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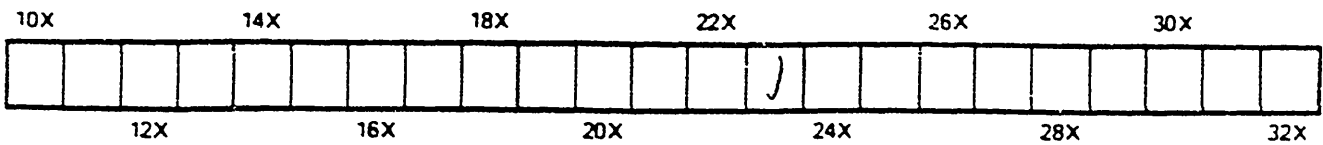

CANADIAN

# PHARMACEUTICAL JOURNAL

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## Original and Selected Papers.

### ANILINE DYES—THEIR SOLUTION AND APPLICATION.

BY E. B. SHUTTLEWORTH.

The fact that nearly every druggist is interested in the sale of aniline colors must serve as my apology for the introduction of a subject which cannot be regarded as belonging strictly to pharmacy. The use of the so-called liquid dyes has now become quite extensive; and, more latterly, the solid colors have been in some demand for the purposes of domestic dyeing. Whether domestic dyeing can be regarded as a success is not the province of this paper to decide, but it may be that the absence of proper directions, or the unskilful preparation of the liquid dyes, have something to do with the failures of which customers so frequently complain. To remedy this a few practical suggestions are offered, which, it is hoped, will prove useful to the druggist and his customers—including the professional dyer, who, to judge from inquiries on the subject, is not always supplied with information as to the manner in which some of the more recent colors are to be applied.

In writing this paper I would acknowledge my indebtedness to various trade circulars accompanying colors of German manufacture; and also to contributions which have appeared, from time to time, in the technological journals.

Like everything else, the aniline colors are liable to be adulterated. I have not found this to be the case with the dyes of the more respectable manufacturers; it has been said, however, that sugar is occasionally added—even to the extent of 50 per cent. Mr. Joly states this to be the case, and says that the fraud may be easily detected by treating the dye with absolute alcohol, or a mixture of alcohol and ether, when the sugar will remain as an insoluble residue, and can thus be estimated. I am unacquainted with any accurate method for estimating the strength of the colors, but for practical purposes have found the trial by dyeing to answer a useful end. Instead of testing on skeins of wool, I find small squares of white merino, or cashmere, preferable, as affording a more even surface, and a greater mass of color. A known weight of the dye should be dissolved in alcohol and added to the bath of warm water, with the necessary mordants. A square of cloth of known weight—say 10 grains—is immersed in the bath, and, after a stated time, removed. The strength and shade of the color can thus be compared with previous samples, dyed under like conditions. It is a good plan to paste these squares, by one edge, in a blank book, noting anything worthy of remark on the margin. The colors are thus preserved from the action of the light, and will be found very useful for reference.

It is impossible to use any dye, successfully, without due regard to cleanliness. This is, perhaps, more particularly the case with the anilines. The slightest trace of a foreign substance will often materially alter the shade. Earthern or enamelled vessels should be used whenever practicable. Iron is generally to be avoided, if for no other reason than that it is difficult to say when it is really clean. Woollen and silken goods, before being dyed, should be thoroughly washed in soap and water, and then carefully rinsed in clean rain water. Cotton requires a previous mordanting before it can be dyed with anilines, as vegetable fibre possesses no affinity for the colors. The preparation generally consists in treatment by sumac, or stannate of soda, and subsequently by sulphuric acid: special directions will be given in those cases requiring particular treatment. The spirit used should be pure, and especially free from aldehyde; methyl spirit does not appear to injure some of the dyes. Spirit containing shellac turns roseine of a bluish color. It will be noted that chemical distinctions as to the source of the dyes are, for

the time, waived; the various colors being known, commercially, as anilines, are so classified, although several of them have a different origin.

RED.

*Magenta.*

This color, which is also called *rosein*, *fuchsin*, and *anilin red*, is the best known of the series. It is better adapted for the preparation of a liquid dye than any other. In the hands of the amateur it can be used with economy, and the results obtained are, generally, satisfactory. It is readily soluble in alcohol, and to some extent, in water. The latter property is taken advantage of by dyers, the dye bath being prepared, directly, from the crystals. It is, however, preferable to use alcohol for dissolving the color, as the solubity in water is not always the same with different samples.

SOLUTION.—To 1 pound of the crystals add 2½ gallons of spirit 65 o. p. The solution may be conveniently made in an ordinary five gallon tin. Agitate frequently, and add 2½ gallons of hot water. This product will be suitable for sale as a liquid dye, but for dyer's use, where a large quantity of water is admissible, 1½ gallons of spirit will be found sufficient. It is sometimes necessary to filter before using.

APPLICATION.—*Silk and Wool*—Sufficient water to cover, without difficulty, the fabric to be dyed, is brought to a temperature of about 170° F.; a sufficient quantity of the dye is added, and followed by the immersion of the goods, which should be moved about to prevent streaks. About half an hour's immersion is sufficient. Half an ounce of the crystals should give a fair shade to 10 pounds of wool. A bath of soap suds is sometimes employed instead of water, and by the use of alkali, brighter, but perhaps, less permanent colors are produced. Acids render the shade dull and bluish.

*Cotton*—Place the cotton in a bath of sumac—1 pound sumac to 10 pounds cotton—for two hours. Wring out, and dye as wool. A brighter shade is given by dissolving ½ oz. of soap in hot water, letting the solution cool to 90° adding 2½ oz. olive oil, and mixing with tepid water. In this 5 pounds of cotton may be worked for

about five minutes. A bath containing ½ pound of sumac, and one ounce of tin crystals is next prepared, through which the cotton should be passed, wrung out, and finally dyed in a bath of magenta and pure water.

### *Cerise and Safranine.*

These colors resemble magenta in appearance, and appear to be varieties of that substance. They are readily soluble in alcohol, and more or less so in water. The colors produced are similar to those obtained from safflower, but possess greater vivacity and permanence. The shades are exceedingly delicate and beautiful, inclining to pink with a shade of yellow.

SOLUTION AND APPLICATION.—As Magenta.

### *Crimson.*

A solid dye belonging to the same series as the preceding, is sold as crimson, but it does not appear to differ very materially from magenta, giving shades with a trifle less blue. It is applied in the same manner as magenta. Much better colors are obtained by the use of anilin yellow and magenta. The former may be applied in the manner indicated for that color, and the fabric so dyed must be passed through a bath of magenta until the required shade is produced. By mixing the liquid yellow and magenta dyes in a bath of soap-suds, nearly every shade from magenta to orange may be obtained. This will be found a satisfactory method for amateurs.

### *Scarlet.*

To produce this color, either the so-called scarlet dye, or coralin, may be used. Neither of these are adapted for amateur use, as greater exactness is required in compounding the dye bath, than the rule of thumb system will admit. For non-professionals I decidedly recommend the use of anilin yellow and magenta, as indicated, for crimson. To produce scarlet the yellow should predominate, or the both may be rendered slightly sour by sulphuric acid.

SOLUTION.—*Scarlet.*—This color dissolves easily in water, and the bath may be made directly from the solid substance. A liquid

dye may be made, if desired, by dissolving one pound of scarlet in a mixture of four gallons of water and one gallon of alcohol.

*Corallin.*—Dissolve 1 pound of corallin in 1½ gallons of alcohol, 65 o.p., by the aid of heat; mix the solution with 7½ gallons of boiling water, and redissolve the precipitated dye by the cautious addition of liquor ammoniæ.

APPLICATION.—*Scarlet.*—Add to the bath containing the dye, an excess of alum and cream of tartar; neutralize carefully by carbonate of soda—the exact point may be known by the liquid changing from a yellowish to a pinkish red. Another process, which, however, I have not tried, is as follows: For every forty pounds of goods, dissolve five pounds of white vitriol at 180° F.; place the goods into this bath for ten minutes, then add the color, prepared by boiling for a few minutes, one pound of scarlet in three gallons of water, stirring the same continually. This solution has to be filtered before being added to the bath. The goods remain in the latter for fifteen minutes, when they have become browned, and must be boiled for another half an hour in the same bath, after the addition of sal almoniac. The more of this is added, the redder the shade will become.

*Corallin.*—Add the dissolved color to the dye bath and neutralize with acetic acid. The exact point is indicated by the pink color of the solution changing to an orange red. Immerse the goods and when the required color is obtained, remove, and wash in a bath of soap suds.

### BROWN.

### *Anilin Brown.*

SOLUTION—This color may be used as a liquid dye, and for this purpose 1 pound of the brown may be dissolved in 2 gallons of spirit 65 o. p.

APPLICATION—Add a sufficient quantity to the dye bath and immerse the fabric. Wool possesses a very strong affinity for this color, and no mordant is required. A snuff brown, more or less deep is produced.

*Bismark.*

SOLUTION—Mix together 1 pound color Bismark, 5 pounds of water, and ¾ pound of sulphuric acid. This paste dissolves easily in hot water and may be used, directly, for dyeing. A liquid dye may be prepared by making the bulk of the above mixture to 2 gallons with alcohol.

APPLICATION—Render the bath sour with sulphuric acid, add a quantity of sulphate of soda, immerse the wool and add the color by small portions, keeping the temperature under 212° F. Very interesting shades may be developed by combining the color with indigo paste, or picric acid.

*Cotton* requires mordanting with sumac and acetate of alumina, and is dyed in a bath under 100° F. By the use of bichromate of potash redder shades may be obtained. The usual color inclines to cinnamon.

*Vesuvin.*

SOLUTION AND APPLICATION—As magenta.

ORANGE.

*Palatin Orange.*

SOLUTION—As magenta.

APPLICATION—Render the bath slightly acid by bichloride of tin, and dye at the boiling point. A very fast, but not very brilliant orange is produced. The color may be combined with magenta, or indigo paste.

*Aurine.*

SOLUTION—Dissolve 1 pound in 2 gallons of alcohol 65 o. p.

APPLICATION—This color is used principally for silk. Dye in a bath containing a trace of sulphuric acid. By combining with magenta, very bright colors are produced.

YELLOW.

*Anilin Yellow.*

SOLUTION.—This color is slightly soluble in water, and for dyer's use may be used directly for the preparation of the dye bath. It is,

however, preferably prepared in a liquid state, by dissolving 1 pound of dye in 2 gallons of alcohol.

APPLICATION.—Without any addition to the dye bath very good yellows may be produced, but the color is much improved and brightened by a trace of sulphuric acid. The temperature of the bath should be under 200° F. (See *Crimson.*)

### *Phosphine.*

SOLUTION.—As the preceding.

APPLICATION.—As the preceding, omitting the sulphuric acid, and substituting a trace of carbonate of soda; or use a soap bath.

### *Picric Acid.*

SOLUTION.—Dissolve 1 pound in 1 gallon of alcohol, 65 o.p.

APPLICATION.—The dye bath requires no addition, or special precaution. This color is used to produce shades of lemon and canary which cannot be attained by the anilin yellow or phosphin. Its chief use is for dyeing green. For this purpose pass the fabric through a bath containing sulphuric acid and alum, adding, after thorough immersion, a sufficient quantity of solution of picric acid and indigo extract.

