writer working in Montreal about six weeks ago, and another working in New York some time since June 18th, when our article was published, should have hit upon exactly the same article, and chosen exactly the same words and used the same punctuation, etc.? We think this a most wonderful case for physicologists to investigate. Is it a case of unconscious mental cerebration, or a projection of the first writer's astral being into that of the second, or is it only a case of plain plagiarism?

The article which we publish in this issue: "The Practical Value of a Drug Journal," by A. N. Doerschuk, Ph.G., was awarded the first prize by the Missouri State Association, at its meeting at Excelsior Springs, Mo., June 14th.

ECONOMIC BOTANY.

By EDSON S. BASTIN, A.M.

Economic Botany may be briefly defined as botany applied to useful ends, or as the study of plants in relation to the wants of mankind. That plants do stand in very close relation to human happiness and welfare, and even to the necessities of man's existence, is a fact so obvious that it scarcely needs to be dwelt upon. We depend upon the vegetable world for the greater share of our food, and, if we take into account that the animals we employ for food all, either directly or indirectly, obtain sustenance from plants, we may say that we are absolutely dependent upon them for the essentials of our diet, and would quickly perish without them.

We depend scarcely less upon them for our clothing and building materials, and for numberless other things upon which our comfort and well being depend.

We also draw from the vegetable world the greater part of the medicines we employ in healing our diseases. There are also the best of reasons for believing that if it were not for the chemical activity of plants in breaking up the carbon dioxide so constantly exhaled into the atmosphere from the lungs of animals, from the chimney throats of our factories and private dwellings, and from the processes of decay that go on about us everywhere—if it were not for this and the restoration of pure oxygen to the atmosphere that the chlorophyll plants are all the time accomplishing, the atmosphere itself would soon become so vitiated that it could no longer sustain the higher forms of animal life, and we should perish from the earth.

In still another respect we are dependent upon this world of plants. If it were not for the bacteria and fungi, those despised and very much dreaded parasitic and saprophytic organisms whose work is largely that of tearing down and restoring to the mineral kingdom, and so to available forms for growth, dead organic bodies, the earth would soon be piled up so high with corpses that there would

be neither room nor sustenance for living beings.

It is largely on account of these relations between plants and human welfare that botany, the science of plants, has grown up. True, superstition has had something to do with its beginnings, as it has with those of other sciences, chemistry and astronomy, for example. The superstitious belief in a philosopher's stone stimulated the research which gathered together many important facts that have greatly helped to lay the foundation of chemical science. Likewise, it was a superstition that the stars sway the destinies of men, but it stimlated observation of the heavenly bodies, and aided to accumulate the facts on which rests the superstructure of modern astronomy. So, in botany, for example, the absurd doctrine of signatures, which so long prevailed in medicine, led to a decided extension of our knowledge of plants, and so helped to build a science of botany.

We have many things to blame superstition for; as a general thing the world has no use for it, but it is well to recognize the fact that it has not always been wholly evil in its effects.

But the foremost cause in the development of botany, in its earlier years at least, was *utility*.

Some knowledge of plants was so much one of man's necessities—to know what plants were useful and what ones dangerous—that long before he reached the stage of mental development when science in any proper sense was possible, a considerable body of facts were gotten together to build upon when the proper time should come. Thus, as we are well aware, the use and cultivation for food, medicine or textile materials, of many of the plants we value most, extends far back of the period when written human history began. This is the case with wheat, maize, barley, millet, sorghum, the opium poppy, cotton, the banana, apricot, orange, melon, pumpkin, bean, pea, manioc, olive, rice, peach, sweet potato and flax.

In many of these instances, in fact, as with maize, we are absolutely ignorant of the wild plant from which the cultivated form is derived. In some cases, most likely, the changes brought about by the ages on ages of cultivation are so great that we are now unable to identify the cultivated with the wild parental form; it has, in fact, been developed into a distinct species. This, perhaps, is the case with wheat. In other instances, probably the parental form has perished altogether, as DeCandolle believed to be the case with maize.

In one sense, then, botany *began* as economic botany, began with the utilities in far-off times, and since then, until comparatively recent times, has chiefly occupied itself with them. But when man reached the age of reason, and science in the proper sense of the term became a possibility, plants came to be studied, not solely or chiefly with reference to their uses, but from a desire to understand what they were in themselves, what were their relations to each other, to the mineral world on the one hand and to the other half of the organic world on the other. The passion to know plants took possession of some men as that to know the mechanism of the heavens or the structure and development of the earth possessed others, and so scientific botany became a reality.

This new development of botany may be said to have begun about three centuries ago, with the work of the Florentine, Cæcalpinus, but it made only slow progress until about a century later, when the Englishman, John Ray, in his *Methodus Plantarum*, laid the first really rational basis for plant classification. From this time on, through the work of Tournefort, Linnæus, Jusseau, A. P. DeCandolle, Endlicher, Lindley, Hooker, Bentham, Alphonse DeCandolle and Gray, systematic botany has made rapid and splendid progress.

Necessarily, owing to the later development of the compound microscope and that of chemical science, the growth of physiological botany was more retarded. Although in ancient times some crude notions existed about the sexuality of plants, the functions of stamens and pistils do not appear to have been understood until Grew explained them in 1676. From this time until 1825 no great progress was made in this branch. In this year, Amici discovered the pollen tubes, and a little later Robert Brown traced them to the nucellus of the ovule. Since then the embryology of plants has made rapid strides, through the labours of such men as Schleiden, Mohl, Naudin, Hofmeister, Strasburger, Baillon, Bornet, Decaisne, Tulasne, and last, but not least, Darwin.

The latter's work on cross-fertilization not only opened up a wholly new field in connection with the subject of sexual physiology, but his works on climbing plants and on insectivorous plants, as well as his earlier work, in which he promulgated his doctrine of the origin of species by natural selection, have given a tremendous impulse to other branches of vegetable physiology.

It is true that this development of which we have just been speaking has mainly been on the purely scientific, rather than on the utilitarian side, at least until quite recently. But a science pursued for its own sake, with a pure love of knowledge for its motive, and regardless of ulterior results, could not but

lead to important practical applications, and so it has been in this instance. Especially have the developments in vegetable physiology found abundant applications. There is no branch of economic botany that has not received tremendous impetus from the researches of such men as Sachs, Strasburger and Darwin.

The researches of these men seem far enough from what is ordinarily called practical, nevertheless they have served as a leaven, to leaven the whole lump of botany, practical as well as theoretical; and economic botany, which for a thousand years had stood still, now shows everywhere signs of the most stirring activity. Not only are the old departments of the subject revivified, but new ones have sprung into life. Agricultural experiment stations, in many cases most elaborately equipped for the investigation of all that relates to useful plants, have been established in every country in Europe, and in nearly every State in the Union; courses in forestry have been established in some of the European, and I believe in at least one of our American Universities; and various professional schools, particularly medical schools and schools of pharmacy, have felt the new impulse, and established laboratories where medicinal plants are investigated structurally, chemically, and with reference to their physiological action.

Let us glance now at the departments of Economic Botany. These may be stated to be as follows: (1) Agricultural Botany. (2) Horticultural Botany, with its sub-departments of Pomology, Arboriculture and Floriculture. (3) Forestry; and (4) Medical or Pharmaceutical Botany.

This classification is in some respects one of convenience and custom rather than a strictly scientific one. It would be hard, for example, to draw a sharp line of demarcation between Agricultural and Horticultural Botany.

Agricultural Botany, using the term in its commonly accepted sense, includes all knowledge relating to the plants which are cultivated on the farm in distinction from those cultivated in gardens or orchards, and from those growing wild in field or forest. It includes the botany of the cereals, the fodder plants, the edible roots and tubers, various textile plants, and others whose products are widely used or cultivated on an extensive scale.

Under Horticultural Botany is usually included the botany of those plants which are cultivated in gardens and orchards, whether for food or other utilitarian purposes, or merely for decorative uses, as in the cultivation of ornamental trees, shrubs and flowers.

Pomology, more properly called Fructiculture, is that department of it which relates to the culture of fruits; Arboriculture, that branch which relates to the culture of ornamental trees, and Floriculture, the branch which relates to the culture of flowers

Horticulture is really a branch of agriculture, though custom and, to a certain extent, convenience, maintain a distinction between them. Both are governed by the same general principles. In horticulture, however, the plant is more often subjected to artificial conditions, for example, to stove-heat, root-pruning, budding, grafting, layering, forcing, and so on.

The proper study of both includes in its scope the commercial history, systematic relationships, life histories, structure, physiology and pathology of the plants cultivated.

Of these physiology takes the leading rank both in its importance and in its scope. It includes not only the study of plant foods and the modes of their assimilation, respiration, metabolism, reproduction, and the influence of various external agents and conditions, as light, heat, soil, drainage, etc., on plants in general, but the study of all these in reference to each particular variety or species under cultivation, and as subject to more or less artificial conditions. The kinds of soil and drainage best suited to the plant, the best manures to employ, the proper order of cropping to prevent exhaustion of the soil, these are things also which are not to be neglected. Of scarcely less importance is a knowledge of the facts and conditions of plant variation, the laws and methods of hybridization, and the modes of taking advantage of these for the improvement of plants in any desired direction. Nothing, in fact, that has happened recently has so stimulated the agricultural arts or encouraged so much hope for future progress in them, as the revelations of the last twenty-five years in vegetable physiology.

The pathology of cultivated plants, that is the nature of the bacterial and fungous diseases to which they are liable, and that of the insect pests that attack them, together with the knowledge we are acquiring slowly but surely of the best methods of dealing with these enemies, is of scarcely less practical importance. It is a subject also which at the present time is engaging the talents of many of our best botanical investigators.

Forestry is a comparatively new, though none the less thriving and important branch of economic botany. Besides including a knowledge of the structure, botanical relationships, physiology and pathology of trees, it deals with such subjects as the best modes of planting, caring for and preserving forest growths, of re-foresting denuded areas, of estimating by means of accurate tests the relative values of different timbers for constructive and other

purposes, the rate of forest growth, the age attained by different species of trees, the relations of timbered areas to rainfall, drainage, to the health of the population and to the permanence of the configuration of the earth's surface, the methods of preventing the encroachment of sand dunes upon fertile areas, and the introduction and acclimatization of new species of trees.

In many of the older countries of Europe schools of forestry have been examined, and systematic measures are employed for the care and preservation of the forests. In Germany and France forestry has become a profession, which gives employment to a considerable number of intelligent men. In this country we have permitted the destruction of a very large share of our forest wealth — a wealth greater, probably, than that of any other nation in the world—and we are now only awaking to a sense of the loss. and beginning to take measures to prevent further destruction.

Although the means thus far adopted are quite inadequate, they form an entering wedge to further action, and the splendid work that has been done by Sargent and Fernald has so awakened intelligent public sentiment, that we may hope for satisfactory legislation on the subject in the near future.

Pharmaceutical or Medical Botany, the branch which most directly concerns us, is, in some respects, behind the other departments in its development; in others, however, it is fully abreast of them. Although general botany owes more to this branch than to any other, since the earlier botanists were mostly either physicians or pharmacists, and since the earliest botanical gardens were established chiefly for the cultivation of medicinal plants, Medical Botany is behind the age in the cultivation and improvement of the plants in which it deals. There are still a very large number of important medicinal plants that are either not cultivated at all, or are cultivated to such a limited extent that we are still dependent for our supplies of them on the primitive forests and prairies. Our agricultural colleges and experiment stations leave the medicinal plants almost wholly out of account; and excepting the case of the Cinchonas and a very few other drugs, experiments with them are left entirely to individual enterprise.

It is behind the agricultural branches also, in the fact that inadequate attention has been given to the study of the structure of the plants with which it deals. True, there are signs of awakening in this direction, and a hope for better things in the near future.

As respects the physiology of medicinal plants, and particularly that important branch of it which relates to the increase and improvement of the yield of medicinal constituents, nothing more encouraging may be said than that it is sadly neglected, the schools, even those of pharmacy, having ignored the subject altogether.

In two or three lines only does this department appear to have kept abreast of Agricultural and Horticultural Botany. This is, perhaps, the case with vegetable histology, and it is decidedly the fact with the investigation of the chemical constituents of plants. Since the German apothecary, Sertürner, in 1817, announced the discovery and isolation of the first known alkaloid, morphine, there has never been in our profession increasing activity in this line of research, and never has there been such widespread interest in the subject as at present. To the credit of this college, it should be said that it has done its full share of work of this character.

But what has been done, valuable though it is, is only an infinitesimal part of what remains to do. That may not be wholly true which Emerson suggests, that every weed is a plant, the uses of which we do not yet understand; but it is safe enough to say that, amongst the 175,000 or thereabouts of plant species that have been described and named, and the possibility that as many more await discovery, there are many times the number we know of at present that are capable of serving mankind in a useful way. We know not what value may lie even in many of the despised weeds about us, to be revealed by careful chemical research. Every day we are discovering new vegetable principles, and discovering new uses for old ones. If such wealth as the aniline dyes came from such an unpromising and apparently worthless substance as coal tar, what may we not hope from the many thousands of plants that are scarcely known to us yet except by name? Of the flowering plants that remain to be discovered, we cannot count on more than from 10,000 to 12,000 species, but these give great promise, because they lie mostly in the great central regions of Africa and Asia, where plants of much potency may be expected to occur.

The least explored botanical fields are those of fungi and bacteria. How many species of these groups remain to be described it is impossible even to guess. We can only say that the number is vast, and possibly, when all are known, may be found to exceed that of all other plants put together. The probabilities of obtaining many important remedial agents from each of these groups are most encouraging to investigators. Many of the fungi are proven to be palateable, highly nutritious, and easily cultivated food plants; and it is largely suspicion and ignorance that prevents us from making more common use of them. The many

poisonous species have made the whole group suspected; but this fact should encourage, rather than retard, pharmaceutical research, for dangerous poisons have often proven useful remedies.

As for bacteriology, so closely and directly is its study related to human welfare, and so important are its achievements in later years, that it is well entitled to rank as a separate branch of Economic Botany. Its achievements, in the score of years of its existence, have been vast, but we may hope for much greater results in the future.

According to Sturtevant, there are 1,192 species of plants that have, at one time or other, been cultivated for food; and the whole number which are known to have been used as food, including those resorted to in time of famine, is 4,090 species; but even the smaller of these includes many plants of little value. I find even in Smith's "Dictionary of Economic Plants," only 515 food plants mentioned, and this certainly would include all of the important kinds. Even of these I judge at least two-thirds have either a very doubtful value or only a local or very limited use. The great food staples of the world are really few in number, but there seems no good reason why they should not be increased many fold, not merely by discovery of new kinds, but by the improvement of old ones. If it is true, as some botanists believe, that wheat in its numerous varieties—now constituting, probably, the most important food of the human race—was originally derived from Ægilops ovata, a grass of little consequence in its wild state even as a forage plant, what possibilities are presented by numerous other grasses, if only they could be subjected to intelligent cultivation?

A man walking along the coast of England or France may, to-day, find a tall, straight-stemmed, glaucous leaved crucifer, which bears at its apex a compact raceme of yellow flowers. Its leaves are lobed and somewhat wavy or crispate, and the stem, when stripped of them and dried, would make a fair walking-stick. The plant is the wild *Brassica oleraceæ*, from which have been developed the common white cabbage, red cabbage, savoys, coleworts, the borecole or Scotch kale, curly greens, cauliflower, broccoli, kohl-rabi, the cow or Jersey cabbage, and, as some, believe, the common turnip, forms, in appearance and habit often so different from each other, that no one not a botanist would suspect their common origin. Precisely how they originated we don't know; but they are the result of a long course of cultivation. Are there no other of our Cruciferæ that possess similar possibilities?

A few years ago there were enumerated in the transactions of one of the horticultural societies of Great Britain 1,500 different varieties of the apple, and this probably does not include nearly all that have been produced from the original wild apple of Europe and Asia. Many other species of Pyrus that have never been subjected to experiment possess, for aught we know, as much promise as Pyrus Malus.

The Japanese have made out of their persimmon what they regard as their most valuable cultivated fruit; but the wild plant, I am told, yields a fruit no more desirable than those of our two wild species. In fact, our common persimmon shows a great tendency to variation, even in the wild state, thus making it a most promising subject for experiment. Scarcely less urgently do the butternut, black walnut, hickories, hazels, blueberries, serviceberry, some of the Sheperdias, the species of Physalis, Apios tuberosa, Psoralia esculenta, and many other native species, invite us to experiment.

Of course, experiments of this kind must be made by government and in long lines of policy, as important results, in the case or long-lived plants at least, could not be expected in a single generation of men. It is not necessary to suppose, however, that because it has taken thousands of years to bring about the present excellence of many of our food plants, it would take the same length of time to similarly improve our wild ones. What was accomplished unintelligently in long ages, might probably be done in a few generations, by taking advantage of the now known laws of variation, hybridizing and artificial selection.

Coming again to medicinal plants, I find that the last edition of the "U. S. Dispensatory" enumerates over 1,300 that are more or less employed in medicine, and a fair estimate of the whole number in use would, I think, be not far from 3,000. This, of course, would not include all that have been employed in medicine; it would be impossible, even approximately, to estimate these; but only those plants that are at the present time more or less habitually employed by man, either civilized or savage. Of these, probably, the great majority are worthless, or nearly so, for the purposes for which they are employed. Even of those mentioned in the "Dispensatory," only 244 are regarded as of sufficient value to be given a place in the Pharmacopœia of 1890, and some of these I am sure are retained, not because of their intrinsic worth, so much as because they are extensively used.

But taking the pharmacopœial plant as representing fairly well those at present approved by the intelligence of mankind, how small a proportion must it be of those that will ultimately be proved valuable! How small a portion of the earth's flora has been

investigated, even superficially, with reference either to medicinal constituents or physicological action! Even among the drugs that have been studied to some extent with reference to these points, in how few cases has the work been done in an exhaustive or thorough way! The greater the amount of study given to the chemical principles of plants, the more we realize how endless is the variety and how great the probabilities are that vast numbers of undiscovered ones yet exist that may prove of inestimable value to mankind.

In the line of cultivation of medicinal plants, with the view to their improvement, just enough has been done to prove the importance of further work in the same direction. Owing to the imminent danger that the destructive methods of gathering Cinchona barks in South America would soon lead to the extermination of these trees, the necessity for cultivating them arose a few decades ago, and experiments were begun in India and elsewhere on a large scale, and with most interesting and suggestive results. It has been found that by careful selection of favorable species, by crossing and again selecting favorable variations, barks may be produced which yield double or treble the quantity of alkaloids produced by the best varieties from wild trees in their native Andes. Therefore, by precisely the methods employed by the floriculturist and pomologist, the drug gardener may improve the medicinal plants he cultivates.

Only one other line of development will I occupy a moment in directing attention to, and that is the possibilities that lie in the microchemical investigations are under such headway that creditable work is being done by them in chemical laboratories the world over; but only quite recently have micro-chemical methods risen to prominence. It is now possible, by means of the microscope, to recognize with certainty the presence of a large number of important medicinal constituents, including many of the alkaloids and glucosides. In many cases, to one skilled in the use of the microscope, it constitutes the simplest and speediest mode of analysing a drug qualitatively. Among the glucosides that are recognizable by this means are coniferin, datiscin, frangulin, lesperidin, phloridzin, rutin, salicin and saponin; and among the alkaloids: aconitine, atropine, berberine, brucine, colchicine, corydaline, cytisine, morphine, narcotine, narceine, piperine, strychnine, theobromine, caffeine, veratrine and nicotine.

The microscope, in the hands of the intelligent pharmacist, is thus destined to become a much more important instrument than heretofore in identifying drugs, judging of their quality and detecting adulterations.

WEST INDIAN LIME.

Citrus Medica, L. var. *acida*, Brandis.

One of the most distinct species of *Citrus* is *C. Medica*, which includes the citron, lemon and the limes. Of the limes there are sweet and sour limes, characterized, according to Roxburgh, by small pinkish flowers, usually four petals, and a perfectly spherical fruit, having a thin skin of a lively yellow color and pale acid juice. Sir Joseph Hooker states that the word lime is promiscuously applied to fruits very different in character, especially in British India, where the sweet limes of various forms are universally spoken of under that name.

The sour lime, although probably introduced from the East Indies, has made its second home in the West Indies, where, indeed, is its present principal area of systematic cultivation. The history of the sour lime is given by Sir Joseph Hooker in the *Botanical Magazine*, tab. 6,745. It was first described by Rumph (*Horus Amboinensis* ii,, p. 107, tab. 29) in 1750, under the name of *Limonellus*, alias *Limotenuis*, or thin skinned Lemo. *C. Limonellus* is also described by Miquel, who says it is cultivated everywhere in the Dutch East Indies. The same plant is well figured by Wight as *C. Limetta*, Risso (*Icones*, t. 958), who says it is wild in the Nilgiris. In the West Indies, McFadyen very clearly describes it as *Citrus Lima*. "a thorny shrub with ovate leaves, pentamerous white flowers, small nearly globose yellow fruit, with thin skin, and an abundance of pure acid juice; it is naturalized in Jamaica, forming strong fences." Brandis (*Forest Flora*, Ind., p. 52) rightly places the sour lime of India as a variety of *Citrus Medica*, L; other authors refer the sour or West Indian lime to *C. Limetta*. Risso, its nearest European representative, but this latter differs in its sweet juice. The botanical position of the West Indian limeas an acid variety of *Citrus Medica*, L, is now established. This small acid lime seems confined to tropical and sub tropical zones. It does not appear to flourish in Southern Europe, and as already stated, its present headquarters under cultivation are in the West Indies, where in the islands of Montserrat, Dominica, and Jamaica it is commercially utilized for the production of lime juice and essential oil.

The lime, as already mentioned, yields juice of a singularly pure, acid flavor. The fresh limes are sometimes exported as gathered, or they are pickled in sea water or brine and shipped to the United States. The demand for the fruit in a fresh or pickled state is said to be very limited. Sir Joseph Hooker states: "The lime is a favorite fruit in the West Indies and the Southern United States, the acid being

far more grateful than that of the lemon; and it is, hence, universally used for flavoring soups, etc., and in the preparation of many alcoholic and acidulated drinks. In my younger days it was imported in vast quantities into the city of Glasgow, providing an indispensable material for the brewing of the famous Glasgow punch. That it is now so seldom seen, comparatively, is due to the declension of that social and family intercourse that once was so intimate between the great city and the Spanish Main. It is still (with the lemon) the principal source of citric acid.

Lime juice is obtained by compressing the fresh ripe fruits between heavy rollers. This is exported in the raw state or concentrated. The latter is obtained by evaporating the raw juice in copper or enameled iron pans until it is reduced to about one-eighth or one-tenth of the original bulk. When exported it is a dark viscid fluid of the consistence of treacle, The concentrated lime juice is not used for food purposes, but devoted entirely to the preparation of citric acid, largely in demand by calico printers. From the rind of the fresh fruits there is obtained by a hand process, called "ecuelling," a fine essence of limes exported in copper vessels. A description, with an account of the mode of using the *ecuelle* (a specimen of which was presented to Kew by Mr. Joseph Sturge, managing director of the Montserrat Company in 1892), is given in the *Kew Bulletin*, 1892, pp. 107, 108. The ecuelle is a copper basin furnished on the inside with numerous prominent studs. The instrument is held in the left hand while the fruit, taken singly, is gently rubbed with a circular motion on the studs. This action bruises the oil glands in the rind and the oil flows in small quantities to the bottom of the basin. The process is a slow one and is performed in the West Indies by women and girls. The task per day is measured in fluid ounces. By distilling the raw lime juice a spirit is obtained known as oil of limes. The essence of limes extracted by hand is far more valuable than the oil of limes. The perfume of the latter is injuriously affected by the heat necessary in distillation.

