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OFFICE OF PUBLICATION 171 ST. JAMES STREET, MONTREAL, CANADA.

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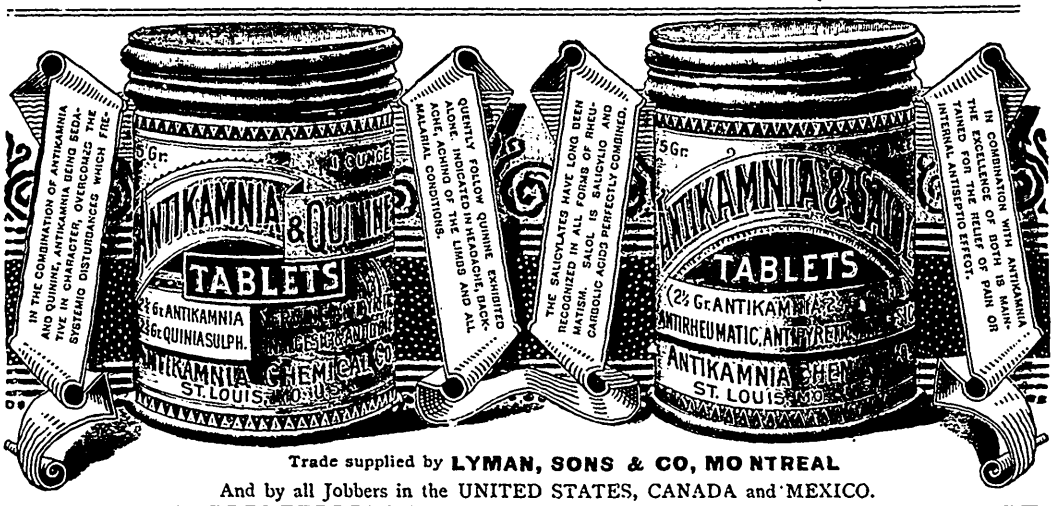

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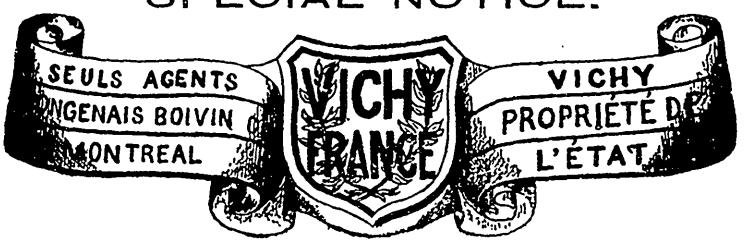

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VOL. V—NO. 5. AUGUST, 1894. $1.00 per annum.

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

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EDITORIAL NOTES.

THE British Pharmaceutical conference held its annual meeting at Oxford this month, and some interesting papers were read. We publish some in this month's issue, and hope to be able to give a short *resume* of each paper in our next. Mr. N. H. Martin, of Newcastle, was re-elected president.

THE British Association for the Advancement of Science also held its annual meeting about the same time. The most interesting feature was the announcement by Lord Rayleigh of the discovery of a new element in the atmosphere, distinguished by negative properties. As the newspaper reports are meagre, correct news of the discovery will be awaited with interest.

PROF. SAUNDERS, of the Dominion Experimental Farm, has gone to Baltimore to attend the meeting of the Society for the Promotion of Scientific Farming of which he is president.

DR. SAUNDERS, son of Prof. Saunders, has obtained his degree as Ph. D. at Johns Hopkins University, and has received the appointment of professor of chemistry at the Wisconsin University.

THE American Pharmaceutical Association meets at Asheville, Sept. 3. We hope a good Canadian delegation will attend, as a strong effort will be made to secure the next convention for Montreal. Two of our local pharmacists will contribute papers on subjects of interest to the profession.

Dispensing by Physicians.

IN THE June issue of the "Canada Medical Record," appeared an article on dispensing by physicians, which is marked by a total disregard of the courtesy which should exist between physicians and pharmacists, and of the honesty which should exist between all men. The publication of such articles is the cause of a great deal of the friction which exists between the two professions and is always avoided by journals which really have the interests of the medical profession at heart.

Pharmacists in general are charged with counter-prescribing substitution, etc., etc., which may be true in some cases, but not in the majority, as most pharmacists fully respect the rights of the physicians and at the same time expect that their rights will also be respected.

But our principal reason for drawing attention to this article, which should never have appeared in a respectable medical journal, and which we doubt very much was ever examined by the editors, is the garbled report of a case recently tried in our courts in which a physician of this city brought action against a prominent druggist for defamation of character. The circumstances of the case as related in the "C. M. Record," are entirely at variance with the sworn testimony given at the trial, which

was decided in favor of the pharmacist, and here we might draw attention to the fact that in rendering judgment in the case Judge Taschereau stated that the druggist would have been wanting in his duty to the public if he had acted in any other manner than as he did. All the other statements published in the article in question were shown to be false on the trial. An action for $5,000 was taken by the physician, "with the unexpected result that he lost the suit and had to pay the costs" as the Record says. The result was the only one possible from the evidence, and we believe that a judge having heard both sides is more competant to decide the question than one who has heard only one side of it, and as for paying the costs, that portion of the story is as truthful as the rest, because the costs had not been paid by the physician up to a few days ago.

The article is on a par with the majority of such things devoted to the defamation of the druggist. It would be better for some physicians and editors to learn the fact that pharmacists have the right to live as well as they, that the majority of pharmacists are as well trained in their profession and as learned as the physician in his, that if they would act as professional men should, that there would not be any trouble with the druggists, if they would remember their duty is diagnosis and prescribing, the druggist's dispensing, and be willing to admit that the latter does know a little about chemistry and materia medica, then matters would run along smootly. Fortunately the best men of both professions get along well together, it is only the men who are in medicine for the money there is in it who make all the trouble.

The question of physician vs. pharmacist is one which can be settled by a little forbearance, common sense and tolerance, but it cannot be aided by the publication of such articles as that of the "Canada Medical Record," marked as it is with exaggerations and misstatements.

THE NEW DRUGGIST.

There is to-day a multiplicity—perhaps an overplus—of journals devoted to the particular interests of every trade, business and profession. Some of these, however, sometimes reward examination on the part of outsiders. To the student of political economy, for instance, what more interesting illustrations of the peculiar and particular state of mind that may be begotten of protectionism can be found than in the editorial columns of our esteemed contemporary the Canadian Manufacturer? But we lately had the pleasure of looking through a number of journals devoted to the interests of the drug trade, among which not the least creditable in general appearance and tone was the Montreal Pharmaceutical Journal, and we were struck by several features which may possess some general interest Immediate trade questions such as those of the drug market, the handling of stock and the relationships of the druggist to the public and to the medical profession, come in for a good deal of attention; but we were particularly impressed by the intellectual activity displayed along the lines of those sciences, including chemistry, botany and materia medica, which have an immediate connection with the business of the druggist, or the pharmacist, as he now more generally calls himself. To realize that the druggist of to-day has high aims for his profession it is only necessary to examine the curricula of the pharmaceutical colleges, the examination papers of the various boards, the character of the scientific papers read at the meetings of the pharmaceutical societies and, lastly, the admirable means provided for a scientific education in the way of thoroughly equipped laboratories, etc. It is apparent, indeed, that the New Druggist is not satisfied with mere competence to correctly fill a written prescription, important as that may be, but is ambitious of other relationships to the pubiic in which scientific knowledge that he has the inclination and the opportunity to acquire, will be brought into play. It would seem, in fact, that the old title of "chemist and druggist" will in time come to generally include, in reality, professional competence in analytical and all round chemistry. Among other possibilities in this direction it may be pointed out that the farmer would then find the country druggist a useful assistant in the matter of testing the purity or strength of his artificial fertilizers, as well as an efficient adviser on the question of well waters. In the journal above referred to, we noted also the considerable importance attached to the use of the compound microscope in the detection of adulterations in drugs, as in vegetable powders, starches and so forth. For competency in this connection to competency in the examination of foods would not probably be a long step, and by the time that Government is prepared for a more general supervision of the quality of food and food stuffs, it is not unlikely that the trained men for the service may be found among the chemists and druggists of the country. But in any case, the intellectual activity displayed by the New Druggist is in itself of distinct value to himself. apart from pecuniary profit or professional advancement, connected as it is with the liberalizing study of several of the most delightful branches of science.—*Montreal Herald.*

LIQUID AIR.

By J. J. STEWART, B.A. Cantab., B.Sc. Lond.

It is a familiar fact to all that some substances can be obtained in the varying forms of solid, liquid, and gas; but many substances come under our notice only when occupying one of these states. When granite is mentioned, we at once think of a hard, solid rock; few people have seen granite in a liquid state Again, the name *mercury* calls to our mind the well known liquid metal. So there are numerous gases and vapors which are known to us only under this somewhat impalpable and less tangible form. Among the substances familiarly known to us, however, there are a large number which, through the action of heat upon them, can be readily changed into a fluid and then into a vaporous state. Perhaps the best known of all is water, though even this in hot climates is rarely seen in the there uncommon solid form; so that the African chief, who had accepted many statements from his European visitor, utterly refused to believe him when he was told that, owing to the intense cold of some countries, rivers got hard enough to be walked over.

Lately, in many text books of science, gases were divided into two classes—those which could be liquefied by the application of cold or pressure, or both, and those which were *permanent*, or were known to us only in the form of gases. It was suspected by scientific men, especially after the extensive experiments by Faraday who succeeded in liquefying many of the "permanent" gases, that all gases without exception could be changed into the liquid form if they were exposed to a sufficiently great pressure and at the same time cooled down far enough. This surmise has been proved correct only within comparatively late years, and now all gases, including the air we breathe, must be considered as differing from vapors, such as steam, only because at the usual temperatures at which we generally deal with them they are in a condition similar to that which other substances attain when heated to a very high temperature.