## GREEN.

### *Iodine Green—Night Green.*

SOLUTION.—This color dissolves easily in warm water. For a liquid dye, 1 pound may be dissolved in 1 gallon of alcohol, and mixed with 2 gallons of water containing 1 ounce of sulphuric acid. This color is almost always a failure in the hands of the amateur, and is not recommended.

APPLICATION.—For silk, no addition to the dye bath is required, the temperature being kept under 180° F. For wool, prepare two baths, one containing the dissolved dye and a quantity of carbonate of soda, or borax. In this the wool is placed, and the temperature raised to 212°. A greyish-green shade is produced, which must be brightened and fixed in a second bath of water at 100° F., to which some acetic acid has been added. Cotton requires preparation by sumac.

Another method, which I think was first published in the *Chemical News*, will, perhaps, be more useful to dyers, and is therefore reproduced:—Mix 3 pounds of the iodine green paste well with about 2½ pounds of cold water; then add successively, 1 pound acetic acid, 8° Beaume; 80 pounds water, of a temperature of 140° Fahr.; and 2 pounds of liquor ammoniæ, stirring the mixture well all the while, and filtering the same before use. Bring the dye-bath to the boiling point; put in as much of the solution as is necessary for the shade required, and dye for half an hour, letting the bath cool off in the meantime. Then have a second water-bath of 140° Fahr., ready prepared as follows, viz.: For every 20 pounds of wool, add half pound sulphuric acid, 66°, and one-eighth pound perchloride of tin crystals, the latter previously dissolved in an equal quantity of water. Take the goods from the first bath, without washing, into the second bath, turn them in it for 15 minutes, and the green will develop vividly. For yellowish tints, shade off with picric acid, which must be added to the second bath and dyed quickly. By this method, 1 pound of iodine green paste will dye 12 pounds of wool medium shade. Preserve the first bath, inasmuch as one-third of the dye remains in it, which circumstance is important in renewing the bath, which will, consequently, require one-third less dyestuff, when feeding it up for the second lot.

## BLUE.

*Bleu de Lyon, Pure Blue, Red Blue, and all others soluble in alcohol.*

SOLUTION—Into a stone jar fitted with a cover, through which a hole is made to admit a stick for stirring, put 1 pound of the dye, 5 gallons of alcohol 65 o. p., and 2 ounces of sulphuric acid; apply the heat of a water bath and stir frequently. After allowing the mixture to cool, filter, and treat any undissolved residue with fresh alcohol until complete solution is effected. From 5 to 8 gallons will be required.

APPLICATION—The dye bath for wool should be rendered sour by sulphuric acid. Tin crystals may be used, in quantity equal to about 1-40th the weight of the wool, to improve the vivacity of the shade. The bath should be brought to the boiling point. For silk, prepare a soap bath, add the color and put in the goods. When dyed

sufficiently pass through a bath acidulated with sulphuric acid. Cotton is prepared as for magenta and dyed in an acid bath as for wool.

### *Water-Blue.*

SOLUTION—This color is quite soluble in water, and will answer well for preparing a liquid dye; 1 pound may be dissolved in a mixture of 1 gallon of alcohol and 4 gallons of water. Dyers may dissolve the powder in the dye bath.

APPLICATION—As Bleu de Lyon.

### *Alkali Blue and Nicholson's Blue.*

SOLUTION AND APPLICATION—Dissolve 1 pound of the dye in 10 gallons of boiling water. Add this, by small portions, to the dye bath, which should be rendered alkaline by borax. The fabric should be well worked about between each addition of the color; the temperature must be kept under 212°. If the right proportion of borax has been used the goods will show but little color when removed from the bath. To develop this, wash with water and pass through a bath containing sulphuric acid.

## VIOLET AND PURPLE.

### *Parme, Violet de Fuchsin, Victoria Violet and Amaranth.*

SOLUTION.—As Bleu de Lyon, omitting the sulphuric acid.

APPLICATION.—Acidulate the bath by sulphuric acid, or use sulphate of soda; both these substances render the shade blueish. Dye at 212°. To give a fair middle shade to 10 pounds of wool, a quantity of solution equal to ½ to ¾ths of an ounce of the solid dye will be required. The color of the dyed fabric is improved by washing in soap and water, and then passing through a bath soured by sulphuric acid. According to Mr. Hirsch,* cotton is treated as follows: Prepare the goods for fuchsine, and turn them over a few times in a tepid solution of 2½ ounces of crystallized perchloride of tin, for every ten pounds of goods. Remove the latter, add as much

*Chicago Pharmacist.

violet solution as the shade requires, dye for a quarter of an hour, wring well and dry. Washing in a solution of alum and starch will render the color more solid.

*Hoffman's Purple.*

SOLUTION—As other violets.

APPLICATION.—Some authorities maintain that this color does not require the addition of acid to the dye bath, but from conversation with a practical dyer, I find the color is inclined to rub off when dyed in this manner. A trace of tartar; tartaric, oxalic, or any vegetable acid may be used with advantage; but mineral acids are to be particularly avoided. The bath should be kept at a boiling temperature.

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## THE MODERN ASPECTS OF THERAPEUTICS.

BY WALTER G. SMITH, M.D.

(*Concluded from page* 117.)

But the most decided step in this direction has been made by Drs. Crum Brown and Fraser, in their important papers "On the Connection between Chemical Constitution and Physiological Action" (1868–69). By introducing a known chemical change into the constitution of a physiologically active substance, without breaking up its molecule, they have shown that the physiological action of the substance may be completely altered, and, in fact, inverted in kind.

They have examined with great care the physiological action of the salts of the ammonium-bases derived from eight of the better known alkaloids, and their results lead to the suspicion that chemical *condensation* (*i.e.* susceptibility of addition) is in some way connected with physiological activity, and that saturated bodies (*i.e.*, whose condensation = o) are inert or nearly so. Thus by the addition of iodide of mythyl to the non-saturated base strychnia, the poisonous activity of that alkaloid is diminished at least 210 times, and a quantity of iodide of methyl-strychnium, containing 21 grs. of strychnia, can be given to a rabbit with impunity. These observations are of the highest value, though at present they must be considered as but foretastes of what is to come, and it is remarkable that almost immediately after, two French physiologists, MM. Joly

yet and Cahours published results corresponding in almost every respect with those of Brown and Fraser.

Dr. Richardson has done good work in the field of anæsthetics in their chemico-physical relations, and he has brought out the curious and interesting fact that, in the alcohol group, the anæsthetic effect has a definite connection with the chemical composition of the alcohol, the anæsthesia rising in proportion to the number of atoms of carbon; for example, contrast the action of ethylic alcohol, containing $C_2$. with amylic alcohol, containing $C_5$. It is observed also that definite changes are produced by the addition or substitution of new elements or radicals, such as H, Cl, I, $C_2H_5$, etc., and when the chemical relationships between different bodies are more thoroughly understood, we may eventually be able lo deduce *à priori* the physiological action of a body from its known chemical history.

Dr. Rabuteau, who has made many contributions to physiological chemistry, believes that he is justified by his investigations in propounding, as a general law, that "the metals are more active physiologically, as their atomic weight are more elevated, or, what is the same thing, as their specific heats are lower," *e.g.* Na, K. and Tl. The diatomic metalloids conform also to this atomic law, but the monads, curiously, are governed by a law which is the reverse of this. Thus F, Cl. Br, and I, is the order of physiological activity of the halogens, and this is precisely the inverse order of their affinity for O.

These illustrations are, at least, sufficient to shadow forth the assistance, qualitative and quantitative, which we may expect from physical and chemical science, and warrant us in believing in a sure foundation for future therapeutics. It is true that the facts, as yet known, are mostly isolated and disconnected, but we may compare them to separate bricks which, though singly of little value and without cohesion, yet when cemented and fitted together, will form a firm and durable superstructure. The physiological school, headed by C. Bernard and Brown-Séquarc, has done much to elucidate the action of some most important drugs, and it is likely that the doctrine of physiological antagonists will lead to practical results.

The different effects of remedies when introduced by different channels, the principle of the administration of smaller doses frequently repeated, and the potency of drugs over the vaso-motor nerves are all receiving a greater or less share of attention, and are exerting a wholesome influence on our habits and methods of prescribing.

Yet even with the most perfect knowledge of the chemical and other properties of drugs, we cannot satisfactorily judge of the influence which they exert on disease, unless we know, in any case of recovery in which medicine has been used, what share is to be assigned to the curative power of the organism itself. The evident

importance of this inquiry was recognized by the Austrian School of Medicine for years before it attracted much attention in these countries, and we have now, at all events, learned that a large proportion of diseases, numbering some of the most formidable character, may get well without the use of any drugs whatsoever, or, in other words, they have a natural tendency to terminate in the restoration of health. This salutary change of doctrine is due in part to an examination of the undeniable results affored by homœopathic practice, but largely owes its impetus to the improved state of physiological and pathological science. There is, however, some danger of being over-zealous in our respect for nature's operations, for the efforts of nature are not always of a benignant tendency, and what is called "expectant medicine" may sometimes prove but "a meditation upon death."

A more accurate knowledge of the real properties of drugs than we have hitherto possessed, lies at the root of all future progress, and the mode of its accomplishment claims attention at the outset. This will be best carried out by carefully conducted trials on *healthy* individuals, checked by collateral experiments on the lower animals, and on patients suffering from diseases whose diagnosis, general course and variations are tolerably well known. Hitherto it has been almost exclusively the custom to endeavor to acquire a knowledge of medicines by instituting trials with them in disease, a method which has borne little fruit in return for the labor bestowed upon it. To Hahnemann, in particular, before he was carried away by the delusion of infinitesimal doses, belongs the credit of actively pushing forward the proving of medicines on healthy individuals, recommended by Storck, Alexander and Haller, and it is strange that, with very few exceptions, no provings of worth have been made by other practitioners until very lately.

Within the last two years Dr. J. Harley has shown the value of this line of enquiry in his elaborate and searching work on the action of opium, belladonna, conium and hyoscyamus, in which he has done much towards defining our knowledge of the effects and uses of these neurotic remedies.

One most important issue of the careful testing of drugs would be the better determination of the "sphere of action" of each medicine, for it is already well known that certain drugs affect particular organs and tissues, and I believe, with Dr. Rogers, that this significant fact of drugs possessing elective affinities for certain textures will occupy a prominent place in our future therapeutics. We have reason to believe that the physiological and therapeutical actions of medicines are very closely related, and it is probable that the modifications impressed by various diseased conditions will not so materially alter their sphere of acti, as is sometimes supposed.

Another real gain from this probation of drugs would be the expulsion from the materia medica of a crowd of articles which only serve

to keep alive the embers of polypharmacy, and to obstruct our advance towards a more rational system of therapeutics. If we accept, as we may safely do, the axiom that a drug which produces no perceptible effects when properly tested on healthy individuals, will prove equally inert in disease, what a host of reputed medicines would be cast into deserved oblivion!