A recent and somewhat full account of the lime industry at Montserrat and Dominica is given by Mr. Consul Galbraith in the United States Consular Reports, December, 1892, pp. 519-522. As these reports are not easily accessible in this country, the following brief summary is given on points not already touched upon: "The largest crops are gathered in years in which the rain-fall is heaviest. The average yield of fruit from an orchard in full bearing would be about 60 to 80 barrels (an ordinary flour barrel is employed in all orchards to guage the quantity of fruit) from an acre per annum. .....A barrel of fruit will yield from six to seven gallons of juice, and each gallon of sound ripe juice contains from 12 to 15 ounces of citric acid." Raw lime juice is preserved in casks and shipped chiefly to the London market. The manufacture of concentrated lime juice consists in boiling the juice in open pans until reduced to about one tenth of its volume; "it is then a black viscid fluid containing from 80 to 100 ounces of citric acid per gallon. ..... Concentrated lime juice is principally shipped to the New York market."

Green limes are exported to a small extent only, and to the English market. Pickled limes, in salt water or brine, are invariably sent to Boston. "The average shipments of the lime tree from Montserrat for the last five years were as follows: Raw lime juice, 800 puncheons of 120 gallons each; concentrated lime juice, 200 casks of 54 gallons each; green limes, 1,000 boxes; pickled limes, 300 barrels; essential oil, 2,500 pounds."—*Kew Bulletin.*

MEDICINAL WINES AND SPIRITS.—As was forseen at the time, the test-case brought by the Inland Revenue authorities here against MM, Dubose and Boulanger to decide whether kola wine and similar preparations are medicinal has been taken to the Court of Appeal. Judgement was recently given in favor of the manufacturers, thus confirming the finding of the lower tribunals. The Court found, as a result of evidence by experts, that extract of *Sterculiar acuminata* (alcoholic tincture of kola-nut) is an exclusively medicinal product, this extract being prepared by manufactures of pharmaceutical preparations for delivery to pharmacists and containing all the active principles of the kola-nut. The decision was also supported by the consideration that the product, little known as yet, has all the characteristics of an energetic medicinal agent. It is in daily use in therapeutics, and experts find that kola-nut, when employed in medium doses, has an energetic action on the circulation, the secretions, the muscular contraction, and the brain. In large doses it causes vomiting diarrhœa, etc. Dr. Monet declares in his evidence that, in certain doses, kola may be considered as poisonous, and that it would be dangerous to employ kola-nut as an article of food or as a simple beverage. Kola-nut is therefore, an exclusively medicinal agent. The Inland Revenue Department had failed to prove their contention that hygienic beverages exist having kola-nut as a base, or that kola-nut could serve for the preparation of such beverages. The Excise Department were condemned to pay the entire costs of the case.

WHAT IS AT PRESENT KNOWN OF TUBERCULOSIS AND THE MEANS OF PREVENTING ITS CONTAGION.

CONCLUDED.

2. *How to Prevent or Lessen the Infection of the Healthy by the sick.*

At home the patient should spit only in spittoons or bowls, cups, partially filled with water, or better with a disinfecting solution (2) so as to keep the sputum in a moist condition.

Spittoons filled with saw dust, ashes or other other such matter are dangerous as they favour the drying of the sputum. The cups or spittoons are to be emptied daily into the fire or, if found more convenient, they may be filled with boiling water and subsequently emptied in the sewers, but never on manure piles in the yards or gardens, where those germs which escaped destruction might contaminate the air or infect the fowls picking about and eating them. (Congress of Tuberculosis, Paris, 1888)

When the patient leaves his home and whenever he finds himself in a place where there are no spittoons, or, what comes to the same thing, if these are not emptied regularly enough to prevent the dessication of the sputum, he should use a pocket spittoon or handkerchief. The handkerchief should be put in boiling water at the first opportunity, so that the sputum will have no time to become dry.

It is most desirable that more spittoons should be provided in the public places. They are specially needed in railway stations, passenger cars and factories, where their presence, perhaps, with the aid of appropriate placards, would soon educate the public to their habitual use.

The room of the patient must be large and sunny, and if possible should not be papered. The curtains should be made of some fabric which can be washed in boiling water, the floor should be waxed or covered with oilcloth, —in a word there should be taken out of the room all that cannot be cleansed with a wet cloth, and dry dusting and sweeping should absolutely be abandoned as displacing and giving motion to the germs that had settled on the floor or objects contained in the room. The wet cloths used in cleansing must be boiled before drying. Body and bed linen must always be boiled in the process of washing. All these precautions taken with regard to the patient are to his advantage, as they increase his chances of recovery by preventing self inoculation. (1)

If the patient dies, or changes his residence, the safety of the persons living in the dwelling demands that the room of the patient with its contents, furniture, linen, bedding, clothing, etc., be disinfected (2). Wool and cotton tissues should be boiled or passed through a steam disinfector. The floors, walls (paper or no) should be washed with a disinfecting solution. All pieces of furniture or other things which are not passed through the steam disinfector should be washed with disinfecting solution.

3. *Prevention of the Use of Food Capable of Reproducing the Disease.*

mostly belongs to municipal authorities. They should inspect the dairies and give or continue licenses only to those milkmen whose animals are found healthy.

The practice of giving only boiled milk to artificially fed infants is becoming more general. There is certainly no better precaution against tuberculosis than by boiling milk and this moreover renders its digestion easier (Drouet).

There can be no adequate control over the meat supply if it is not inspected and stamped previous to being offered for sale. The stamping is indispensable as it is the only way for the public to know that meat which is offered for sale is that which has been examined. The establishment of public abattoirs renders the control of the meat supply much easier for the municipal authorities.

The regular inspection of cattle throughout the Province by competent veterinary surgeons and the slaughtering of animals found to be tuberculous complete the measures necessary to prevent the use of tuberculous food, and in addition would also prevent the propagation of the disease amongst our herds.

KOCH'S DISCOVERY OF TUBERCULINE.

In 1890, Koch announced to the world that he had discovered in tuberculine (3) a specific remedy which destroyed tuberculous tissues. Unhappily the experiments with his tuberculine did not have the effect anticipated, for while in some cases good results seemed to follow its use in many instances the symptoms were aggravated. At present Koch's lymph

(2) For instance: Bichloride of mercury 2 drachms, dissolved in one gallon of water.

(1) If no mention is made here of the excreta of tuberculous patients, it is because when thrown into the sewers or cesspools as it is usually done, the germs are very soon destroyed (Armingand). It must not be forgotten however that the patient can soil his linen and bedding so that in such circumstances the excreta become as dangerous as the expectoration. This soiled bedding and clothing must be disinfected by boiling.

(2) The local Boards of Health of the cities of Montreal and Quebec have undertaken to disinfect, free of charge rooms which have been occupied by consumptive Patients when requested to do so.

(3) Tuberculine is a glycerine extract of cultures made of the germ of tuberculosis [tubercle bacillus.]

is merely employed to diagnose tuberculosis amongst animals (1) though according to Strauss & Teissier, this method is not absolutely sure, the febrile reaction which follows the inoculation with tuberculine not showing itself in tuberculous subjects but having been observed also amongst subjects affected with other diseases. Klebs has eliminated some of the noxious constituents of tuberculine and the experiments with his "tuberculocidine" have given better results than those of Koch's tuberculine. Spengler combines tuberculine and tuberculocidine and obtains thereby good results.

All this seems to indicate that we are getting nearer to the discovery of a specific, and the only reproach we can make against Koch is that of having given us permaturely, facts not thoroughly studied.

However, as this discovery is far from being complete, and is likely to remain so for some time to come. the surest means of guarding against consumption is by following the directions given in this circular.

Wise Physicians Should not Dispense.

—Should the practitioner supply his own medicine? In reply to this query, it must be said that, in the present state of medical affairs, as a general rule, in a vicinity amply supplied with competent pharmacists, the practitioner has no right to compound or to carry drugs to dispense with his own hand to the patient. Holy Writ says that "the laborer is worthy of his hire." And so is the trained, qualified pharmacist. Pharmacy and medical practice, while a close affinity exists between them, are separate and independent branches of the healing art. The physician in a large city, who carries and dispenses medicines, by that act loses caste; he does an injustice to his patient and appropriates to himself what justly belongs to the druggist who depends largely on prescriptions for his support. It is alleged that the physician saves the patient the expense of prescriptions and so retains him. But the fact is he fails in both. In very many cases he might as well dose his patients with fragments of chips, pebbles or other inert substances as to give him stale, petrified tablets, which, with time, have lost their potency. His patient has no respect for the preacher-practioner combination, nor has he any enduring faith in the walking apothecary shop; hence, when he is really seriously ill he will pay only for the straight article. "Let the shoemaker stick to his last" is an old and true saying. If we would stop counter prescribing, the pharmaceutical treatment of gonorrhœal and amenorrhœal troubles, then we must give to the honest pharmacist what justly belongs to him. Pharmacists as a class are appreciative, and no physician ever patronized one that was not repaid two-fold. What we have said does not apply to the country practitioner, nor to the use of emergency drugs for night practice.—*Medical and Surgical Reporter.*

(1) "When a small quantity of tuberculine is injected under the skin of a tuberculous animal, the temperature of the body rises considerably; while in animals free from this disease, no such effect is produced. The rise in temperature does not take place immediately but occurs between 3 and 20 hours after the injection. The duration of the high temperature varies."
(Dominion Experimental Farm Bulletin).

THE BISMUTH BREAKDOWN.

If the happiness of syndicates is measurable, as that of nations is said to be, by their want of history, the palm for felicity among all the corners, pools, and trusts that mark the progress of modern chemical industry must surely be given to the Bismuth Syndicate. For more than nine years the little handful of firms that compose this respectable body have unostentatiously, but contentedly, battened upon the consumers of the drug. Bismuth metal, of which the syndicate have up to the present controlled the entire effective production, has been supplied by them to the manufacturers of bismuth salts at a price which must have lined the pockets of the mine-owners and their agents with wealth, although it has probably checked the use of the metal in various industries in which at a small margin upon the cost of production, it might have found profitable employment. It does not seem as if the manufacturing chemists who prepare the various bismuth preparations of materia medica have benefited in the same measure by the policy of the syndicate. Although, until quite recently, there has not been much price-cutting in bismuth preparations, the manufacturers have been compelled by circumstances to content themselves with a modest precentage of profit. This is proved by the fact that when, within the last few weeks, a continental manufacturer initiated a cutting policy on a small scale, it needed only the reduction of the price of subnitrate of bismuth (the principal salt) by a very few pence per lb. to sound the rock-bottom of profitable manufacture. In our Trade Report of last week we referred to these cutting proceedings, but since that report was written the nerves of the bismuth-dealers have been tried to a degree beside which the previous slight disturbances of the market fall into insignificance. On Friday last the syndicate (which is represented in this country by an old established Mincing Lane house) suddenly proclaimed a reduction in the price of bismuth metal from 7*s.* 6*d.* to 4*s.* 3*d.* per lb. net cash, for wholesale quantities. This reduction took the trade altogether by surprise. The continental house to which we have alluded had just succeeded, by slightly

underselling the British makers, in booking several orders for bismuth salts, and its customers are naturally far from pleased at having entered into contracts which, instead of the small advantage they promised to bring, seem likely to prove veritable Dead Sea fruit. It may be taken for granted that the continental firm were themselves caught altogether unprepared by the sudden action of the syndicate, but the incident strikingly illustrates the danger of contracting ahead for supplies of an article controlled by an irresponsible and secretive clique, without the safeguard of a clause guaranteeing the buyer against a fall in price.

Before referring to the causes of the sudden breakdown of the market it will be useful to sketch, as briefly as may be, the commercial aspect of the bismuth industry.

Until comparatively recent times the Royal Saxon mines were the only important source of production of crude bismuth. Within the last quarter of a century, however, important deposits have been opened in the South American Republic of Bolivia. It probably costs more to market the Bolivian product than the Saxon; but this difference is no doubt more than equalised by the admitted superiority of the Bolivian ore, which is said to be entirely free from arsenic, a metal always found associated with the Saxon mineral It is almost impossible to procure any figures worth quoting with regard to the yield of the Bolivian deposits, Bolivia is not a country famous for reliable statistics, and although some of the handbooks dealing with that Republic refer briefly to its bismuth mines, none of them contain any really useful particulars on the subject. This absence of information is naturally to the advantage of the syndicate, than whom no owl or bat could shun the daylight more. When the Bolivian bismuth became known in Europe, an agreement was concluded between the Saxon and the South American producers, under which (it is said) the supply of the requirements of this country, France and the United States was entrusted entirely to the Bolivians, or rather their agents in London, while Germany and the east of Europe were allocated for the same purpose to the proprietors of the Saxon mines For many years, with one solitary interruption, this agreement has worked to the satisfaction of both parties. Small parcels of bismuth from mines outside the convention occasionally found their way into trade, but these spasmodic supplies (in which Peru, Norway, Bohemia, and Germany participated) have never been able to disturb the market seriously. About seventeen years ago rather considerable shipments of Peruvian crude bismuth were made to France (in 1877 that country imported about 4½ tons from this quarter), but this source of supply appears to have run dry long ago. It is said that the Peruvian ore was too poor to pay the mining expenses, and it may be that the producers were squared by the lucky monopolists. Anyhow, the output of South American bismuth was presently again limited to the Bolivian metal, which, after being refined in this country or in Germany, finds its way to the pharmaceutical manufacturers in the west of Europe and the States.

But about the year 1883, another and more dangerous rival arose to disturb the peace of the syndicate. Australian bismuth ore, which had long been talked about in an indefinite sort of way, then proved itself to be, to the syndicate people, an unpleasant reality. Offers of bismuth were made to European consumers on behalf of firms in New South Wales, and within a short time the Australians succeeded in making several contracts at prices below the convention rates. The Bolivians at once retaliated, and made large sales at still lower figures, while the Saxon mines practically withdrew from the market for a while. The Saxon-Bolivian syndicate had evidenrly underestimated the strength of the newcomers, and after a short period of disturbance, in the course of which the former controllers of the market were disillusioned with respect to their opponents' weakness, the representatives of all the producers laid their heads together and formed a reconstructed syndicate, embracing the Australians. The first effect of the new combination was an advance, in January, 1885, of about 1*s* per lb. in the price of bismuth metal, which from that time until last week has undergone no further alteration. It may be that the artificially elevated quotation has stimulated production—a rock upon which syndicates have often been wrecked—but, whatever the cause, there is no doubt that the production of bismuth in Australia has considerably increased within the last few years. Bismuth ore has been found in remunerative quantities in Queensland, New South Wales, and recently, it is said, in Tasmania. It is known to occur in Victoria and in Southern and Western Australia, although in the last named colonies it has not been commercially worked up to the present. At the end of 1891 the total declared output of New South Wales amounted to 168 tons, valued at 36,641*l.*, and representing from 50 to 60 tons of the refined metal. In Queensland, at the same time, 120 miners were engaged in the production of the mineral, and the output in that colony had risen to 117 tons against 31 tons in 1890. The Queensland ore contains from 17 up to 30 per cent. of bismuth metal, and the production of the colony may thereore be moderately estimated at 25 tons of metallic bismuth per

annum at least. It is also known that bismuth deposits which are not under the control of the syndicate exist in Bolivia and have occasionally been marketed. The industrial position of the article therefore contains many powerful factors making for the disintegration of the combination. At present the employment of bismuth is practically restricted to pharmacy. In that field no great extension of use can be looked for, even though the price should fall to a third of the present figure. But the fact that a number of new mines have been opened in various parts of the world must greatly endanger the continued existence of the combination. They cannot go on drawing their latchstring for every new knocker at the syndicate gate unless, like the iodine people they can induce every member of the combination to agree to the limitation of his sales to a percentage of the world's requirements proportionate to the capacity of his mine. But whereas the iodine producers (so far as they count at all for practical purposes) are all placed together in a narrow area, and can be controlled with comparative ease, the bismuth producers are scattered over the whole globe, and have little in common but their wish to sell as much of their stuff as they can get rid of. Nature in fact, fights against the bismuth syndicate.

Still, there is no reason why something like a truce should not be patched up between the now warring interests. The present disturber of the harmony is said to be of Bolivian origin, but we should not be surprised if it turned out that the bismuth supplies which are the cause of the breakdown in the market come from the French Colony of New Caledonia. Bismuth is known to exist there, and the mining industry has been greatly developed in the island during the last few years. It would seem that the consignees of the "outside" supplies first, ineffectually, tried to sell their bismuth on the London market through a Mincing Lane broker, and then placed the supply in the hands of a Continental firm, who are said to have made considerable sales, both in France and in the United States. France probably manufactures a larger quantity of bismuth salts than any other country. Her imports of the metal average about 25 tons a year, which is about one-third of the total estimated consumption. It seems to be certain that the known mines of Australia, if fully worked, can alone produce quite enough bismuth to satisfy the whole of the world's medicinal requirements of the substance.—*Chemist and Druggist.*

A Contribution to the History of Kola.

BY F. A. FLUCKIGER.

The seeds of Cola acuminata R. Br., generally and improperly known as kola nuts, have, had from a remote period a great reputation in tropical Africa.

An Arab or Spanish physician, El-Ghafehy, or Gafiki, who lived in the first half of the 12th century, seems to have known of these seeds, at least we may so judge by a passage from this author, given in the "Djami and Mufridat," of Ibn Bailar, of Malaga.

In this compilation, which resembles that of Pliny in its size, the author brings together in one chapter a dozen of drugs under the classification Djouz, or nuts, (Edit. Leclerc, A. 383, No. 633), one of which, Djouz-ez-Zendy, is, according to Ghafeky, contained in a rough shell of the size of an apple but slightly longer. The form of the nut is compared to that of the lesser cardamon, of a red color, aromatic, with an odor resembling that of galanga root. It is not impossible that this description refers to kola. Ghafeky says that it came from the desert of Berber, which probably means that it was brought to Spain from the north of Africa. The end of the quotation states that the nut was used in the form of powder as a remedy for colics, and entered into the composition of warming remedies. The same doubt exists concerning the lesser cardamon. According to Ghafeky it might be a sort of ammomum or elettaria, but these are much smaller than kola. On the other hand he used for these the Arabian term hil, which more correctly should apply to koarima—kardamome which cannot be called small.

The supposition that this Arab physician knew of kola rests upon no definite proof although there is a likelihood of it.

The first incontestable mention of this nut was made in the 16th century. However, I cannot affirm that Oduardo Barbosa knew of it, as is said by Schuchardt (Berlin, 1893), as this author only wrote on the drugs of India.

Oduard Lopez, in his work on the "Kingdom of Congo," published in 1578 or 1587, at the time when Portugal was making important attempts at colonization in Africa, says:

"Vi sono altri arbori che producono frutti nominati cola: i quali sono grandi come una e hanno dentro altro frutti a guisa di castagne, in cui sono quattro polpe separate di sosso colote, e masticano per ispignere la sete e far saporita l'acqua."

"Here we have some other trees bearing a fruit whose name is Kola; as big as a very small pine-apple, they contain inside fruits very like chestnuts and each contains four separated pulps of a rose pink color, they (the natives) keep them in the mouth and chew to prevent thirst and to give flavor to the water.

Shortly after 1566 André Alvarez de Almada visited the coast of Guinea, and in his work entitled "Tratade breve des rios de guiné," published 1594, stated that on the banks of the

Gambia and more especially along the rivers of Guinea, kola nut was the most important article of exchange, the tree which produced it resembling the chestnut but the fruit was not so prickly. Alvarez also speaks of the use of kola, which reminded him of the mastication of betel.

Towards the end of the 16th century the Portugese traded largely with Senegambia and Sierra Leone, from which they brought, according to Almada, kola nuts which were carried from the interior of the continent by Mandingoes. The extraordinary value set on this drug by the Mandingoes is proved by F. de Azivedo Coelho, who gives some interesting details on this subject. No important enterprise could be commenced without kola nut, which had the reputation even of preserving from sin.

The annals of the Jesuits (1604-1605) also mentions the importation of kola by the Portugese into Sierra Leone, where, according to Almada, it was the most precious article of barter. Ficalho, even, quotes two lines which show the value set upon it in Angola:

"Who tastes of Kola,
Remains in Angola."

About the same time it was brought to London Jacques Garet, the apothecary who translated into English the "Traité des drogues des Indes" of Christobal Acosta (Burgos, 1578) showed some kola nuts to Clusius, when this celebrated botanist visited London (1591 or 1571). Clusius also received two of these nuts from Tobias Roels, of Middleburg, Holland, who, according to Schuchardt, stated that they were used by the natives of Cape Verde.

From the beginning of the 17th century we find many references to kola. Palisot, of Beauvais, saw the tree during his voyages to Benin and the Niger, and gives a cut of it under the name of Sterculia Acuminata, in his great work published in 1804.

Nevertheless, very little attention was paid to it, even after Attfield had found caffeine in it to the extent of 2.13%. It was only in 1882 that Heckel and Schlagdenhauffen commenced their investigations and found it to contain 2.35% of caffeine and .02% of theobromine. To these two French chemists is due the honor of having first studied the chemical composition and medical properties of this drug, the results of which they published under the title of "Les Kolas Africains." The monograph published by M. Heckel gives the results of their investigations and over 60 bibliographic references. The conscientious work of Schuchardt also adds several details to our knowledge of the drug.

If we include the different varieties of kola under the specific name of cola acuminata, we find it scattered over the vast region extending from 10° north to 50° south, although we cannot speak with certainty of its growth in the interior of the continent. Rohlfs found it used by the natives in the neighborhood of Lake Tchad, who called it guru or goro. It remains to be verified whether the trees grow in the vicinity of the great lakes or if the nuts are carried there by way of trade.

Karsten, who has rendered such great services to botany by his exploration in the northeast of South America (1844 to 1856) found the tree on the coast of Venezuela. It has also been grown on Martinique for the last century, its introduction being due without doubt to the slave trade with Africa, and since the properties of kola have become known in Europe, the French, English and German Governments have made efforts to extend its growth.

Where the climate and soil are suitable its culture presents no difficulties, the tree yielding fruit in the third or fourth year, although it is only towards the tenth year that it attains its full growth and yields as much as 175 pounds of nuts.

The same tree yields white or red seeds, the latter color being produced by modifications of kolanine. Since this remarkable glucoside was discovered in the laboratory of Hilger, the investigation which it is undergoing will not fail to enlighten us as regards its nature, and particularly the importance attached to the nut it in its fresh state in African trade. The nuts now arrive in Marseilles in an excellent state of preservation, wrapped in large leaves, packed in baskets, which contain about 130 kilos. of nuts.

Heckel, in his Monographe, gives a great many details gathered from the accounts of contemporary travellers on the effects of Kola, although these are not free from many exaggerations; consequently it is necessary that their statements should be scientifically verified.

Heckel sees in Kola an aliment of great value to armies in the field.

It should be noted that Kola is a generic name, which is applied to several kinds of sterculia — namely, Kola Duparquetiana (Buillon), K. Heterophylla (Masters), K. Cordifolia (R. Brown), K. Bullayi (Cornu), and perhaps, also, Sterculia Tomentosa, and others.

The greater part of these are distinguished by their form and anatomical structure. From the chemical point of view they are remarkable by the absence of caffeine, and consequently of kolanine. Kola Bullayi contains one per cent. of caffeine. The leaves, terminating in a point, are easily recognized. This species is found principally in Southern Africa. Garcinia Kola (Heckel) yields seeds of a yellow colour, which have a bitter taste, and in the delta of the Niger are called bitter, false or

male kola, and are rich in resin, but contain no caffeine.

It would thus seem that the presence of caffeine would be a sufficient characteristic to distinguish the real from false kola, the true kola containing about 2⅓ per cent. of caffeine and .25 per cent. of theobromine; and since the discovery of kolanine, future researches will be directed not only to the study of caffeine, but also to the *role* of kolanine in the action of kola.

The future will pronounce upon the hope conceived by M. Heckel, and prove if kola be a reserve food of the first rank. Many researches instigated by his work have given results favorable to his views. In any case, the illustrious *savant* deserves well of science for having drawn attention to such a valuable product.—*Translated from Rep. de Phar. for the Montreal Pharmaceutical Journal.*

PHARMACEUTICAL NOTES.

USE OF CITRIC OR TARTARIC ACID TO DISSOLVE QUININE SULPHATE.—Mr. Crousel (Bul. Soc. Pharm. Bord.) recommends the use of these acids, instead of sulphuric, for dissolving quinine, as the bitter taste is not so much developed, and they harmonize better with the digestive fluids, and do not lessen their action. To render soluble 1 gm. quinine sulphate, he uses 20 centigrams of tartaric or 60 centigrams of citric acid.