I propose to give a short account of the work hitherto done in the liquefaction of gases, commencing with that so ably carried out by that unsurpassed experimenter, Michael Faraday, and going on to refer to the researches, commenced by Raoul Pictet and by Cailletet, in France, who, about the same time (1877), succeeded in liquefying oxygen and even hydrogen. These researches were pursued by Wroblewski and Olzewski, in Russia, and have been continued lately in our own country by Professor Dewar, who, with such striking success, has liquefied air in large quantities, and has even handed it about in pint bottles for inspection by a large audience.

There are two means open to us of liquefying a vapor. Let us increase the pressure upon it, or lower its temperature, and if we proceed for enough in these operations the vapor will become liquid. A further condition is necessary with the "permanent" gases—we must cool them down below their *critical temperature*. This critical temperature is that above which no amount of pressure applied to the gas will be capable of changing its state into that of a liquid.

Faraday, in his series of experiments, applied the simple but effective means of generating the gas in a strong glass tube, from those compounds which evolved the required gas on heating. In this way the gas, being produced in a limited space, produced a great pressure, under which pressure of its own vapor the gas became a liquid. On breaking the tube, the gas, compelled by pressure to exist as a liquid, would revert to the form natural to it at the temperature of the experiment, and would do this with explosive violence. There was thus always a tendency for the gas to burst the tube and this sometimes occured during Faraday's experiments. He was careful to wear a mask made from wire gauze or thick glass, but even thus he did not entirely escape injury. Faraday immersed one end of his tube in a freezing mixture while the other was exposed to heat. In this way he succeeded in liquefying a large number of gases, and examined their properties while in this unusual state. Among the gases so treated were the following: carbonic acid, hydrochloric acid, sulphur dioxide, cyanogen, ammonia and chlorine. He carried out his first set of experiments on this subject in the year 1823 Later, in the year 1845, after Thilorier had shown how carbonic acid gas could be obtained in the liquid form on a large scale, and also as a solid, Faraday used the solid carbonic acid mixed with ether, and by means of the cold produced by the evaporation of the mixture he reduced the temperature—100° Cent., and obtained most of the above mentioned gases, and also nitrous oxide, not only in a liquid but also in a solid state. Hydrochloric acid, hydrogen arsenide, ethylene, silicon fluoride, boron fluoride and chlorine he at this time managed to get in the liquid form, but was unable to solidify these substances. The gases hydrogen, oxygen, nitrogen, nitric acid, carbon monoxide, and marsh gas resisted all Farady's attempts to liquefy them, and it was not until more than thirty years later that these substances were condensed.

Andrew's by his classical researches on the critical point of gases and vapors, and especially by his thorough investigation of the behavior

of carbon dioxide when exposed to great pressure at varying temperatures, paved the way for future work on the liquefaction of gases, and showed that great pressure of itself was not sufficient to cause a gas to turn into a liquid, but that a certain limiting temperature must be passed in cooling down the gas before it can by any amount of pressure be liquefied. Thus above this limiting or critical temperature, which is different for each gas, it may be called truly permanent, while below this temperature the gas is liquefiable if only enough pressure is applied to it, and the gas may then be described as a vapor.

When substances evaporate or change from the liquid to the gaseous state, a large amount of heat disappears or becomes latent, and is used up in separating the molecules of the liquid farther apart and giving them increased energy of motion. On account of this disappearance of heat during evaporation great degrees of cold may be produced, and it was by this means that Pictet, in 1877, obtained a temperature of—140° Cent., and obtained oxygen in the liquid state. He cooled liquid carbon dioxide by surrounding it with liquid sulphurous acid, kept boiling in a vacuum, and got a still greater degree of cold by then allowing the liquid carbonic acid to evaporate rapidly in an exhausted space. The oxygen was generated in the usual way from potassium chlorate, a salt which spilts up and gives off oxygen gas when it is heated; but the gas was produced in a strong iron retort, so that by means of its own pressure alone the gas was compressed by a force several hundred times greater than that of the ordinary pressure of the atmosphere.

The method adopted by M. Pictet is the same in principle as that employed by Faraday. The gas is generated in a closed vessel capable of standing a great pressure, and it is condensed by being simultaneously exposed to a great cold and to the pressure of the gas itself, forced to occupy a very small space. In Pictet's original experiment he obtained a temperature of —130° Cent., at which temperature oxygen is liquefied, when the pressure is raised to 273 atmospheres.

While Pictet was continuing his experiments and endeavoring to liquefy the hitherto permanent gases, the same subject was being investigated by Cailletet, and it was on the same day, Dec. 24th, 1877, that the French Academy was informed of the success of both these experimenters in liquefying oxygen. Cailletet attained his object by exposing the gas to enormous pressure, produced by means of a hydraulic press, while at the same time the temperature was lowered by suddenly allowing the gas to expand. In this way a sudden diappearance of heat takes place, the heat energy becoming transformed into mechanical motion of the particles of the expanding gas. In Cailletet's apparatus the pressure was produced by a steel piston working in a cylinder, the hydraulic cylinder being filled with water. The gas was contained in a capillary glass tube with small bore and thick walls which could support the strong pressure required The glass tube containing the gas was connected to the hydraulic pump by means of a flexible metallic tube. Cailletet worked with small quantities of gas, while Pictet, by means of his machinery, was able to obtain relatively large quantities of the various liquefied gases.

The results got were only obtained after years of preparation and endeavor by both experimenters, working quite separately and independently. Cailletet made use of the skill and knowledge obtained by him in the prosecution of his business as an ironmaster at his works at Chatillon-sur-Seine; while Raoul Pictet carried on his experiments in Geneva, where he was engaged as a manufacturer of ice-making machinery.

Cailletet's apparatus is singularly simple and effective, and by it he also obtained liquid hydrogen, which appeared as a mist on the inside of his tube when the great pressure to which the gas was subjected was suddenly relieved, and heat thus suddenly absorbed. Hydrogen was thus liquefied into globules of mist on the glass when the pressure of three hundred atmospheres was suddenly removed, while air previously carefully dried changed into a liquid under a pressure two hundred times that of the atmosphere after it was cooled by means of liquid nitrous oxide. That is what happens in Cailletet's experiment: the gas, first of all cooled on account of its quick expansion, descends in temperature below its critical point, and then becomes liquid under the moderate pressure to which it is then exposed. But as expansion and relief of pressure continues the liquid is soon under too little pressure to remain in this condition, and besides by conduction from surrounding objects heating occurs, so that the liquefied gas soon evaporates and the mist produced is fugitive; this is especially so in the case of hydrogen.

MM. Wroblewski and Olzewski have carried out many experiences, using an apparatus similar to Cailletet's. At —136° Cent. a pressure of twenty atmospheres sufficed to liquefy oxygen, and at the critical temperature of this gas is placed at—112° Cent. that is, it must be cooled *at least* as far as this before liquefaction can take place. The critical temperature of nitrogen is found to be still lower than this, being —147 Cent., or —223° Fah.

On Friday evening, June 26, 1891, at the Royal Institution, the audience saw liquid

oxygen in large quantities freely drawn off from the refrigerating apparatus, and having all the appearance of hot water, with a vaporous cloud above it. In reality the oxygen was boiling at a temperature of —296° Fah. *i.e.*, 328° below freezing point, and the apparent vapor consisted of ice particles produced from the moisture of the surrounding air, cooled from the contact of the chilled gas. On filtering the liquid oxygen, to get rid of the minute particles of solid carbonic acid scattered through it, it was seen to consist of a blue limpid liquid not unlike water. It would naturally be expected that the liquified gas when placed in an open vessel in a room at the ordinary pressure and temperature would with great rapidity, and even violence, hasten to take the gaseous form. But this was not the case; the liquid oxygen evaporated but slowly, and retained its liquid form for a considerable time, although it was only under the usual atmospheric pressure. When a few drops of the liquid were thrown into the water, the effect was like that of plunging red hot iron into a liquid; a fizzling noise was produced, and soon the globules of liquid oxygen were seen each floating about in a little cup of ice formed from the surrounding water. By means of the remarkably cold fluid, alcohol, which remains liquid even in the severest Arctic climate, was quickly frozen into solid lumps; the solidifying temperature for alcohol being —130° Cent.

The effect of cold in rendering sluggish and inert substances which are usually chemically active is strikingly seen in the case of cooled oxygen. At ordinary temperatures oxygen gas has a great affinity for phosphorus, and combines readily with it, producing vigorous combustion with much heat; and light clouds of the solid phosphorous oxide being formed. But a piece of phosphorous when placed in liquid oxygen remains undisturbed; no combination takes place.

By means of liquid oxygen, nitrogen may be liquified. Advantage is taken of the fact that liquid oxygen when placed in vacuo boils at a lower temperature that when under the ordinary pressure. A temperature of —328° Fah. can thus be obtained, at which both nitrogen and atmospheric air can be liquified. During the process of liquefaction of the air the two gases of which it is made up become liquid together, but when the temperature is allowed they evaporate separately. The nitrogen, though more difficult to liquify, comes off as a gas first, leaving almost pure oxy behind.

Prof. Dewar has solidified air as well as nitrogen by employing powerful pneumatic apparatus. Pure oxygen has itself never been obtained in the solid form. In order to obtain a succession of lower and lower temperatures, the various liquefied gases are caused to boil in a vacum. Thus the more easily liquefiable gases are made use of to abstract heat on their evaporation from those more difficult to liquefy. When these latter are made to boil in vacuo a still lower temperature is attained, and by successive steps a reading on the thermometer as low as —211° Cent. (or —345° Fah,) has been reached. At these low temperatures experiments of an interesting character have been made on the electrical behavior of metals, and their electrical resistance has been determined.