Before concluding, I wish to point out most emphatically that we should not allow ourselves to overlook the continued necessity for bedside observation in our admiration of the progress and prospects of the scientific departments of medicine. Though our theoretical knowledge were ever so perfect, yet clinical experience must always hold an important position to every true physician, and "it is to the experience of the mass of the profession that we look for the final establishment of doctrine and rules of practice." The most rapid and complete advances in science can never do away with the necessity for watchful observation, and "the nice adaption of means to end can only be gained by experience." The past history of medicine should teach us not to be too hasty in condemning or ridiculing a line of practice which united and prolonged experience has approved, even if it be contrary to the received dogmas of the day, or be incapable of immediate explanation. Rational experience must and will keep its place. Let it by all means be reinforced and directed aright, but not trammelled, and clinical researches and empirical decisions must eventually prove the touchstone of therapeutical theory.

Keeping in view, then, that the three chief aims and objects of medicine, especially so far as concerns the non-professional public, ought to be the cure of disease, the prolongation of life, and the alleviation of physical suffering, we can sum up, in Sir W. Jenner's words, our gains in practical medicine, as resulting in "advances in knowledge, in the addition to the science of medicine of new facts, the elimination of supposed facts, the more correct appreciation of the bearing of old facts, and the application of this new knowledge to the advancement of the practical objects of the science."

And, though the discoveries of our own time naturally appear to us of greater importance than those of preceding ages, even the most incredulous will admit that we have reached a stage when ignorance is giving way to knowledge, hypothesis to facts, and that the time is approaching when we shall be able to free ourselves from the quicksands of uncertainty, and rest on the firm basis of knowledge and truth.

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The urine of horses and cattle is utilized in Northern Prussia for the manufacture of benzoic acid. One house at Konigsberg supplies the market from this source. The establishment makes 7,700 pounds of benzoic acid annually.

# ON THE COCA LEAF, AND ITS USES IN DIET AND MEDICINE.*

BY J. H. SCRIVENER, M.D., LIMA.

The two most valuable vegetable productions of Bolivia are the Cascarilla (*i.e.*, the Cinchona, or Peruvian Bark), and the Coca; the former is well known to fame, the latter comes next in importance for its services to mankind.

The coca *(Erythroxylon coca)* is a shrub which grows to about six feet in height. Its leaves are about one inch in length, and of a light-green color; its flowers are white, and produce a red berry. In its cultivation the soil is well prepared previous to the sowing of the seeds, and then divided into different compartments. After the sprout has come out, which takes place in a few weeks, and when they have grown to two or three feet in height, they are transplanted to other grounds, within two or three feet of each other, which are called *cocales*. These plantations are formed in the most shady places, for the purpose of protecting them from the heat of the sun, which is very powerful in the deep valleys of these regions. Indian corn is also sown between them, the broad shady leaf of which serves as an additional protection to them.

The coca plant grows luxuriantly in all the valleys, and arrives at perfection in about two years; the time is known by the height of its branches, and the brittleness of its leaves, which break or fall on touching them. The Indians are careful in gathering the leaves, as they are delicate and easily broken from their stems. As soon as they are gathered they are laid upon the ground for the purpose of being dried by the sun, which, as this process gradually takes place, changes the color of the leaf from a light to a dark green. The leaves, when perfectly dried, are wrapped up in palm-leaves and covered with flannel. Packages are then made of them of fifty pounds each, which are called *cestos:* others of a 100 pounds are called *tambors*.

They are then conveyed on the backs of Llamas to the Custom-house of La Paz, and sold to the miners for the Indians of their establishments. The duties on the coca forms an important revenue to the nation, amounting to $400,000 a year—£80,000.

It is not known when the coca was first discovered, but it must have been at an early period, probably under the Incas. Its production was very great during the Spanish sway, for it then became an article of importance to the Indians. Previous to that period, according to Prescott, it was reserved for the Incas and nobles of the country.

There are many estate-holders in the city of La Paz who have large plantations of coca, from which they derive a large revenue.

* From the Medical Times and Gazette.

they are not exposed, like other plantations, to local causes or atmospheric changes which might injure or destroy them.

According to an article published in *La Tribuna*, August 5, 1863, "the Indians of Peru refer to mystic traditions for the origin of this plant. They say that Manco Capac, the divine son of the Sun, descended in the primitive epoch from the rocks of the Lake Titicaca, and bestowed the light of his father upon the poor inhabitants of the country; that he gave them a knowledge of the gods, taught them the useful arts and agriculture, and presented them with the coca, that divine plant which satisfies the hungry, gives strength to the weak, and makes them forget their misfortunes."

In the splendid and sumptuous city of Cuzco (the capital of the Incas), the coca leaf was used as an article of luxury; the Incas and the nobles masticated it in their palaces and temples, which were richly adorned with gold and silver.

There are different opinions of the properties of the coca, for, according to some writers, it contains a small quantity of some narcotic, which intoxicates those who masticate it; whilst others affirm, as cited by Prescott, that its effects are similar and equally injurious to the mastication of tobacco.

The properties of the coca are variable, according to the quantity employed. It is a stimulant, a tonic, slightly narcotic, and very nourishing. It possesses an agreeable aroma, and a flavor similar to that of tea, and, like that plant, is frequently employed in the form of an infusion in slight disorders of the stomach.

There are certain signs in the physiognomy of a coca chewer which manifest the influence of the plant; they are characterized by a paleness of the lips, a slight yellow tinge about the angles of the mouth, and the teeth are stained with a bright yellow. With its use the countenance, which usually presents an afflicted aspect, becomes more animated; the eyes assume a brilliant appearance; the pulse is strong and frequent, and there is a desire for physical exertion. These are, undoubtedly, signs of the stimulating and tonic effects of this plant.

Abuse of the coca occasions, according to some authors, signs of premature old age, which are marked by an unsteady step, a yellow skin, a want of brilliancy in the eye, and a general indifference or apathy. I have seen hundreds of Indians, during my residence in Bolivia, who have chewed the coca-leaf from youth upwards, many of whom had attained their 80th year, and who showed no sign of having been affected by the plant. I have only seen the signs above mentioned in very advanced age, for the Indians are proverbial for longevity.

There can be no doubt that the coca is both salutary and nutritious, and, we may add, the best gift that the Creator could have bestowed on the unfortunate Indians. It is of inestimable value to

them, for without it they would do nothing with spirit or good-will. They are always supplied with a quantity of its leaves, which nourish and strengthen them; and it is their great resource in their trials and afflictions. They always carry a bag of the leaves hanging from their neck, and a small flask by their side filled with ashes or lime. The manner of employing them is very singular, and is as follows:—The Indian takes a handful of coca-leaves out of the bag, and withdraws the filaments from them. He then puts them into his mouth and chews them into the form of a ball. He then wets a piece of thin stick, which he introduces into the flask, and on withdrawing it, it is covered with the lime or ashes. He then pierces the ball in his mouth with it till it has acquired a strong and pungent taste, which is followed by a copious salivation; part of this salivation is ejected from the mouth, and part of it is swallowed. The ball is retained in the mouth for about an hour, and is then renewed with another handful of leaves.

The proprietors of the mining establishments in Potosi and other districts, are abundantly supplied with coca, which they daily distribute to the Indian workmen. The quantity which they give to each Indian is an ounce and a half, with the exception of holy days, when it is increased to three ounces. Groups of Indians may be seen on those days, during the hours of rest from their labors in the mines, chewing the coca with as much pleasure and delight as a connoisseur in tobacco smokes a rich Havana.

The effects of coca on the Indian are very visible; they are strongly marked in his countenance by a greater brilliancy in his eye, more agility in his step, and he is animated and contented; he appears as if he had partaken of a rich repast. There can exist no doubt, in view of these beneficial effects, of the erroneous opinions of authors who have written on the noxious effects of this plant; and to prove still further their little knowledge of its properties, I shall bring forward the effect it produces upon travellers.

The Indians of Bolivia are very remarkable for the rapidity of their journeys on foot, and are probably without rivals as postilions. There are some who are called *andadores* (swift travellers), who are employed by the Government on critical occasions to convey dispatches to distant parts, for the swiftness of their journeys and their well-known fidelity. They travel from sixty to seventy miles a day—from the rising to the setting of the sun—and for several successive days. Their road generally lies over passes in the mountains only known to them, and they are without any other food than a few coca-leaves, or a small quantity of powdered Indian corn. But, what is more surprising, and will appear almost incredible, is, that they travel these long distances without being weary, or at least, without signs of fatigue.

I heard from good authority that, during the war for the independence of the country, a battalion of infantry, composed princi-

pally of Indians, made forced marches of sixty miles a day, notwithstanding the weight of their knapsacks and their arms, and without any other food than the coca, and occasionally a small quantity of Indian corn. This was found sufficient to sustain their strength, to keep them lively and contented, and ready and disposed to continue their journeys, which invariably terminated without signs of fatigue.

There was at that period a battalion of infantry, under the command of General Valdes, which travelled 108 miles on foot in three day, and without any other food than the coca-leaves.

The Indians, according to Tschudi, looked upon the coca plant as sacred and mysterious. It formed a principal part in their religious ceremonies, and they burnt it upon their altars as a pious offering to their deity. The priests chewed it at their prayers to conciliate the benevolence of their gods, and blessed it to obtain every worldly advantage. The Indians, according to the same author, filled the mouths of the dead with coca leaves for the purpose of securing their salvation; and some have affirmed that this custom still exists among them, and that when an Indian meets with a mummy he kneels down with devotion, and places around it a quantity of coca leaves.

There are few plants that can be compared to the coca for its varied and inestimable qualities. Besides its admirable effects in nourishing the system, it is employed with advantage, in a medical point of view, as an excellent tonic in weakness of the stomach, and other affections of that organ. It is to be hoped that the day is not distant when that plant will become generally known to the medical faculty, and placed beside those in our Pharmacopœias as one of the most important of the kind.

I cannot admit the opinion of the Jesuit Julian, who states that the coca would lose the strength of its properties by exporting it to Europe, and that medical men would not employ it as a tonic. There can be no difficulty, in my opinion, in preserving the properties of the plant, as the leaves might be packed up in cases lined with tin, as the tea is from China, which would prevent it from becoming impaired in the voyage.

It would have been interesting to have known when this plant was discovered, but this was a task we could not accomplish, and will probably remain a mystery. The information we have acquired of it is from the period of the Conquest, when the coca was employed in the manner we have described; and, from the knowledge we possess of its valuable qualities, we firmly believe that when they become known in Europe it will be employed with advantage for complaints of the stomach, and as a solace and powerful auxiliary unequalled in the history of plants to the poor and afflicted when suffering from hunger and grief.

The coca was introduced into Salta, a province in the Argentine Republic, about a century ago, and is frequently employed by

its inhabitants. The peasants in the valleys of San Carlos, Molinos, and Rinconado chew it with the same pleasure and advantage as the Indians of Bolivia. It is not unknown in Buenos Ayres, the capital of that State, where it is gradually coming into use, and can be obtained at several chemists' shops. The natives employ it, in the form of an infusion, in disorders of the stomach.