SPASMATOXINE is obtained from ergot by Dr. Jacoby, of Strasburg, by a process based on its solubility in ether and its insolubility in petroleum ether. It is a yellow, amorphous powder, insoluble in water, diluted acids and petroleum ether, very soluble in alcohol, acetic ether, benzol. With alkalies it forms salts, from which it is precipitated by carbonic acid. The ordinary dose is 4 to 8 centigr.

RESEARCH OF MINERAL ACIDS IN VINEGAR (Greggi, L'Orasi).—1 c.c. of vinegar is placed in a porcelain capsule, and one drop of alcoholic solution of hydrochlorate of rosaniline (25 gm. of fuchsine in 100 c.c. alcohol) is then added. If the vinegar is pure, the color of the test solution is not changed, but is even intensified. In the presence of mineral acids the color is changed to yellow, even when the proportion of acid present is very small.

COMPOSITION OF OAK AND BEECH WOOD CREOSOTES.—Messrs. Behal and Choay, who have carried on a lengthy investigation on the composition and characters of these products, found that that obtained from beech wood contains more guiacol and less monophenol than that from oak.

NEW ANTIDOTE FOR HYDROCYANIC ACID.—Dr. Antal has reported to the Hungarian Society of Physicians that he has discovered that nitrate of cobalt is a most efficient antidote to poisoning by prussic acid or soluble cyanide.

CREOSOTE PILLS.—O. A. A. Rouillon, at a meeting of the King's County (N.Y.) Pharm. Society, recommended the following formula:

Creosote	℥xx
Sodium Benzoate	grs. x l

Mix well, and make into pills No. XX., no excipient being needed.

SCHOOL OF PHARMACY, UNIVERSITY OF KANSAS.

COMMENCEMENT EXERCISES.

The afternoon of Monday, June 4th, was devoted to the Ninth Annual Commencement of the School of Pharmacy of the Kansas State University. The exercises were a fitting close to an excellent year's work. Year by year the class graduating increases in size, and the standard of scholarship is raised. This year the degree of Graduate in Pharmacy was conferred upon seventeen young men and women.

The exercises were held in University Hall, and the programme was an unusually interesting and attractive one. It consisted of an address by Dr. Chas. E. Bessey, of the University of Nebraska, on the "Evolution of Plant Life;" an oration by Percy Bigelow Barber, a member of the graduating class, on "Pharmacy—from Superstition to Science," and an essay on "Pharmacy—What Is It?" by Thomas Henry Kelly, also of the graduating class.

The graduating class was the largest ever sent from the school, and the next class will be still larger. Each year brings out more clearly the demand for better accommodation in class-room and laboratory facilities. A new building for the exclusive use of the School of Pharmacy is needed, and the necessity of its erection will be urged upon the next Legislature.

Following is a list of the graduates:—Perry Bigelow Barber, William Marstel Clar, George Ervin Haller, Herbert Edward Jenkins, Chas. Edward Joslin, Thomas Henry Kelly, Marlin Samuel McCreight, James Edgar Northrup, Fred. C. Oehler, Orin Herbert Parker, Herbert John Rankin, Carl Davidson Reynolds, Earl Ira Steinberger, Wm. Orange Strother, Lewis Charles Gilbert Woeltzel, Ellsworth Frank Wallick.

ENGLISH PHARMACEUTICAL NOTES.

By our London correspondent.

In continuation of my description of the exi aminations of the Pharmaceutical Society a brief sketch of the establishment at 17 Bloomsbury Square, may be of interest. Some four or five years ago, the council decided that further accomodation was required both for the examinations and also the clerical work of the society. Some time before that the leasehold of the adjoining premises had been purchased and a new building was erected at the cost of about $85,000. The frontage was in Bloomsbury Square, in which the new office for the clerical staff was located. Passing through these one reaches the new examination hall, a fine lofty room capable of holding some 100 to 150 persons.

When the examinations are on, the centre of the room is occupied by a couple of rows of chairs, figuratively termed the "funking form." Here the candidates wait, until examiners in the various subjects are at liberty. At each end of the room are small tables devoted to materia medica (with specimens), pharmacy (also with specimens) and the other subjects, except practical pharmacy, chemistry and dispensing. These latter are taken in rooms turning out from the hall and under the research laboratory. The dispensing department is a small model in its way of what a department should be. Bottles are all recess, labelled and look very handsome, the fittings are also thoroughly good, and drawers are all marked with their contents. Nearly all the usual counter adjuncts, such as measures, pill machines, etc., are kept in drawers out of sight, so that the labelling is important to candidates who are timed in their work and would otherwise waste a good deal. Some six or eight candidates can be examined at a time, the examiners standing in the middle, superintending the operations taking place around them. The chemical laboratory is similarly designed, only the counter or bench runs round two sides and the examiner is at the back of the candidates. Unfortunately it was designed under the impression that the new schedule and increased fees in the minor examination would lead to a marked diminution in the number of candidates. The reverse has been the case and consequently only what is termed the theoretical portion of the examination in chemistry is conducted here, the practical taking place in the laboratory of the School of Pharmacy during its vacation. Although the apppointments are fair and the apparatus sufficient, this laboratory will not compare for a moment with that recently fitted up by the Institute of Chemistry for their examinations. A description of their laboratory will be given in a future letter, as it is admitted generally to be the finest and most complete in the kingdom. Opposite the "funking form" in the examination hall is the chair of the president of the Society, who is present as a member of the Board of Examiners, with the vice-president *en office*. To this place the fortunate or unfortunate candidate is called and the result of the examination announced to him. If successful he meets with a cordial grasp of the president's hand and a few words of advice as to his joining the Society, upholding its dignity and engaging in research work are tended to him.

Some curious pages of pharmaceutical history might be written by examiners. Not long ago a *fin de siecle* youth presented himself for examination and amused all the examiners by the conceited style in which he replied, by no means very successfully, to the questions in chemistry and prescription reading. But the climax came when he reached the subject of botany. Here he was taken by Mr. Fletcher, of Cheltenham, who showed him some pollen under the microscope, "Aw" said the youth, "there is some dirt or dust or something there, but you dont expect a fellow to recognize *that*." Mr. Fletcher firmly assured him that he did expect it, and that he would have to pluck him if he did not tell him what it was. The youth arose then and roundly complained of the unfairness of the examination and it almost required the intervention of the porter to eject him. There is considerable feeling amongst candidates that the examinations, particularly the minor, are not fair, as the examination in theoretical subjects is vivâ voce, which is always an unfair ordeal to timid candidates. On the other hand it is admitted on all sides that the prospect of really incapable men passing in each of the subjects and through some six examiners' hands without detection is almost impossible.

In this respect, the major examination for the diploma of pharmaceutical chemist is fairer. The practical portion, like the practical part of the minor, is taken on a separate day, and then a written paper is set for the subjects of materia medica, theoretical chemistry and physics, and botany. The practical part includes analysis of complex salts, mixture of alkaloids, determination of impurities, etc. There are always some volumetric and gravimetric analyses. But as the full time of one day, from 10 a.m. to 5 p.m., is devoted to the practical part, the amount of work that can be done is considerable.

It has just been decided by the Council that in future the Board of Examiners shall contain professors of the subjects of chemistry and botany in addition to its ordinary pharmaceutical constituents. This will be a vast improvement, not such by reason of the value

of the professional help, but because it carries with it the limited length of service of all examiners. It was to be considered almost a life appointment when an examiner was elected, with the consequence of deterioration after a time in the special ability of the examiner. Farther there was a strong tendency for the examiners to fall into grooves. Questions from certain examiners were known beforehand and the pupils at some "cram" schools specially coached to meet this particular crochets. By the system of reducing the period of appointment the board will obviate this and secure assistance from some of the rising young pharmacists in our midst.

Business generally has been very quiet and on all sides we hear complaints. In export, trade must be very slack, if the terms are correct upon which several houses are doing business. I suppose that in few trades besides druggists' are the charges on packages, relative to the cost of the contents, so high. An unsatisfactory feature here, also, has been the varying prices charged upon the same package. Thus one wholesale firm I know charge 1 oz. stoppered bottles of hydrocyanic acid at 12 cents for the bottle. Another on precisely the same package charges 6 cents. This has always appeared to me a very unsatisfactory arrangement and one that ought to be levelled in some way. But now I understand one or two firms are offering to execute indents and not charge either packages or freight. One can hardly unnrstand how it can be done when the order includes *liquors*, *potassæ*, or other cheap lines, where it is obvious that the bottle costs as much as the contents. Perhaps some one nlse will go "one better," by not charging for contents, but only for the packages.

Very little progress can be reported in this countrr respecting the new pharmacopœia. The correspondence column of the PHARMACEUTICAL JOURNAL has been opened for suggestions and criticism, but medical men are hardly as enthusiastic as they might be.

This month has witnessed two remarkable falls in prices of staple articles, such as salicylic acid and bismuth salts. A drop in each case of over 25 percent in value is of interest to those who are outside these rings' or conventions. In each case the object is the same, to keep out an intruder who has the audacity to offer and book orders below the convention rates. In this instance, those who thought they were doing a good thing by buying at a trifle below these fixed rates, will now find themselves "left." But it clearly proves what profits some of the manufacturing chemists, chiefly German, I regret to add, make out of these protected articles even in a free trade country like this. In one day we had a drop of over 50 per cent. in the price of piperarine, merely because another patent for its manufacture has been taken out. Within recent memory we have had iodine down at 9 cents per oz, when for a space the iodine ring broke up. But, if it is true that their are several speculators who have been holding many thousand ounces of quinine for some years past, in hopes of the price going back to something like its old figure, they are doomed to disappointment. Perhaps one of the most significent features of the downward progress of quinine during recent years, has been the development of manufacturing pharmaceutical chemicals by such notable quinine firms as Howards. Besides the whole list of fine chemicals, they manufacture now nearly all the galenicals and it would hardly surprise me to learn that they had taken upon the *role* of wholesale druggists at any time. Certainly there are firms daily taking this position with *far less right or pretence*, the latest instance being a grm of liquor manufacturers.

"BOTANY AS A PHARMACEUTICAL SUBJECT—USEFUL OR OTHERWISE?"

BY ERNEST A. HODGE.

Read at a meeting of the Plymouth and District Chemists' Assistants' Association on June 25th.

To the average student aspiring to pharmaceutical honors the study of botany presents itself as being a dry and laborious task—a cramming into one's head of a mixture of lengthy Latin names and incomprehensible terms. Should the student not be in the least way interested in the subject, the effort to read, mark, learn and inwardly digest a chapter of "Bentley" or "Prantl" becomes somewhat difficult.

How or why this subject should be necessary to a pharmacist's training does not concern the candidates; it suffices that it so. The "powers that be" at Bloomsbury Square have decreed it, and who shall question?

We often hear the query: Of what use is it? According to the individual views of the one questioned, so the answer will be. If the individual whose opinion is solicited on this question happens to be a devoted student of that portion of nature treated of in the science of botany, he will no doubt answer that it is most decidedly useful, in that it helps one to more freely understand and appreciate the work and progress of natural life in the vegetable kingdon, noting, by the way, how nearly it is allied to animal life. It enables one to watch with interest the changes of the seasons; the life of the plant is observed in the 'bud-

ding" of spring, the "flowering" of summer, the "fading" of autumn, and the "deadness" of winter, all exemplified in our commonest trees or plants. These changes in plant life are apparent to everyone, but to the botanist they are doubly interesting, as in botany, as a science, he has a "peep behind the scenes," and the commonest herb has a history. To trace the opening of the buds, the expanding of the flowers, and the ripening of the fruit is no waste of time; even the cryptogamic mosses and lichens have their varied stages of life and developments, and although by the casual observer they are regarded as useless and parasitic growths, yet the formation and development of these lower forms of vegetable life is a branch of study in itself.

Now, if the one questioned on the usefulness of botany happened to be one who took no interest in the "flowers that bloom in the spring," and for whom the change of nature's aspect has no charm, the answer would unhesitating be far from favorable. The subject would at once be voted as dry and uninteresting; one to be studied more from necessity than choice.

It has been called the "ladies' subject," and and it is true that, on the whole, the majority of botanical students are ladies, owing no doubt to the fact that ladies generally have plenty of time and opportunities to the more thoroughly study it, and therefore to the better appreciate and apply their knowledge.

The principle question before us just now, however, is: How botany stands with regard to "things pharmaceutical?"

To the pharmacist—to the business man behind the counter—is botany useful? To express the answer briefly, and to the point, it would be: Before exam., yes; after, no. To use it as a "means to an end," that of passing the necessary examinations, was all very well, but very few of our pharmactsts to-day have the time or the inclination to continue their studies after having reached that end.

It is not to be compared with analytical chemistry as regards usefulness. The chemist often has occasion to make analyses for physicians and others, and that branch of the business may be well included under the head of "profitable extras," but to dissect a flower or leaf and bring his botanical knowledge into play, how often? Even the once valued microscope now stands as an emblem of student days, and rests in peace in its case, waiting to be used again by the next generation.

To the pharmaceutical student who has not as yet attempted the examinations, botany comes as a useful aid to the more important study of Materia Medica, which, by the way, is a subject with which the chemist comes in contact every day. By a knowledge of botany we are able to locate the exact part or tissue of the plant from which the drug is extracted, and to trace the causes of its formation and the various processes which go on in the internal tissues, helping to build up and sustain its growth. The formation of starch and sugar in plants are interesting instances, and the extraction and purification of these substances alone form important branches of industry.

Botanical nomenclature is somewhat difficult to the beginner, but on a deeper knowledge the terms used are easily understood. It, no doubt seems rather a mouthful to describe a common "buttercup" as a "ranunculaceous thalamifloral dicotyledon of the Angiospermous division of Phanerogamia," but it is merely a matter of botanical cltssification.

Theory without practice in botany is of little use. To see is to know. When studying the parts of the flower, to have a real flower before us materially helps the retaining of the knowledge gained. Botanical excursions are to be encouraged, and a country walk, however short, may be made interesting and profitable to the student by collecting and preserving any specimens which may be worth the while. Herbaria and botanical specimens are always useful, and, as an incentive to study, the Pharmaceutical Society offer every year a prize to their "students" for the best herbarium.

Mention should also be made of the advantages obtained by joining the classes promoted by the South Kensington Science and Art Department; the cost is comparatively very low, add the benefit obtained very great, as it gives one a groundwork on which to work for the Pharmaceutical Examinations, which are becoming harder each year. Therefore, every opportunity should be taken, and every offer accepted, which would at all tend towards making examinations less of a difficulty that they are at present.

Botany, as a science, is of great service in agriculture; the knowledge of what to sow and when to sow it is an important item to the farmer. The richness of the ground, with regard to the power of sustaining nourishment for a certain class of grain and produce, has to be considered, and by the "rotation of crops" al material in the ground is utilized for the particular plants for which it is suited. In this case we see how useful a little botanical knowledge is to the practical agriculturist. In pharmacy, we seldom if ever have occasion to put any of our botany to a practical use, whereas chemistry, dispensing and practical pharmacy are always with us in the every-day routine of a chemist's business.

Therefore, it follows that it is in our preparation days that botany is most useful as a

pharmaceutical subject. That being so, junior sections of our associations would do well to aid and encourage its members in this study, especially in provincial towns and districts, where better facilities are afforded for practical work. Each season has its own special feature, and the subject is one which can be kept up with but little effort all the year round. Evenings, during apprenticeship and as assistants, might be occasionally spent to some good by glancing over the syllabus and applying themselves to a little preparatory work. Were this done more whilst time is plentiful, and by degrees, there would be less of the necessary "cram" which is so apparent at the examinations just now, with the result that the percentage of failures is very great. A suggestion by one of the Pharmaceutical Council at a recent meeting to the effect that "no candidate should enter for the Minor examination unless he had been a period of not less than six months at a school" is a step in view of preventing the really unprepared from risking their money and success. Whether or not the embryo pharmacists will look at it in that light it is not for another to say, but in the words of Guicciardini, "Let us remember how easy it is to lose opportunities and how difficult to regain them, therefore, when they present themselves, it is the more necessary to make every effort to regain them."—*British and Colonial Druggist.*

PHARMACEUTICAL ASSOCIATION OF THE PROVINCE OF QUEBEC.

The first meeting of the new Council was held in the Montreal College of Pharmacy, 595 Lagauchetiere street, on Tuesday, July 3rd, 1894, Mr. Joseph Contant, president, in the chair.

The minutes of the previous Council meeting, and also that of the Board of Examiners, having been read by the secretary and duly confirmed, the Council proceeded to the election of officers for the current year, which resulted as follows:

Joseph Contant, president; R. W. Williams, first vice-president; W. H. Chapman, second vice-president, Alex. Manson, treasurer.

Board of Examiners for Major and Minor Candidates: S. Lachance, W. H. Chapman, J. R. Parkin, Montreal; R. W. Williams, Three Rivers, and A. E. D'Berger, Waterloo.

Preliminary Board of Examiners: Professors A. Leblond de Brumath and Isaac Gammell, Montreal, with Mr A. LaRue as supervisor of these examinations in the city and district of Quebec.

Auditors: Messrs. L. A. Bernard and R. H. Bryson.

In addition to the above officers, the following gentlemen compose the remainder of the Council, viz.: H. R. Gray, D. Watson, S. Lachance, A. D. Mann, Rod. Carrière, C. E. Scarff and W. A. Dyer.

It was resolved that, instead of the bonus annually voted to the secretary-registrar, that his salary be permanently raised by the amount of such bonus.

On the recommendation of the Preliminary Board of Examiners, the following resolution was adopted: *Resolved.* That all candidates for the preliminary examination be required to write in a legible hand, and that all illegibly written papers shall suffer a loss of at least five per cent. of marks.

A renewed application was presented from Mr. C. M. DuGay, of New York, for registration in this province as a Licentiate of Pharmacy. This application was refused, upon the ground that the applicant had not gone through any curriculum of study as required by the Quebec Pharmacy Act before presenting himself for examination before the New York City and County Board of Pharmacy. In this connection, the registrar was instructed to prepare a circular setting forth the clauses of the Quebec Pharmacy Act, referring to the qualifications required by said Act from applicants for registration as Licentiates of Pharmacy from other Pharmaceutical boards.

The registrar was authorized to issue the necessary credentials, as delegates, to any of the members desiring to attend the American Pharmaceutical Assoc. meeting at Asheville, N. C., in September next. Notice of such intentionmust be given to the registrar not later than August 1st next.

Mr. W. H. Chapman, on behalf of the Board of Examiners, was authorized to spend a sum not exceeding forty dollars for the purpose of improving the appliances of the examination dispensing department.

Several complaints of the infringements of the Pharmacy Act by druggists were brought to the notice of the Council, and the registrar was instructed to write these parties, and to take what further steps that might be necessary to enforce compliance with the law.

Mr. Lachance brought forward the question of inviting the American Pharmaceutical Association to hold its 1895 annual meeting in Montreal, and the matter was referred for consideration to a special meeting to be called on the first Tuesday in August.

There being no further business, the meeting adjourned until the first Tuesday in September.

PHARMACEUTICAL EXAMINATIONS.

The quarterly meeting of the Preliminary Board of Examiners of the Pharmaceutical Association of the Province of Quebec, was held in the Montreal College of Pharmacy, 595 Lagauchetiere street, and Laval University, Quebec, on Thursday, July 5th, when thirty-six candidates presented themselves in Montreal and seven in Quebec, and of these the following passed in order of merit, viz.: J. Vaschereau, J. O. Mathieu, A. Arcand, G. Richard, V. F. Forges, O. Robert, R. J. Taylor, A. Lord, O. Thibault, O. H. Tansey, G. P. Plamondin, T. E. Gagner, J. A. Goyer and L. Achille Roy. The following candidates passed on all subjects but arithmetic, viz.: Percy E Jones and E. Jacotel. These will have to present themselves for that subject in October next. The remainder of the candidates are referred back for further study, and will be required to take up all subjects should they again present themselves. The subjects of the examinations are, English and French grammar, English and French translation, Latin, arithmetic, history and geography.

The Preliminary Board of Examiners are Professors A. Leblond de Brumath and Isaac Gammell, with Mr. A. LaRue, of Quebec, as supervisor of examinations for Quebec city and district.

The next examination will be held on the 4th October, and candidates are required to give ten days' notice of their intention to present themselves. This rule is strictly carried out.

TRADE NOTES.

Past and present of a great Pain Cure.

It is not often that a reporter, in the wild rush of present every day life, can take time to be reminiscent, and dip into the past, however, the sight of a huge black and yellow poster, just put up on a prominent bill board in this city, carried him back to the remote past, when bill boards, newspapers and other various means of advertising; were generously employed in setting forth the magic words "St. Jacob's Oil"; this much for the past.

The though now struck me, will not the resent generation be interested in learning what has been accomplished by this great Pain Cure during the intervening years, since its introduction to the Dominion.

But a short walk and I enter the precincts of a huge brick warehouse from which for many years back, huge quantities of St. Jacob's Oil has been sent out to the trade, for distribution to the sufferers from rheumatism, neuralgia and all other pains, throughout the Dominion.

St. Jacob's Oil was originally introduced in the Dominion fourteen years ago, during which time over 5,000,000 bottles have been sent out, each containing a cure for at least one pain ridden sufferer.

What a record this, when one considers the many so called pain cures which have sprung up in the meantime and had an existence as fleeting as a dream.

St. Jacob's Oil has conquered millions of pains, but ftom the volume of sales at present it is safe to assume, that this great preparation still has much good work to do With a main-house at Baltimore, U S.A., and large branch houses in San Francisco, Toronto, London, Eng.; Paris, France; Melbourne and Sydney, Australia, besides hundreds of agencies, St. Jacob Oil belts the Globe, thousands of testi monials from the cured testify to its efficy, and with such a preparation within easy access, why should anybody suffer?—*Toronto Globe.*

SHOT IN THE BULL'S-EYE.

Red Messina Orange—right in the middle of it—soda fountains are doubling their business on it.

Hance Brothers & White say: "Order a dozen or two and use a bottle—serve it right—and return the rest if it doesn't hit the bull's eye.!"

Orange isn't expected to be very wonderful. People that like it like it, and people that don't are apt to let it alone. If you sell Hance Brothers & White's Red Messina Orange you will find it new and out of the beaten track. It is fresh and sweet, the color is good, the strength is high, and the flavor is orange—nothing but red Messina orange—which is rare.

Cherry Ripe is another trade maker.

It was new last year, it is new this year to nine out of ten. The people have no means of finding it out, and every man, woman, boy and girl will thank you for introducing it.

If Hance Brothers & White had any fear of their coming back they shouldn't risk them; there's a run on them; hands full. But they want them sold wherever soda is served in a a way to do fine flavors justice.

They have a lot more—Pineapple, Strawberry, Raspberry, Chocolate, unfermented Grape, Lemon, Red Current, etc. To name them is to praise them· They haven't a mean one in the lot. They would rather say: "We don't make it," than a mean one.

Remember. "Good soda, good drugs;" but say nothing about it. People will find it out fast enough That applies to Hance Brothers & White as well as you. These fine fruit juices they make for your soda·fountain are to advertise their pharmaceutical and chemical preparations.

Drop Hance Brothers & White a postal and get their liberal supply of effective advertising

by return mail; free. And if you haven't their "Help at your soda fountain," they will senk it for the asking.

BOTANY FOR THE PHARMACIST.

By FREDERICK C. NEWCOMBE, B.S., Ph.D., Assistant Professor of Botany, at present in charge of Botany at University of Michigan.

The object of this paper is not to indicate what pleasure the pharmacist, in common with other people, may derive from the study of plants, nor to point out how the comprehension of biological principles will have a vastly important philosophical bearing on his habits of thought and his attitude in the study of men, but to show (1) why the pharmacist, as a pharmacist, needs botany; (2) how much of it he needs, and (3) how he can obtain it.

In the commercial world there are three groups of positions which the pharmacist occupies, or is likely to occupy, in which he is brought into relation with plant structures. These positions are (1) in the collection and identification of crude material for the manufacture of medicines; (2) in the wholesale and retail trade of partially prepared plant material, such as rhubarb and mustard, and (3) in the examination of foods and condiments.