On boiling successively in vacuo carbonic acid, nitrous oxide and ethylene, using the first to take away by their evaporation heat from the gases which are more difficult to liquefy, a temperature of 227° Fah. is reached, at which oxygen can be liquefied under a pressure of fifteen hundred pounds per square inch. The rapid evaporation of oxygen in vacuo so quickly removes heat from surrounding substances that air and nitrogen are soon liquefied, and these, when treated under powerful air pumps, abstract sufficient heat to allow the production of solid nitrogen. This last experiment was successfully carried out for the first time in public on January 19, 1894.—*Knowledge*,

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Iodine Ointment.

BY S. A. MCDONNELL, PH. G.

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

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

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

℞ Iodine.....gr. IV
Adipis.....gr. XCVI
Misce

Place the lard on a water bath and apply heat until melted, then drop in the iodine and stir with stick or glass rod, when the iodine will soon be dissolved. The object of the iodide of potassium and water in the official

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

Anæsthetic Antiseptic Liquid.

DR. MAYET.

The following formula for an antiseptic and anæsthetic liquid for the dressing of wounds, etc., has been communicated by the author to the Society of the Medical Sciences, at Lyons:

Vaselin Oil, sterilized by ebullition	100 parts.
Iodoform	5 "
Cocaine	1 part.
Oleic Acid	4 parts.

The last ingredient serves to facilitate the solution of the cocaine in the fatty oil; the alkaloid is dissolved by trituration.

The author uses this mixture chiefly as an anæsthetic in uterine pain. A piece of very fine soft and perfectly aseptic sponge of the size of a walnut is provided with a thread through its centre and imbibed with the liquor in question; it is then placed against the cervix. This tampon advantageously replaces those of cotton, lint, or even gauze, which become deranged, and eventually form hard bodies, illy tolerated by the uterus.

The same mixture is considered an excellent topical application in hysteralgia from any cause, especially, however, that of neuropathic persons; it is employed, also, for dressing felons, small contused wounds, furuncles, anthrax and burns.

A LECTURE ON ANATOMY.—Teacher: "How many bones have you in your body, Jimmie?" Jimmie: "Two hundred and nine." Teacher: "But the other pupils have not so many." Jimmie: "Well, they ain't had fish for dinner, like me."

Vaccination in France and England.

The official report on vaccination was the subject of a paper read by M. Hervieux, at a recent meeting of the Academy of Medicine, Paris. He stated that the small-pox epidemic in Paris is now a thing of the past, and compared it with that which he said had prevailed in England since 1891, remaining still unchecked at the commencement of 1894. This, he added, was in spite of the fact that vaccination is compulsory in England, whereas in France it is only so as regards the army. M. Hervieux is of opinion that England has been paralyzed in combating the epidemic by the action of the Anti-Vaccination League, while France has turned to account all the arsenal of prophylactic means of which it disposes. He traced the history of the League in question, and then reviewed the various means by which the small-pox epidemic had been overcome in France, specially mentioning animal vaccine and the conditions under which it should be preferred to human vaccine. He does not favor the variola vaccine of Fisher and Haccius. Re-vaccinations were quoted as the principal cause of the cessation of the epidemic in Paris, but much service was recognized as having been contributed by the municipal processes of disinfections, etc.

The Pasteur Institute.

The latest returns from the Institute show that 417 persons were treated there during the months of April, May and June. Of these, 54 were bitten by animals that experiments showed were suffering from rabies, 210 by those found to be mad by a veterinary examination, while 153 of the victims had been attacked by animals who were only suspected of being rabid. Two patients only, treated at the Institute this year, have succumbed to hydrophobia, while one who was bitten in October last has died from another malady.

ÆRATED MILK, by which is understood milk charged with carbonic acid gas, is being used in Russia in many cases as a substitute for koumyss. It was introduced by Professor Botkin, and has been used successfully by Professor Pasternacki and others in cases of feeble digestion. Dr. Borysoroski states that the best and cheapest method of ærating milk is by means of liquid carbonic acid, which is prepared in St. Petersburg in special factories, and sold in iron bottles, in which it exerts a pressure of about 60 atmospheres, which is certainly considerable, and may possibly give rise to accidents from explosions.—*Monthly Magazine of Pharmacy.*

A Few Paragraphs on Pharmacy from an introduction of Liebeg's Chemistry Published in Heidelberg, Germany, 1843.

TRANSLATION, WITH COMMENTS AND ADDITIONAL HISTORY, BY AMBROSE MUELLER, PH. G.

When a few months ago I came into possession of a frgament of Geiger's Handbook of Pharmacy, fifth edition, rewritten and revised by Dr. Justus Liebig, professor of the University at Giessen, Hessia, Germany, I thought it might be of value, if only historical, to some pharmacists, to hear some of his views on pharmacy, and I have aimed to give as near a literal translation as possible.

1. Pharmacy (apothecaries' art) is that branch of natural science which treats of the gathering, preparing, preserving and dispensing of drugs and medicines.

2. Natural science in its widest sense embraces all things which are perceived by the senses. It investigates and studies their properties and phenomena. Some branches of natural searching consider things fixed, according to natural characteristics, as form or shape, size, etc. This embodies physiography (generally called natural philosophy), and may be divided into geology, botany, and zoology. Other branches observe the changes of bodies (astronomy, physiology, therapeutics, etc.), but if the causes of these changes are studied, two distinct sub-branches result as physics and chemistry proper. Of these branches pharmacy treats of all which, through any cause, form, or way, have any relation to drugs.

3. The number of drugs is at present very large, regardless of the many useless and inactive, which in later years have been excluded from medicine, some, however, without thorough investigation. Many have, again, been introduced, and with every year their number multiplies. The most generally used and known bodies in every day life, as food or in the arts, furnish a vast scope for pharmacy.

4. Pharmacy, as stipulated in paragraph 2, requires a knowledge of systematic zoology, botany, and mineralogy; further, a knowledge of physics and chemistry, which are indispensable in the preparing of pharmaceuticals; and to this must be added the practical ability which can only be acquired by zealous diligence and several years' practice under the guidance of a competent preceptor. Therefore pharmacy must be regarded as a scientific art, as a branch of medicine, the highest timely "good" for preserving health and prolonging life.

5. The importance of his calling requires him to be equipped with the already stated scientific knowledge and practical ability. The apothecary must be a true, conscientious man of good morals, whose office is a sacred duty, and who will attend to his profession with honesty and willingness. From this we can see that he must at all times keep the best medicines, and never allow himself to act arbitrarily or neglectful, but always discharge his duties punctually and quickly, and charge strictly in accordance with legal taxation [a fixed price which gives him a profit on every ingredient, allows for work, bottle, box, or label, and the writing of same—in short, a profit which, if charged by us, would be considered too high], and, lastly, keep all parts of the apothecary shop perfectly clean and in good order.

The scope of pharmacy from this point of view assures the apothecary an honorable position in the State, and there is no doubt that he, as a scientifically qualified pharmacist, is the physician's equal.

Pharmacies in the Hands of Physicians—First or Hippocratical Period to the Time of Scribonius Largus (43d year A. D.)

6 Ancient history of pharmacy of coincides with that of medicine. Simple and artless, as their customs, were undoubtedly their medicaments, and laborious modes of preparing the same were at that time scarcely thought of. The first physicians prepared their own medicines and provided that the sufferers received them in the most suitable way for administering. Some time later, throhgh extended progress in medicines over to reliable men. who attended to the gathering of drugs and the dispensing of medicines.

The Asklepiads in the temples of Kos prepared inspissated juices, poultices, decoctions, and ointments, a thousand years before the Christian era, and their work must be looked at as the starting point of pharmacy, though scarcely deserving of the name apothecary—many of them defined themselves as unguentarii, seplasiarii, pigmentgrii, medicamentarii, pharmacopoli etc.—but rather merchants, dealers in paints, charlatans, and mixers of poisons.

From the temples of Kos and Knidos our first physicians have emanated. They cloaked their art in mythology, but laid a foundation for medical science. The son of Heraklides, known by the name "Hippocrates," deserves the highest place among them, and pharmacy will find its oldest sources in his writings. Several noteworthy men of that period, who occupied themselves with the gathering of drugs, and who zealously devised, planned, and worked out practical processes for preparing medicines for the sick, and who, so to say, opened the way to pharmaceutical learning,

are the following: Diokles of Karystus, Paraxagoras of Kos Chrysippus of Knidos, Theophrastus of Eresos, Nicander of Kolophon, Heras of Kappadocia, etc. In this period the renowned separation in medicine was brought about by the Alexandrian school and resulted in dietetics, surgery, and pharmacy. This separation has undoubtedly had a grave influence on the part of preparing medicines: men who cured with remedies used internally, and besides attended to the mixing of medicines, were called pharmaceutists, while the dietetists treated by giving advice as to the proper food and manner of living, and the surgeons attended to local manual practice only. Wrong is the idea, "that pharmacy must be regarded as a separate profession from this period."

Second or Galencial Period to the Founding of Apothecary Shops in Bagdad 765 A. D.

There is no doubt that in the latter part of the first period quite an extensive collection of formulas for preparing medicines were written in books of that time, but of those we have only fragments The oldest and most complete which has been preserved is the work of Scribonius Largus, who lived during the reign of Emperor Claudius. His "Compositiones Medicæ" must be regarded as the oldest pharmacopœia, containing strict directions and modes for preparing medicines in accordance with rules observed at that time.

Immortal are the names of some distinguished Greeks and Romans for great services rendered to pharmacy and materia medica, now called Pharmacognosy, and whose names are doubtless in place here, namely: Dioscorides of Anazarba, Cajus Plinius and Claudius Galenus of Pergamos, the latter certainly deserving of the honor of having this period of pharmacy called his.

Pharmacy an Independent Science—Period of the Arabs to the Erection of Pharmacies in Italy in the Eleventh Century A.D.

By the fall of the Roman Empire, through northern nations, art and science were almost entirely lost, and only the Arabs retained their treasure, and, to say, preserved it for better times. Even if the labors and works of the latter are not equal to those of the Greeks and Romans, we still have to thank them for a great deal in chemistry and pharmacy.