It is to be regretted that we have no further details of the coca, which is attributed to the conquerors of Peru, who were indifferent to everything save gold and silver, and who destroyed everthing that tended to a knowledge of the country. It is well known that the Incas transmitted to their descendants an account of their laws, arts and sciences—in fact everything relating to the welfare of the country. These accounts were made of cords of different colors, called *quipos*, which, according to Prince San Severo, served them as an alphabet. It would have been an easy task to the Indians, who had acquired a knowledge of the Spanish language, and who served as interpreters to their conquerors, to have deciphered the *quipos;* but the indifference of the latter to all that was scientific had no bounds; they were satisfied with amassing gold, silver, and precious stones, and cared nothing about the history and customs of the country.

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## NOTES ON CHLORAL.*

BY ROB. F. FAIRTHORNE.

Hydrate of chloral having become so popular as a remedy lately, I thought that a description of its physical characteristics and its behavior when brought in contact with other substances might prove interesting.

As found in the shops of Philadelphia it appears in three different conditions. That of German manufacture is in compressed, flattened masses of various sizes, which have (when freshly broken) a shining fracture, the facets of the crystals of which they are composed, glistening, and giving to them considerable resemblance to pieces of spermaceti. Another form it is found in, is in tabular crystals having a rhomboidal construction. The American hydrate, however, appears generally to consist of loose acicular crystals, which, when recently prepared, are almost transparent, but which after a while sometimes becomes opaque; their solubility in water being much reduced after this alteration has occurred. May not this be due to the same cause that produces a change in anhydrous chloral, which is occasionally converted into a hard opaque insoluble substance? Its odor is at the same time altered to some extent, becoming more pungent and irritating to the nostrils. I think that

*From the American Journal of Pharmacy.

probably the hydrate or its vapor becomes partially dehydrated. It may possibly be produced by the action of light, as the vapor of alcohol, if exposed to sunlight in the presence of chloral, explodes. Chloroform is also affected by long exposure to light and air, chlorine and hydrochloric acid being developed.

When a little of this substance is placed on the glass slide of a microscope and melted by the application of heat, upon cooling it will be found that crystals have been formed. These, when magnified, present a very beautiful appearance, and will be observed to have assumed two distinct forms; one portion appearing as rhomboidal plates and the other (by far the greater part) as transparent acicular crystals, arranged in tufts of radiating prisms, the terminations of which are divided into feathery lines.

Anhydrous chloral has nearly the same specific gravity as chloroform, being 1.500, that of chloroform 1.495. It has a strong affinity for water, with which it combines, forming the crystalline substance just described. It unites also with alcohol a compound resulting that resembles the hydrate in appearance.

Chloral is formed by passing dry chlorine through alcohol, until fumes of muriatic acid are no longer given off, and the spirit has assumed a yellow color. This liquid is heated until it boils. It is then mixed with three times its bulk of sulphuric acid and finally redistilled over quick-lime.

Its formation seems to depend upon the affinity that chlorine has for hydrogen, the former gas taking it from alcohol and being disengaged during the process as hydrochloric acid. Alcohol is composed of $C_4H_6O_2$; by abstraction of two equivalents of hydrogen (which takes place at the beginning of the process) it becomes aldehyde $C_4H_4O_2$. As the chlorine continues to pass it takes with it three more equivalents of hydrogen, leaving, however, three of chlorine in their place; the aldehyde, therefore, is decomposed, and $C_4Cl_3HO_2$ remains, which is chloral.

Pure hydrate of chloral, according to Dr. Rieckher, does not take fire when heated in a spoon over a spirit lamp, but evaporates without residue, [the alcoholate when similarly treated inflames]. Nitric acid sp. gr. 1.20, either cold or hot, should not produce any reaction with it. I find that its aqueous solution produces a dense precipitate when mixed with solution of subacetate of lead.

The hydrate is readily dissolved by alcohol, ether, oil of turpentine, benzole, bisulphide of carbon and the fixed oils. The solution in the last named article might prove of value to the physician as a topical application, perhaps available in neuralgic or gouty affections.

When equal parts of camphor (in small pieces) and hydrate of chloral in crystals are shaken together in a vial and allowed to stand, they become fluid, forming a clear solution. This might also be of use as an external remedy.

When hydrate of chloral and sulphuric acid are mixed, a great reduction of temperature takes place.

Both pure chloral and its aqueous solution dissolve morphia freely.

Quinia is soluble, to a considerable extent, in a strong solution of the hydrate, six grains readily dissolving in 1½ fluid-drachms.

Cinchonia, strychnia, veratria, aconitia, atropia, are also soluble in the same menstruum.

From this it appears to be a general solvent for the alkaloids, and perhaps their solutions might be used with advantage for making ointments, or for mixing with oils for liniments, &c.

The solution of quinine just mentioned is somewhat fluorescent, but not quite as much as that of the sulphate.

When chloral and glycerin are mixed a crystalline substance is formed in a few hours.

Chloral is a good solvent for camphor or for crystallized carbolic acid, which it deprives of odor to a great extent and renders it quite soluble in water.

When the latter solution is added to sulphuric acid a pink-colored solid is produced, which is probable a compound of sulpho-carbolic acid and chloral.

When benzoic acid is added to chloral and slightly heated it dissolves, and when cold the mixture solidifies into beautiful radiating crystals.

When hydrate of chloral is added to a strong solution of the bichromate of potassa and heated, after the addition of a few drops of nitric acid, a blue color is gradually developed. If liquid ammonia is afterwards added in large excess it assumes a currant-red color. Chloroform, treated in the same manner, produces a deep orange, retaining this even after the addition of ammonia.

If caustic soda is added to the mixture of chromic acid and chloral a bright green color is produced. With solution of potassa in considerable quantity, a blue color occurs.

When alcohol is mixed with solution of bichromate of potassa and nitric acid and heated, after caustic soda is added in excess, a green color is produced which quickly changes to brown.

I have placed these reactions together so as to compare them with one another, thinking that they might possibly lead to the discovery of a test for chloral.

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## BOTANY—THE REQUISITES FOR A PROFITABLE STUDY.*

BY CHAS. FREDIGKE.

In surmounting the first principles of any science, the learner despairs, a lasting dislike paralyzes the first courageous attempts

*From the Chicago Pharmacist.

because in every-day life we are not called upon to scrutinize matters by close examination, we skip them as soon as we have the faintest idea that they are of no practical advantage. And, above all, as society is at present constituted, it offers so many distracting diversions, that it requires a firm resolution on the part of not a few to avoid being drawn into the general vortex of seekers after pleasure, to the neglect of the marked course of duty or study.

There are no so-called easy methods of learning anything thoroughly. It requires resolution and patience, for there is no other way of reaching the nut except by cracking the shell. If we only master the first principles, botany will be found one of the most attractive sciences. A knowledge of botany is an indispensable auxiliary to many professions, and our calling is one of these. Even if it should do nothing more than engender a habit of close observation, its usefulness would be considerable enough. But its advantages are more positive, of more real value, besides the practical prosecution of it in fields and woods presents inducements for improving body and mind offered by no other science, except geology.

The following will be devoted to some hints for its profitable pursuit, and if some details of an apparently trivial nature occur, it should be remembered that it is just the knowledge of them which insures success, and the pleasure resulting from it.

Botany (derived from Boravy, the Greek word for herb) is a part of natural history, and gives us a knowledge of plants. One of its first aims is their determination. This necessitates a thorough mastery of botanical terminology. When this has been attained, Linne's system must be learned by heart, for its conciseness makes a knowledge of it to the student indispensable, and if he has only a number of plants and their names together, he will be convinced of its usefulness and convenience. Having overcome these first steps, we can at once proceed to their application. It may be here remarked, that what is called the natural system, is not very suitable to commence with, because it requires a certain facility of taking in at a glance the habitus of plants, *i.e.* their morphology and physiognomy, which is only acquired after some practice, and the more simple sexual system forms an admirable introduction to this. But how to proceed in determining a plant out of the immense number? This is the object of special botany, which describes every single species of plants, in a concise manner, by noting their distinguishing features and classifying them accordingly. This shows at once how necessary a scientific description is of all the plants of a country or locality, and the reason why the works of Prof. Asa Gray, of Cambridge, for instance, have been of inestimable value in the study of American botany. But the vast extent of our country leaves it still very desirable that we should possess descriptions of plants confined to a circumscribed locality, a "local floral;" so it

would be of great advantage, for example, if we had a description of the flora of Cook county and environs of Chicago; we would become much more easily acquainted with our surrounding vegetation, and that which is not represented by it would be easily determined by the knowledge thus acquired. In determining, therefore any plant, it is only necessary to apply our knowledge of terms, and the principles of the sexual or natural systems, and by the aid of one of these works on special botany, it will not be difficult to find its name and a minute description of it. If the first is commenced with, the parts of the flower and fruit must be closely investigated to determine the class; the leaves, stems, and roots, and other organs attached to them, furnish distinguishing features to determine the species; if the natural system is used, the main characters of its different natural orders must be studied. The more of these differences memory will retain, the more easy will it be to refer a plant to its proper genus.

But in order not to forget what has been learned of plants, it is necessary to gather and preserve them in a dried condition, to look over the collection now and then, for the purpose of refreshing one's memory. Such a collection is called an herbarium, and is of great value, when the plants have been properly handled during the process of drying, correctly determined and marked. "A good herbarium is better than all pictures: no botanist can do witnout it," says Linne.

The process of drying is simple; all that is required is a little care, and whatever else is needed can almost always be obtained at little expense. Two square, even and smoothly planed pine boards, a good size is 24x36 inches, or if that is not convenient, 20x24, three or four reams of paper not strongly sized (old newspaper is excellent) and some heavy stones, is all that is necessary. If another set of boards is at hand, a larger number can be treated at once.

The plants are laid in according to their natural growth, between two single sheets of paper, these between the boards, and the stones on top of all. The upper board serves to equalize the pressure exerted by the stones. All flowers and some other easily deranged parts of plants must be underlaid by and covered with clean writing paper. This is necessary with blue, rose-colored and yellow flowers, which, being pressed between unsized paper, would, during the first days of drying, turn almost white, the yellow ones generally assuming a greenish appearance. By pressing the plants, their sap will exude; it is, therefore, advisable to interpose from six to twelve sheets of paper between them. This must be removed every morning and evening, and replaced by the same quantity of dry paper, for the first ten or fourteen days. During the third week one daily change is sufficient; afterwards a change every third day will be required till they are perfectly dry, which takes at an average from four to six weeks; in some cases much less, in others more time.

For the purpose of handling so many sheets of paper con-

veniently, and not to lose much time in finding the plants between them, it is advisable to fasten every ten half sheets in a whole one at the center of its width, about an inch from the edge, by means of a strong packing needle and twine, leaving the ends of the latter long enough to form a rather large loop for the purpose of hanging it up to dry.

In changing the paper the upper layer is cautiously removed, care being taken not to disturb the next plant below; the layer thus removed is immediately replaced by a dry one, and it, together with the plant and second wet layer, lifted off from the second plant, turned over so that the second layer comes uppermost; this is replaced again by a dry one, as in the first instance, the whole laid down upon the second plant, which, together with the third wet layer is lifted up from the third plant, turned over, replaced by a dry one as before, and so on through the pile. In this way all the wet paper is exchanged without disturbing the position of the plants.