It does not require more words to convince one that the profession of the pharmacist touches at many points on the science of botany. We may pause here, however, to look a little more closely at the range of the science that is of practical utility. This brings in the second heading named above,—viz.: How much botany does the pharmacist need?

The whole range of botanical science may be divided into systematic botany, structural botany and physiological botany. What part of this great field will the pharmacist find of use in his profession? The manufacturer certainly needs to understand systematic botany, so that he may be able to identify his crude material as the particular plant that he wishes to use. But he receives much material that is partially prepared and incapable of identification by the ordinary method of analysis of plants by external features. In such cases he must study the internal construction of this material, study it often microscopically. This means that he must understand not only systematical but structural botany. And he must understand the whole range of the plant kingdom, for his material comes from as low in the series of plants as the ergot and Iceland moss, and rises through the ferns and lycopodium to the highest flowering plants.

But not only is systematic and structural botany a necessity to the manufacturer, but physiological botany can hardly be dispensed with, especially if one wishes to attempt new methods and new preparations. Physiology teaches one how, for instance, the fatty and ethereal oils come into existence, in what plants and what tissues they are to be found, and at what age of the plant they are greatest in quantity.

The botany needed by the analyst of medicinal and food preparations is pre-eminently structural. Since the preparations come from all parts of the plants,—from root, stem, leaf, flower, seed and fruit,—the pharmacist, in order to be able to determine the composition of these preparations, must know the structure of all parts of plants, whether he has to deal with the organs in their whole condition or with the same organs ground to powder. Moreover, in order to do this kind of work intelligently, the analyst should understand systematic botany; for his material comes from all groups of the plant kingdom. Physiological botany is in this kind of work less of a necessity than in manufacturing, yet the pharmacist who knows not only how to recognize what he sees, but knows also how the substance came to be, knows the process by which the plant manufactured it, will do better work, with better satisfaction to himself and others, than the man whose thoughts travel no farther than to identify the object which he sees. The one works as the skilled archæologist, who, when a ruin is uncovered, not only recognizes the utensils and fragments, but from the pieces is able to construct the whole, while at the same time he knows the period to which they belong, and the rank of the family that possessed them. The other works as the laborer, whose spade turns the earth, and who knows little more than to separate the valuable remnants from the inclosing dirt.

If, then, we may assume that at least two departments of botany are a necessity to the pharmacist who attempts to analyze crude plant material and foods, and that the third, or physiology, is more or less desirable according to the particular direction of the work involved, we may now go a step further, and inquire by what means the untaught are to obtain this knowledge.

Unquestionably the best way to obtain this knowledge is by a course of study in a good college. The best colleges of pharmacy in this country are now advertising laboratory work in all of the three directions indicated above as comprising the science of botany, though, of course, these schools give, as they should, a pharmaceutical bearing to all the work. A student cannot learn to identify crude plant material and to analyze foods in any college by taking in the laboratory two to four hours a week for half a year. Any school that professes to give students structural and systematic botany, and the determination mi-

croscopically of adulterations, in such a limited period, should be looked upon with suspicion.

But there are many young men who unfortunately, are unable to enjoy the privileges of a college course, but who, nevertheless, wish to know something about the uses of botany in pharmacy, and who would be grateful, no doubt, if they could be told how to proceed to gain something of the outlook and insight which their more fortunate fellows obtain from skilled instruction. To such persons it may be said, for their comfort, that, as in other professions in life, so in pharmacy,—the college may not fulfil the measure of success of the hard-working, self-taught student. The college furnishes an opportunity for a man with ability and energy to acquire what he will with greater ease and in shorter time than he could by himself. The college does not furnish brains, nor compel a student to learn against his will. Other things being equal, the college man will excel the non-college man.

The man, however, who would study botany by himself, or with such aid as some friend may give him, can, in time, with patience and perseverance, accomplish much in some directions. The mere ability to name plants by the use of an artificial key is not a very great task, neither is it a scientific study. But the learner, if he is wise, will leave the classification of plants till he has made some progress in the study of structural botany. For this latter study there are two methods, not equally good, which might be pursued. By the first method, the student would begin with the study of medicinal or food material,—with cinchona bark or mustard, for instance. He would learn the structure of these preparations and their histology, and then take up another, learning each for itself and by itself, till he had gone over the more common crude materials and food preparations. But there are two reasons why this would not be a good plan for study. In the first place, it requires more time than the other method, and, in the second place, it gives one mere fragments of knowledge—not the knowledge that is power. By way of illustration, it might be asked whether any one would think of learning chemistry by a similar method? Does one study chemistry by taking up chemical substances one by one? Does he not rather group those substances, and study the interrelations of the members of a group, and thus arrive at principles and laws that give him knowledge that is power? And so, also, it is in the study of botany. Even for pharmaceutical botany one should begin with the study of groups of objects. Better, then, than the study of mustard as mustard, and of wheat, flour and coffee, each by itself, would be the study of seeds, to see what they have in common in structure and contents. The best point, provided one has the facilities, at which to make the very beginning of botanical study, is undoubtedly with the cell—not with the mustard cell nor with the coffee cell, but with the whole group of cells, to see what they have in common, and how they differ from one another. The practical utility of such a method will be apparent, also, when it is stated that in examining powder of unknown composition one can often decide its source, as from root to stem, leaf or fruit, though he may never have seen the particular plant from which the material came. In this way one receives a hint that will often greatly lighten his labour.

With these preliminary remarks, an attempt may now be made to outline a course of study in botany, which course, it is believed, is in accordance with the method that will give in the end the best results. It must be remembered, however, that by this or any other method difficulties will arise that, without the aid of an instructor, will render great proficiency difficult, if not impossible, in many cases.

The order of study recommended is the following:

1. Structural and physiological botany combined.
2. Systematic botany.
3. The study of articles of trade.

These three departments of the subject will now be taken up singly and in greater detail, and proper helps suggested.

The first thing that one who wishes to work by himself must obtain is a proper manual to direct his study. Such books are not numerous, though the number of manuals on particular parts of botany is great enough. There has recently appeared from the publishing house of D. C. Heath & Co. an admirable little book, by Professor Spalding, of the University of Michigan, which is just what the beginner needs. This book tells the student what equipment to purchase and how to prosecute his study, while it presents to him, by the laboratory method, both the structure and the physiology of plants. In addition to Professor Spalding's little book, "Guide to the Study of Common Plants," the student should procure Strasburger & Hillhouse's "Practical Botany," published by Macmillan & Co. This book has not arranged its material in as good order as the former one, but it contains many details especially interesting to the pharmacist which Professor Spalding's book omits. A third manual recommended is Flueckiger &

Tschirch's "Principles of Pharmacognosy," by W. Wood & Co. There is no need here of advising the student what apparatus or tools to procure, since the first two manuals named give explicit and reliable directions for this purpose.

A fourth book which the student would find useful in explaining the physiological processes is Goodale's "Physiological Botany," published by Ivison, Blakeman & Co.

When several months have been spent in studying the structure and physiology of plants by the aid of the books named above, the classification of plants may be taken up and carried on with the continued study of structure. For the study of classification there is no better manual than the new edition of Gray. The learner should better obtain both the "Lessons" and "Manual." They may be purchased separate or in one binding Should the reader reside in Southern United States or in the Rocky Mountain region, he would need, instead of Gray's Manual, either Chapman's "Flora of the Southern United States," or Coulter's "Manual of the Botany of the Rocky Mountain Region."

When one's study has gone so far that he knows how roots, stems, leaves, flowers, seeds, and fruits are constructed—has learned the marks by which he can identify the different kinds of tissues and cells—can identify, for instance, collenchyma, bast fibres, tracheids, spiral vessels, etc.; when he has learned, also, the means of identifying starch grains, protein granules and other cell contents, both optically and microscopically, then he is ready to begin the investigation of medicinal and food preparations.

For this practical study manuals are needed as for the preliminary study. In English there is, unfortunately, no suitable manual that is up to date; the best is "Food, its Adulterations, &c.," by Hassal, but the book is old, with many mistakes in text and figures. In Germany there are two hand-books that can be especially recommended for the examination of foods. They are Schimper's "Antleitung zur Mikroskopischen Untersuchung der Nahrungs und Genussmittel," and Moeller's "Mikroscopie der Nahrungsund Genussmittel." Even though the reader understands but little German, he can get much out of these two books, especially from that by Schimper.

In all of this practical work, especially in examination for determining purity, there is one rule which is to be followed,—always study the structure of material known to be pure before examining the preparation whose purity is to be tested. It will, in most cases, be best and easiest to learn this structure from uninjured parts of plants rather than from preparations. For instance, if one is to test mustard, he should first become acquainted with the structure of mustard seed; then he can readily determine whether his sample, on examination, shows any other elements than he discovered in the seed—that is, whether it is adulterated. By such a method of procedure it will readily be seen that the analyst can examine for adulteration any new preparation that turns up. After he has learned the method of working, all he has to do, if anything new appears on the market, is to procure the plant organ from which the preparation is made, acquaint himself with its structure, and then test the preparation.

The foregoing directions have been given for the aid of those especially who have had no botany. Those who have had the part of the work given in most of our High Schools by the study of Gray's or Wood's Lessons and Manual, would do well to pursue the same course as indicated in the preceding paragraphs, except that they will not need so much time for the study of classification. Those persons who have thus had the systematic work, would best procure Prof. Spalding's Manual, together with Strasburger & Hillhouse's, or for these two books Flueckiger & Tschirch's may be substituted, though the material used for study in the last named is often difficult to procure, and therefore Professor Spalding's book would be the more convenient.

In closing, it might be of help to bring before the reader in concise form the limitations to his progress in the science of botany. He should understand, then, at the outset, that botany does not consist in the naming of plants, as many innocent people believe. He should understand that it cannot be "picked up" by one's self any more readily than chemistry can. The part that can be most readily acquired, and which all can acquire, is the systematic part, as given in Gray's "Lessons and Manual." With the microscopic structure of plants, one may also do a great deal by patience and perseverance. For the other departments of botany, one would best limit himself to reading, until such time as he can have the assistance of competent instruction.—*Pharm. Era.*

[The writer might have included "Bastin's College Botany," which we consider one of the best works for students on the subject.—Ed. M. P. J.]

WHAT IS A POISON?

BY ALBERT N. DOERSCHUK, PH. G., KANSAS CITY, MO.

Read before the Missouri State Pharmaceutical Association, June 15th.

One of the remnants of the dark ages to which many people of the present day still cling with great tenacity, is the use of the word *poison* in designating such substances as arsenic, strychnine, corrosive sublimate, and the many others that cause serious effects when absorbed by the human system in comparatively small quantities.

The English language affords scarcely a word that has caused so much diversity of opinion respecting its real meaning as has this word "poison." As might be expected, the views on this subject maintained by professional men differ greatly from those held by the laity. Quite as marked, however, are the differences in opinion prevailing among the professional men themselves In courts of law, for instance, the defendant in cases of murder by poisoning has been known to escape on technical grounds arising from wrangles among medical witnesses as to what really constitutes a poison. In law an adequate definition of this word is scarcely ever prescribed for the guidance of authorities, and many have been the inconveniences, not to say difficulties, arising on this account.

All persons have well fixed individual opinions as to whether this or that substance is poisonous, but the fact that the same substance can be turned to value and use in its proper relation to man does not seem to bear much weight with them. Thus, certain people are very fond of mushrooms and know full well that the genuine article cannot possibly be injurious, while others insist this fungous growth is poisonous under all circumstances, and would not think of touching it, even though it is a nourishing food in constant use. In some localities people eat pokeberry pie and think no more of it than of drinking water, while in other places these berries are supposed to be fraught with all manner of poisonous principles, and their proximity is dreaded. The general prevalence of the impression that substances like arsenic or strychnine are deadly poisons under all circumstances, further illustrates how firmly the masses hold to such unwarranted prejudices. Many people hold up their hands in holy horror when they learn that their physician has prescribed these medicinal agents for them.

Two distinct schools have naturally developed among those who differ as to the correct meaning of the word "poison."

The one holds that a substance only becomes a poison when, by its innate chemical nature, it causes impairment or destruction of function.

The other asserts that only a certain fixed class of substances, such as hydrocyanic acid, corrosive sublimate, morphine, and others that are capable of causing serious effects when absorbed by the human system in comparatively small quantities, can be termed poisons; and that drugs of this class possess certain native properties for the destruction of function not found in substances reputed inert.

The latter description, it would seem, is entirely too narrow and restricted. If we accept it as the logical definition, then all those substances not included among the arbitrary poisons must, of course, be reported as innocuous—and many of those substances reputed inert operate in precisely the same manner as those termed virulent, when taken into the system in unusual quantities. For example, opium, when absorbed by the system in overdoses, causes death for the reason that it then becomes a narcotic poison; strychnine, because it becomes a narcotico-irritant, and arsenic an irritant poison. Now the mode of operation of one-half pound of common salt when taken into the stomach, is precisely the same as that of five grains of arsenic. Both cause death for the reason that in the quantities mentioned they act as powerful irritants on the sentinent extremities of the nerves of the lining membrane of the blood-vessels, thereby producing a fatal impression sympathetically upon the general nervous system. In this instance, why shrink from calling common salt a poison, simply because a much larger quantity of it than of arsenic is necessary to act fatally? Both these substances in the quantities mentioned operate in precisely the same manner, causing suspension of life by overcoming the vital forces. The natural conclusion is, therefore, that a substance is a poisou in relation to man, in the actual sense of the word, only when by its innate chemical nature it causes impairpairment or destruction of function; and from this it must be decided that no suostauce can be termed a poison *per se*.

Among medical men the following has generally been accepted as an authentic definition of this word "poison." It reads: "A poison is a substance capable of destroying life when taken internally or applied to the surface of the body, without acting as a purely mechanical irritant." This, however, is open to the same objection that it at once fixes a a distinct class of substances as poisons under all circumstances.

The words "*a deadly poison*" form a phrase very generously abused in newspaper accounts of casualties by poisoning. Ammonia water, copperas, or salts of tartar are made to suffer under the same horrid epithet as the dangerous alkaloids or mercurials, when accidentally responsible for serious results. This term should be used only in describing those drugs that are poisonous in very small quantities.

PROFESSORS OF THE MONTREAL COLLEGE OF PHARMACY.

C. A. PFISTER.

C. A. Pfister, Professor of Pharmaceutical Chemistry, is French by birth and received his scientific training at Strasburg. He came to Canada in 1866. He founded the Ecole Polytechnique of Montreal, in which he teaches Applied Physics, and Industrial Chemistry, is Professor of Chemistry in Laval University, and was appointed Professor of Chemistry in the Montreal College of Pharmacy in 1888. He is also on the Board of Examiners of the College of Physicians and Surgeons.

JOSEPH BEMROSE

Joseph Bemrose, Professor of Chemistry and Botany, is a Senior Bell Scholar of the Pharmaceutical Society of Great Britain. Came to Canada in 1871 and entered the service of Messrs. Evans, Mercer & Co., with whom he remained till 1882 when he took charge of the laboratory of Messrs Lyman Sons & Co., which position he resigned in 1892 in order to devote himself to private analytical work. Prof. Bemrose has been lecturer on Chemistry and Botany in the Montreal College of Pharmacy since 1882 and also teaches the former branch at Bishop's School of Medicine. Besides being an earnest student of chemistry in its higher branches, he is also a most enthusiastic botanist, and indulges in the gentle game of chess of which he is one of the best known devotees in Montreal, and has frequently tested the skill of the great masters who have visited the city.

The old aphorism, "One man's food is another man's poison," is nicely illustrated in the fact that many valued articles of food, such as fish, oysters, rice, strawberries, cranberries, apples and many others, often cause a form of poisoning characterized by eruptions of the skin termed "urticaria," when ingested by certain persons who are incapable of properly assimilating these palate pleasing foods.

When this word "poison" is considered in its more general significance, independently of its relation to man, the fact of its being an indefinite relative word with only an approximate meaning, is clearly demonstrated in the circumstance that certain species of birds satiate themselves with the berries of deadly night-shade, finding in them nourishment, and goats eat with impunity the leaves and pods of stramonium; so dangerous to man, this herb is to them, as it were, a rare and tempting delicacy.

DR. H. E. DESROSIERS.

Dr. H. E. Desrosiers, Professor of Materia Medica, is one of the best known lecturers and writers on medical subjects in Canada, being Professor of Materia Medica and Therapeutics in Laval University, Professor of Materia Medica in the Montreal College of Pharmacy and is the authority of a "Practical Treatise on Materia Medica Therapeutics and Toxicology," which is standard work among French speaking physicians.

Dr. Desrosiers was born on July 29, 1853, his father being Dr. T. B. Desrosiers, and his mother, Emeraude Cartier, a sister of the late Sir George Etienne Cartier, Bart., one of the founders of Confederation. After a classical course at St. Hyacinthe College, the doctor studied medicine at Laval University, Quebec, from which he was graduated April 11th, 1876. In 1879 he was appointed Professor of Toxicology in Laval University, (Montreal branch), and two years later Professor of Materia Medica and Therapeutics, a chair which he has filled ever since.

When the Notre Dame Hospital was erected in 1880 he was appointed first House Surgeon, and has since been connected with the staff and gives clinical lectures on practical therapeutics. In 1888 he was appointed to one of the chairs of Materia Medica in the Montreal College of Pharmacy. Dr. Desrosiers is also Secretary of the Faculty of Medicine of Laval University, is a life-governor of Notre-Dame Hospital, and is also an examiner for several Life Insurance Companies.

DR. T. D. REED.

Dr. T. D. Reed, Professor of Materia Medica, the Doyen of the Montreal College of Pharmacy, was born in Albany, N. Y., of English parents, and was educated at Phillips' and the High School. In 1855, he entered the service of Lamplough & Campbell, Apothecaries Hall, with whom he remained for 10 years, acquiring a thorough knowledge of the profession with a penchant for the scientific aspect of it. For six years he conducted a retail pharmacy on St. Antoine street In 1871 was graduated M.D., at McGill and the same year was appointed Lecturer in Chemistry to the Montreal College of Pharmacy, from which in 1876 he was appointed to the chair of Materia Medica which he still retains. He is also Lecturer in Physiology at the Normal School, is one of the Consulting Physicians and a governor of the Montreal Dispensary, Librarian to the Medico-Chirurgical Society.

Although not a voluminous writer, Dr. Reed has made many communitious to the Medical and Pharmaceutical press, and the A. P. A., and has assisted in the revision of the 11th, 12th and 13th Editions of "Biddle's Materia Medica"

Six coloured pharmacists passed the North Carolina State Board of Pharmacy at their last meeting. This is the first time, with one exception, that coloured men have applied for licence to practice pharmacy in that State. We are informed that their general average was very good; the highest being 88 per cent., the lowest 76 per cent., and only one falling below 83 per cent.—*Meyer Bros.' Druggist.*

EXERCISES FOR STUDENTS.

No. 18.—What is an Alkyl salt?—an Ester?—an Amylose?—a Stère?—a Ptomaine?

No. 19—What volume of Nitrous Oxide, measured at 60° F. and two atmospheres, should be obtained from 98 grams of pure Ammon. Nitrat.?

No. 20.—How many gallons of Ammonia gas are contained in 1 gall. of Liq. Ammon. F. P. B 60° F.? (1 gall. H. weighs 6¼ grains).

ANSWERS.

No. 12.—12 lb. = 192 oz. = 175 oz. troy, the precious metals being indicated only in troy weight. First calculate the sp. grav. of the combined gold and silver, thus: $\frac{3}{\frac{1}{10}+\frac{2}{19}} = 11{\cdot}875$.

Then proceed as in No. 9:

$$\frac{3{\cdot}3654-2{\cdot}5}{11{\cdot}875-2{\cdot}5} \times \frac{11{\cdot}875}{3{\cdot}3654} \times 175 = 57.$$

One third of this is gold ∴ Ans. 19 oz. gold, 38 oz. silver.

No. 13.—Ans. 207° F.

$\frac{40 \times \text{loss of temp.}}{10 \times \text{gain of temp.}} = {\cdot}114$ ∴ 4 L = ·114 G;

and L + G = 180° ∴ G = 175, and

32 + 175 = 207.

This calculation illustrates the great value of water as a means of conveying heat. Notice how little the water falls in bringing up the ice-cold metal.

No. 14.—Ans. 3 oz. nearly.

$5^2 \times 36 \times \frac{1}{4}\pi = 707$. $\frac{707}{277\frac{1}{4}} = 2{\cdot}55$ gal.

$2{\cdot}55 \times 2 = 5.1$; 1 oz. K ClO_3 = 171. gr. O., and 1 gall. O = 100 gr. ∴ $\frac{510}{171} = 3$.

A valued correspondent sends us the following problems:

What will be the volume of a 5 lb. mixture (avoirdupois) of equal parts of glycerine and ether, of glycerine and alcohol?

What will be the volume of 75 grains of these mixtures?

ELECTRICAL HEAT IN THE CHEMICAL INDUSTRIES.

The adoption of electricity to furnish heat in techno-chemical operations, carries this agent into a new field of usefulness. The *Chemiker Zeitung* states that in Germany it is used largely in the chemical industry to concentrate sulphuric acid. To produce 100 kilos of 66° acid it is necessary to concentrate 117 kilos of 60° acid. Assuming that this has a temperature of 18° C. at the commencement, and the concentrated acid 330 C. at the end, and assuming the specific heat of the acid at 0·33, the heat consumption in attaining the required temperature and evaporating will be as follows:

1. Heating 66° acid from 18° to 330° C.	10,296
2. Heating acid, evaporation of 17 kilos water	12,283
3. Heat evolution during union of 60° acid with one and a half H_2O, forming 66° acid	10,000
	32,679

Hence 32,679 × at 2 × 10_2 watts per second are required, or $\frac{32679 \times 4{\cdot}2 \times 10}{736 \times 3600}{}^3 = 44{\cdot}2$ H.P. per hour; or allowing for loss of heat by radiation, etc., from the retorts, about 50 H.P. per hour.

The resistance of platinum wire is used to localize the heat. To calculate the dimensions of the wire it is assumed that its mean temperature will be 150° C. higher than the acid—that is, 480° C.,

If the difference of potential between the ends of the wire be 5 volts, a current of 364 amperes will develop, in a wire 0 5 cm. diameter and 77 cm. long, 2·4 electrical units; hence, in the course of five hours, 12 units are produced competent to concentrate 24 kilos of 66° acid (starting at 60°) in a vessel suitably jacketed to minimise loss by conduction, etc.

It does not appear to have been quite decided yet whether it is cheaper in practice to use a weaker current for a proportionately longer time, or *vice versa*. The calculations indicate at least the probability that electrically generated heat may be very economically applied, not only in the concentration of sulphuric acid, but of other liquids which demand concentration before being put upon the market.

PEPPERMINT OIL, ENGLISH.—Since October last the quotations for genuine Mitcham and Lincolnshire oils have advanced by a few shillings per lb.; natural, non-rectified oil being quoted to-day at 34s. per lb. But even if we take as a basis the lowest English price of the season, viz., that of 32s. per lb., we find that middlemen in Germany have all along offered below that figure; the quality of the oil thus quoted being, we need scarcely say, of the vilest description, and often without a trace of English Oil. Of course the expert is immediately able to detect the characteristics of American or Japanese oil in bargains of this kind, but there are still a good many consumers who secretly believe that they have done a clever stroke of business in buying stuff of this kind.

WHY NOT TURN YOUR KNOWLEDGE TO ACCOUNT.

By Frank Edel, Des Moines, Iowa.

The pharmacist is often called upon to dispense odd chemicals, and if he were to keep anything like the assortment in stock that he may have calls for occasionally, he would soon find his shelves stored with goods in some instances likely to spoil and in others to be unsalable. It is astonishing how often pharmacists let customers go without once remembering that on their shelves are all the chemicals necessary to produce easily and simply the required article. And if a given substance is wanted in the form of solutions, its preparation often would require but a minute.

The pharmacist, by so doing, can easily make a reputation for himself in the manufacture of these goods, and one can often hear people say, "We will go to So and So's pharmacy, for if he hasn't got it in stock he will make it for us." It is astonishing how soon such things become known, and when known, what a powerful influence they are towards building up a tradesman's business.