They discovered many chemical products, and introduced many new remedies, some of which we use at the present time. In the eighth century the Arabs established the first apothecary shop in Bagdad, and founded pharmacy as an independant science. Also were they the first to encourage and introduce legal dispensatories—in the ninth century that of Ebn Sahel, and in the twelfth the one of Abu Hassan Hebatollah Ebn Talmid.

Renowned men of this period, who distinguished themselves by zealous work in pharmacy. are the following: Rhazes of Ray in Irak, Geber of Harran in Mesopotamia, the two Serapions, Mesue of Maridni on the Euphrates, Avicenni of Lokhara, Aben Gnefith, etc.

Constantinean Period to the Erection of Numerous Pharmacies in Germany in the Fifteenth Century.

While chemistry and pharmacy were flourishing in the Orient, the larger portions of Europe dwelt in almost total ignorance on these subject. But a new light was brought into existence by Constantinus of Karthago, who established the first pharmacies in Europe. Salerno was the place where he founded the first ones, which he termed "Stationes," and the apothecaries "Confectionarii." At that time Nicolaus Præpositus of Alexandria wrote a large collection of formulas for the preparing of medicines, whose work may be regarded as the first European dispensatory. The first strict pharmacy law was instituted by Emperor Frederick II The so-called apothecaries' art was at that time in its childhood. Ignorance and superstition prevailed throughout the countries, and science could only slowly creep forward. Men of those dark days who earned noteworthy laurels for pharmacy are Matthaus Sylvaticus, Johann of Dondis, Saladin of Asculy, and several others, whose works were authoritative at that time, but now are only of historical interest.

Ortolf-Brunfelsian Period to the Spread of the Antiphlogistic System of Chemistry in the Latter Part of the Eighteenth Century.

The end of the fifteenth and the entire sixteenth century were brought into distinctiion by the rapid progress in all branches of scientific knowledge Ortolf of Baierland wrote the first German treatise on the Practice of Pharmacy, in 1747, and about the same time a large number of pharmacies were established in the different provinces of Europe, but particularly in Germany. The capital, Augsburg, had its own dispensatory in 1573, which was written by Adolf Occo. And even before that time, in 1538, there existed a legal chart regluating the strengths and taxations of medicins, which was printed by the free city of Lindau. From this time chemistry began to exert more and more influence on pharmacy, and men who at that time, and particularly in in this branch, received praiseworthy mention

are the following: Reimund Lullius, Basilius Valentinus, Theophrastus Paracelsus, who especially introduced many mineral and chemically prepared medicines—in fact, it is to him that pharmaceutical chemistry owes its origin. Thurneisen zum Thurn, Croll, Libaw van Helmont, Majow, Mynsicht, Sylvius, Glauber, one of the most able chemists of his time; Chomel, Stahl, the founder of the phlogistic system; Boerhaave, Cartheuser, Dippel, Geoffroy, Neumann, Boyle, Beguin, Minderer, Hoffmann, Lemery, Zwoelfer, Kunkel, Becher, Marggraf, Lowitz, Scheele, who called so many important discoveries in chemistry into existence, and who together with Priestly discovered our indispensable oxygen; Wiegleb, Westrumb, Meyer, Gren von Crell, Goettling, Hagen, etc., complete the list of eminent and skillful scientists and pharmaceutical chemists. About that time botany awoke out of its long sleep, Otho Brunfels wrote his new German herb book (Herbarium), illustrated with accurately prepared wood-cuts. He was followed by a great many others in furthering and perfecting our science, and botany is undeniably an indispensable companion of pharmacy. Eminent botanists of that time were: Hieronimus Tragus, Mathiolus, Gesner, Cæsalpinus, Clusius, Lobelius, Johann and Caspar Bauhin, Tournefort, Linne, the immortal founder of the Sexual system; Jussieu, the founder of the Natural systems; Haller, Gleditsch, Jaquin, Gaertner, Batsch, etc.

Period of Lavoisrr to the Present Time.

In honor of the founder of the antiphlogistic system we deem it just and suitable to call this period his. The great influence which his system exercised in chemistry is really wonderful, and the projected teaching of his genius revealed several discoveries immediately and shortly afterwards. As a marked epoch for physics, chemistry, and pharmacy, must be regarded "Contact Electricity," discovered by Galvani; the law of proportion (Stoechiometry) worked out by Richter, though first acknowledged after Berzelius had examined and thoroughly tested it. These experiments had an almost magical effect on chemistry, afforded opportunities for new investigations, and threw a clearer light on differentiated ideas—some of which, in facts it changed entirely, By the zealous and laborious work of our scientists of a half a century ago, pharmacy as well as other branche of natural science, has developed rapidly, and now stands at a height which requires a fundamental and most thorough course of study of the sciences. Pharmacy has steadily grown richer in the number of scientists, and their work of scientific researches more and more minute and accurate in all its branches.

Practical pharmacy has made wondeful progress in the past fifty years, and is continually going ahead by the tireless workers and scientists who live for progress only.

Pharmacognosy has as also made surprising advances, and by means of the microscope unveiled a great many characteristics, and in fact opened a new field for the study of the same.

Chemistry, last but not least. has more to offer in this period than any other branch of science:

Firstly, because it builds or constitutes the origin. composition and functions of other branches.

Secondly, researches after researches for the determination of the constitution, properties and purity of elements.

Thirdly, change from the equivalent notation to our molecular, and the readjustment of molecular weight of the elements.

Fourthly, the field of organic chemistry is almost beyond conception to those who have not kept pace with the times; and I have no doubt our forefathers would be blinded with the surprising discoveries and new products of these days. Great men of this age need not be mentioned here, as their names and works appear in different text books. It is true some of our heroes are no longer with us, but their "memory" remains immortal. "We all meet here to-day, on this noble occasion, but no one can tell of next year's congratulations."

The Pharmacopœial Instructions for the Preparation of Tinctures.

By R. H. Parker, F.C.S.

Read at the British Phar. Conference Meeting, Oxford.

In considering the official directions for the preparation of tinctures, the instruction to "add sufficient spirit to make a pint" does not appear calculated to ensure uniformity of product under variety of manipulation. Thus, if I make a pint of tinct. aurant., following the B.P. instructions, the final addition of 10 or 12 per cent. of menstruum may be required to adjust the volume of the finished product; if operating on six pints I can reduce the final deficiency nearly to 1 per cent, while, if I have to make 10 or more gallons, the difficulty of manipulation may increase the loss to 6 or 7 per cent. If the "making up" be omitted, the product will be of the same strength if 5 ounces or 50 gallons be made at a time, and whether the marc be pressed in a lemon-squeezer or by hydraulic power.

I would, therefore, suggest that in the next issue of the Pharmacopœia, all tinctures and preparations of about one in eight strength be ordered to be prepared by maceration only, without final adjustment of quantity; those of

one in four, or greater strength, "to be prepared by percolation, so that N. fluid ounces of percolate represent the activity of one ounce of drug." The strength of the products would thus be clearly defined, and the pharmacist might be allowed to select his own method of recovering the residue according to the quantity of material dealt with. The "making-up" is already omitted from the directions for preparing tinctures of nux vomica and cannabis indica.

The formulæ for tinct. zingiberis and tinct. camph. co. might be simplified, the former being prepared by diluting the stronger tincture, and the latter by replacing opium with an equivalent of its tincture

I think also that the footnote to the liniments of belladonna and aconite should be omitted, as a needless apology, and an aspersion on the manipulative skill of the pharmacist, there being no difficulty in preparing these liniments of one in one strength if required.

Change of color in Lemon and Orange Peel

BY. E. G. CLAYTON.

When the orange peel is moistened with strong hydrochloric acid, its color changes from yellow to a rich dark green; lemon rind, similarly treated, retains its hue, or, at most, assumes a dingy, yellowish brown tint. A convenient and simple chemical test, therefore, which will distinguish between small fragments of lemon and orange peel is to touch them with a glass rod previously dipped in hydrochloric acid. The diluted acid will answer the purpose, but the reaction is slower.

A few minutes exposure to hydrochloric acid gas will effect this change in the pigment of orange peel. The color of lemon rind is unaffected.

The shades of green developed by dilute hydrochloric acid are deepest in the cases of Murcia, Denia, and Florida oranges, of moderate intensity with Jaffa and "blood" oranges, and feeble with Valencia and Tangerine oranges. This statement also applies to the reactions with strong hydrochloric acid, excepting that the color of Tangerine orange peel with the strong acid is perhaps more intense than that observed with any of the other varieties of the fruit.

The peel of the lime behaves, with hydrochloric acid, like lemon rind.—*The Analyst.*

DIGESTION WITHOUT DIGESTIVE FERMENTS —M. A. Dastre has stated in a report to the Academy of Sciences that fresh proteids (fibrin, albumin, etc.) undergo the same series of changes when subjected to the prolonged action of 10-15 per cent solutions of ammonium or sodium chloride (or 1-2 per cent. sodium fluoride), as when acted on by gastric juice.

THE BRITISH PHARMACOPŒIA.

The following communication has been sent out from the General Medical Council Office :—

"In connection with the subject of the Imperial extension of the Pharmacopœia, replies to the proposal of the Medical Council to extend the usefulness of the work to the Colonies and India have been received by the Council through the Colonial Office from the Bahamas, Barbadoes, Bermuda, British Honduras, Cape of Good Hope, Cyprus, Jamaica, Malta, Queensland, St. Helena, Sierra Leone. South Australia, Tasmania, Western Australia, Zululand; and replies from other Colonies are expected. A representative from Canada has visited London, and has had an interview with members of the Council on the subject.