In laying the plants the best way in general is to do it on the spot where they grow. For this purpose a portfolio with two or three quires of paper is necessary. After its habitus has been studied in situ, and notes taken, it is dug out or cut off and laid in, care being had not to disturb its natural growth and position. If the leaves are so numerous that they would overlap each other, pieces of writing paper must be interposed; no naturally recumbent or crooked parts dare be straightened, ascending or obliquely standing leaves, branches, &c., must not be pressed horizontal, &c. Plants, when being laid in, should not be moist by rain, dew, &c., or their green color will, during drying turn black. Some succulent plants, and such as are of tenacious growth, have to be immersed for a minute in boiling hot water, or subjected several times to the pressure of a hot flat-iron (between layers of paper which must be as repeatedly changed), to kill their growth. In all cases their flowers must be excluded, for they refuse such treatment. It takes generally from two to four months to dry them completely. Again, the size of a great number of plants precludes their being laid in entire; of these, sections of their roots, stems, leaves, &c., are made, and subjected to the same general procedure. Those of a very delicate construction must be left under moderate pressure for a week, before an attempt is made to change the paper, and those parts of plants which produce a sticky juice must be sprinkled with lycopodium before being pressed at all, otherwise it would be impossible to remove them from the paper. The adhering powder can be easily blown off after they are perfectly dry.

For the purpose of exerting pressure, four or five stones, each of 30 to 40 pounds' weight, are enough for one pile. They must, if possible, be of nearly equal weight, and during the first four or five days three, and after ten or fourteen days the rest may be laid on.

The presses used by bookbinders and others, especially constructed for the purpose, have been recommended, but all are objectionable for the reason that too great a pressure is applied too easily, with too little exertion, parts are crushed, sap extravasates, &c. No plants should be laid in without having all their parts investigated, and their name and position in the system correctly determined and marked.

(*To be continued.*)

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## BRIEF REMARKS ON THE BARK OF *RHAMNUS FRANGULA* OR BLACK ALDER TREE.*

BY H. C. BAILDON, EDINBURGH.

Some time since a gentleman from Holland applied to me to prepare for him a decoction of the *Rhamnus Frangula* bark. The bark he brought with him, having previously found that he could not obtain it in this country. He spoke most entusiastically of its good properties as a gentle cathartic, which had proved very beneficial to himself, and which was much used and esteemed by the medical profession in Holland. He kindly offered to procure for me a small quantity of the bark. To my surprise, I shortly afterwards received a bale containing nearly a quarter of a cwt., accompanied by the following letter. He writes, "I hope you will find it giving as much benefit generally as I have derived from it personally. The preparation of my Dutch physician was 3 or 4 drams of bark to a pint of water boiled down to half a pint. Two or three tablespoonfuls occasionally night and morning, as an aperient. Than this, nothing can be more simple or less injurious, and it does not require increase of dose, but the contrary."

I am aware that this drug is not altogether unknown in this country, though I believe rarely or never used. In the 2d volume of the first series of the *Pharmaceutical Journal*, page 721, I find a letter signed George Mennie, Plymouth, speaking very favorably of it as a purgative and alterative, and again in the 9th volume, page 537, there is an analysis by M. Benswanger.

I have repeatedly taken the decoction myself, and find the taste not unpleasant, with a slight prussic acid flavor, of which the analysis shows traces. It operates gently as an aperient, without griping, in doses of 2 or 3 tablespoonfuls. It appears to me to possess properties which should in many cases render it a valuable substitute for senna,—which is often found drastic in its effects, and is nauseous to take,—and to be especially suitable for children.

In Holland it must be very plentiful, as it was charged me only at the rate of about 10*d.* per lb., including cost of carriage.

*From the Pharmaceutical Journal, London.

# Editorial.

## MEETING OF THE COUNCIL.

A meeting of the Council is announced to convene at this city, on Friday, December 8th, for the election of officers, and the transaction of other important business. It would have been desirable for this meeting to have taken place at an earlier date, so that the Council might have organized, and at once proceeded to provide educational facilities for our students during the winter. We believe that the sole motive of economy has deferred the meeting until the present, as the Act appointed a meeting for February, and it seemed somewhat extravagant to hold two meetings in the course of three or four months; especially when the travelling expenses and remuneration of members, to the amount of, perhaps, one hundred dollars, is taken into account. It was not discovered, however, until very lately, that the meeting in February is appointed by the Act for the purpose of ratifying the decision of the Board of Examiners, and granting certificates of competency to those about to commence business. As the principal business of the meeting refers to the labors of the examiners—two of whom reside in this city—it will only be necessary for a few of the city members to attend, in order to secure a quorum of five members, so that the business, which is altogether of a formal nature, can be satisfactorily disposed of. There will, then, be no necessity for the attendance of country members, in February,—without such is their desire—and the meeting on the 8th, will by this arrangement, incur no extra expense. We have no doubt that this period will suit the convenience of country members better than in mid-winter, and hope there will be a good attendance.

In addition to the organization of the Council, there is a large amount of business which claims imperative attention, and we would merely suggest a few of the subjects which it would be well to discuss.

First in order, is the matter of education. If the body to which we belong is to be a college, in fact, as well as in name, it is needful to make some effort at once. In this respect, our sister province

puts us to the blush, for we find with resources of not a tithe of our own, and with a membership not nearly a tenth as large, the Quebec Association has, since the first year of its existence, organized courses of lectures on the various branches of study, and carried them on successfully up to the present time. This too, with no especial legislative advantages, such as we enjoy. Take again the Chicago College of Pharmacy, a much younger institution than ours, and which has had not only sufficient vitality to institute a college and maintain it in active operation, but has survived the discouraging misfortune of losing by the late fire, all it possessed, These instances should be sufficient to spur us to action.

The providing of a suitable place for meeting, which the college can call its own, is very desirable. In this, the museum, for which we already possess the neuclus of a collection ; and the library, of which we are, individually, the forlorn librarian, might be located. A collection of *materia medica* should be amongst the property of the college, if only for the purpose of providing objects for recognition by candidates during examination.

Another matter, to which we have before alluded in this journal, is the formation of branch societies in the larger towns and cities. This plan is pursued with great advantage in Great Britain, and should, by all means, be adopted here. It would have a great effect in rendering the interest general, instead of localizing it in this city.

There are other matters, of minor importance, connected with the internal working of the college, to which we will not now allude as they will suggest themselves in good time at the coming meeting.

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## THE PERCENTAGE SYSTEM.

We are pleased to notice that the letter of "a Toronto Pharmacist," which was published in the October number of this journal, has had the effect of calling the attention of the medical press to this crying evil. The *Pacific Medical and Surgical Journal*, of San Francisco, in commenting on the subject says:

"Can anything be said in defence of the system which prevails among apothecaries, of allowing to physicians a per-centage on prescriptions sent to them? How far the practice maintains elsewhere, we can not say. But we can say that some practitioners in

San Francisco—a small proportion of the whole number, we are glad to believe—take pains to send their prescriptions to certain apothecaries, often inconveniently remote, for the purpose of getting a share of the price; and we do not hesitate to pronounce the practice unjust to patients, if not positively dishonest. The journals sometimes condemn it, but not often. A writer in the October number of the *Canadian Pharmaceutical Journal* reprobates the practice severely, as it is carried on in Toronto. Would it not be well for all pharmaceutical journals and associations to take up the subject, and unite in an effort to eradicate the evil?"

We are aware that there are two sides to every question, but, with our contemporary, have been somewhat at a loss to discover any good reasons which could be adduced in justification of the percentage system. Adherents of the system have, heretofore, had little to say in the way of defence; wisely concluding that discretion is the better part of valour, they have maintained silence despite the fiercest attacks of their opponents. It occasionally happens, however, that one more rash than his fellows attempts a justification, and of this we have an example in a communication which appears in another column. We do not intend to argue the point with our correspondent, as it is more than likely that "a Toronto Pharmacist" will, in our next number, perform this service.

We have so frequently expressed our views on this question that it is unnecessary to pursue the subject further. It may, however, be interesting to give the views of our English friends, as published, some time ago, in the *Pharmaceutical Journal* of London. Speaking of Great Britain, the writer says:

"In this country, as well as in America, it is a violation of medical etiquette and respectability for a physician to participate directly or indirectly in the profit arising out of the dispensing of his prescriptions. It would be a libel to accuse either a medical man of receiving, or a chemist of paying, a share of the spoil as an equivalent for patronage.

A man who professes only to prescribe, and clandestinely takes a profit on the medicine, is deceiving his patients and robbing the druggist. The deception on the patient is two-fold, for he is strictly charged to go to one particular druggist, on the ground that no other is to be depended on; whereas the actual reason is, because the party recommended is the accomplice, and the prescriber is a participator in the profit.

This collusion is a deception on the public. A physician or prescribing surgeon receives his usual fee, or he prescribes gratis, taking credit for benevolence. When he takes his percentage or

bonus, in the first case he is paid twice, in the second case he receives money for that which he has already given away. He has a direct interest in drenching his patients with medicine, and prescribing it in its most expensive form, although he must be aware that they consult him in the full belief that he is disinterested in this respect.

We are convinced that no respectable member of the medical profession is guilty of this degrading practice; but in all classes of society there are shades of character ranging from white to black.

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## PHARMACEUTICAL ASSOCIATION OF THE PROVINCE OF QUEBEC.

We learn that this Association is in a flourishing state, and that steps are being taken for the organization of classes, in the various branches of study, so that students may have an opportunity for qualifying themselves to pass the examination, by which, alone, they can become members of the society. A copy of the regulations which govern the admission of members, and associates, has been sent us. From this we learn that to become an associate of the association, the candidate must first pass an examination ensuring a knowledge of the English, French and Latin languages; the first four rules of Arithmetic, vulgar and decimal fractions. He will also be required to produce evidence of his having a good moral character. This is styled the minor examination. The major examination applies to those seeking full membership. In this the candidate will be required to read written prescriptions, translate them into English, write out at full length all abbreviated words in a neat and distinct hand, and detect unusual doses. To possess a knowledge of the weights and measures in use in the English, American and French Pharmacopœias. To weigh, measure, and compound medicines; finish and properly direct each package. To recognize the preparations of the Pharmacopœia which are not of a definite chemical nature,—such as extracts, tinctures, simple and compound powders, etc.; to describe the composition of such as are compound, and give the proportion of the active ingredients. To recognize specimens of roots, barks, leaves, fruits, juices, etc., used in medicine, and name the officinal preparations into which they enter. To possess a knowledge of the laws of chemical combinations; the nature and pro-

perties of the chemical elements and their compounds; and to recognize the acids, oxides, salts, and other definite chemical bodies of the Pharmacopœia, and to describe the processes by which they are produced, and explain the decompositions that occur in their production and admixture by written equations and diagrams. To recognize the more important medicinal plants, and to possess a knowledge of their elementary structure; and the structure and distinctive character of roots, stems, leaves, and flowers. To name the antidotes to be administered in cases of emergency for the more ordinarily occurring poisons. Every candidate will be required to produce evidence that he possesses a good moral character, and that he has pursued his studies not less than four years in a drug store.

Candidates must give notice to the Registrar of their intention to present themselves, at least ten days before the day of examination. Candidates for the Major are required to attend for the written portion of their examination on the day preceding the day fixed for the oral examination.