The writer calls to mind an instance of a physician who, after going the rounds of the stores, inquiring for sub-iodide of bismuth, came to the establishment where he (the writer) was employed, and inquired for the article. He was told that it was not in stock, but could be made for him within a certain time. At another time he wanted iodide of lime, and then saccharrated iodide of iron, and thus became a regular customer. Another time a certain photographer came in and asked for chloride of lead and sulphate of lead. He was told that they were not in stock, but would be made for him. This gentleman afterwards took particular pains to send people to the store.

Elsewhere, in an article on the remedy for the speciaity nuisance, the writer has said that there is no place where a pharmacist can so easily make a reputation for himself, no place where he can occupy his spare time to so much advantage, as in laboratory work. And this work can be done without neglecting the mercantile part of his business, It is not the purpose of this article to advocate the making of chemicals in the drug store, for the reason that in most cases they can be purchased from reputable manufacturers for as little money as they can be made for by the pharmacist. And, therefore, there is no argument in favor of making them on the ground of economy.

But with odd chemicals it is different. The pharmacist cannot afford to buy them, for the sale would not justify, and in most instances they can be prepared from those chemicals carried in stock, and many of them can easily be made. Take for instance, the lithium salts. Having the carbonate of lithium in stock, the pharmacist is able to supply the citrate, salicylate, benzoate, borate, etc., if in solution, in a few minutes. And he can, also, easily prepare the salts themselves when so desired. The same is true of the ammonium salts, also of those of potassium and sodium.

Some years ago, while employed in a pharmacy where many prescriptions calling for solution of benzoate of ammonium, 10 grains to each dram, were filled, the writer had his attention called to the insolubility of the preparation as sold in the market. This is entirely due to the salt being of acid reaction instead of alkaline, as directed in the Pharmacopœia.

Of course, solution could be affected by heat, but it would crystalize out when cold. This difficulty was remedied by adding ammonia in slight excess. In order to overcome the trouble, a permanent stock-solution was made up, containing 10 grains to the dram. This solution was made by taking the proper amount of benzoic acid and water, applying heat, and adding ammonia to slight excess, filtering, and adding water to make the proper volume. Thus we were able to dispense these prescriptions rapidly and properly. It is an old practice, and a good one, to keep a 50 per cent. solution of acetate of potassium on hand for dispensing. Such a solution keeps well, and is easily made.

It is astonishing what a number of chemicals the pharmacist can prepare himself, with comparative ease, if he will consult his reference works. Such work makes him a better pharmacist, gives him a more accurate and practical knowledge of chemical processes and the chemistry of what chemicals he handles. In fact, there is no line of work so conducive to the actual thoroughness of the pharmacist as this. It enables him better to understand the action of one chemical upon another, and to forecast results of combinations ordered in prescriptions, and often to save physicians from serious error. Again, it gives a clear and more practical insight into the arithmetic of chemistry, and in every way conduces to the benefit of the pharmacist. And the good which comes from this line of work is the advantage it is to the apprentice. He thus becomes familiar with working methods, and it is of great advantage to him. Seeing practical demonstrations of what pharmacy should be, he is better able to appreciate the teachings of the schools.—*The Western Druggist.*

ANNUAL MEETING NEW BRUNSWICK PHARMACEUTICAL SOCIETY.

(Held 19th June, in St. John.)

The New Brunswick Pharmaceutical Society held its annual meeting in its rooms in Market

building, The president, J. B. D. F. Mackenzie, occupied the chair. The reports of the registrar, secretary and treasurer were submitted, all showing that the society is in a flourishing state. The membership is now 122, with only two delinquents. The society, which is now in its tenth year, affords abundant evidence that the druggists of this province are in no way behind those of the other provinces of the Dominion. After some routine business had been transacted, the election of the new council for the ensuing year took place. Messrs. R. E. Coupe, R. W. McCarthy, M. V. Paddock, Chas. W. Parker, W. H. Mowatt, H. J. Dick, Walter Clarke, N. B. Smith, Struan Robertson and G. A. Moore, of St. John; C. H. Fairweather, Sussex, and Winslow Tilley, St. Mary's, were elected.

The newly elected Council met after the adjournment of the regular meeting and elected the following officers: Messrs. R. E. Coupe, president; M. V. Paddock, vice-president; W. H. Mowatt, secretary; Hazen J. Dick, treasurer, and R. W. McCarthy, registrar.

The Pharmaceutical Society, with a number of invited guests, drove out to Loch Lomond and spent the time in rowing, fishing, ball-playing and other ways.

At eight o'clock thirty persons sat down to the tables set by host Richards of the Ben Lomond house. President Coupe occupied the chair and had on his right the retiring president, J. B. F. Mackenzie, and on his left Dr. L. Allison. After ample justice had been done to an excellent repast the president opened the proceedings by proposing the health of Queen, which was royally honored.

Dr. L. Allison, in a few well chosen words, proposed the health of the new president, which was replied to in a happy manner by Mr. Coupe, who spoke of the large and satisfactory condition of the membership roll, pointing out that during the year some members had gone down to the grave, and also gone down to the medical profession.

Mr. Mackenzie proposed the health of the officers of the Society, to which M. V. Paddock, Wm. Mowatt, H. Dick and R. W. McCarthy made suitable replies.

To the toast of the medical profession, proposed by the president, Drs. L. Allison, W. A. Christie and McLean replied, referring to the good relations existing between the pharmacists of the province and the medical profession, and the valuable assistance rendered the profession by them. Mr. Paddock in proposing the health of the lecturers in last winter's course in connection with the society, pointed out the great improvement in the papers of those who were recently examined and who had taken the the lectures on Materia Medica and Chemistry. A. E. Macintyre and William Mowatt replied on behalf of the lecturers.

C. Parker on whom devolved the duty of proposing the toast of the commercial travellers engaged in the drug business, spoke of the generosity and support received by the society from certain wholesale firms in starting and maintaining the school of pharmacy in this city. F. Turner, of Parke, Davis & Co., Mr. McDonald, of Davis, Lawrence & Co., David Watson, jr., of Kerry, Watson & Co., and F. Moore, of T. Barker & Sons, replied.

W. C. R. Allan made a short address on the position of pharmacy in the province, advocating closer union between the medical profession and the pharmacists; and further a greater independance on the part of the pharmaceutical chemists; that is, that they should prepare in their own laboratories many of the preparations which they at present largely bought from wholesale houses, and pointed out that in order to accomplish this our pharmacists must receive a thorough scientific training.

Walter Clarke replied to the toast of the drug clerks, and Messrs. Wiley of Fredericton, Tilley of Marysville and Mackenzie of Chatham, on behalf of the visiting pharmacists.

The health of the host was replied to by Mr. Richards in a very neat speech.

The company broke up at 10. 30 p.m. and returned to the city.

INTERMITTENT PERCOLATION.

In percolating drugs with a strong alcoholic menstruum, there is no trouble in exhausting the drug; but in cases where a weak alcoholic menstruum is used this is not so easily accomplished. In many cases Frank Edel (Market Report) has used what might be called intermittent percolation with good results. It is conducted as follows: The properly moistened drug is packed in a percolator, and the menstruum added as directed in the U. S. P. Then the percolator is closed and the drug allowed to macerate for twenty-four hours,—percolation then being allowed to proceed until 4½ parts of the reserve of 9 parts are obtained. The percolator is then closed again and maceration allowed to continue for twenty-four hours. Percolation is then allowed to proceed to 4½ parts more, which should be reserved, and the process completed as directed in the U. S. P. It is the belief of the author that in many drugs this process is superior to that directed in the U.S.P., and that by its use a larger percentage of extractive matter will be found in the reserve than by 48 hours' maceration to exhaustion, reserving the first nine parts; and this, in the opinion of the author, is a result

much to be desired. It is an established fact that heat does, to say the least, no good; in many cases it does serious harm. It naturally follows that the more nearly the reserve contains the extractive matter and strength of the drug, the less harm the heat necessary in evaporation can do.—*Western Druggist.*

DISPENSERS AT THE STORES.

A correspondent has supplied us with a set of the rules by which the employés of the Army and Navy Co-operative Society (Limited) are governed. These are stringent, but not, so far as we can see, unreasonable, in view of the extent and character of the business carried on. A copy of the engagement-form is also forwarded to us which is interesting. It runs thus:—

Army and Navy Co-operative Society (Limited)
105 Victoria Street, Westminster, London, S.W.,
189 .

I, , of , hereby engage myself to the Army and Navy Co-operative Society (Limited) as at the wages of per week, subject to the following terms:—I agree to abide in all things by the Rules of the Society (a copy of which I have this day received, and have carefully read), to obey the orders of the proper officers of the Society, and to be searched when required, and that my engagement shall be subject to instant determination without notice, or pay in lieu of notice, in the event of either of the managing directors or the assistant manager at any time being satisfied that I have infringed any rule of the Society.

Ordinary hours of work:—Mondays to Fridays, A.M. to P.M.;
Saturdays A.M. to P.M.

Signature

Witness

Lastly, we are supplied with the following special instructions to the employés in the dispensing department, printed on a folded card:—

ORDO RERUM.

HOURS.—From 8.30 A.M. to 7 P.M.; Saturdays, to 2.15 P.M.; after which times extra pay commences.

Assistants are requested to be at their posts by 8.50 A.M. punctually, unless otherwise instructed. Each assistant is to dust and arrange his own bottles, and to be ready to commence dispensing at 9 o'clock.

POISONS.—*Potent* are to be kept in a cupboard quite apart from other drugs. *Less potent* on vermilion-coloured shelves.

COPIERS.—When entering a prescription, to consider the doses of the drugs, also their effects, and each evening, or morning before 9.10, to enter the memos from the "Prescription Note Book."

DISPENSERS.—(A) The prescription, or a correct copy, to be in front of the dispenser, who should first consider the doses of the drugs and their effects. Each ingredient to be weighed or measured separately, and the bottle from which it was taken put back to its place at once. Read the label as the bottle or package is taken for use, and never fail, on returning it to its place, to again see that you have taken the right bottle or package.

(B) Re-read prescription immediately it is finished, to make doubly sure that it has been correctly dispensed.

(C) The weighing or measuring of all poisons should be checked; if for a number of powders, the bulk to be checked, and then weighed separately; the formulæ requiring them should be shown to the assistant who may be called upon to check. This applies to making preparations as well as dispensing.

(D) Put notes of excipients and other memos, if needed, in a book kept for that purpose.

(E) For all medicines for external use, or not to be taken, *excepting non-poisonous gargles, mouth-washes, and sprays*, special poison-bottles are to be used.

PREPARATIONS OF BARK.—(F) When a preparation of bark is ordered, the 1867 is to be used for all prescriptions written prior to September, 1885. Also ext. cinch. *flav.* liq. and inf. cinch. *flav.* for mixtures containing alkalies and their carbonates.

TO OBVIATE DELAY.—(G) In every case where an order taken down by a dispenser cannot be executed forthwith, the cause of delay is to be noted in a book kept for the purpose; but as much of the order as can be done is to be proceeded with, and passed on to the finisher.

FINISHERS.—The formulæ (*sic*) dispensed from must be before the assistant, who must thoroughly check it in all its details. The name of the patient should be copied from the prescription, but should this bear no name, it must be obtained from the prescription-book. To be careful to insert distinctly the correct index of book and number of prescription on label, also ticket-number outside the medicine and envelope.

POISON-LABELS.—All preparations for external use containing poisons are to be labelled such, and potent medicines for internal use to have a "with care" slip put on the bottle.

WAITING-ORDERS.—In every case where part of an order can be finished off, do so, but inquire if such shall wait, or be despatched with memo that remainder shall follow.

STOCK-KEEPER.—To carefully examine all goods before taking into stock, and when the slightest deterioration is noticed, or any doubt arises, to at once refer to the manager.

In all cases of difficulty and doubt, employés are requested to apply to the head of room, who, if necessary, will consult the manager.

Talking, excepting on business connected with the department, is strictly prohibited.

The observance of these rules must not be perfunctory, but real, any breach of same being visited with a heavy fine, which will be handed to the Provident Fund.

Drug Department, A. & N. C. S., L.,
November, 1887.

ADDITIONS.

FINISHERS.—The directions on labels of all *potent* medicines must be checked by a second person, who must initial the order.

DISPENSERS.—The person checking a *poison* must initial the order.

September, 1889.

From this date, *January* 13, 1890, when *salicylates* are ordered for internal use, the *natural* salt is to be understood as meant; but for prescriptions copied *prior* to above date the *ordinary* kind is to be used.

Each dispenser is to check his own *scales* every morning, and the *weights* for same to be verified on the first Monday in every month, and any discrepancy to be reported to the hand of the room.

All prescriptions are to be taken from the rack, according to the order in which they are arranged, and no *fresh order* must be taken until the one in hand has been executed, *unless such order cannot be forthwith completed.*

Chem. & Druggist.

CHEMISTS LIFE IN BERBICE, BRITISH GUIANA.

Perhaps a few notes from a Scotch chemist in British Guiana will prove of interest to some in the profession at home. The spot where the pharmacy in which I am dispenser stands was once the happy hunting-ground of Carib Indians. We are never disturbed by them now, but occasionally a jaguar or a small tiger is seen, as also the baboon. But mosquitos are troublesome, and no mistake. Even as I write they are humming all around and biting whenever they get a chance. Eucalyptus is the principle thing used to keep them away. Snakes are plentiful in the bush, but seldom make their appearance in the town. Tarantulas (a large species of spider,) scorpions, centipedes, lizards, etc., we have enough of. The bite of a tarantula is rather dangerous, as the ditty shows:—

I had a girl in Mexico—
Insect bit her on the toe;
She is where the lilies grow.
Name of insect you may know—
Ta-ar-ra-rantula, etc.

The climate is very hot. It compares favorably, however with that of some of the principle parts of Europe, and though hot, it is far from unhealthy, as it is generally supposed by persons unacquainted with the colony. The unfavorable impression with regard to the insalubrity of the climate has probably originated in the occasional occurrence of epidemic yellow fever. These epidemics occur at intervals of twenty years or thereabout.

Dr. Hancock, who resided in this country for twenty-five years, testified to the general salubrity of the climate. Though it lies in the main tract of the equinoctial current, hurricanes, so terrific and destructive amongst the West Indian Islands, he says, are unknown here, and the equinoctial gales are extremely steady and uniform. It is not, he adds, the absolute degree of temperature that determines the salubrity of the climate, but it is the great and sudden changes from heat to cold and from cold to heat which chiefly render any country unhealthy. There is probably no no country where the temperature is more uniform than in British Guiana. We seldom have it under 80° F. in the shade. When it rains here it pours. There are two wet seasons and two dry. The principal complaint here is intermittant fever, which seems to trouble the natives most. The favorite treatment is quinine and Epsom salts:—

Quin. sulph..... .....3j
Ac. sulph. dil..... .....
Syrup. aurant ....℥j
Inf quassiæ ad..... .....3vj
℥ss. t.i.d

Europeans seldom have it; but when they land first they usually have a severe attack. The medical men do no dispensing. The coolies will take anything almost, but they are mortal afraid of "pitchkari"—*i.e.*, enemas. We get very good prices for prescriptions—3s., 4s., and 6s., for 6 oz., 8 oz., and 12 oz. respectively. Pills are charged 2d. each; powders, 4d. each—*i.e.*, single pills and powders. Patents sell very well here—1s. 1½d. articles for 1s 4d.; 2s 9d. for 3s. 6d., and so on.. We have to keep a large stock, as it takes a month or two for our goods to come from London. General storekeepers have drugs and patents

in stock, and they sell a good quantity. There is no poison law here. Profits look large, but expenses are high. The bulk of our goods are subject to 8 per cent. duty *ad valorem*, and some are charged special dutv. On opium, for instance, we have to pay $4 = 16s. 8d. per lb. Then there are the heavy freight and the shipping charges to add. The assistant who comes out here need not expect an easy time of it. We open shop at 6 a.m· and close at 8 p m. It is too hot here to have dinner in the middle of the day, so we leave it till about 7 o'clock.

Of course, as at home, we have our funny orders—*e.g.*. "A pennyworth of stamps, and please to wrap it up in a piece of paper." (We have a licence to sell stamps and get 5 per cent. commision). "A gill rose-water and plenty almond drops in it." The darkies believe in big doses. They think nothing of taking 4 oz. of castor oil right off.

Drugs do not keep extra well here. Insects get amongst them, and ants especially are a great nuisance. They are very fond of sugar, and you cannot dispense syrup withoutgetting the ants crawling all over your hand. Mixed powders and "pulv. pro pil." invariably go into hard lumps, which are very difficult to get out of the bottle. Then when a bottle of liq. ammon. fort is required, we have to be very careful, as it begins to boil as soon as the stopper is loosened. The coinage here is very mixed. We have five-dollar notes = 20s. 10d. Two-guilder pieces = 2s 8d. are rare now; but guilders and half-guilders are plentiful. Then we have four-penny pieces or "bits" as they are called here. A "gill" is a penny, and half-a-bit equals twopence. Then, of course, we have the current British coins. A sovereigns sells here for five dollars, so that it will pay anyone who comes here bring a good quantity of sovereigns with him. In conclusion let me say that I always look forward to the coming of the mails with THE CHEMIST AND DRUGGIST. We have a mail once a fortnight from home. Trusting I have interested at least a few of my professional brethern, I am, FERRUM.

P.S.—The following is an order received on the day after writing the above:—

June 8th, 1894.

Respected and dear Sir having to call your attention hastely to my Difficiency of those articles whiching my shop is difficient off. Kindly post at once saturday morning mail sharp that I may have in hand I am awaiting for the parcel on Saturday express at the hour of ten o'clock morning mail I am well knowing that I have erect my own Building stocked with Medicines and publickly open having a licensed infull power by law. therefore I request that I only open last month infull and having no other creditor or being in-debted to anyone therefore I would patronize you apothecaries shop and deem it necessary you also that my confidence is strongly placed on you only for a short time to do a crediting favor with me and every Monday mail you will surely get your money by post or if you like write doctor———to receive it from me or what you would prefer including with parcel at once I have enclosed here-in potrage 8c. for the parcel payment by mail that you may give for me to receive parcel at once kindly everything properly packed quite safe. I am your obdt. and truthful

[Name of party] Dispenser etc Druggist etc.

Kindly sir if you detain from sending those medicines kindly send the 1 bot. Edwards harling hair resterer 32c. 1 ounce glass 24 c. for herein my letter to you these two is paid for your 56. cents is in this letter. if you oblidge me as I expects I am assure to post balance on Monday forenoon mail express [Name again] Druggists shop.

I turuly sorry just as I go to post off before I understand that you have to post it to ——— post office

Kindly am looking out for my parcel to-marrow

[Name again]

Kindly send 8c. Iodid of Potas. [Then follows an order]

Total amount $5.80 56 cents paid cash balc $5.24

Kindly send me all sorts of you new and old magazines books consisting of Medicine.]Name and address again.]

—*Chemist and Druggist.*

THE SOLUBILITY OF CREAM OF TARTAR IN ALCOHOL.

BY J. A. ROELOFSEN.

Alcohol of 93 per cent. by weight was mixed with various amounts of a saturated solution of cream of tartar, previously purified, to make liquids of different strengths. Lots containing 90, 80, 70, 60, 50, 40, 30, 20, 10 and 0 per cent. of alcohol respectively were made, and small bottles holding about 125 cc. filled with them. These were tightly corked and exposed for a number of hours, in no case less than six, to the following temperatures: 0°, 5o, 10°, 15° 20°, 25°, 30°, 35°, 40°, 45o, 50° C. The bottles were frequently shaken. It was found necessary in the case of the weaker alcohols at the higher temperatures, to add some cream of tartar so as to maintain an excess and preven tsupersaturation; for, except in the stronger alcohols, it was found that the amount thrown down from solution on addition of the alcohol was not sufficient to saturate the liquids at the higher temperatures.

For each determination 50 cc. were used, and this amount was drawn up in a pipette to the lower end of which was attached by means of rubber tubing a piece of glass tube 10 cm. long and 6mm. in diameter, tightly packed with cotton-wool. In this way undissolved particles were kept from being drawn up. In a few cases it was very difficult to obtain perfectly clear solutions. The bottles subjected to the higher temperatures were packed in cotton after being taken from the hot air chamber, to prevent loss of heat by radiation during the taking of samples, and observation of the temperature of the remainder of the liquid after the samples were taken showed no appreciable loss of heat. The samples were put into beakers, diluted with water, and de-

terminations of the cream of tartar present made with decinormal solution of sodium hydrate, phenolphthalein being employed as an indicator. The sodium-hydrate solution was freed from carbonic acid by barium hydrate, and preserved in a bottle provided with a rubber stopper which passed a syphon to draw off the solution as needed, and a U-tube containing solid potassium hydrate through which air was admitted. The solution was standardized against normal sulphuric acid, and this was repeated several times during the course of the work, which extended over some weeks.

Four determinations of the dissolved cream of tartar were made in each case, and wherever these results gave a considerable deviation from a regular cure more than these were made. The averages of these are given in the table which indicates by a separate line for water and for each strength of alcohol employed, the weight in milligrams of cream of tartar dissolved in 10 cc. as determined for each 5o of temperature from o° to 50° C.

MILLIGRAMS OF CREAM OF TARTAR DISSOLVED IN 10 CC.

Tem.	Alcohol of Percentage									Water.
	90.	80.	70.	60.	60.	40.	30.	20.	10.	
0°	6·2	6·4	4·9	6·0	6·0	6·2	7·0	10·8	17.3	30.1
5°	5·5	6·0	5·1	6·0	6·8	6·8	7·1	13·2	18.8	33·0
10°	6·2	6·2	5·1	5·8	6·4	7·0	8·6	16·0	27·0	41·1
15°	5·3	6·2	6·2	6·2	5·5	7·7	8.8	15·8	23·9	44·3
20°	6·4	6·4	6·2	6·4	7·0	9·6	11·3	17·1	29·3	49·0
25°	4·7	5.5	6·)	6·8	7·0	10·3	11·7	21·4	36·4	54·1
30°	4·7	6·0	6·8	7·5	8·5	11·0	13·1	21·7	39·9	69·2
35°	1·9	5·1	5·9	6·8	9·0	12·4	18·8	28·7	49·3	83·8
40°	1·7	5·3	5·8	7·0	10·2	14·9	23·1	37·7	53·6	95·9
45°	1·7	5·3	6·0	7·9	10.7	16·5	25·8	44·2	72·6	112·8
50°	1·5	5·1	6·0	8·1	12·8	19·0	29·9	53·6	87·2	124·8

IODINE OINTMENT.

By S. A McDonnell, Ph. G.

I had occasion to use some Iodine Ointment for a prescription a short while ago, and upon removing it from the stock jar I noticed it was dotted throughout with the black specks of iodine. This indicated that it had been imperfectly made (and, by the way, it requires some patience to properly prepare it). Not desiring to throw it out—as it should not be dispensed int that condition—I took what I wanted from the jar and, placing it in a couvenient water bath, applied heat until it was melted, and was gratified to observe that the iodine lost itself in the fat, much

> "As snowflakes fall on the river
> One moment *black* then lost forever."

Hence, on further experiment, I have concluded that this is the way to make Iodine Ointment. Just try a little—say

℞ Iodine - - - - - gr. iv.
Adipis - - - - - gr. xcvi.
Misce.

Place the lard on a water bath and apply heat until it is melted, then drop in the iodine and stir with stick or glass rod, when the iodine will soon be dissolved. The object of the iodide of potassium and water in the official ointment is to dissolve the iodine—and in the hands of many it is only very imperfectly done; whereas by the above method it is a case of "why did I not think of this before?" The result is far superior, and with much less labor. Of course it is understood that the heat is not high—lard melts at 35° C (95 F.) and this low heat does not vaporize the iodine to any more appreciable extent than ordinarily, as it is slowly volatilized at ordinary temperatures, and it does require 114° C. (237.2° F.) to melt it and give rise to the purple vapors, which would indicate a loss of some portion of the iodine, if not confined in a closed space. The ointment in this way prepared is superior inasmuch as we get rid of the hard crystals of iodide of potassium which which remains when the water has evaporated, and the scratching of the tender skin by the rubbing to which it is subjected.—*Proc. Calif. Pharm. Soc.*

JOURNAL NOTES.