"In all cases the proposal of the Council has been accepted. In some of the Colonies neither climatic nor other conditions point to any special adaptations of the Pharmacopœia, but offers are made to collect and forward any desirable information. In others, medical and pharmaceutical committees have been appointed to consider and report upon the matter. In some Colonies the prevailing high temperature leads to requests for ointments of commensurate melting point, for extracts having the minimum of moisture, and for pill masses less liable to become hard. The omission of costly drugs that are without special advantages and can easily be substituted is recommended in some of the communications. Several suggestions concerning individual preparations are made. Most of the valuable indigenous Materia Medica seems, as might perhaps be expected, to have already found their way into the British Pharmacopœia."

We wish to draw attention to the above and also to the fact that although notice of the proposed changes had been sent to every little English colony scattered over the globe, none has been sent to any of the Canadian associations or colleges. As stated in the above clipping, "a representative from Canada has visited London, etc" Who was the representative Canadian, and from whom did he receive authority to act as such? We have not heard of any. We think that if the General Medical Council wishes to have the aid of Canadian physicians and pharmacists they should officially notify our societies to that effect. As can be seen from the foregoing communication, such places as Sierra Leone, Zululand, Bahamas, have been requested to aid to the making of the new Pharmacopœia but Canada, the greatest country under the Union Jack has been entirely overlooked.

Why is this thus?

CALIFORNIA BORAX MINES.

Though every now and then reports come from the desert of rich finds of gold and silver, yet the greatest industry of Death Valley and the desert is the mining and working of borax. Twenty years ago borax was first discovered in California, west of the Slate range, seventy-eight miles from Mojave, the discoverer, John W. Searles, forming a company known as the San Bernardino Borax Mining Company, erected works which have been in constant operation ever since,

The borax in the crude state forms a crust over the marsh. This crust is removed, hauled to the works and placed in solution in immense tanks heated by steam. After allowing the solution to settle, it is drawn off in cement vats, where it is allowed to crystallize. This operation is again repeated, when the borax is ready to be sacked and shipped to market. After the removal of the borax from the marsh, crystals of tincal again begin to form, which are worked but once, when they are in a salable condition. In order to faciliate this operation, water from the marsh is pumped into large tanks, in which the tincal forms.

These works are models of mechanical contruction, and are the best equipped on the desert. To the uninitiated, borax working is but a repetition of boiling, settling and crystalizing. The fuel use is crude petroleum, which is hauled in huge tanks from Mojave.

The teams used in the transportation of the refined product are curiosities in their way—a wonder to the tenderfoot and a surprise to the teamster. As these wagons are the greatest in existence, carry the heaviest loads and are seen no other place, a description is in order. The hind wheels are seven feet in diameter, front wheels five feet; hubs, eighteen inches in diameter by twenty-two inches in length; tires six inches wide and an inch thick; steel axles, three and one half inches in diameter; bed sixteen feet long, four feet wide and 6 feet deep. Each wagon weighs about 8,000 pounds, and is capable of carrying 20,000 pounds at a load. Two wagons loaded with borax and and an oil tank on a third wagon complete the train hauled by the borax team. The team consists of eighteen mules and two horses—twenty animals in all, which are driven by a bell cord, used as a jerk line. A carload (40,000 pounds) of borax is hauled each trip from the works to Mojave, and a tank of oil and two loads are hauled on the return trip.

It takes eight days to make the trip, and in nearly twenty years not a trip has been missed. Stations at which water can be had, and where feed is stored, have been erected for the borax teams to put up. The borax company has done much to assist in the development of the desert, as water is furnished free of charge at all their stations.

From the borax mine, twelve miles from Daggett, wagons of the same style and teams similar in make up are used by the borax company. Not all the borax of Death Valley and the desert is found in marshes, and all the marshes, while having the same appearance, do not contain borax.

In Furnace Creek canon of the Funeral mountains, and in the Death Valley marsh. borax is found in the shape of cotton balls, while in the San Bernardino Company's marsh none of these are found. The cotton balls are borate of lime and are scientifically known as urexite. On taking them from the ground they can be pulverized easily, but after exposure to the air they become very dry and hard. They become so hard that it is necessary to put them through a crusher.

For month, after the discovery of borax hundreds of prospectors braved the terrors of Death Valley, and many left their bones to bleach in that terrible sink-hole. Borax was searched for in unheard-of-localities, but it was only known to exist in marshes and beds of old lakes. It was not until the discovery of silver in the Calico mountains that borax was known to exist in deposits or veins. A miner, more curious than his fellows, had a piece of white looking rock assayed, and made the wonderful discovery that hundreds of prospectors had traveled over a vein of boracic acid more valuable than any marsh then known. This was a set-back to all preconceived notions of borax mining, and the supposed-to-be valueless white rock of the Calico mountains became suddenly valuable. This is only another case of where the values at home were overlooked for the much-talked-of treasures of of a far-off land. The deposit at Calico, is owned by the Pacific Coast Borax Company, and the product is shipped to their works at Alameda for reduction.

Another and larger deposit of the same class was foumd at Monte Blanco, in a branch of Furnace Creek canon, but its great distance from a railroad made the working of it an impossibility.

In Death Valley are the rotting remnants of two borax works—institutions which promised, for a time, to make their owners rich. With a fall in the price of borax and the establishment of more accessible rivals, abandonment was forced upon the owners. The works north of Furnace Creek,, which were erected to utilize the product of Winter's discovery, closed in 1888, after a run of five years. The Eagle works, erected at a marsh belonging to a Frenchman named Daunet, have also been closed down for several years.

Throughout all this country, with the exception of Death Valley, may be found the stakes of the railroad surveyor, and several practical routes for a railroad have been found, though none have yet been decided upon. At the time of the discovery of borax in California, the wholesale price was 50 cents a pounds. At present it is worth about 8 cents. Over 20,000 tons are used annually, about one-third of which is produced in the United States.

THE APPENDICITIS FAD.
Popular Errors about Grape Seeds Exploded.

A prominent doctor who has performed a score of successful operations for the removal of that troublesome and inexplicable part of the human anatomy, the vermiform appendix, says that the general impression that appendicitis is caused by the presence in the appendix of a cherry stone or a currant seed or a seed of and kind is entirely erroneous. I have not found a seed in the appendix of a single one of my cases,' he said, 'a small bit of digested matter gets into the little sac, if the neck of it is open far enough to receive it. It may remain there for years and cause no trouble, and then again it may bring on appendicitis almost immediatly. Where the patient is in good health, in four cases out of five the operation for the removal of the appendix is successful. There is a great difference in the length of time taken by surgeons to perform this, or in fact, any delicate operation. There is one surgeon in the city who has performed the operation in eighteen minutes, which included the time from the moment the patient was brought in on the operating table until he was ready to be taken out. This is half the time that it requires the majority of skillful surgeons to do it. Of course, speed is not everything.

'The appendicitis fad, as the craze among rich people to have their vermiform appendices removed is called, still continues unabated, and there are few surgeons of prominence who are not familiar with the performance of the operation. A story is told of a doctor who is constantly ordering the removal of the vermiform appendix for patients. He was called to see a gentleman one evening who was rather seriously injured. The gentleman when he recognized the doctor, said :—'Oh, it is you ; then I must have appendicitis!'

'Doctors who have allowed the appendicitis fad to carry them away have performed the operation upon a great many people whose vermiform appendices were in good condition, and in some case patients having weak constitutions have died because of the needless slit in their abdomens. I am very glad to explode that theory about the grape seeds and other seeds, especially as the grape season is just coming on. People who have heard about appendicitis have given up the luxury of small fruit in fear of appendicitis, and some of the extremely sensitive ones have even been constantly worried lest some seed they had swallowed in the past might give them this disease—which is among the rarest of diseases, anyway.'—*New York World.*

Note on Liquid Apiol.

By Lewis Ough. F. C.S

The use of liquid apiol in capsule and perle form having considerably revived during the last few years, and being called upon to prepare rather large quantities, it has occurred to the writer that a few notes with reference to this substance may be of interest. The information contained in the literature on the subject is somewhat vague and misleading. Squire describes apiol as "a greenish-brown oily liquid obtained from the fruit of *Apium Petroselinum*, with a peculiar odor and disagreeable taste," and then proceeds to say that "from the published papers of MM. Joret and Homelle, who introduced this medicine in 1850-55, it would appear that originally the non volatile oil alone was used, to which the name apiol was alone applied; but from an examination of capsules obtained from them in 1889 we find that the volatile oil is now employed, 95 per cent. being carried over by distillation with water."

The National Dispensatory describes parsley-fruit as containing ¼ per cent. of volatile oil and 22 per cent. of fixed oil, and describes an oil of parsley as colorless or yellowish, of s.g. 1.01 to 1 14. The stearopten or camphor contained in this oil has also been named apiol, and may be obtained in white needles, insoluble in water, but readily dissolved with alcohol and ether.

The preparation of (liquid) apiol is then given. Exhaust the fruit with petroleum benzine, evaporation leaves the apiol as a colorless oil, s.g. 1.07, having an acid reaction, pungent taste, and odor of parsley. Other authorities describe liquid apiol as being simply an alcoholic extract of parsley seeds, and from experiments recently made it has been ascertained that an alcoholic extract is identical with the apiol now in the market, and is such as described by Martindale as a green oily liquid with a pungent parsley-like taste, not miscible with water, but readily soluble in alcohol and ether.

The following method gives a good result when dealing with ½ to 1 cwt. of seeds.

The freshly-powdered seeds are thoroughly damped with alcohol (s.g. .838), packed in a percolator, and after standing forty-eight hours percolation is continued with alcohol, ½ gallon being used to every pound of seeds taken. The bulk of alcohol is recovered from the bright green alcoholic liquor by distillation and the remainder driven off in an open vessel by means of a water bath. The residue on cooling deposites a quantity of a waxy-looking solid from which the apiol is readily separated as a dark green oily-looking liquid with a specific gravity of 1.036; the yield being about 7.5 per cent.