The Quebec Association, in thus ensuring the thorough qualification of its members, is creating a power which will soon assert itself, despite all opposition, and which, sooner or later, will result in its recognition by the Government, as the only licensing body of the province.

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## CUNDURANGO.

Our readers are doubtless familiar with the history of this, the latest sensation. We have, so far, refrained from any comments on the alleged virtues of the remedy, and have merely published the account of an analysis made by Dr. Antisell, from which it was concluded that no particular principle, to which extraordinary effects could be attributed, existed in the drug. This statement has been borne out by facts, for we find that in every case in which the remedy has been tried by disinterested parties, that cundurango has failed as a cure for cancer. It will be remembered that Dr. Bliss, the introducer of the drug, gave an account of six cases in which it had been administered successfully; it appears, however, that four of these persons have since died. From this we must conclude that, at least, the effects of cundurango are of an exceedingly transient character. It appears that Dr. Bliss, nothing

daunted by the death of his patients, has entered into a partnership with a person named Keen, who has been despatched to South America for an unlimited supply of the drug—while the doctor is meditating the establishment of a laboratory in New York for the preparation of the remedy in its most potent form. We would suggest a fluid extract, if only for the sake of uniformity with the renowned preparation of Helmbold; but would hope that, unlike the latter gentleman, the hero of cundurango will not be driven to the melancholy extremity of suicide in order to give celebrity to his wares. A partnership with Helmbold would be just the thing —"Helmbold, Humbug, and Cundurango"—a taking title, truly.

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We learn with sorrow of the loss sustained by the Chicago College of Pharmacy, during the late fire. The course of lectures for the winter had just commenced, and everything bid fair for a prosperous season. Unfortunately, however, the building occupied as a college lay in the track of the fire, and, as one of our contemporaries has remarked, the college lost everything it possessed, with the sole exception of its members. The *Pharmacist*—a journal well known to our readers—must also be included in the list of losses. We are, however, glad to see, that with true Western spirit, the *Pharmacist* has gained its feet again, and comes to us a little shorn in its outside appearance, perhaps, but none the less welcome. It is said that the lectures in connection with the college will be resumed again this winter; we trust this will be the case, and have no doubt but the enterprise and energy which have, so far, characterized the pharmacists of the West will suffer but a slight check, by this discouraging occurrence. We do not know whether the Chicago College ever gave a thought to armorial bearings; if not, we certainly think that the ancient pharmaceutical emblem of a phœnix rising from the flames, must be unanimously accorded to it as a special bequest of fate.

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We have to note a good idea which has been adopted by Messrs. Lyman Brothers & Co., at the Toronto Chemical Works. In future, all dangerous preparations, including those enumerated in the first part of Schedule A of the Pharmacy Act, will be labelled with a

bright red label. This color is aptly chosen as suggesting danger, and we should consider it impossible for anyone to neglect so conspicuous a warning that caution must be employed in handling a bottle symbolized in this manner.

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EXAMINATIONS ON PHARMACY IN NEW YORK.—The *Medical and Surgical Reporter* says that "the reports of the Board of Pharmacy show that, out of two-hundred and fifty druggists and one hundred and ninety clerks examined by the commissioners, sixty druggists and eighty-one clerks failed to give sufficient proof of the qualifications necessary, and were rejected. It is the intention of the board to hold meetings only twice a week for the next six weeks, in order to give the clerks who are not far enough advanced an opportunity to attend either the lectures at the College of Pharmacy or the lectures by Dr. Doremus, at Bellevue, on chemistry and poisons. The majority of the leading druggists in the city have been examined, and the result shows that a large number of both druggists and clerks could not read the Latin prescriptions."

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## REGISTRATION OF MEMBERS.

The Registrar has sent in the following list of names omitted in last number; the list also includes those registered since the 1st of October:—

MEMBERS.

Gladish, Wm., Yorkville
McDonnell, G. A., Perth
Newton, Dr. J., Mill Point
Riggins, C. E., Beamsville
Smith, Wm. B., Drayton
Brodie, W. F., Ancaster
Fitzgerald, Jos. W., Fenelon Falls
Garland, Louis, Hamilton

ASSOCIATES.

Climie, Jas. D., Mill Point
Brown, Ernest, Sarnia
Curts, J. W., Hamilton

The following associates have registered:—

Johnston, W. S., Peterboro'
Corbett, W. J., Rosemont

## OBITUARY.

The English journals bring the melancholy intelligence of the death of two gentlemen who were each eminent in the particular branches of science to which they were devoted.

Sir Roderick Impey Murchison, Bart., K.C.B., L.L.D., F.R.S., etc., the celebrated geologist and geographer, died on Sunday, Oct. 22nd, at the advanced age of nearly eighty years. He was born in Rossshire, in Scotland, and, after completing his studies at the University of Edinburgh, entered the army, and served under Wellington in Spain and Portugal. As Captain of the 6th Dragoons he fought under Sir John Moore, and shared in the dangers of the retreat at Corunna. At the close of the war, he turned his attention to the study of physical science, and soon became known through his contributions to the geology of Great Britain. For three years he was engaged on a geological survey of Russia, which he completed with the highest honors, having conferred upon him the Grand Cross of the Order of Stanislaus, by the Emperor Nicholas. In 1851, Mr. Murchison published his well known work, "Siluria," in which he pointed out the similarity of the mountain ranges of Australia to the Ural Mountains, and from this inferred the presence of gold in that continent—a prediction which was very shortly after realized. He held several important offices in the Royal Geographical and Geological Societies, and his connection with the travels of Dr. Livingstone are fresh in the minds of all. Some two months before his death, Sir Roderick was seized with an affection of the throat, which resulted in an attack of bronchitis, under which he died.

Charles Babbage, F.R.S., was born in the year 1790. At an early age he entered Trinity College, Cambridge, and in 1824 took the degree of B.A. In 1828 he was appointed to the Chair of Mathematics in the same University—a position which he held for eleven years. Mr. Babbage is well known as an able mathematician and mechanician. His researches in regard to the construction of a calculating machine have gained for him a lasting celebrity. He was also the author of several useful works on his favorite science. Like the subject of the former notice, Mr. Babbage lived to an advanced age, being at the time of his death in his eightieth year. He died at London, within a few days of the time of the demise of Sir Roderick Murchison.

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A baronetcy has been conferred on Dr. Christison, the well-known physician of Edinburgh.

# Correspondence.

## THE PERCENTAGE SYSTEM.

To the Editor of the Pharmaceutical Journal.

DEAR SIR,—In the November issue of the JOURNAL, "A Toronto Pharmacist" brings prominently forward some of the abuses of the percentage system. I should like, for the purpose of discussion, to say a few words in its favor. In the first place, I cannot see that it is wrong for a druggist, in the hope of acquiring business, to surrender a portion of his profits to those who send it to him. The whole trade do this in a variety of ways besides the giving of percentages. Plate glass windows, expensive show cases, gilt labels, and all the fittings of a first-class store, are just as much a surrendering of profits for the purpose of gaining trade. The selling of a large quantity at a very much lower rate than a small quantity is a transaction of the same nature. It is a surrender of profit for the sake of gaining trade. But, says "Toronto Pharmacist," the percentage comes out of the pockets of customers. This might with equal justice be urged against the morality of expensive fittings: and, if it were true, those who have the best appointed stores would be the most unfair dealers. I know that in some cases the accusation has no force, and I make no doubt there are hundreds of druggists who use the percentage system without injustice to any one. Then comes the question: Is it politic to allow a percentage? In answer to this, I would say that I think it very often is the best policy that can be pursued. A druggist doing business in a certain locality often finds that medical men all around him are in the habit of keeping their own drugs and making up their own prescriptions. It is of course his aim, if he be a good business man, so to arrange matters that all these shall draw their supplies from him Often they are poor, and even if in good circumstances, from their defective business training, they are very slow paymasters. If, now, the druggist sells to them, he must just sell at a very slight advance on cost, and then either offend them by refusing to credit, or else wait a long time for his returns, and in some cases lose them entirely. The percentage system steps in here as a very efficient remedy. The druggist makes up the prescription (a great gain, by-the-by, to both physician and patient), surrenders a portion of his profit to the doctor, but not more than he would if he had sold him goods at jobbing rates, takes payment from the patient, and all parties are benefitted. The physician is saved

the trouble of putting up his own prescription, and makes nearly as much out of it as if he had done so. The druggist has payment in his hand, and has made quite as much as if he had sold the raw material to the doctor; and the patient pays no more for his medicine than the doctor would have charged him, whilst, in all probability, he gets it much better compounded.

Now for the abuses, I do not think it is fair play to condemn anything because it has been abused. The use of calomel has been, in time past, fearfully abused, yet I do not think on that account we ought to banish it from our stores. Opium is abused, to the injury of thousands, yet I do not think we could do without it. Of course, if the abuse is inseparable from the custom, then the custom must be condemned, but not otherwise. The percentage system is liable to abuse—where the druggist raises his prices for the sake of paying the percentage. I do not think, however, there is much danger of that. Competition is so keen now that the tendency of prices is rather to go down than to rise. Most of us would not think the public very much wronged if they paid a little higher for their drugs than they now do. It is liable to abuse where the physician increases the size of his mixture for the sake of getting a larger percentage. But the absence of the system is no remedy for this abuse. The man who will order his patient more medicine than he needs from the drug store will also send him more than he needs from the surgery, or pay him a needless visit. That depends upon the man, not upon the system. It is liable to abuse where the physician makes unfair remarks upon the ability or character of a druggist who does not allow him a percentage. To this it may be answered that most medical men have their favorite druggists, even when there is no percentage in the question, and that it depends upon the men what means they take to give effect to their recommendations. In some cases this favoritism is justifiable, from the peculiar care used by the favorite in the selection of drugs and the compounding of prescriptions; in others it is a mere matter of friendship or self-interest. The use by physicians of empirical formulæ is sometimes a matter of convenience only. Where used for the purpose of compelling the patient to take it to a particular store, it must be classed as an abuse, and may be answered in a similar manner to the last abuse mentioned.

In conclusion, Mr. Editor, I have tried to prove, first, that it is not absolutely wrong for a druggist to allow a percentage. Second; that it is often good policy to do so, and third, that any abuses to which the system is liable, are not indissoluble from it, but depend upon the character of the men who work it. If to the last proposition it be answered—it is not good to leave too much to the character of the men, I maintain that the business of a druggist is one in which you must trust almost everything to the character of the man, and that if you cannot trust him to work his percentage system

honestly, you cannot be sure he will not add water to his sweet spirits of nitre; alcohol to oil origanum and make his laudanum with half the requisite amount of opium. Hoping, dear sir, to see the matter temperately discussed still further.

I remain, yours truly,

"SOOTHING SYRUP."

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To the Editor of the Pharmaceutical Journal.

Montreal, Oct. 31, 1871.

SIR,—As representing the only organ of the Pharmaceutists of the Dominion, I take the liberty of addressing you on the doctors' percentage question, trusting you will open your columns to a fair and temperate discussion of the subject.

Here, in Montreal, it has become a serious question, in consequence of certain physicians not only recommending their patients to the establishment with which they are in collusion, but insisting upon their going.