Wolfville, N. S.—Geo. V. Rand is building two elegant stores. One he will occupy as a drug store; the other is rented for the post-office. They will be ready for occupation by September 1st. Mr. Rand learned the business in Boston, Mass., and has been a resident of Wolfville for forty years. The ideas he brought with him from that metropolis has given him a distinguished place among the people of Wolfville, and he has been a most useful adviser in the municipal affairs of the town. The very complete system of waterworks Wolfville now enjoys can be attributed very much to his ability and energy.

The Danger of Ice—The chemists of the Paris Municipal Laboratory have been making experiments during the past few days with samples of ice used for alimentary purposes. Analysis has shown that microbes of all nature, and even fragments of evacuation, have been discovered therin. The laboratory is endeavoring to find a means of stopping the sale of this contaminated ice. The subject has been brought up regularly for the past year or two, without any effective steps being taken.

Pharmacien Expert—Professor Moissan has been nominated a member of the Commisslon for examining the inventions likely to interest the French army and navy.

THE PRACTICAL VALUE OF A DRUG JOURNAL.

BY ALBERT N. DOERSCHUK, PH G., KANSAS CITY, MO.

In determining the practical value of a drug journal it will be most convenient to first ascertain what features make a drug journal practically valuable, and then to draw our conclusions from such abstract consideration of the subject.

The task of treating this matter from an impartial standpoint is no light one. Editors of many prominent drug journals seem to differ materially on certain salient points concerning the running of a druggist's paper, and this personal rivalry creeps out in the columns over which they preside, making it almost impossible to estimate the merits of these journals from a common point of view. It will be convenient, therefore, to determine the practical value of drug journals from the expectations druggists can reasonably entertain of them, as well as from the actual merits common to the higher class of these journals.

Druggists follow a peculiarly international profession. In the conducting of their affairs they are not hemmed in by local prejudices or customs, are not dependent upon local resources, and are not affected by State or national lines except in times of social disturbance. By the resources at their command they profit by the labors of men in all parts of the globe. An original success achieved by pharmacists or chemists in Paris or Berlin to-day, becomes an experiment in New York to-morrow; being successful there, the result is flashed over a thousand wires and in a few hours a continent is informed of the achievement, and in an incredibly short time the world is profiting by the results.

Drug journals exhibit a pre-eminently practical value when they confirm and minutely report and explain such developments resulting from scientific research. Druggists cannot afford to be behind the times, and by placing dependence in these mediums, they are enabled to benefit their patrons by recent progress made in their profession.

Next to the attention given general progress, the practical value of a drug journal is largely embodied in its editorial department. Editorial writing has become a fine art. A man must have a vast amount of skill, experience and general knowledge before he begin to meet the demands made upon an editorial writer of a drug journal. From this department are promulgated from time to time, as occasion dictates, those unwritten fundamental laws that make pharmacy a profession. An editorial writer is generally conversant with the various phrases of pharmaceutical affairs, and from his ripe judgment of the resources at his command, professional questions of vital importance are best decided. He is largely responsible for the plans and ideas put into execution at the various association meetings, for by the influence of his pen necessary innovations are popularized, legitimate schemes are developed, and professional pharmacy is encouraged. In this department, fakes have found their death, cranks have been permanently discouraged, and pretty schemes put to shame. Here the druggist finds well-weighed thoughts on the proceedings of pharmaceutical bodies, and comments on general topics most profitable to his interests. He finds views that are at once broad and conservative, progressive and cautious, reasonable and always professional.

The practicability or real merit of new plans and plausible suggestions can be accurately determined only when they have been put into actual operation and their direct result are at hand. It is for this reason that original communications to drug journals are always of especial interest. They set forth the success or failure of boasted schemes and experiments and bear the marks of authority because they are unprejudiced reports of results arrived at by actual experience. By paying attention to these communications, practical druggists often profit by the trials of others.

There is among pharmacists a deep rooted feeling of mutual sympathy which manifests itself towards all the members of their profession. Our sympathies are affected by the successes or misfortunes that come to druggists in various parts of the country, much as if we experienced the same conditions, and for this reason personal news given in drug journals is read with interest. In this connection, however, it may be said that commonplace personals involving small details, are especially tiresome and disgusting when they appear in pharmaceutical literature.

We have yet to consider the prices current and advertisements given in every well-regulated drug journal. These features are most convenient and valuableto the thrifty druggist; from the one he ascertains the fluctuations in prices of drugs, and, incidentally any advantages his wholesaler may be taking of him, and from the other he determines by what new features he will profit, or add to the attractiveness of his place of business. There are those who argue that to have advertisements in a drug journal detracts from its practical value and places it upon a mercenary basis; this, however, is hardly true, for in our successful journals great care is taken not to give prominence to trade features at the expense of professional interests. And, moreover, among the details necessary to support a drug journal, sinews of war figure quite extensively. It is

well to bear in mind that these valuable journals are placed at so small a price, within the easy reach of all druggists, largely because advertisers are willing to part with goodly sums of the necessary evil in return for the privilege of communicating with the drug trade.

To conclude, then, the practical value of a drug journal is embodied in its ability to keep the modern drugaist informed as to chemical and pharmaceutical progress, the transactions of pharmaceutical bodies, interesting drug news, fluctuations in prices of drugs, the general movements in drug centers, and trade features by which he can profit. Many journals do this remarkably well and we can easily be proud of them. That a few are still behind the times and are continually croaking verbose negations and pessimistic cant is a exceedingly to be regaetted.

The live original drug journal is of the utmost practical value to druggists of to-day, and is a constant instructor and guardian of the modern profession.

WOMEN AS PHARMACISTS.

FEMININE APOTHECARIES FILL PRESCRIPTIONS AND DISPENSE DRUGS

If you are a young woman and want a calling —one that entails responsibility and requires brains and accuracy and delicacy—and if you have a sufficiently analytical mind, says a recent writer in the Boston Herald, you should become a pharmacist. It is not an unprecedented profession for women at all. There are two women students in the New York College of Pharmacy, at least two graduates practising in New York, and three or four in Brooklyn.

It was at a drug store in the latter city, he continues, that I learned of this new field for the activity of women. Instead of the dapper young man who usually takes your prescription and disappears with it into the mysterious realms behind, this apothecary had a young woman for the duty. She had a pair of serious blue eyes that inspired you at once with confidence in her care and accuracy, and in an unusually short space of time she reappeared with the neatly wrapped and labelled bottle.

"Pardon me," I said, "but did you put up the prescription?"

"Oh, yes; I am the regular prescription clerk," she answered.

"Then you are a graduate of a college of pharmacy?"

"Yes, I graduated from the college in New York in 1889."

"But isn't that rather unusual for a woman?"

"Well not particularly so; at least, not now. Since 1886 there has been on the average one graduate a year. Of course, it is a new field, comparatively speaking, for considering the success of those who have ventured into it I have no doubt that in the near future pharmacy will be as generally recognized a profession for women as medicine. At present there is naturally a certain amount of prejudice to combat. If, for example, there are two drug stores adjoining one another, one conducted by a man and the other by a woman, both being equally well up in their calling, I have no doubt that most people would go to the man's establishment simply because they are used to members of his sex as pharmacists. Some of the druggists, even, show this conservatism, but it is fast wearing away, and in a short time, indeed, I think that women pharmacists will be accepted as a matter of course.

"The chief difficulty for a woman is in getting a start. It is necessary to have two year's experience in a drug store before entering upon a course at the College of Pharmacy*, and kind as the druggists are, they rather open their eyes with surprise when a woman asks them for employment in any other capacity than that of cashier or dispenser of soda water. Aside from this, however, there is no opposition from our masculine fellow-workers, at least as far as my experience goes. They do not feel that we are encroaching upon territory that they have the exclusive right to, or if they do they give no sign of it. At the college it is a litte disagreeable at first going in alone among so many men, but the women students are measured by the same standard, and never was I made to feel that I wasn't one of them, or in any way out of my proper place. Since my graduation I have been given every aid and encouragement in my work, and I think other women who have taken up pharmacy will say the same thing. In my opinion it is a profession unusually adapted to my sex. The wonder is that there are not more of us in it"

Perhaps the first woman to take a course at a college of pharmacy was Miss Mary Putnam, who has since achieved prominence in the profession of medicine as Dr. Mary Jacoby. She graduated in 1867. From then to late in the seventies there were no women students in the New York College of Pharmacy, and until 1885 they were a rarity. Since that year, however, the average has been one graduate annually. At present there are two women in the college, Mrs. Emery and Miss Mahoney.

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*In the Brooklyn College a grammar school education is required for admission, and four years' "experience" for graduation. The New York College's requirements for admission are equivalent to those for admission to a high school; and three and one half year's shop experience is one of the requirements for graduation.—ED.

Whether or not the Brooklyn air is more benign to women pharmacists, it is a fact that most of those who have graduated from the colleges in New York and Brooklyn are practising in the city of Churches. Among these are Miss McHiggin, Miss Owen, Miss Turnure, who is the apothecary of the Consumptives' Home, and Mrs. Burns.

But women's work in pharmacy is not confined to New York and Brooklyn. The colleges in Philadelphia, Chicago, Boston and Albany all have women taking the full course, and their names are invariably on the honor rolls of their classes. Among the graduates of the New York College of Pharmacy are two Spanish girls from Colon, who, upon the completion of their studies, returned home to practice. Another student is Miss Selina Granat, who came all the way from Sweden to take the course, and is now, it is said, a prosperous druggist in her native country.—*N. E. Druggist.*

Should Physicians be examined by Pharmacists before permitting them to run a Drug Store?

This is the clinching argument that a country doctor brings when he desires to defeat the the pharmacy law. The doctors confidently assert that they are the ones to examine a druggist. Just how much an examination would amount to was evidenced in Missouri recently. Five physicians examined a prospective registered pharmacist and certified to her proficiency as follows :

MISSOURI, April 5th, 1894.

To the Board of Missouri Pharmacy:

We, the undersigned regular practicing physicians of —— County, Missouri do hereby certify that we are personally acquainted with Miss ——, daughter ——, druggist of ——. That she is about eighteen years of age. That we have examined her in reference to her knowledge and competency to compound drugs and medicines, and find that she is well versed therein, that she sufficiently understands the drug business to be a safe, cautious and accurate clerk and salesman in a general drug store, and recommend the Board to grant her the proper Certificate, as is by law provided for in such cases.

No doubt the Missouri State Board of Pharmacy was awed with the importance of this mighty testimony to the applicant's proficiency. However, the law of the State does not provide for the acceptance of such evidence and the applicant was subjected to an examination, "as a mere matter of form," the questions being as follows:—

I. Give proportions of Alcohol and Water directed in the pharmacopœia of 1889 to make Alcohol dilutum, (a) by measure, (b) by weight.

II. Name (a) the official Oleoresinæ, (b) Give process of their preparation, (c) In what do they differ from the Fluid Extracts made from the same drugs?

III What is the chemical difference between Magnesia and Magnesii carbonas? How would you prepare Magnesia?

IV. Sulphur lotum is prepared by washing Sublimed Sulphur with Ammonia water and water. What impurity is to be removed from the Sublimed Sulphur?

V. Give formula for (a) Unguentum, (b) Ungt. Acidi Carbolici, (c) Ungt. Diachylon.

VI. Describe the properties and state from what is obtained (a) Lycopodium, (b) Macis, (c) Gallæ, (d) Coccus, (e) Manna, (f) Resina, (g) Moschus, (h) Myristica, (i) Thymol, (j) Ol. Cadinum.

VII. Give three tests to ascertain the purity of Glycerinum.

VIII What is the official name of this compound: Take of Rhubarb 10.00, Glycyrrhiza, Anis, each 4.00; Cardamom 1.00, Glycerin 10.00, Alcohol and Water q. s. to make 100 c.c. by percolation?

IX. What quantity of each of the ingredients, excepting the Alcohol and Water is required to make 475 Cc.?

X. Give your opinion of this Prescription: ℞ Pulv. Cretæ comp. ʒii, Tr. Opii Camph. ʒii, Acid sulph. arom. ʒi, Syrup ʒss, Aqua Cinnamon q. s. ad, ʒiii M. S. teaspoonful at a dose.

The surprise of the examiners can be better imagined than described when they received from the fair applicant the following set of answers to the above questions:

I. (a) Alcohol 95%, water 5%.
(b) Alcohol 12 oz., water 4 oz. measure.

II. (a) (Colophany or Gualcia scrammony Resina.
(b) By Oleic acid & Resin.
(c) by containing know Alcohol.

III. The chem difference is magn is a salt while the carb magn is carbonic gases and magn combined.

IV. From Roll sulphur or brimstone carbonic acid is removed.

V. (a) White wax and cerate.
(b) 10 drops carbolic acid to 1 oz. oint.
Ferrous sulp 2 gr to 1 " "

VI. (a) Lycopodium is obtained from a plant and root, is used (b) macis (c) Galis from Nut gall a large seed (d) coccus or cochineal from a plant of a red color (e) the leaves of the manna tree dark green (f) resins residue left

after distilling the volitable oil from turpentine.

(g) Moschus or musk from the urine of an animal moschus is of a red color.

(h) Myristica from the nut meg if the tree is light brown in color.

(i) Thymol is in white crystals obtained from a plant

VII. By Percolation.

VIII. Tr Rhei.

IX. About 760 drops rhubarb.
About 140 gly.
About 140 anis.
about 40 gly.

X. It should be diluted.

Such puerile nonsense as some of the answers evidenced startled even Secretary Sennewald, who is becoming hardened with experience. The next step was to learn how familiar this doctor-vouched-for-pharmacist had become with ordinary drugs, chemicals and galenicals. The following five drugs were shown :

Marshmallow. coriander, burdock, logwood and galbanum.

These were all as strange to the candidate as they would be to a Christian Science Doctor. Not one was identified. The following chemicals were then shown :

1, Alum; 2, potassium bitartrate; 3, citric acid; 4, potassium ferrocyanide; and 5, potassium permanganate.

Numbers 1, 3 and 5 were identified, but the candidate could not answer the simplest questions about them. As a last resort the following galenicals were presented :

Syrup iodide of iron, aromatic syrup of rhubarb, compound tincture of lavender and laudanum.

The laudanum was identified, but the others were strangers.

We would be pleased to hear from the physicians who examined the candidate and testified to her competency as a pharmacist The set of questions they gave and the answers received would be interesting, to say the least.

Where are the drug clerks.—*Meyer Bros.' Druggist.*

Dr. V. Harley, in the proceedings of the Royal Society of Great Britain, states as the results of experiments upon himself that sugar is proven to be a muscle food. Seventeen and a half ounces when fasting increased his working power from 61 to 76 per cent. On adding 7 ounces to a small meal the total work done was increased from 6 to 30 per cent. During 8 hours, 8¾ ounces increased his working power from 22 to 36 per cent.

Pharmaceutical Association of the Province of Quebec.

PRELIMINARY EXAMINATIONS.

The next Preliminary Examination for candidates entering the study of Pharmacy will be held in the Montreal College of Pharmacy, 595 Lagauchetiere street, Montreal, and Laval University, Quebec, on Thursday, October 4th, 1894.

Candidates must give notice to the registrar, in writing, of their intention to present themselves, *at least ten days* before the date fixed for the examination.

A printed form of application must be obtained from the registrar, which must be duly signed by the applicant.

The council of the association having instructed the registrar to strictly enforce the ten days' notice rule, no application will be accepted after the 25th day of September, 1894,

These preliminary examinations are held on the first Thursday in the months of January, April, July and October, in each year.

E. MAIR, *Sec.-Regissrar.*

595 Lagauchetiere street, Montreal.

ANSWERS TO CORRESPONDENTS.

"DISPENSER" asks what should be given when Syr. Hypophos. Co. is prescribed.

We do not think that there should be any doubt in the matter, although apparently there exists some confusion about it.

Syr. Hypophos. Co. of the unofficial Formulary of the British Pharmaceutical Conference and the American National Formulary, contains the calcium and other hypophosphites, with quinine and strychnine, in the latter formula as tincture of nux vomica, and is the preparation which should be dispensed when the compound syrup is prescribed. Syr. Hypophosphitum (U.S.P.) does not contain quinine or strychnine, and, although a compound syrup, should not be dispensed for the first.

QUOD ERAT sends the following prescription, and wishes to know the cause of the precipitate which forms—

Quin Sulph. ..... ℥i
Pot. Iod. ..... ℥iij
Ac. Sulph. dil..... q. s.
Aquæ, ad..... ..... ℥ij.

The precipitation is due to the formation of quinine iodide, if only sufficient acid to dissolve the quinine sulphate has been used, but if the acid be in excess, it will react on the potassium iodide, liberating iodine, which will then combine with the quinine sulphate to form iodosulphate, which will be precipitated in greenish scales.

PRICES CURRENT.

JULY, 1894.

Acetum cantharides	lb	$0 60	
" colchici corm	lb	50	
" ipecac	lb	40	
" opii	lb	1 20	
" scillæ	lb	12	
Acetanilid	lb	90	oz. 15
Acid. acetic glac	lb	50	demi 16 00 ea.
" " fort P.B	lb	15	carboy 11
" benzoic German	oz	15	lb 1.75
" " " ozs. Hwds		25	Bulk 20
" boracic	lb	18	pulv. 20
" butyric conc	oz	30	lb 3.75
" camphoris	oz	60	
" carbolic No. 5 Cal	gl	1 50	
" " common	gl	90	
" " cryst	lb	40	10 lbs 35
" " No 1 Calverts	lb	2 25	
" " No. 2 "	lb	1 40	
" " " "			10 lb tins 1.10 lb
" chromic	oz	10	lb 1.00
" chrysophanic	oz	30	
" citric	lb	60	10 lb. 50
" " pulv	lb	65	
" gallic	oz	10	lb 1.25
" hydro-bromic dil	lb	45	
" hydrochloric	lb	5	carboy 2½
" " C P. s.g.1.19.	lb	25	Wins. 20
" hydrocyanic P B.	doz.	90	in 1 oz. 10c per oz.
" " Scheele's	doz.	1 00	do 10c do
" hypophosphor	lb	1 10	
" hydrofluoric (in patent ceresine bottles)			½ lb bottles .50 ea. 1 lb " 1.25
" lactic dilutum	lb	1 15	
" " conc. pur	lb	2 75	
" nitric	lb	15	Wins. 12 carb
" " C.P. s.g.1.40.	lb	80	Wins. 25
" oleic pur	lb	45	
" osmic	gm	1 75	
" oxalic	lb	12	50 lb 10
" perchloric	oz	35	
" phos. dilut	lb	17	Whr. qt. 14
" " cone S.G. 1.5.	lb	50	
" " glac. pur stick.	lb	1 20	
" " syr s.g . 1.750	lb	55	
" picric	lb	75	
" pyrogallic Schering's	oz	35	8 oz. 30
" pyroligneous	lb	10	gall 50
" salicylic	lb	1 50	
" sulphuric	lb	5	carboy 2½
" " C.P s.g.1.84.	lb	25	Wins. 20
" " pur Eng		20	Wins. 18
" " aromat	lb	65	
" sulphuros	lb	12	
" tannic	lb	80	5 lb 75
" tartaric pulv	lb	35	10 lbs 30
" valerianic	oz	40	
Aconitina exot	gr	4	60 gn. 3
Adeps benzoatus	lb	35	
Æther S. G. 735	lb	40	Whr. qt. 35
" acetic	lb	55	do 50
" butyric	oz	15	lb 1.50
" chloric	lb	65	Whr. qt. 60
" Anæsthetic tin 500 gms		1 50	each. } Squibbs
" " 250 "		80	" }
" " 100 "		40	" }
" " L. S. & Co	1 lb tins	1.00	each
	½ lb tins	0 55	"
	¼ lb tins	0.30	"
Alcohol. brl	cash	8 85	10 gall 4.15.5 gall 4.20 1 4.25 in s/c

Alcohol absolut	lb	1 00	Wr. 90
" methylated	gal	2 00	5 gals 1 90 Brl. 1 70
Aloes Barb opt	lb	30	10 lb 25 cash
" " pulv	lb	35	do 32
" Cape	lb	15	10 lbs 13
" Cape pulv	lb	25	do 23
" Socotrina	lb	60	do 55
" " pulv	lb	70	do 65
Aloin	oz	30	
Alumen lump	lb	3	brl 1¾
" pulv	lb	4	brl 2¼
" chrom	lb	15	
" exsiccat	lb	20	
Alumnol	25 gm	50	each
Ammonii benzoas, from gum	oz	25	lb 3 00
" bromid	lb	65	
" carb	lb	15	
" " kegs	lb	11	
" " pulv	lb	20	
" " resub	lb	55	c. b.
" chlorid	lb	12	100 lb 10½
" " gran	lb	12	100 lb 11
" " pulv	lb	13	
" " pur	lb	25	
" hydrosulph sol	lb	40	
" hypophosph	oz	25	lb 3.00
" iodid	oz	45	lb 5.50
" molybdas	oz	25	
" monocarb	lb	35	
" nitras gran	lb	32	25 lb 30
" " crist	lb	35	25 lb 30
" oxalas pur	lb	75	
" phosph	lb	1 25	
" salicylat	oz	40	lb 4.75
" sulphas com	lb	9	pur 25
" valerian	oz	40	
Amygdala amara	lb	50	
Amyl nitras	oz	15	
" nitrite	oz	15	
" valerian	oz	35	
Amylum pulv	lb	9	cwt. 8
Annatto Hispan opt	lb	50	
" Fullwood ½ oz & 1 oz	lb	1 00	
Antim crocus pulv	lb	20	
" nigrum pulv	lb	12	50 lb 10
" oxid	lb	65	
" sulphurat precip	lb	50	
" tartarat pulv	lb	45	10 lb 42
Antikamnia	oz	1 30	
Antipyrin Knorrs'	oz	1 10	5oz 1.05 10-25oz 1.00
" Swiss	oz	1 00	5 ozs. .95 10-25oz 90
" "	lb	12 75	
Apiol green	oz	65	
Apomorph hydroch	gr	2	5 and 10 grain tubes.
Aqua anethi	lb	10	
" anisi	lb	10	
" aurantii flor trip	lb	25	Win qt 20
" camph	lb	10	
" carui	lb	10	
" cassia	lb	10	
" cinnam	lb	20	
" destillata	gl	12	carboy 10
" floridæ	gl	5 00	
" lauro-cerasi	lb	25	Whr qt 20
" menthæ pip	lb	10	
" rosæ	lb	25	Whr qt 20
" sambuci flor	lb	25	
Argenti chloridum	oz	2 50	
" iodide	oz	2 50	
" nitras cryst. L B. & Co.	oz	85	8.50 lb cash
" " fus (4 to oz)	oz	1 00	
" oxidum	oz	2 40	
Aristol	oz cartoons	1 85	
Arsenicum alb. pulv	lb	10	
" rub "	lb	15	