The experiments made were conducted in the laboratory of John Richardson & Co., Leicester (Limited), whose courtesy in allowing these notes to be published the writer wishes to acknowledge.—*The Chemist and Druggist.*

EXERCISES FOR STUDENTS.

No. 21.—Calculate the quantities of oil of vitriol, 90%, the smallest and the largest, necessary to act on one short ton of Chili saltpetre, of 84% purity, in the manufacture of acid nitric.

No. 22.—Calculate the △ of official blue ointment on the following data: Adeps △ ·935, sevum △ ·940, hydr. △ 13·5 to 3 decimals.

No. 23.—Required 2 oz. ammon. hypophosp. It will be made from barium hypophosph. and normal ammon. sulph. How much of each will be required?

No. 24.—A perennial herb with thick fibrous roots from a creeping root stalk. The flowerless stems terminated by a large 7–9 lobed leaf peltate; the flowering stems bearing leaves with the stalk fixed near the inner edge. Flowers white, nodding. Sepals 6 fugacious; petals 6–9 obovate; stamens 12–18, the anthers opening by uplifted valves. Ovary ovoid, with a large, thick and sessile stigma, becoming fleshy and edible in fruit. Name this plant. What parts and preparations are found in the shops?

ANSWERS.

No. 15.—Ans. 8 oz. fl. to be diluted to 17 oz. fl.

$63 : 17 :: 68{\cdot}8 : 18{\cdot}565$, $\frac{24}{5} \times 18{\cdot}565 = 89{\cdot}116$.

$\frac{89{\cdot}116}{41{\cdot}96\ \text{P.B.}} = 2\frac{1}{8}$ *i.e.*, 1 to make $2\frac{1}{8}$ or 8 = 17.

No. 16.—Ans. 4·6235 oz.

$$\frac{20 \times 1{\cdot}275 \times 63}{569} \times \frac{207}{126} = 4{\cdot}6235.$$

No. 17.—$8 \times 1{\cdot}843 \times {\cdot}98 \times 2{\cdot}5 = 36\frac{1}{8}$. Ans. Dilute till it weighs $36\frac{1}{8}$ oz.

Our contributed problems permit of more than one answer—40 oz. avd glycerine, △ 1·25 + 40 oz. ether △ ·72 = $87\frac{1}{2}$ fl. oz., the liquids being unmixed; 40 oz. glycerine + 40 oz. alcohol △ ·82 = 80 fl oz. (1% contraction); 75 grains No. 1 = 90 minims; 75 grains No. 2 = 83 minims.

W. L.—You have copied the formula incorrectly; but it is not necessary in No. 16, as you will see above.

How Much is a Cubic Centimetre?

T. D. REED, M.D.

As many pharmacies are still unsupplied with graduates of the metric system, students and dispensers require to be familiar with the equivalent value in the measure glasses in use in this country. The calculation of the gramme presents no difficulty, the grain being an universal unit, and 15½ grains per gramme being near enough for prescription purposes.

But for liquids, generally measured, the case is not the same. Consulting the text-books, American, English and French, in common use, a difference is observed, the cubic centimetre being given as 16 minims in one case and 17 in another. This discrepancy arises from two causes—the want of allowance for the effect of temperature, and the fact that minims are variable.

The gramme we know gives the C.C.M. = the volume of pure water at 4° C. in vacuo. A gramme of laudanum, for example, is a fixed weight but a variable measure; a C.C.M. of laudanum a fixed volume but a variable weight. Greater uniformity and accuracy, therefore, are had by weighing; but, for prescriptions, liquids are most often indicated by measure. To get as near as possible to the equivalent of the C.C.M., consider first the English fluid ounce; this is the volume of 437½ grains of pure water. Divide this by the gramme, 15·43235 639 grains (Washington Tables Prototype Standards), and divide the quotient into 480, the minims.

$$\frac{480}{\frac{437{\cdot}5}{15{\cdot}43236}} = 16{\cdot}9315 \text{ minims.}$$

But the minim glasses have been prepared to represent for each minim $\frac{1}{480}$ of the ounce of water at 62° F. in air; therefore this quantity has to be diminished by the difference of volume due to the difference between the English and French norme of temperature and pressure.

According to Office of Standard Weights and Measures (Washington), the expansion of water, from 4° C. in vacuo to 62° F. in air and 762 m.m. merc., is equal to about $^1/_5$ per cent.;

therefore ·0338 is to be deducted from 16·9135 = 16·8977.

In the case of United States measure glasses, where the minim is the 480th part of 456 grains— $\frac{480}{456}$ = 16·2446. This is to be $\frac{15·43236}{}$ dimished, for temperature and pressure, also $^1/_5$ per cent. 16·25 – ·033 = 16·22.

The cubic centimetre, therefore, is equal to
British..... 16·9 minims.
United Ststes..... 16·22 "
practically 17 British and 16 United States.

The U. S. P. 1880 gave also 16·22 (omitted in 1890), the calculation evidently having been made as above.

In a prescription in which the liquids are ordered in grammes, the above approximations will do for most tinctures, but for liquids, which vary notably from water in specific gravity, weighing must be practised, as the volume of a gramme may vary one hundred per cent., *e.g.*, ether and chloroform.

Montreal College of Pharmacy.

Spiegler's Test for Albumin in Urine.

(*Therap. Monatshefte*).

This test has proved to be one of the best and most sensitive yet employed. It will show the presence of 1 part of albumin in 350,000. The objection that the precipitation of mucin by addition of acetic acid is not complete, can be met by a control test. The formula for the reagent is as follows: Mercury bichloride, 8 grammes (2 drs.); acid tartar, 4 grammes (1 dr.); distilled water 200 grammes (6¼ fl. oz.) glycesin, 20 grammes (4 fl. dr.).

In using the test, the urine is first strongly acidified with acetic acid and filtered, if necessary. Then about 2 c.c. of the reagent are poured into a test-tube, and by means of a pipette this is overlaid, drop by drop, on the side of the tube considerably inclined, by the urine to be examined. Should Albumin be present, there will appear a distinct whitish ring at the line of junction of the two liquids.

Balsam Copaiba Tests.

The followiug important circular on balsam copaiba has been issued by Stallman & Fulton, of New York:

The arrivals of this article, from direct sources, during the year 1891 amounted to 205,480 pounds; in 1892, 185,280: in 1893, 80,000, and the first four months of 1894 about 27,000.

The consumption has not materially decreased; yet in spite of the greatly diminished imports the price has not advanced. The cause of this is not far to seek, and we call attention to the fact that hardly any balsam copaiva goes out now into the trade unadulterated, even from some of the most reputable houses, while it is claimed to be pure These adulterations have of late grown to such an extent that it is time to call a halt; buyers should not only buy of strictly reliable houses, but examine and test every package they receive.

The principal adulterant is gurjun balsam (E. I. Wood Oil), which has been imported here of late from England to an alarming extent. Among other adulterants are mineral oil, castor oil, etc. Gurjun balsam can readily be detected by holding the suspected sample in the sun or a strong light; the presence of gurjun balsam is indicated by a greenish violet tinge.

Hager's test is as follows: To 4 cc. of a mixture of one part pure sulphuric acid and 25 parts pure acetic ether, add 4 drops of the balsam to be tested; after a few minutes the mixture will assume a violet hue, if a large percentage of gurjun balsam be present, and on standing for about 12 hours will change to a dark brown to black color; in small admixtures of gurjun the violet tinge will not be pronounced, but on standing for above named length of time will also partake of a dark brown color.

Paraffiine oil, liquid paraffine or vaseline oil can be detected by the following test, devised by the Ledoux Chemical Laboratory of New York, viz: Put 30 drops of the balsam in a test tube, adding 3 to 4 times their volume of 95 per cent. alcohol, shake well together, then hold the tube suspended in boiling water until the contents begin to boil; if paraffine oil is present, it will appear separated from the mixture at the bottom of the vial, the balsam being held in a clear or milky solution by the acohol.

Pure balsam copaiba of all varieties excepting Para, mixed with an equal volume of aqua ammonia, will make a clear transparent solution and will more readily do so when heated; if gunjun balsam, Venice turpentine or castor oil is present in the capaiba, the mixture, after standing for, say 12 hours, will remain either wholly or partly cloudy. It is necessary to take ammonia water, the same results not being obtained with stronger ammonia. Owing to the large percentage of oil copaiba which is present in Para balsam, the above test is not applicable to this grade. We believe other tests can be devised, and we invite further investigation. Considerable quantities of balsam copaiba, especially the Para kind, have frequently been deprived of most of the oil of copaiba by distillation and put on the market again as pure balsam, but really defective in quality.

ARTIFICIAL PERFUMES.

Almost all the natural perfumes are of vegetable origin, and are derived from the treatment of flowers and fruits. In this way are obtained the aromatic essential oils of rose, mint, anise, santal, thyme, cloves, etc., and the perfumes of the violet, iris and jasmine. Musk is the only important perfume that is of animal origin.

For a long time, now, the odor of fruits has been imitated with the aldehydes and ethers of fatty acids, such as the acetates, valerianates, benzoates, salicylates, and butyrates of methyl, ethyl and amyl, which, mixed in definite proportions, recall the odor of strawberries, raspberries, apples, pears, etc. The following are two examples of such mixtures:

PERFUME OF THE PINEAPPLE.

Chloroform	10.0 Gm.
Aldehyde	10.0
Butyrate of ethyl	50.0
Butyrate of amyl	100.0
Glycerin	30.0
Alcohol, 100°	1 liter.

PERFUME OF THE APPLE.

Chloroform	10.0 Gm.
Nitric ether	10.0
Aldehyde	20.0
Acetate of ethyl	10.0
Valerianate of amyl	100.0
Glycerin	40.0
Alcohol, 100°	1 liter.