Of course it is unnecessary to go into details of the system—they are well known to us all—but I should really like to know how the rising generation are to gain experience in the art of dispensing, if the practice of this art is to be confined to a few pharmacies. That it is confined to a few, is easily demonstrated by the fact, that in every city there are some few medical men who write the great bulk of prescriptions. These physicians having been in practice some years, will, under the present system, be in the hands of one or two of the oldest established drug houses, consequently the young pharmaceutist, beginning on his own account, is entirely debarred from dispensing the prescriptions of leading physicians; and not only is he unfairly deprived of his share of dispensing, but it is impossible for him to hold his customers.

By care and attention to the wants of his patrons, the new beginner gradually gathers around him the nucleus of a thriving business, and a few wealthy families open accounts at his pharmacy; but no sooner is the doctor (who in most cases is in the pay of a rival druggist) called in, than he influences his patient away, and in Montreal at least, insists upon his going. Confidence from that moment is lost in the young pharmaceutist, and ten to one but the patient and the rest of the family leave him altogether.

I ask your readers is this fair competition? If it is, it is right and honorable to purchase a doctor's influence with money, and if it is honest for a doctor to give to the patient who trusts him implicitly, advice *which is not disinterested*, then all I can say is, what is the use of exerting ourselves to give a superior pharmaceutical education to the rising generation?

Yours truly,

(ESTABLISHED 1859.)

## BUSINESS MEMORANDA.

Mr. T. Copeland has opened a new business at Hamilton.

Mr. G. W. Morgan, Jr., having been burnt out by the late fire in Bradford, has commenced business at St. Thomas.

Mr. I. T. Lewis, late manager of the wholesale establishment of Messrs. Kerry, Crathern & Co., has commenced business on his own account, at the corner of Carlton and Yonge streets.

Dr. Twedale, of Tilsonburg, has suddenly removed to the United States, leaving numerous creditors to settle his affairs.

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## MARKET REPORT.

The changes noted in our quotations are not very numerous, but some of them affect articles of importance. The general tendency is towards an advance. As anticipated last month, the prices of Liq. Ammon. and Ammon. Carb. have risen; as also, Tartaric Acid, which is now quoted at 45c to 50c. Iodine and the Iodides are still advancing—Resublimed commands $10.50, and Iodide of Potassium $10. Mercury is a trifle higher; Sulphate of Quinine is very firm at advanced rates, and it is said that all the manufacturers can produce, until the close of the year, has been already sold. Sulphate of Morphia is easier, being quoted at $3.85 to $4.20.

Cinchona Rubr. is much higher; Jamaica Arrowroot and Alcohol have advanced slightly. Oil Lemon ord. is quoted at an advance of 40c per lb.

Naval stores are very high and seem likely to remain so. Pitch, Rosin, Spirits Turpentine and Tar are all higher than last month.

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TUNGSTIC GLUE.—Tungstic glue bids fair to be an acceptable substitute for hard Indian rubber, now so high in price. It is prepared by mixing a thick solution of glue with tungstate of soda, and hydro-chloric acid, by means of which a compound of tungstic acid and glue is precipitated, which at a temperature of 86 to 140 Fahrenheit, is sufficiently elastic to admit of being drawn out into very thin sheets. On cooling, this mass becomes solid and brittle, and on being heated is again soft and plastic. This new compound, it is said, can be used for all the purposes to which hard rubber is adapted, and may prove to have valuable surgical applications.—*Medical and Surgical Reporter.*

| DRUGS, MEDICINES, &c. | $ c. | $ c. |
|---|---|---|
| Acid, Acetic, fort | 0 12 @ | 0 14 |
| " Benzoic, pure | 0 25 | 0 35 |
| " Citric | 0 90 | 0 90 |
| " Muriatic | 0 04 | 0 06 |
| " Nitric | 0 11½ | 0 15 |
| " Oxalic | 0 26 | 0 30 |
| " Sulphuric | 0 03½ | 0 07 |
| " Tartaric, pulv | 0 45 | 0 50 |
| Ammon, carb. casks | 0 20 | 0 22 |
| " " jars | 0 19 | 0 20 |
| " Liquor, 880 | 0 1 | 0 25 |
| " Muriate | 0 12½ | 0 15 |
| " Nitrate | 0 45 | 0 60 |
| Æther, Acetic | 0 45 | 0 50 |
| " Nitrous | 0 27 | 0 30 |
| " Sulphuric | 0 45 | 0 50 |
| Antim. Crude, pulv | 0 13 | 0 17 |
| " Tart " | 0 50 | 0 55 |
| Alcohol, 95 per ct.... Cash | 1 64 | 1 72 |
| Arrowroot, Jamaica | 0 18 | 0 22 |
| " Bermuda | 0 45 | 0 65 |
| Alum | 0 02½ | 0 03½ |
| Balsam, Canada | 0 24 | 0 35 |
| " Copaiba | 0 68 | 0 75 |
| " Peru | 4 00 | 4 20 |
| " Tolu | 0 90 | 1 00 |
| Bark, Bayberry, pulv | 0 18 | 0 20 |
| " Canella | 0 17 | 0 20 |
| " Peruvian, yel. pulv | 0 45 | 0 50 |
| " " red " | 2 10 | 2 20 |
| " Slippery Elm, g. b | 0 15 | 0 20 |
| " " flour, packets | 0 28 | 0 32 |
| " Sassafras | 0 12 | 0 15 |
| Berries, Cubebs, ground | 0 20 | 0 25 |
| " Juniper | 0 06 | 0 10 |
| Beans, Tonquin | 0 62 | 1 10 |
| " Vanilla | 16 00 | 17 00 |
| Bismuth, Alb | 4 20 | 5 00 |
| " Carb. | 4 20 | 5 00 |
| Camphor, Crude | 0 38 | 0 40 |
| " Refined | 0 50 | 0 55 |
| Cantharides | 2 20 | 2 30 |
| " Powdered | 2 30 | 2 40 |
| Charcoal, Animal | 0 04 | 0 06 |
| " Wood, powdered | 0 10 | 0 15 |
| Chiretta | 0 25 | 0 30 |
| Chloroform | 1 00 | 1 50 |
| Cochineal, S. G. | 0 80 | 0 90 |
| " Black | 1 00 | 1 20 |
| Colocynth, pulv. | 0 50 | 0 60 |
| Collodion | 0 67 | 0 70 |
| Elaterium oz | 4 50 | 5 00 |
| Ergot | 0 65 | 0 75 |
| Extract Belladonna | 2 20 | 2 50 |
| " Colocynth, Co | 1 25 | 1 75 |
| " Gentian | 0 50 | 0 60 |
| " Hemlock, Ang | 1 12 | 1 25 |
| " Henbane, " | 1 70 | 2 00 |
| " Jalap | 5 00 | 5 50 |
| " Mandrake | 1 75 | 2 00 |
| " Nux Vomic | 0 60 | 0 70 |
| " Opium | Variable. | |
| " Rhubarb | 7 50 | — |
| " Sarsap. Hon. Co | 1 00 | 1 20 |
| " " Jam. Co | 3 25 | 3 70 |
| " Taraxicum, Ang | 0 70 | 0 80 |
| Flowers, Arnica | 0 25 | 0 35 |
| " Chamomile | 0 30 | 0 40 |
| Gum, Aloes, Barb. extra | 0 70 | 0 80 |
| " " " good | 0 42 | 0 50 |
| " " Cape | 0 12 | 0 20 |
| " " " powdered | 0 20 | 0 30 |
| " " Socot | 0 76 | 0 80 |
| " " " pulv | 0 90 | 1 00 |
| " Arabic, White | 0 60 | 0 65 |
| " " " powdered | 0 50 | 0 55 |
| " " sorts | 0 28 | 0 30 |
| " " " powdered | 0 42 | 0 50 |
| " " com. Gedda | 0 13 | 0 16 |
| " Asafœtida | 0 31 | 0 35 |
| " British or Dextrine | 0 13 | 0 15 |
| " Benzoin | 0 48 | 0 55 |
| " Catechu | 0 12 | 0 15 |
| " " powdered | 0 25 | 0 30 |
| " Euphorb, pulv | 0 32 | 0 40 |
| " Gamboge | 1 05 | 1 20 |
| " Guaiacum | 0 38 | 0 87 |
| " Myrrh | 0 42 | 0 60 |

| DRUGS, MEDICINES, &c.—*Contd.* | $ c. | $ c. |
|---|---|---|
| " Sang Dracon | 0 60 | 0 70 |
| " Scammony, powdered | 6 50 | 6 75 |
| " " Virg. " | 14 50 | — |
| " Shellac, Orange | 0 43 | 0 45 |
| Gum, Shellac, liver | 0 38 | 0 40 |
| " Storax | 0 65 | 0 75 |
| " Tragacanth, flake | 1 10 | 1 40 |
| " " common | 0 35 | 0 40 |
| Galls | 0 27 | 0 32 |
| Gelatine, Cox's 6d | 1 10 | 1 20 |
| Glycerine, common | 0 25 | 0 30 |
| " Vienna | 0 30 | 0 40 |
| " Prices | 0 60 | c 75 |
| " Honey, Canada, best | 0 15 | 0 17 |
| " Lower Canada | 0 14 | 0 16 |
| Iron, Carb. Precip | 0 20 | 0 25 |
| " " Sacchar | 0 40 | 0 55 |
| " Citrate Ammon | 1 10 | 1 20 |
| " " & Quinine, oz | 0 50 | 0 60 |
| " " & Strychine " | 0 17 | 0 25 |
| " Sulphate, pure | 0 08 | 0 10 |
| Iodine, good | 10 00 | — |
| " Resublimed | 10 50 | — |
| Jalapin | 1 40 | 1 60 |
| Kreosote | 1 60 | 1 70 |
| Leaves, Buch | 0 25 | 0 30 |
| " Foxglove | 0 25 | 0 30 |
| " Henbane | 0 35 | 0 40 |
| " Senna, Alex | 0 30 | 0 60 |
| " " E. I. | 0 12½ | 0 20 |
| " " Tinnevilly | 0 20 | 0 30 |
| " Uva Ursi | 0 15 | 0 15 |
| Lime, Carbolate brl | 5 50 | — |
| " Chloride | 0 03 | 0 06 |
| " Sulphate | 0 08 | 0 12½ |
| Lead, Acetate | 0 1 | 0 15 |
| Leptandrin oz | 0 60 | — |
| Liq. Bismuth | 0 50 | 0 75 |
| Lye, Concentrated | 1 50 | 2 00 |
| Liquorice, Solazzi | 0 50 | 0 55 |
| " Cassano | 0 23 | 0 40 |
| " Other brands | 0 14 | 0 25 |
| Liquorice, Refined | 0 35 | 0 45 |
| Magnesia, Carb. 1 oz. | 0 20 | 0 25 |
| " " 4 oz. | 0 17 | 0 20 |
| " Calcined | 0 65 | 0 75 |
| " Citrate gran. | 0 40 | 0 50 |
| Mercury | 1 10 | 1 15 |
| " Bichlor | 1 00 | — |
| " Chloride | 1 30 | — |
| " C. Chalk | 0 60 | — |
| " Nit. Oxyd | 1 30 | — |
| Morphia Acet | 3 90 | 4 00 |
| " Mur. | 3 90 | 4 00 |
| " Sulph | 3 85 | 4 20 |
| Musk, pure grain oz | 21 00 | — |
| " Canton | 0 90 | 1 20 |
| Oil, Amonds, sweet | 0 50 | 0 52 |
| " " bitter | 14 00 | 15 00 |
| " Aniseed | 3 80 | 4 00 |
| " Bergamot, super | 5 00 | 5 25 |
| " Carraway | 4 00 | 4 20 |
| " Cassia | 2 00 | 2 20 |
| " Castor, E. I | 0 13 | 0 14 |
| " Crystal | 0 22 | 0 25 |
| " Italian | 0 26 | 0 28 |
| " Citronella | 1 10 | 1 50 |
| " Cloves, Ang | 1 00 | 1 00 |
| " Cod Liver | 1 90 | 1 50 |
| " Croton | 2 00 | 2 10 |
| " Juniper Wood | 0 80 | 1 00 |
| " " Berries | 6 00 | 7 00 |
| " Lavand, Ang | 16 00 | 17 60 |
| " " Exotic | 1 40 | 1 60 |
| " Lemon, super | 5 00 | 5 20 |
| " " ord | 2 20 | 3 40 |
| " Orange | 3 20 | 3 50 |
| " Origanum | 0 65 | 0 75 |
| " Peppermint Ang | 13 00 | 14 40 |
| " " Amer | 3 00 | 3 25 |
| " Rose, Virgin | 7 75 | 8 00 |
| " " good | 5 50 | 6 00 |
| " Sassafras | 1 00 | 1 20 |
| " Wintergreen | 6 50 | 7 00 |
| " Wormwood, pure | 5 80 | 6 50 |
| Ointment, blue | 0 76 | 0 80 |
| Opium, Turkey | 6 00 | 6 25 |
| " " pulv | 8 00 | 10 00 |