Arsenici bromid	oz	40	
" iodid	oz	60	
" tersulph pulv	lb	25	
Asphaltum exot	lb	15	100 lbs 12
Atropina pure	dr	80	oz. 4 00
Atropinæ sulphas	dr	80	oz 4 00
Auri chloridum (15 gr)	doz	4 00, 3 doz 3 75, 6 doz 3.50	
" " L B & Co.	doz	4.25	
Baccæ aurantii	lb	25	
" capsici	lb	25	pulv. 30
" cassiæ	lb	35	pulv. 40
" cubebæ	lb	60	
" " pulv	lb	65	
" juniper	lb	8	10 lb 7
" juniper pulv	lb	12	10 lb 11
" xanthoxylon	lb	50	
" pimentæ	lb	12	
" " pulv	lb	14	25 lb boxes 13
Balsam canad	lb	40	Winch. 35
" copaibæ	lb	75	Whr. qt. 70
" peruvian	oz	25	lb 3.00
" totlu	lb	60	
Barii carb pu	lb	35	
" chlorid pur	lb	25	
" hypophos	oz	25	
" nitras exsic	lb	20	
" nitrate C. P	lb	35	
" sulphate pur	lb	50	
" sulphide "	oz	10	
Bath Pipe	lb	40	
Bay rum St. D	gal	3 75	sec. 2.75
Beberinæ hydroch	dr	50	
Beberinæ sulphas	oz	90	
Benzine refined	gal	40	
Benzoyl Guaiacol	oz	2 00	
Bismuthi Benzoas	oz	1 00	
" carb	lb	2 75	
" citras	oz	20	
" et ammon-cit	oz	35	lb 4.50
" salicylas	oz	25	
" subgallas	oz	35	
" subiodid	oz	50	
" subnitras	lb	1 90	
" valerian	oz	50	
Bismuthum (metal)	lb	3 25	
Bole armen	lb	6	
Borax	lb	11	keg 9
" pulv	lb	12	do 10
Bromine	oz	29	
Bromoform	oz	40	
Cadmium	oz	10	lb 1.20
Cadmii bromid	oz	20	lb 2.25
" iodid	oz	45	
" sulphas	oz	20	
Caffeina pur	oz	25	lb 3 50
" citras	oz	25	
Calamina præparata	lb	7	
Calci bromid	oz	20	lb 2.25
" carb. præcip	lb		V. Creta precip.
" chlorid. crys	lb	25	
" " fusum pure	lb	30	
" " fused crude	lb	15	
" hypophosphis	lb	1 40	
" iodid	oz	50	
" lactophosph	oz	15	lb 2.00
" nitras	lb	75	
" phosphas præcip	lb	20	
" sulphas	lb	4	[illegible] 3
" sulpho-carbolas	lb	2 50	
" sulphid	lb	50	
" sulphis	lb	18	pulv. 20
Calx chlorinata	lb	5	keg 4 brl. 3
" " in packets 1 lb		7, ½ 8, ¼ 9	
Camphora Ang. Hd's	lb	60	
" " " ozs	lb	65	
" " " flowers	lb	80	
" Dutch	lb	55	
" " ozs	lb	60	
Camphor monobromid	oz	20	
Cantharides Russian	lb	1 40	pulv. 1 50
" Chinese	lb	—	do 75
Cantharidine	grain	8	
Cap papav. alb	100	1 00	
Carbo animalis pur pulv	lb	12	
" ligni	lb	6	
" ligni pulv	lb	10	brls 5.50 each
Carbon bisulphidum	"	20	Whr qt 15 drums 12
Carmine	oz	40	lb 5.25
Caryophyllum, Zanzibar	lb	18	22 Pulv.
" Amboya	lb	25	
" Penang	lb	50	
Cassia fistula	lb	30	
Castoreum	oz	1 40	
Cera alba	lb	65	sec 45
" " paraffin, opt	lb	25	50 lb 20
" " "	lb	18	50 lb 13
" flav opt	lb	40	secs 35
" " lithographers	lb	50	
Cerii oxalas	oz	10	lb 1.20
Cetaceaum	lb	55	10 lb 50
Cetrar Iceland	lb	16	
Chirata Incis	lb	45	
Chloralamid	oz.	35	
Chlorodyne Lyman's	lb	2 00	
Chloral Hydrate recryst	lb	1 10	
Chlorof pure Smiths 1 lb g.s. bs.	lb	90	10 lb 80 Whr. qt 65
" D. F. & Co's pur	lb	1 80	5 lb 1.75
" " meth	lb	90	5 lb 85
" " blue label	lb	90	
" Merck 1 s	lb	65	
" " 28-lb tins	lb	55	
Cinchonidin sulph	oz	15	Hds. 20
Cinchoninæ murias Hds	oz	18	
" sulphas "	oz	18	
Civet	dr	1 00	
Cocaine hydrochlor crys,	oz	5 50	Merck's 6.00
" phenate	qt	10	
Cocculus Indicus	lb	10	pulv 20
Coccus cacti S. G	lb	40	pulv 45
Codeina pure	dr.	90	oz 6,50
" Phosphate	dr.	1 25	
" Sulph	dr.	90	oz 6.00
Colchici corm	lb	30	
Collodium	lb	65	
" vesicans, P. B	lb	2 25	
" flexile	"	65	
Colocynthis Turc select	lb	60	pulv 85
Confectio rosæ Gallic	lb	50	
" sennæ	lb	40	
Cortex aurantii Ang	lb	70	
" " coml.	lb	15	
" " opt. ¼s	lb	20	
" canellæ	lb	20	pulv 25
" cascara sagrada	lb	25	
" cascarillæ	lb	25	
" cassiæ	lb	13	pulv 18, 25 lb box 16
" cinchon flav	lb	90	pulv. 1.00
" " " coml.	lb	30	pulv. 35
" " rubquill	"	60	pulv. 70
" granat fruct	"	20	
" " radicis	"	60	
" limonis ang opt	"	65	
" " com	"	16	
" mezerei	"	25	
" myricæ (bayberry)	"	20	
" pruni virginianæ	"	15	20 lbs 12
" quillaiæ	"	15	grd. 20 pulv. 25
" sassafras	"	15	pulv. 22
" ulmi	"	16	pulv. 16 grd 14
Creolin, Pearson's	"	60	litre bot. 1 10 each.
Creosot. Ang (Morson's)	oz	20	lb 2.00
" (Beechwood) Merck's	lb	1 80	
" " French	lb	2 75	
" white, from coal tar	lb	75	
" Carb	oz	1 00	
Creta gallic	lb	12	

Creta gallic.....lb		5	bgs. 3½
" præcip..... .....lb		10	keg 8
" præparata .....lb		5	50 lbs 4
Crocus stigmat amer.....lb		65	
" " Valent.....oz.		80	Alicante 65c oz.
Croton chloral-hydrate.....oz		45	
Cudbear.....lb		20	
Cupri ammonio-sulphas ...lb	1	00	
" chloridum pur.....lb		60	
" nitras pur .....lb		60	
" oxidum nigr. pur....lb	1	75	
" " coml...lb		50	
" sulph..... .....lb		7	keg 5 brl 4½
" sulph recryst.....lb		25	
Cuprum scales..... .....lb		40	
Curare.....grain		6	
Currie powder.....lb		35	
Cusso " .....oz		10	
Damiana.....lb		40	
Daturine, pure xtls .....gr		10	
Dextrine, white.....lb		10	50 lb 8
" yellow.....lb		9	" 7
Diapente.....lb		30	
Diastase.....oz	1	25	
Digitaline..... ....½ oz		50	each
Diuretin "Knoll" .....oz	1	75	
Dolichos pruriens pubes....oz		60	
Duboisin, pure Amp 5 gr. tube		60	each
" sulphate ....gr		12	
Eikonogen.....25 gm. tins		40	each
Elaterium.....dr		35	
Ergota.....lb		90	pulv. 1.00
Ergotinum Bonjean.....oz		75	
Ergotine Bonjean Gen..30 gm	2	00	
Eserine sulph 5 or 10gr. tube.gr		10	
Ethyl, Benzoate.....oz		40	
" Bromide..... oz		35	
" Butyric.....oz		15	
" Chloride..... .. tubes		35	each
" Iodid.....oz		75	
" Œnanthylate.....oz	1	00	
" Succinate.....oz		60	
" Valerian .....oz		50	
Ecualyptol.....oz		25	lb 3.00
Europhen .....oz	2	00	
Exalgine .....oz	1	25	
Extract. acon. (rad alco.).. oz		35	lb 4.80
" aloes barb.....lb		75	
" " " pulv....oz		10	lb 1.25
" " socot..... "		10	lb 1.25
" anthemides ..... "		20	lb 2.50
" belladon ang..... "		25	lb 3.50
" " pulv .... "		25	lb 2.50
" " aqueos...oz		15	lb 1.50
" Belladon alcoh ....oz		25	lb 3.00
" calumb.....oz		25	lb 3 25
" cannabis indicæ...oz		25	lb 3.00
" cascara sagrada....oz		25	lb 3.50
" cinchonæ flav.....oz		25	lb 3.50
" colchici.... .....oz		20	lb 2.60
" " acet.....oz		15	lb 2.00
" colocynth co.....oz		25	lb 3.00
" " " pulv oz		20	lb 2.50
" conii P.B..... ..oz		20	lb 2.00
" conii pulv..... oz		20	lb 2.50
" copaibæ resin .oz		15	lb 1.50
" digitalis.... .... .oz		20	lb 2.50
" " pulv.... oz		30	lb 3.50
" ergotæ pulv.....oz		60	
" gentianæ.....lb		45	
" filicis maris ether..oz		25	
" hamamelis dest ...gr	1	25	
" glycyrrh mol.....lb	0	75	
" " pulv.....lb	0	75	
" hellebor nig..... oz		25	
" hæmatoxyli.....lb		80	
" hyoscyam.....oz		20	lb 2.5. 0

Extract hyoscyam aquos ...oz	10	lb 1.00	
" " pulv ....oz	25		
" " exot ....oz	15	lb 1.50	
" ignatia amara.....oz	60		
" ipecac acetic.....oz	1 50		
" jaborandi.... ....oz	60		
" jalapæ.....oz	25	lb 3.50	
" " pulv.....oz	35		
" krameria.....oz	25	lb 3.50	
" lactucæ..... ....oz	20	lb 2.20	
" logwood ....lb	11	(15 & 30 lb boxes)	
" logwood 1 lb pkts..lb	15	(30 lb boxes)	
" " ½ lb pkts .lb	16	"	
" " ¼ lb pkts..lb	17	"	
" " asst. pkts..lb	16½	"	
" lupuli..... ...oz	25	lb 3.00	
" malt..... .....lb	25		
" mezerei æther.... .oz	60		
" nucis vomic..... .oz	40	lb 5.40	
" " " pulv...oz	40		
" opii..... .....oz	90	lb 13 50	
" opii pulv .....oz	1 00		
" " liquid..... ..lb	1 25		
" papaveris .... ..oz	16	lb 2.25	
" physostigmatis....oz	2 00		
" podophylli.... ...oz	25	lb 3.00	
" quassiæ.. ..... oz	20	lb 2.40	
" rhamni frang.....oz	50	lb 5.00	
" ramni pulv..... oz	40		
" sarsæ jam.....oz	30	lb 4.00	
" rhei E. I.....oz	2:	lb 3.50	
" sarsæ jam co.. ... oz	28	lb 3.25	
" sarsæ hond co ....oz	20	lb 2.75	
" stramonii fol.....oz	20	lb 2.50	
" stramonii pulv ....oz	25	lb 3.00	
" taraxaci..... - ..lb	50		
" valerian.....oz	15	lb 2.00	
" veratri viride.....oz	45		
Fabæ physostigmatis... ...lb	50		
" tonca para.....lb	1 00		
" " surinam.....lb	1 75		
" " angostina.... ..lb	2 75		
" vanillæ short .....lb	3 00		
" " medium ....lb	5 00		
" " 7½ in..... lb	6 50		
Fehling's solution.....lb	1 00		
Fel bovinum purificat .....oz	20	2.00 lb	
Ferri ammon chlorid.....lb	60		
" persulph(iron alum) lb	40		
" " protosulph.....lb	25		
" " tartras .....lb	75		
" arsenias..... .....oz	15	lb 1.60	
" bromidum .....oz	20	lb 2.00	
" carb. precip .....lb	15		
" carbonas sacch.....lb	30		
" citras soluble .....lb	65		
" et ammonii citras....lb	70		
" et quin. cit., 4%.....oz	15		
" " " .....lb	1 75		
" " 10%.....oz	20		
" " " .....lb	2 50		
" " P. B....oz	22		
" " " .....lb	2 75		
" " Hd's ...oz	25		
" " amorph....oz	15		
" " " .....lb	1 75		
" " et strych. cit , oz	35		
" " " Hd's , oz.	40		
" et strychn. citras 1%.oz	15	10 oz 13 lb 1.75	
" hypophosphis..... .oz	20	lb 2.50	
" iodide..... .....oz	40		
" lactas..... .....lb	75		
" perchlorid..... ....lb	35		
" phosphas ... .lb	85		
" pyrophosph.....lb	80		
" succinate ....oz	35		
" sulphas commercl....lb	2	brl 90 gross	

Ferri sulphas exsic.....lb	9		
" pur.....lb	7	10 lb 6	
" sulphid..... .....lb	15		
" valerian.....oz	25		
Ferrum dialyzatum.....lb	40		
" redactum.....lb	75		
" tartaratum.....lb	80	10 lb 75	
Flor. anthem. opt, French..lb	35		
" " Roman.....lb	30		
" " German.....lb	30		
" arnicæ..... ...lb	25		
" lavand.....lb	15	pulv. 25	
" rosæ gall.....lb	1 75		
" " white.....lb	75		
Folia aconiti..... .....lb	25	pulv. 40	
" belladon .....lb	25	pulv. 35	
" buchu, ...lb	20		
" cocæ green.... .....lb	50		
" conii.....lb	20	pulv. 35	
" digitalis.....lb	20	pulv. 35	
" eucalypti glob.....lb	18		
" hyoscy exot.....lb	25	powd. 40	
" jaborandi.....lb	90		
" maticæ..... .....lb	40		
" pulegii..... .....lb	20		
" sennæ alex..... ..lb	60		
" " tenny.....lb	20	15, bale 16, 12.	
" " " pulv....lb	25		
" uvæ ursi.... .....lb	12		
Fruct. anethi..... .....lb	30		
" anisi German .....lb	15		
" " pulv.....lb	20		
" " Star .....lb	45		
" capsici..... .....lb	27	10 lbs 25	
" " pulv.... .....lb	30	" 28	
" carui..... ..... lb	12	" 11	
" " canad.....lb	11	" 10	
" carui pulv.....lb	18		
" conii .....lb	30		
" coriandri..... ....lb	10	bag 7½	
" " pulv.... ...lb	18		
" fœniculi .....lb	15	pulv 20	
Fuller's earth .. .. lb	4	100 lb 3	
" " pulv.... ....lb	6	100 lb 5	
Gaduol.... ....oz	40		
Gallæ cœrulæ.... .....lb	28	bag 25	
" cœrulæ pulv.... .. lb	30	grd 28	
Gasoline, 76° .....gal	60		
Gelatine, black label.....lb	35	10 lb 30	
" bronze label. ....lb	40	" 35	
" silver " ....lb	45	" 40	
" gold " .....lb	60	" 55	
" pink gold label ..lb	75		
Glue, black..... .....lb	12		
" amber ....lb	15		
" white.....lb	20		
" cooper's ....lb	39		
Glycerine (double dest)1260deg lb.	20	6 lb tin 15 case 14	
Glycerine Price's .....lb	70	W. qt. 65	
Grana paradis.... .....lb	20		
" " pulv..... lb	30		
Guaiacol .....oz	80		
" benzoate .....oz	1 50		
" carb .....oz	1 75		
Guarana pulv.... .....lb	3 00		
Gum acacia turc elect.... .lb	65		
" " med ..... .lb	50		
" " sorts.....lb	35		
" " pulv... .....lb	75		
" ammon in guttæ.....lb	50		
" asafœtid. opt.....lb	45	sec. 35	
" " pulv .....lb	40		
" benzoin opt ....lb	75		
" catechu nig..... ...lb	12	20 lb 11 pulv 25	
" catechu pallid cubes..lb	16	10 lb 15	
" copal..... ....lb	1 00		
" damar.... .....lb	30		

Gum elemi	lb	45	
" euphorb. pulv	lb	40	
" galban opt	lb	3 50	
" gambogiæ	lb	1 05	pulv 1 20
" guaiaci	lb	65	Sec. 40 pulv 50
" juniper	lb	45	
" kino	lb	1 50	pulv 1 60
" mastiche select	lb	1 00	
" myrrh. turc opt	lb	70	
" " " sorts	lb	45	pulv 65
" olibani	lb	25	
" sang. draconis	lb	45	reed 90
" " " pulv	lb	75	
" scammon. aleppo opt. (pulv)	lb	6 50	
" scammon resin	lb	3 75	
" seedlac	lb	40	
" shellac, orange	lb	40	
" " bleached	lb	40	50 lb 35
" spruce	lb	30	10 lb 25
" storax liquid		50	
" " dry	lb	50	
" thus	lb	15	
" tragacanth Ribbons	lb	90	
" " Alleppo opt	lb	75	
" tragacanth Alleppo No. 2	lb	60	
" " pulv. opt.	lb	90	
Gun cotton		70	1 oz box
Hæmogallol, 10 gm. vials		60	each
Hæmol " " "		35	"
Homatropine Hydrobrom.	gr	30	
Humulus lupulus	lb	20	assorted packages
Hydrarg. bicyanid	oz	30	
" bisulphate	lb	90	
" iodid rubr	oz	40	lb 4.50
" " virid	oz	25	lb 3.50
" oxyd. flav	lb	1 50	
" " rubr	lb	1 10	
" perchlor	lb	90	pulv. 1.00
" subchlor	lb	1 00	
" " a la vapeur	lb	1 50	
" sulph flav	lb	1 50	
" " alb	lb	90	
" " c sulph	lb	1 00	
" tannas	oz	35	
" ammon	lb	1 20	
" c. creta	lb	60	
" oleas 5%	lb	55	
" " 10%	lb	65	
" " 20%	lb	80	
Hydrargyrum	lb	80	10 lb 70
Hydrastine alcaloid C.P.	dr	50	
" hydrochlor C.P.	dr	90	oz. 6 00
Hydrastinine mur.	gramme	1 25	
Hydrochinone	oz	35	lb 4.50
Hydrogen peroxid, Peuchot's. 1 lb			doz 8 00
" " " ½lb			" 6.00
" " " ¼lb			" 4.50
" " Coml	lb	35	
Hyoscine, hydrobrom, 5 gr. tub.		1 75	each
Hyoscyamine	gr	25	sulph gr 35
Hypnon, pure	oz	1 50	
Ichthyoe. inc. Brazil	lb	2 40	
" " " oz packets		1 80	dozen (Grid'ey's)
" " Russian	lb	5 00	
Ichthyol, Merck's	oz	40	¼lb 5.50 lb; ½lb 5.25 lb; 1lb 5.00 lb
Indigo Madras opt	lb	75	sec 65
" " pulv	lb	90	
" Paste	lb	20	
Ins. powder Dalmatian	lb	35	25 lb 26 56 lb 25
" " Persian	lb	30	25 lb 21 56 lb 20
Iodoformum	oz	40	lb 5.90
" præcip	oz	40	lb 5.90
Iodol	oz	1 40	
Iodum crude	oz	80	lb 4.50

SPECIAL OFFERS

Canary, Hemp, and Millet Seed,
Gum Opium,
Bismuth Subnit.
Phenacetine Bayer,
Acid Acetic Fort,
" " Glacial,
" Salicylic,
Soda Salicylas,
Morphia Sulph.
Bismuth Subgallate,
" Salicylate,
Cod Liver Oil, Norway,
" " Newfoundland.
By Norway Process

Injection Wattau,
Eau Vido,
Bromo Seidlitz,
Anchor Weakness Cure,
K. D. C.
Liquid Sulphates,
No to-bac,
Mariani Coca Wine,
Marshmallow Cream.
Anakesis,
K. D. C. Pills,
Parker's Nipple Oil,
Pinaud's, Roger & Gallet's and Gelle Frere's Perfumes.

KIRK'S SOAPS

LYMAN, SONS & CO.,

MONTREAL.

Iodum resub .....oz	40	lb 5.25	
Jalapin ang.....oz	1 00	lb 13.50	
Kamala ..... lb	60		
Kousso.....oz	10		
Kava Kava.....lb	90		
Lactopeptin ozs.....doz	8 50		
" ½ lbs.....lb	10 50		
Lactucarium ang.....oz	70		
Lanolin .....lb	85		
Lapis calam. prœp.....lb	7		
Lapis pumicis select.....lb	8	ordinary 6	
" " pulv.....lb	7	100 lb 5	
Leptandrin .....oz	45	Keiths 50	
Lichen Hibern opt.....lb	20	Scc 15	
Licorice Corig.....lb	35		
" Solazzi .....lb	45		
" Zuvia .....lb	30		
" Windsor, 4,8 or 16 1-5 lb	35	25 lbs 30	
" Y. & S. stick.....lb	35		
" Pellets Y. & S....lb	40		
" " M. & R....lb	40		
Lignum guaiaci rass.....lb	7		
" qoassiæ incis.....lb	10	50 lb 9	
" sant flav grd.....lb	65	Rub 10	
Liniment aconiti.....lb	90	Whr. qt. 80	
" belladon.....lb	95	" 85	
" camph .....lb	55		
" camph comp.....lb	60	Whr. qt. 55	
" iodi.....lb	1 50		
" opii .....lb	90		
" saponis co.....lb	45		
" " c pot iod..lb	90		
" terebinth .....lb	30		
Liquorammon. acet conc ...lb	35		
" ammon fort s. g. 880 lb	12	12 Whr. qts. 10	
" antim. chlor.....lb	22	W. qt. 20	
" arsenicalis.....lb	10 pt., Whr. qt. 8		
" arsenii et hyd. iod. .lb	25	W. qt. 20 (Donovans)	
" ferri Acet	35		
" " " Ft	60		
" " perchlor fort...lb	12	Whr. qt. 11	
" " pernit.....lb	14		
" " persulph.. ....lb	25		
" plumbi subacet.....lb	12	Whr. qt. 10	
" potassæ.....lb	7		
" santal flav comp lb	1 50		
" sodii chlor..... ...lb	16		
" strychnine.....lb	50	Whr. qt. 45	
Lithii bromid..... .....oz	25		
" carbonas..... .....oz	25	lb 3.20	
" citras.....oz	20	lb 2.75	
" hippurate.....oz	1 50		
" iodid .....oz	50		
" salicylat..... ....oz	30		
Litmus..... lb	60		
Lucilline .....1 lb tins	20 each		
" .....5 lb "	90 "		
" .....10 lb "	1 60 "		
" ..... 25 lb tubs	13 lb.		
" ..... 50 lb tubs	12 "		
Lupulinum..... .....lb	60		
Lycopodium.....lb	80		
Lysol..... ....½ kilo bottles	75 each		
Macis..... .....lb	1 20	pulv 1.30	
Madder compound.... ....lb	10	carboy 9	
" Dutch .....lb	12	brl 10	
Magnes citr. gran. Bishop..lb	80	7 lb 75	
" " " Lyman. lb	35		
" calcined ....1 lb tins	50		
" " .... " bots	65		
Magnesii carb levis 1 oz pkt lb	22	10 lb 20	
" " " 2 " lb	20	" 18	
" " " powd..lb	25	1 lb tins	
" chloride .....lb	30		
" sulphas.....lb	3	Brl. 1.50	
Magnesium, wire or ribbon .oz	75	Powder 50	
Maltopepsin ½ lb bots.... .lb	5 85		
" bots.... ....doz	6 35		
Maltose xtls..... .....oz	1 50		
Mangan chlorid.....lb	50		
Maganese hyphospdite.... oz	30		
" oxyd. nigr .....lb	10	brl. 7½	
" sulph. pur..... ..lb	60		
Manna flak select.....lb	1 75		
Maranta Bermuda.....lb	45	10 lb 42	
" Jamaica .....lb	15		
Mel. canadense.... .....lb	15	10 lb 14	
Menthol.....oz	55	lb 8.00	
Morphinæ acetas..... ...oz	1 70	10 ozs. 1 60	
" hydrochloras....oz	1 70	" 1.60	
" sulphas..... ..oz	1 80	" 1.70	
Moschus, in grain.....dram.	5 50	4.50 3.50	
Myrtol..... .. oz	1 00		
Naphtha mineral .....lb	50		
Naphtha vegetable .....lb	60		
Naptlialine resublimed.....lb	30		
Naphthol Beta.... .....oz	10	lb 1 .40	
" " Bengoate ...oz	40		
Nickel sulph cryst.....lb	75		
" ammon. sulp.....lb	35		
Nux. areca select.....lb	20	pulv 35	
" kola..... .....lb	50		
" myristicæ (limed)....lb	90	pulv 1.00	
" " opt.(unlimed)lb	1 00		
" vomica .....lb	12	pulv 25	
Olio Resin Capsici.....oz	85		
" Cubeb .....oz	50		
Ol. absinth.....oz	30	lb 4.00	
" amygd. dulc.....lb	50	Whr. qt. 45	
" " essent. sine acid pruss.....oz	50		
" anethi Ang .....oz	35	lb 4.50	
" anisi.....lb	2 75	Whr. qt. 2.50	
" anthem Ang.....oz	2 00		
" aurantii..... .....lb	2 50	Winch. 2 25	
" bergam super.....lb	3 00		
" buchu.....oz	3 00		
" cadi.....lb	35	Whr. qt. 30	
" cajeputi..... .....oz	10	lb 1.00	
" carui.... ....lb	2 50		
" caryoph .....lb	1 25		
" cassiæ.....lb	1 50		
" cedri opt .....lb	75	Whr. qt 70	
" chaulmoogra..... ..oz	20		
" cinnamomi ver.....oz	1 70		
" citronella.... .....lb	80	bot. 70 lb	
" cocoanut.....lb	15		
" cognac..... ...oz	1 75		
" cologne ....oz	60		
" conii....spruce.....lb	70	Whr. qt. 65	
" copaibæ.....lb	1 25		
" coriandri..... .....oz	70		
" crotonis.....oz	10	bot. 1.20 lb	
" cubebæ..... .. ....oz	40		
" cymini.... .....oz	50		
" erigerontis..... ....lb	3 25		
" eucalypti..... .....lb	1 25		
" fœniculæ dulc.....lb	1 50		
" gaulther..... .....oz	25	lb 3.00	
" " synthetic....lb	2 00		
" geranii rosx .....oz	50		
" " super..... ..oz	1 00		
" juniperi bacc.....oz	15	lb 2 00	
" " lig .....lb	60	Whr. qt. 55	
" lauri.... .....lb	40		
" lauri essent Bay.....oz	40	lb 5.00	
" lavand ang..... .oz	2 00		
" " exot.... .....lb	3 50	sec 2.50 1.50	
" limonis super.....lb	2 00	copper 1.50	
" macis.....oz	25	lb 3.50	
" menth. pip. Amer....lb	4 00	Whr. qt. 3.75	
" " English..oz	1 00	lb 14.00	
" " " Japan ...lb	4 00		