The aroma of rum and cognac and the bouquet of wines have also been reproduced artificially. We shall not dwell upon the danger that accompanies the use of these products in a large quantity when they are mixed with beverages and alimentary substances. We shall occupy ourselves here more particularly either with products like those we find in nature, such as vanillin, or with perfumes such as musk and the odor of violet, which are designed not for alimentation, but for perfumery properly so-called.

Among the aromatic products employed as perfumes we may first mention methylsalicylic ether, which reproduces the oil of wintergreen (*Gaultheria procumbens*) The oil of bitter almonds, too, has been frequently replaced by nitrobenzine, which is prepared in large quantities by manufactories of coloring materials. Nitrobenzine, as regards composition, is absolutely different from the oil of bitter almonds, but it resembles it in odor. Benzaldehyde, likewise, has replaced the oil of bitter almonds in certain cases.

Such substances possess but a secondary importance; but vanillin, on the contrary, which reproduces the odoriferous principle of the vanilla bean, is the object of an extensive and very prosperous manufacture. The first process that gave rise to it was elaborated in 1874 by Messrs. Tiemann and Haarmaan. In studying coniferine, these scientists found that it was formed of a glucoside which, under the influence of a special ferment (emulsin), split up into glucose and coniferic acid. This latter, through oxidation, gives vanillin. The coniferine itself, oxidized with a mixture of sulphuric acid and bichromate, furnishes vanillin. It was by this process that it was first manufactured. The method of purification was very simple. Like aldehyde, vanilla possesses the property of forming an insoluble bisulphite combination, which was separated from the mass and afterwards decomposed.

Chemically, vanillin is methylprotocatechic aldehyde:

$$C_6H_3\begin{cases}\text{CHO} & (1)\\ \text{OCH}_3 & (3)\\ \text{OH} & (4)\end{cases}$$

The figures to the right of the atomic groupings represent the relative positions in the benzenic nucleus. They are of considerable importance, since isovanillin, which is constituted by exactly the same groupings, but differently placed, has no odor. After the formula of vanillin became known, an endeavour was made to employ the neighboring bodies, to add the groupings that were wanting, and to properly place them with respect to each other. A host of methods was proposed to this effect, in making use of eugenol (De Laire and Tiemann), which was oxidized by permanganate; of eugenol and bromide of methylene (De Boissieu), and of guaiacol and pyrocatechin (Tiemann and Reimer). Vanillin is even found in certain natural products, such as the benzoin of Siam, crude beet sugar, asafœtida and opium. A certain number of these processes are employed industrially.

Piperonal or heliotropin is closely connected with vanillin. It is, in fact, the methylenic ether of protocatechic aldehyde. In order to prepare it, piperic acid is oxidized by permanganate, but it can also be obtained by means of safrol. It is found in the oils of sassafras and shikimia, and can also be obtained from the oil of camphor. Coumarin is the anhydride of ortho-oxycinnamic acid. It has been obtained synthetically by Perkin by causing acetic anhydride to react upon the sodium salt of salicylic aldehyde. It is especially extracted from natural products, such as the Tonka bean and the "vanilla plant" (*Liatris odoratissima*) of the United States.

Spirit of turpentine has likewise yielded a perfume, the terpineol of De Laire. To this effect, one can either dehydrate terpine or treat spirit of turpentine directly. This per-

fume is known under the name of lily-of-the-valley or lilac.

We now come to the two most recent discoveries—viz., the perfume of musk and that of the violet. Natural musk is the product of a secretion of the musk deer, a ruminant mammal that inhabits certain regions of Asia. The perfume is found in a sac, which usually contains from 14 to 20 grammes of it. It is also found, but in much smaller or even minimum quantity, in other animals, such as the civet, the musk-rat, the badger and the marten. Certain plants, too, often possess the odor of musk. This product is of the highest importance, since it is the base of all artificial perfumes, which sometimes contain considerable quantities of it.

The first process of preparation of a product having the odor of musk was discovered by Messrs Schaafer and Haffeld, who heated a mixture of dimethyl-benzine, isobutylic alcohol and chloride of zinc, which they afterwards broke up and nitrated. The truly industrial discovery of an artificial musk dates back to 1889, and was made by Mr. Baur, on the occasion of some researches upon the oil of resin.

In order to prepare the Baur musk, chloride of isobutyl is made to react upon toluene (methyl-benzine) in the presence of chloride of aluminium. We thus obtain isobutyl-toluene, which, under the influence of nitric acid, is converted into trinitro-isobutyl-toluene, which is the somewhat cumbersome chemical name of commercial musk.

There exists, theoretically, a host of analogues and homologues of this musk. A certain number of them have been prepared from xylene, cymene, and the diphenyl and xylyl methanes. A large number of such products possess the characteristic odor of musk.

A no less important discovery is that made a year ago by Mr. Tiemann, who reproduced synthetically the perfume of the violet (called ionine), after a series of researches of the greatest interest from a scientific standpoint.

In order to prepare this perfume, we start from citral, which is itself derived from the oil of lemon, or from the oxidation of the alcohols of the formula $C_{10}H_{18}O$ that we find in certain essential oils — geraniol, linaleol, auranteol and lavendol. The citral is shaken with acetone and barytes, and pseudo-ionine is thus formed. The body is odorless, and in order to render it odorous it is necessary to convert it into ionone, a product which is very closely related, but which is cyclic, while the pseudo-derivative is of the open chain series. A long series of similar products can be made with other acetones, and these have been studied with the greatest care by Messrs De Laire and Tiemann.

Messrs. Tiemann and Kruger, on treating orris root with appropriate solutions, have separated various products, and, among others, irone, which is the odorous principle of this root, and it was in the wake of these experiments that the synthesis of ionine was made, these two bodies being, in fact, isomerous, and, consequently, very closely related.—*Le Genie Civil* (*Scientific American*).

HOME MADE EXTRACT OF BEEF.

BY JACOB PRICE M.D.

West Chester, Pa.

A reliable and palatable extract of beef, that can be quickly prepared, and at less cost than most of the preparations of this class upon the market, is an important desideratum. I have found such an extract made in the following manner very satisfactory. It is somewhat in the line of Liebig's original formula.

Take of official hydrochloric acid, f℥i; essense of pepsin (Fairchild's. I have commonly used), f℥ ij, and mix them. Of this mixture three teaspoonfuls are to be added to one pound of finely minced lean beef and placed in a quart jar, which is to be nearly filled with cold water. The jar should be tightly covered, the mixture well shaken, and the shaking repeated every half hour. It must be kept cool—in hot weather on ice. After two hours it will be ready for use.

The amount ordinarily taken at one time would be about f℥ ij. This should be salted to taste, and five drops of tincture of capsicum added. Where there is much objection to the taste, a little Burgundy wine may be added.

These directions may appear to some to include an amount of unnecessary detail, but in the preparation of such an extract, as in most other matters in medicine and surgery, it is careful attention to detail that alone insures success. Frequently it is necessary to especially emphasize the instructions as to shaking, and the avoidance of boiling or in any way heating the preparation The beef should be allowed to remain in the jar till all is used that can be taken up with a spoon; then considerably more of the extract can be obtained by turning the beef out into a strong linen towel and twisting it firmly.

Such a concentrated, partly digested food is particularly indicted in cases of gastric catarrh, and in other conditions, acute or chronice, attended with deficiency of the normal secretions of the stomach. I also depend very much upon it in cases of typhoid fever and pneumonia. It is more readily assimilated than any other article of food that I know of.—*Phil. Poly. Jour.*

ENGLISH PHARMACEUTICAL NOTES.

(By our London Correspondent.)

The season of the year suggests an agricultural topic for this letter. Mitcham, with its ancient industry in the cultivation of lavender and peppermint, still retains some of its glory, and at this time is seen at its best. The work of harvesting the crops and distilling is now in full swing, and a short description of a recent visit may be of interest.

My readers will remember that Mitcham oils are official in the Pharmacopœia, although it is stated that in the next edition a little more latitude will be allowed, provided pure oil is used. Besides Mitcham, a small quantity of both lavender and peppermint is produced at Hitchin, in Hertfordshire; but probably only five per cent. of the English oil is produced outside the Mitcham district. The area all round Mitcham for miles is devoted to market gardening, and many of the most successful herb growers are these same market gardeners. The plants are placed in the ground in rows in the months of October or November, old plants being taken up and divided into two or three portions for this purpose. Care is taken to plant them about a foot apart. Hoeing and weeding are necessary through the early spring months, and about the end of July the crop is gathered. This year, owing to the wet, the peppermint and lavender have both run up to a good height, fully 3 feet, and in some cases 4 feet. Consequently the mowing has been done by reaping machine instead of by hand. This only applies to mint of two or three years' cultivation, as the first year's crop is too low. A good deal of the lavender is collected into bundles and sent into Covent Garden, where it always fetches a good price at the commencement of the season. But the mint is made into piles, like hay, dried for a day, and then conveyed in fibre mats to the distillery. Some of the growers make a point, in the case of lavender, of separating the flowers from the stalk, and M. Lelasseur, the proprietor of the business of John Jackson & Co., assures me that the superiority of the oil is very marked. Few pharmacists are aware that there are two varieties of peppermint, black and white, so called from a slightly lighter colour in the stalks and leaves of the white. The flower in each case, however, is purple. But white peppermint has a distinct reputation of its own, although, to the ordinary Philistine, no superiority in the oil is recognizable. The yield of oil is at least 30 per cent. less than that from the black variety, so the price is always some $2.50 to $3 dearer. The principal consumers are the highest class perfumers and confectioners. After harvesting, the lavender fields are ploughed over and freely manured, and crops succeed each year with very little attention except thinning, weeding, etc., for four years, after which the plants are worthless. They are either taken from the ground and burnt, or ploughed deeply in, and potatoes, etc., planted.