| DRUGS, MEDICINES, &c.—*Cont'd* | $ c. | $ c |
|---|---|---|
| Orange Peel, opt. | 0 30 | 0 36 |
| " good | 0 12½ | 0 20 |
| Pill, Blue, Mass | 0 80 | 0 85 |
| Potash, Bi.chrom | 0 25 | 0 27 |
| " Bi-tart | 0 27 | 0 28 |
| " Carbonate | 0 14 | 0 20 |
| " Chlorate | 0 55 | 0 55 |
| " Nitrate | 10 50 | 11 00 |
| Potassium, Bromide | 1 15 | 1 50 |
| " Cyanide | 0 75 | 0 80 |
| " Iodide | 10 00 | 0 00 |
| " Sulphuret | 0 25 | 0 35 |
| Pepsin, Boudault's oz | 1 50 | — |
| " Houghton's doz. | 8 00 | 9 00 |
| " Morson's oz. | 0 85 | 1 10 |
| Phosphorus | 0 75 | 0 85 |
| Podophyllin | 0 50 | 0 60 |
| Quinine, Pelletier's | — | 2 25 |
| " Howard's | 2 35 | — |
| " " 100 oz. case. | 2 30 | — |
| " " 25 oz. tin.. | 2 30 | — |
| Root, Colombo | 0 13 | 0 20 |
| " Curcuma, grd | 0 12½ | 0 17 |
| " Dandelion | 0 25 | 0 35 |
| " Elecampane | 0 14 | 0 17 |
| " Gentian | 0 10 | 0 12½ |
| " " pulv | 0 15 | 0 20 |
| " Hellebore, pulv | 0 17 | 0 20 |
| " Ipecac, " | 2 20 | 2 30 |
| " Jalap, Vera Cruz | 1 35 | 1 60 |
| " " Tampico | 0 90 | 1 00 |
| " Liquorice, select | 0 11 | 0 13 |
| " " powdered | 0 15 | 0 20 |
| " Mandrake " | 0 20 | 0 25 |
| " Orris, " | 0 20 | 0 25 |
| " Rhubarb, Turkey | 3 50 | — |
| " " E. I | 1 10 | 2 00 |
| " " " pulv | 1 40 | 2 50 |
| " " " 2nd | 1 30 | 1 50 |
| " " French | 0 75 | — |
| " Sarsap., Hond | 0 40 | 0 45 |
| " " Jam | 0 88 | 0 90 |
| " Squills | 0 10 | 0 15½ |
| " Senega | 1 70 | 1 80 |
| " Spigelia | 0 48 | 0 50 |
| Sal., Epsom | 2 25 | 3 00 |
| " Rochelle | 0 26 | 0 35 |
| " Soda | 0 01¾ | 0 03 |
| Seed, Anise | 0 13 | 0 16 |
| " Canary | 0 05 | 0 06 |
| Cardamon | 3 50 | 3 75 |
| " Fenugreek, g'd | 0 08 | 0 10 |
| " Hemp | 0 06½ | — |
| " Mustard, white | 0 14 | 0 16 |
| Saffron, American | 2 00 | 2 50 |
| " Spanish | 17 00 | 18 00 |
| Santonine | 9 50 | 10 00 |
| Sago | 0 07½ | 0 09 |
| Silver, Nitrate Cash | 14 85 | 16 50 |
| Soap, Castile, mottled | 0 10 | 0 14 |
| Soda Ash | 0 03 | 0 04 |
| " Bicarb. Newcastle | 4 50 | 4 50 |
| " " Howard's | 0 14 | 0 16 |
| " Caustic | 0 04 | 0 05 |
| Spirits Ammon., arom | 0 25 | 0 35 |
| Strychnine, Crystals | 2 20 | 2 50 |
| Sulphur. Precip | 0 10 | 0 12½ |
| " Sublimed | 0 03½ | 0 05 |
| " Roll | 0 03 | 0 04½ |
| Vinegar, Wine, pure | 0 55 | 0 60 |
| Verdigris | 0 35 | 0 40 |
| Wax, White, pure | 0 75 | 0 80 |
| Zinc. Chloride oz | 0 10 | 0 15 |
| " Sulphate, pure | 0 10 | 0 15 |
| " " common | 0 06 | 0 10 |
| DYESTUFFS. | | |
| Annatto | 0 35 @ | 0 60 |
| Analine, Magenta, cryst | 3 25 | 4 00 |
| " " liquid | 2 00 | — |
| Argols, ground | 0 15 | 0 25 |
| Blue Vitrol, pure | 0 08 | 0 10 |
| Camwood | 0 06 | 0 09 |
| Copperas, Green | 0 01½ | 0 02½ |
| Cudbear | 0 16 | 0 25 |
| Fustic, Cuban | 0 02 | 0 04 |
| Indigo, Bengal | 2 40 | 2 50 |
| " Madras | 0 95 | 1 10 |
| Extract | 0 23 | 0 35 |

| DYESTUFFS—*Continued.* | | |
|---|---|---|
| Japonica | 0 05½ | 0 06½ |
| Lacdye, powdered | 0 33 | 0 38 |
| Logwood | 0 02 | 0 03 |
| Logwood, Camp | 0 02 | 0 3½ |
| " Extract | 0 10 | 0 14 |
| " " 1 lb. bxs | 0 14 | — |
| " " ½ lb. " | 0 15 | — |
| Madder, best Dutch | 0 16 | 0 17 |
| " 2nd quality | 0 15 | 0 16 |
| Quercitron | 0 03 | 0 05 |
| Sumac | 0 06 | 0 08 |
| Tin, Muriate | 0 10½ | 0 12½ |
| Redwood | 0 05 | 0 06 |
| SPICES. | | |
| Allspice | 0 8½@ | 0 10 |
| Cassia | 0 38 | 0 40 |
| Cloves | 0 12½ | 0 15 |
| Cayenne | 0 18 | 0 25 |
| Ginger, E. I | 0 12 | 0 14 |
| " Jam | 0 20 | 0 30 |
| Mace | 1 45 | 1 50 |
| Mustard, com | 0 20 | 0 25 |
| Nutmegs | 1 05 | 1 10 |
| Pepper, Black | 0 19 | 0 20 |
| " White | 0 26 | 0 28 |
| PAINTS, DRY. | | |
| Black, Lamp, com | 0 07 @ | 0 08 |
| " " refined | 0 25 | 0 30 |
| Blue, Celestial | 0 08 | 0 12 |
| " Prussian | 0 65 | 0 75 |
| Brown, Vandyke | 0 10 | 0 12½ |
| Chalk, White | 0 01 | 0 01½ |
| Green, Brunswick | 0 07 | 0 10 |
| " Chrome | 0 16 | 0 25 |
| " Paris | 0 25 | 0 35 |
| " Magnesia | 0 20 | 0 25 |
| Litharge | 0 06½ | 0 09 |
| Pink, Rose | 0 12½ | 0 15 |
| Red Lead | 0 06½ | 0 08 |
| " Venetian | 0 02½ | 0 03½ |
| Sienna, B. & G | 0 10 | 0 15 |
| Umber | 0 07 | 0 10 |
| Vermillion, English | 1 15 | 1 25 |
| " American | 0 25 | 0 35 |
| Whiting | 0 85 | 0 90 |
| White Lead, dry, gen | 0 08 | 0 09 |
| " " " No. 1 | 0 07 | 0 08 |
| " " " No. 2 | 0 05 | 0 07 |
| Yellow Chrome | 0 12½ | 0 35 |
| " Ochre | 0 02½ | 0 03½ |
| Zinc White, Star | 0 10 | 0 12 |
| COLORS, IN OIL. | | |
| Blue Paint | 0 12 @ | 0 15 |
| Fire Proof Paint | 0 06 | 0 08 |
| Green, Paris | 0 30 | 0 37½ |
| Red, Venetian | 0 07 | 0 10 |
| Patent Dryers, 1 lb tins | 0 11 | 0 12 |
| Putty | 0 03¾ | 0 04½ |
| Yellow Ochre | 0 08 | 0 12 |
| White Lead, gen. 25 lb. tins | 2 30 | — |
| " " No. 1 | 2 10 | — |
| " " No. 2 | 1 90 | — |
| " " No. 3 | 1 65 | — |
| " " com | 1 30 | — |
| White Zinc, Snow | 2 75 | 3 25 |
| NAVAL STORES. | | |
| Black Pitch | 5 50 @ | 5 60 |
| Rosin, Strained | 5 00 | 5 25 |
| " Clear, pale | 9 00 | 10 00 |
| Spirits Turpentine | 0 81 | 0 84 |
| Tar Wood | 5 00 | 5 25 |
| OILS. | | |
| Cod | 0 58 @ | 0 60 |
| Lard, extra | 1 00 | — |
| " No. 1 | 0 95 | 1 00 |
| " No. 2 | 0 85 | 0 90 |
| Linseed, Raw | 0 75 | 0 80 |
| " Boiled | 0 80 | 0 85 |
| Olive, Common | 1 15 | 1 35 |
| " Salad | 1 80 | 2 30 |
| " " Pints, cases | 4 20 | 4 40 |
| " " Quarts | 3 60 | 3 00 |
| Seal Oil, Pale | 0 68 | 0 75 |
| " " Straw | 0 60 | 0 65 |
| Sesame Salad | 1 30 | 1 35 |
| Sperm, genuine | 1 90 | 2 00 |
| Whale, refined | 0 75 | 0 80 |

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