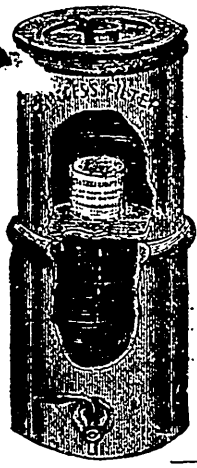
Ol. menth virid ....oz	25	lb 3.50	
" morrhuæNorweg .....gl	1 50		
" " Nfld by Norweg. process	1 00	kegs 18 gals 90	
" myrbane.....lb	30	Whr. qt. 25	
" myristicæ.....oz	30	bot. 25	
" neatsfoot, pale.....gl	1 10		
" neroli. opt.....oz	4 00		
" olivæ sublime salad ..gl	3 50		
" olive sublime salad 1 gal	original tins incl 2.50 each		
" " green.....gl	1 40	brl. 1.20	
" " " opt .....gl	1 50	brl. 1.35	
" " yellow.....gl	1 40	brl. 1.15	
" " yellow opt .....gl	1 50	brl. 1.25	
" (Salad American)gl	1 00	brl. 85	
" origani .....lb	85		
" " Sec.....lb	50	Winch 45	
" palmæ select.....lb	15		
" patchouli opt.....oz	75		
" petit. gran .....oz	75	Sec 45	
" picis.....lb	12	Whr. qt. 10	
" pimentæ.....oz	25	lb 3.20	
" pini silvestris.....lb	50		
" pulegii hed .....lb	2 25		
" rapii .....gl	1 00		
" rhodii.....oz	80		
" ricini E. I.....lb	11	case 8 tins 9	
" " Gal water pa'e..lb	12	brls 8½	
" " Virgin	15	tins 13	
" " Ital.....lb	20	tins 18	
" rosmarini exot.....lb	70	W. qt. 65	
" rutæ.....oz	25		
" sabinæ.....lb	1 30		
" sambuci vir.....lb	30		
" santali ang.....oz	50	lb 7.50	
" " " W.I.....oz	40	lb 5.00	
" sassafras.....lb	70	Whr. qt. 65	
" sem santoh.....oz	25	lb 3.20	
" sesame .....gl.	1 35	cask 1.25	
" sinapis essent.....oz	65	lb 8.50	
" sperm.....gl.	2 00		
" spike .....lb	25		
" succin. rect ... .lb	65	Whr. qt. 60	
" tanaceti opt .....oz	30	lb. 4.25	
" terebinthinæ.. .....lb	50		
" " coml....gl.	65		
" theobromatis.... ....lb	55	(tablets)	
" valerian.....oz	1 00		
" verbenæ.....oz	10	bot. 9	
" vini.....oz	25	lb 3.50	
" ylang-ylang.....oz	7 00		
Opium Turc.....lb	4 25		
" " pulv.....oz	40	lb 5.25	
Os sepiæ.....lb	25	select 40 pulv 35	
Otto rosæ Dougsi.....oz	7 00		
" virgin.....oz	9 00	opt 11.00	
Pancreatine, Morson's.....oz	1 00		
" Merck's.....oz	50		
Papoid.....oz	3 25		
Paraffinum durum.....lb	20	50 lb 15	
Paral hyde.....oz	20	lb 2.25	
Paris Green.....100 lb irons	14		
" ..... 25 lb "	15		
" ..... 1 lb tins	18		
Pellaterine Tannate.. ... gm	45		
Pepsin .....lb	225		
" pur. sol pulv. Merck's. lb	3 00		
" Merck's scales .....lb	5 00		
" ang. coml.....oz	30	lb 3.50	
" Boudault's.....oz	1 20		
" medicinal Morson's..oz	85		
" porci Morson's.....oz	2 25		
" saccbar.....oz	25	lb 3.50	
" Jensen's scales " .oz	1 25		
" Armour's.....oz	90	lb 12.00	

Petrol Barbadens..... ...lb	15		
Petroleum, see Lucilline			
Phenacetine Bayer.....oz	35	lb 4.75	
Phenocol.....gm	25		
" Hydroch.....25 gms	1 50		
Phenolphthalein.....oz	1 00		
Phosphorous...11 lb tins..lb	85	1 lb bots 1.00	
Pil. hydrarg.... .....lb	70		
Pilocarpin Hydrochlor ....gr	20	5 or 10 qr tubes	
" nitras..... ....gr	20	5 or 10 qr. tubes	
Pipe clay..... ..... lb	5	100 lb 4	
Piperinæ ..... oz	1 00		
Piperazin Bayer, ½ oz bottle.oz	3 25		
" tablets... 10x16 gr	2 00 each		
Piper alba..... .....lb	20	pulv 22	
" cayenne .....lb	25	10 lb 20	
" nigrum.....lb	17	pulv 19 25 lb 17	
Pix Burgund bladders.....lb	10	20 lb 9	
Platinum Bichlor.....oz	8 00		
" " 10% solut oz	1 25		
" Foil .....grm	60		
" Wire..... "	45		
Plumbi acetas brown .....lb	10	50 lb 9	
" " Xtls .....lb	12	50 lb 10	
" " C. P .....lb	25		
" iodid.....oz	35	lb 4.50	
" nitras comi.....lb	16		
" oleas.....lb	1 00		
" oxyd pulv.....lb.	9	keg 7½ (litharge)	
" " rub.... .....lb	8	keg 6 (red lead)	
Podophyllin resin.....oz	35		
Potassa caustica sticks.....lb	55		
" sulphurata.....lb	35		
Potassii acetas.....lb	45	gran 50	
" bicarbonas .....lb	16		
" " pulv.....lb	17		
" bichromas.... ....lb	15	keg 12½	
" binoxalas.....lb	23	10 lb 22	
" " pulv.... .lb	25	10 lb23	
" bitart ....lb	30	keg 24 brl 28	
" bromid.....lb	60	5 lb 55	
" carbonas.....lb	14	10 lb 12	
" carbonas pearl ashes lb	10	100 lb 9	
" chloras.....lb	26	keg 24	
" " pulv.....lb	27	keg 25	
" chlorid. pur.....lb	30		
" chromas .....lb	50		
" citras neutral.....lb	70		
" cyanid. C. P.....lb	1 00		
" " gold plater.lb	75		
" " fused ....lb	45		
" hypophosph.....lb	1 50		
" iodid.....lb	4 00	5 lbs $3 75	
" nitras..... .....lb	10	112 lb keg 7	
" nitras pulv.....lb	11	(Gran) 10 keg 7½	
" " C.P. Mercks...lb	30		
" oxalas, neutral ....lb	25		
" permangan pur....lb	35	10 lb 30	
" pruss. flav.....lb	35		
" " rubr.... .. lb	75		
" silicas.....lb	30		
" " Liq.....lb	20		
" sulphas.....lb	12	pulv 13	
" sulpho-cyanid.... .oz	15		
" sulphocarb.....lb	1 90		
" sulphuret .....lb	35		
" tartras ..... lb	80		
Potassium.....oz	3 00		
Propylamine..... .....oz	75		
Pulv. aloes c. canella.... ..lb	40		
" antimonialis P. L....lb	60		
" catechu comp.....lb	70		
" cinnam comp.....lb	75		
" cretæ aromat P.B.....lb	1 20		
" " " c. opiô P.B.lb	1 50		
" " comp Ph. Sd..lb	50		
" " comp. c. opiô ..lb	75		

Pulv cretæ c. camph.....lb	25	10 lb 20	
" glycyrrh comp.....lb	30		
" ipecac comp.....lb	1 40		
" jalap comp.....lb	75		
" kino comp..... ....lb	1 25		
" rhei comp.....lb	75		
" sapo cast.....lb	25		
" " " alb.... ....lb	35		
" scammon comp..... oz	30		
" seidlitz Howards.....lb	25	7 & 14 lb	
Pyoktannin.....25gms	1 25		
Pyridin Puriss..... ....oz	25		
Quassine, ½ oz vials.. .....oz	4 00		
Quininæ bisulph.....oz	50		
" bromid.....oz	75		
" citras..... .....oz	80		
" hydrobrom.....oz	90		
" hydrochlor ..... .oz	85		
" hypophos.....oz	1 50		
" iodid.... .....oz	1 00		
" phosphas.....oz	75		
" salicylas.... ....oz	65		
" sulph German.... .oz	40	100oz tin 27 25 oz 28	
" " Howards...oz	45	100 oz 40	
" " " .4 oz	40		
" sulphocarbolas....oz	1 50		
" tannate .....oz	50		
" valerian.....oz	85		
Rad. aconiti.....lb	20		
" " contus.....lb	25	pulv 30	
" anchusæ.... .....lb	20		
" angelicæ.... .....lb	30	pulv 35	
" arctii (burdock).....lb	15		
" belladon.....lb	18	contus. 30	
" calam. aromat.....lb	30		
" calumb.....lb	20	pulv. 20	
" curcumæ Madras.....lb	10	" 12	
" galangal minor.... ..lb	15		
" " pulv.....lb	25		
" gentian, select.....lb	10		
" " ground.....lb	12		
" " pulv .....lb	15		
" ginseng..... ....lb	4 50		
" glycyrrh decort.... }	1 lb	25	10 lb 22
" " incis ..... }			
" " dec't pulv....lb	60		
" " bundles ....lb	12		
" " small bundles super.....lb	18		
" " grd..... . .lb	12	brl. 11	
" helleb alb.....lb	12		
" " " pulv.....lb	16	keg 14 br. 13	
" ipecac..... lb	2 00		
" " pulv..... ....lb	2 25		
" iridis Florentine ....lb	50		
" " pulv .lb	60		
" jalapæ .....lb	45		
" " pulv.... .....lb	55		
" krameriæ opt.....lb	30		
" pareiræ brava..... .lb	40		
" pyrethri..... .....lb	35		
" rhei E. I. opt..... .lb	1 25	cubes 1.00	
" " " sec..... .lb	75		
" " " elect opt...lb	2 25	fingers 1.50	
" " pulv elect opt ...lb	2 50		
" " " E. I. opt...lb	1 25		
" " " " sec...lb	80		
" sanguinariæ.....lb	14	pulv 16	
" sarsæ Hond.... .....lb	45	incis 50	
" sarsæ Jam..... ....lb	70	" 75	
" " Mexican.. ...lb	18	20 lb 16	
" scillæ sicc.....lb	12		
" " pulv.... .....lb	30		
" senegæ.... .....lb	65		
" spigeliæ..... .....lb	45	pulv 65	
" sumbul..... .....lb	90		
" taraxac sicc.....lb	18	10 lb 15	

Rad tormentillæ	lb	40	
" " pulv	lb	50	
" zingib. Afric. u. b	lb	16	20 lb 15 bag 13
" " " pulv	lb	18	30 lb 16
" " Jam. u.b	lb	25	brl 23
" " " bleached	lb	30	10 lb 28
" " " pulv opt	lb	30	10 lb 28
" " " " sec	lb	25	
Resin flav	lb	4	
" " pulv	lb	5	50 lb 4
Resorcin xtls	oz	25	lb 3.00
" resublim	oz	50	
Rhizoma arnicæ	lb	30	contus 40
" cimicifugæ	lb	15	
" podophylli	lb	14	
" serpentariæ	lb	55	pulv. 90
" valerianæ	lb	15	pulv. 22
Rouge—Jewellers	lb	75	
Rubidium chloride	gm	40	
Saccharine	dram	20	oz 1.20
Sacch. lactis pulv	lb	30	
Sago perlat. parv	lb	6	bag 5½
Sal prunellæ glob.	lb	20	
Salicinum	oz	20	lb 2.75
Salipyrine	50 gms	2 50	each
Salol	oz	30	lb 3 75
Salophen Bayer	oz	1 50	
Santoninum	oz	20	lb 2.75
Sapo Castile Alb Contis	lb	16	box 15
" " " Shell	lb	12	" 10
" " " Virgin	lb	12	" 10
" " " " cakes	box,	5 00	
" " Mottled opt	lb	12	box 11
" " " com	lb	10	" 9
" " " cakes	gross	4 75	
" mollis ang	lb	10	20 lb 8
" " German Green	lb	35	
" " Green opt	lb	55	
Scammoniæ resin pulv	lb	3 75	
Scoparii cacumin	lb	25	
Secale Cornut	lb	75	
Seidlitz Mixture hds	lb	22	
Sem. canary	lb	5	bag 3¾
" cardam	lb	1 75	1.50 & 1.00
" cardam decort	lb	1 00	
" " pulv	lb	1 50	
" celery	lb	30	
" chenepodii	lb	25	
" colchici	lb	55	pulv. 65
" cydoniæ	lb	50	
" cymini	lb	20	pulv. 25
" fœnugræci	lb	5	
" " pulv	lb	7	ground 6 brl 5
" hemp	lb	5	bag 4½
" hyoscyam	lb	60	
" jambul	oz	15	
" *lini sifted*	lb	4	brl. 3½
" lini crushed	lb	5	brl. 4
" " " No. 2	lb	4½	brl. 3½
" " " No. 3	lb	4	brl. 3¼
" lobeliæ inflatæ	lb	50	pulv 55
" maw	lb	15	10 lb 14
" millet	lb	6	keg 5
" pumkin	lb	25	
" rapii	lb	8	bag 7
" santonicæ	lb	18	pulv. 28
" sinapis alb	lb	10	
" staphisagriæ	lb	35	
" stramonii	lb	25	
Soda caustica stick	lb	45	
" caustica cake	lb	40	
" crystals	lb	2	brl 1.25 per 100 lbs
" tartar æ	lb	28	
Sodii acetæ pura	lb	25	
" arsenias	oz	10	lb 1.20
" benzoas	oz	15	lb 1 50
" bicarb. pulv Morson's	lb	10	
" " " Hd's	lb	16	14 lb 15

Sodii bicarb pulv. coml.	lb	4	keg 2.75
bisulphis.	lb	25	
sulphas pure	lb	30	
[illegible]	lb	65	
[illegible]cryst	lb	15	
" carbo'as pur	lb	3 50	
" chlorate xtls	lb	50	
" citras	lb	1 00	
" hypophosphis	lb	1 40	
" hyposulphis	lb	5	keg 112 lbs. 3.00
" iodid	oz	40	lb 5.50
" nitras pur	lb	25	coml. 8
" oxalas	lb	50	
" phosph pur	lb	15	pulv. 25
" potass tait pulv	lb	25	
" salicylas 1 lb boxes	lb	1 75	5 lb bulk 1.60
" silicas xtls	lb	15	
" " solut conc	lb	10	
" sulphas	lb	3	brl. 1¾ Hds 5 [brl. 4.
" " exsicc. pulv	lb	15	
" " pur recryst	lb	30	
" sulphid	lb	60	
" sulphis	lb	7	pulv. 8
" sulpho carbolas	lb	1 10	
" valerian	oz	50	
Sodium	oz	40	
" molybdate	oz	40	
" succinate	oz	35	
Sol. acid osmic 1%	ox	1 50	
" cocain 4%	oz	60	
" nitro glycerin 1%	lb	1 75	
Somatose—Bayer, 2 oz tins.	oz	70	
Spartein sulph	dr	40	
Spice pickling	lb	40	
Spt. ætheris comp	lb	60	
" " nit S. G. 845	lb	65	Whr. qt. 60
" ammon. arom	lb	60	" 55
" " fœtid	lb	85	
" camphor	lb	70	" 65
" chlorof. S. G. 871	lb	70	" 65
" cinnam	lb	2 00	
" menthæ pip	lb	1 10	
" methylated	gl.	2 00	Brl. 1.75 cash
" myristicæ	lb	90	
" rectificatus 65 o/p	gl	4 25	5 gl. 4.20 in a/c.
" " " Brl		3 85	cash.
" vini gall	gl	4 75	opt. 6.50
Spongia usta	lb	2 50	
Stanni chlorid. crist	lb	40	
" oxid (putty-powder)	lb	50	
Stannum gran	lb	50	
Stearin	lb	15	
Strontii nitras exsicc	lb	20	10 lb 18
" chloridum xtls	lb	30	
Strychnina cryst	oz	1 00	10 oz 90
" sulph	oz	1 20	in ¼ oz bots 25 extra
Styrax liquid	oz	50	
Succus conii	lb	75	
Succus limæ fruct W. I	gl	90	brl. 80
" rhamni	lb	25	
" scoparii	lb	70	
" taraxaci	lb	65	
Sulphonal—Bayer	oz	35	lb 4.50
Sulphur Lac		12	10 lb 11
" præcip (B. P.)	lb	20	10 lb 18
" rotund	lb	3	brl 2
" sublim	lb	4	bag 110 lbs 2¾
" vivum	lb	6	10 lbs 5
Sulphuris iodid	ox	40	
Svapnia, ½ oz bottles	oz	5 00	
Tamarindus, W. I	lb	14	10 lb 12
Tapioca flake	lb	8	
" pea	lb	8	
Terebene	lb	65	
Terebinth canadensis	lb	45	
" chian	oz	35	
" Venet	lb	15	
Terpine Hydrat	oz	20	
Terpinol	oz	30	
Terra Japonica (Gambier)	lb	10	
Thallin Sulphate pure	drm	40	
Thiol liquid	oz	60	
Thymol	oz	40	
Trional-Bayer	oz	1 25	
Tripoli	doz.	90	
Triticum repens	lb	20	
Troch. acid carbolic G'sT H.	lb	75	
" " tannic "	lb	1 25	
" aconite	lb	90	
" bath pipe	lb	45	
" black currant, Gibsons	lb	90	
" boracic acid T. H.	lb	90	
" bronchial P D & Co.			5 lb can 1 75 each
" cachou dwf bouquet	lb	52	
" " floral gems	lb	52	
" camphor	lb	75	
" capsici Gibson's	lb	65	Domestic 35
" catechu "	lb	80	
" chlorodyne	lb	65	Gibson's 90
" coltsfoot	lb	40	
" cubeb T. H.	lb	90	
" gelatine	lb	60	
" glycerin [jujubes]	lb	75	
" guaiaci T. H.	lb	1 10	
" ipecac	lb	75	
" kramariæ T. H.	lb	1 25	
" lactucæ, T. H.	lb	1 25	
" licorice (pipe)	lb	35	
" mentha pip C.S Gibson's	lb	65	1lb bottles 75
" mentha pip [XXX]	lb	50	
" morphinæ	lb	1 00	
" " et ipecac.	lb	1 00	
" mosch Gibson's	lb	80	
" opii	lb	75	
" paregoric	lb	70	
" pontefract	lb	30	
" potass. chlor	lb	50	Tablets 60
" pyrethri T. H.	lb	90	
" rosæ Gibson	lb	80	
" sedative T. H.	lb	90	
" tolu	lb	70	
" tussi [cough]	bot	1 20	Gibson's
" " "	lb	50	[Preston's]
" " " Watsons.	tin	1 25	each
" vermifuge	lb	50	worm
" voice [jujubes]	lb	85	
Uranii acetas	oz	60	
" nitras	oz	60	
Urethane	ox	60	
Veratrina	oz	1 75	
Verdigris	lb	35	powd 40
Vinum rubrum [port]	gl	3 00	qr. cask 2.90
" " opt "	gl	3 50	" 3 25
" xericum [sherry]	gl	1 75	" 1.65
" " opt. "	gl	3 00	" 2.75
" " " fine	gl	3 50	" 3.25
Witch Hazel extract	gl	1 50	5gals 1.25
Whiting	lb	1	brl 60c per 100 lb
Xylol	lb	60	
Zinci acetas	lb	45	
" bromid	oz	25	
" carb	lb	35	
" chlorid. sticks	oz	15	½ lb 45, lb 75, bt. free
" iodid	ox	60	
" oleas	lb	1 20	
" oxidum Howard's P.B	lb	70	
" " Coml	lb	15	10 lb 12
" phosphas pur	lb	1 25	
" phosphid	oz	60	
" sulphas com	lb	6	10 lbs 5
" " pur Merck's	lb	10	10 lbs 9c.
" sulphocarb	oz	10	lb 1.00
" valerian	oz	30	b 4.00
Zincum granulatum	lb	30	
Zinci sozoiodol	oz	1 50	



This cut shows a sectional view of the

Stoneware Filter.

Styles 1 and 2,

Set up ready for use. There are two crocks, each of four gallons capacity—an upper one holding the Filter Block as shown, and a lower one, which can be used as a water cooler, if desired.

This block is four inches in diameter by the same in height, and is hollowed out on inside. This fits on a metal tube, which fastens by means of the nut, shown in separate cut, to bottom of Filter Jar. Block can be lifted off tube, cleaned and replaced in two minutes, and with no trouble at all. Water passes from outside of block, through the walls, into the hollow chamber and from thence, by means of the Drip Tube, into the lower receptacle.

PRICE LIST.

All Best Glazed Stoneware, Matches Mahogany: Rosewood or Walnut Furniture.

No. 1.	Family or Office size, as shown,	4 gallon capacity,	$5 00
No. 2.	" "	2 blocks, 6 " "	7 50
No. 3.	Hotel or Restaurant size,	3 blocks 8 " "	10 00

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RISING SUN STOVE POLISH

DO NOT BE DECEIVED

with Pastes, Enamels, and Paints which stain the hands, injure the iron, and burn red. The Rising Sun Stove Polish is Brilliant, Odorless, and Durable. Each package contains six ounces; when moistened will make several boxes of Paste Polish.

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DUSTLESS-LABOR SAVING-DURABLE

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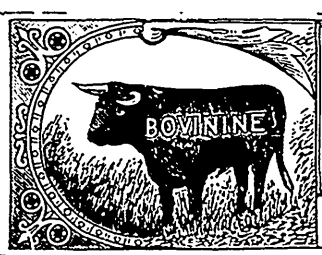

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Creates new and vitalized blood faster than any other food preparation in the world.

For overworked and insufficiently nourished people; over-taxed professional and aboring men.

Builds up the system after severe illness when recovery is slow and the appetite poor.

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It is the only thing that will permanently cure nervous prostration, dyspepsia, cholera infantum and excessive irritability of the stomach from any cause.

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October 1st, 1885. FRED. D. GRANT."

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Put up in 6 and 12 oz. size, at **60** cts. and **$1.00** per bottle. 12 ozs. contains the strength of 10 pounds of beef.

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