Perhaps the most interesting part is the distillation of the oil. This is conducted in enormous copper stills of some 2,000 gallons capacity built over furnaces, from which they receive their heat direct. The condensing worm is usually tin, and, like the stills, very old and massive. It is encased in a wooden vat, through which cold water circulates. A curious feature is the out-let of the worm as it is placed in a cage, capable of being locked, —the reason of this being that small growers bring their own herb and have it distilled at so much a load. They are allowed to lock up the receiver, and so are quite sure of obtainin their full yield of oil.

The yield of oil varies considerably, as may be expected, according to the season. An average fair yield is from 9 lbs to 10 lbs. of oil to a ton of herb. The yield of oil from lavender flowers is slightly higher, being nearer 12 lbs. of oil per ton. It is a curious fact that the freshly-drawn oil of peppermint has quite an unpleasant smell, which can only be described as of green herbs. It is pungent, but not at all strong of peppermint, which characteristic odor is developed after a few weeks. At Messrs. Jackson's Mitcham factory special stills are also in use, besides the old-fashioned kind. In the new stills the oil is fractionally distilled, and a cleaner and purer product is claimed to be produced. Some of the residue left in the still was shown me, and seemed to be like yellow resin, quite without odor or taste.

Besides lavender and peppermint, chamomile and rosemary are cultivated in Mitcham for their oils. The chamomile plants have to be renewed yearly, and during March or April the plants are divided and spread out for the crop. It is harvested in August, when the flowers are distilled with a little of the herb.

We are threatened with 40 new drug stores! This is the somewhat tall order which Parkes' Drug Stores, Limited, have set themselves to execute, if the public will only kindly assist. Perhaps the irony of the situation is accentuated by the discovery, which many chemists must for some years have suspected, that the prime mover and originator is a firm calling themselves wholesale manufacturing chemists. Under the name of Parkes' Drug Store, Messrs. Lorimer & Co. appear to have been for the past two years trading as a cutting establishment, at the same time as they appealed to druggists for support as wholesalers. At their principal establishment in the suburbs of London they claim to have turned over

$40,000 per annum, with a gross profit of 27 per cent. and a net profit of 11 per cent. In the prospectus of the limited company they announce the 40 stores, and special stress is laid upon the West-end establishment, which is to be shortly opened. The fittings are most ornate, and no expense has been spared. There is a surgical instrument room, with a female attendant for ladies. A dark room is provided for the use of photographic customers; and a director gravely assured a press representative that they would have a skilled analyst to perform urine analysis, sputum examination, etc.

The last meeting of the Chemical Society was held at the Royal Institution, to listen to Professor Dewar upon his latest researches. Phosphorescence or Fluorescence, closely allied if not identical phenomena, was the subject. Many articles which would appear to be most unlikely illustrations of phosphorescence were shown to be brilliant examples when placed in an atmosphere of 180 C., and exposed for a second to the electric light. Gelatine and celluloid bodies were shown; and numerous other organic bodies, such as ivory, india-rubber, white of egg, etc., formed splendid examples. As a general rule, the more complex the molecular formula of a body, the more probable that it would exhibit phosphorescence. Pure water is only feebly affected, but traces of organic matter render it strongly phosphorescent. On the other hand, pure oxygen is phosphorescent, but a trace of organic matter, such as ether or alcohol, in the air around, is sufficient to destroy its power. No other gas has similar property; and as oxone is produced it is evidently some molecular change in the oxygen. It is generally admitted that Professor Dewar is on the eve of still further important discoveries that may profoundly affect our knowledge of molecular constitution and the composition of bodies.

DOSES FOR PHARMACISTS.*

BY H. M. WHELPLEY, PH.G., M.D.

The calling of the pharmacist is in responsibility on a parity with its ancient, honorable and sacred history. His duties as a servant of the public are many, and their number does not seem to diminish with the advance of time and tread of new inventions. It is not my purpose to remind you of the individual amenable duties or write an essay on the vocation of the compounder of prescriptions. What I crave is your attention to but one feature of the pharmacist's life. It is one which renders his vocation at once grave and responsible. I refer to the fact that a druggist must compound prescriptions containing, and sell over the counter medicines constituting, agents potent to the extent of taking human lives What adds to the seriousness of the occupation is the innocence of the customer and patient, who is in no position to judge of the nature or power of the substances handled. The confident customer, trusting the knowledge of his physician and assured of the ability of the pharmacist, will take a prescription containing half grain doses of strychnine with the frankness of a friend eating at a social dinner. So it is with the customer who calls for oxalic acid when he wants tartaric acid. To him

"A rose
By any other name would smell as sweet,"

and 'oxalic" does not startle his caution unless the pharmacist mentions the dose and lethal action of the poison.

How important it is then that a pharmacist have at his wits' end the dose of each remedy! True, the list of remedy is too long for mortal memory, but those doses not in mind must be within ready access to the prescription case and dispensing counter. Never guess at a dose; if in doubt, look it up, and see to it that reference books are always convenient for this purpose.

The word "dose," is a short combination of letters coming from the Greek *dz domi*, togive." In our minds and practice must be associated not only the idea of giving, but also that of the "amount" given. It is of this quantity that constitutes a dose, and the conditions that increase or decrease the amount to be taken, that I propose to speak.

From the dogmatic manner in which doses are stated in text and reference books we are led to believe that a dose is a dose and that we can depend on the size with mathematical exactness. Far be this from the physiological and therapeutical truth.

The dose of a medicine is the amount of the substance which exists in the blood or comes in contact with and acts upon the tissues at one time. This is the true meaning of the word when considered from the standpoint of pharmaco-dynamics. A more common definition, and one that applies to the every-day use of the word, would be that "a dose is the quantity of a medicine required to produce a given effect and is usually given at one time." A still more common application of the word is to consider the amount of a remedy given at one time to be a "dose." Thus it is considered by the laity. The pharmacist, however, should consider the dose as the amount required to produce an effect. This leads him to read the directions on the prescription and

*Read before the Missouri State Pharmaceutical Association, at Excelsior Springs, June, 1894.

see how often as well as how much is to be taken.

The size of the dose is regulated not only by the frequency of the administration, but by several other conditions worthy of our consideration

The weight of the patient should be taken into account, for the result of the action of a remedy is in proportion to the weight of healthy tissue with which it comes in contact. Thus, one grain of medicine will, other conditions being equal, produce the effect on a person weighing one hundred pounds that will result from a two-grain dose on a two-hundred-pound individual. Patients with dropsy, tumors or excessive fat are not amenable to this rule. The average man weighs 143 and a woman 121 pounds. Women require smaller doses than men, not only on account of their being less in weight but also from a greater susceptibility to the action of medicine.

The method of administration effects the size of the dose. We give but one-half or one-quarter as much hypodermatically as by mouth, while enemata require about twice the ordinary dose. It has been found that different tissues of the body take up medicine with varying rapidity, and the serous membranes are most active, intercellular tissue next, and mucous membranes next. The size of doses should be in the ratio of this absorption. Liquid preparation are readily absorbed when compared to powders and pills. This calls for smaller doses of tinctures and fluid extracts than of powder or pills of the same remedy.

Familiarity breeds contempt for the power of medicine, as is evidenced by the excessive doses of morphine that an *habitué* will take without serious results. Race has its peculiarities, and only about half the ordinary dose is required by the Indians, Chinese, negroes, and other dark and yellow races. Some claim that blonde Anglo-Saxons require larger doses than the brunettes.

The dose of the same remedy varies greatly with the object for which it is administered. Thus, ipecac in large doses is an emetic, while smaller doses will cure obstinate vomiting due so depression. The effect on dose of the age, purity and strength in the active principle of drugs requires no more than mere mention to pharmacists.

New remedies are sometimes given in doses that time and experience revise by either increasing or decreasing the size.

The minim and drop are sometimes used as equal measures when designating doses. The drop, unless made under proper conditions of temperature, size of container, nature of orifice from which drop is passed, quantity of liquid in container, and rapidity of dropping, will vary greatly with the same liquid. The relative size of drops of different liquids is shown by tables to be found in most standard works of reference.

The age of the patient plays such an important part in the regulation of the size of the dose that many rules have been devised to estimate the approximate dose in relation to age Perhaps Dr. Young's is as safe and generally used as any. It is as follows:

Add 12 to the age of the child, and divide the age by this sum. The quotient is the fraction of an adult dose to be administered. This: a child two years old would require (2 plus 12 equals 14; 2 divided by 14 equals) one-seventh. If the adult dose was seven grains the dose for a child of two years would be about one grain.

Old age again calls for smaller doses, but the requirement is not as generally respected as in childhood.

A table of doses is given below which will assis in determining the amount for different ages:

Age.	Dose.		
One month	1/20	3 grs.	0.200
Three months.....	1/15	4 "	0.250
Six months	1/10	6 "	0.400
Nine months.....	1/9	7 "	0.450
One year	1/7	9 "	0.550
Two years	1/6	10 "	0.650
Three years.....	1/5	12 "	0.750
Four years	¼	15 "	0.950
Five to six years.....	⅓	20 "	1.250
Seven to eight years.	½	30 "	1.000
Ten to twelve years.	⅔	40 "	2.500
Thirteen to fifteen yrs	¾	45 "	3.000
Eighteen to twenty yrs	5/6	50 "	3.260
Twenty to fifty years	1	1 drach.	4.000
Fifty years.....	5/6	50 grs.	3.250
Sixty to seventy years	¾	45 "	3.000
Eighty to ninety yrs.	⅔	40 "	2.500
One hundred years..	½	30 "	2.000

Aside from these influences on the size of the dose the physician must keep in mind the condition of the stomach, personal idiosyncrasy, temperature, temperament, climate, season, time of day, effects of disease, city or country patient, passions under which the patient may be laboring, and many other controlling conditions.

I have endeavored to illustrate that no "rule of thumb" can be applied to dosage, so at best our posological tables are suggestive rather than dictatorial. It is unfortunate that we have no absolute guide, but such is the fate of the professional man. Study, consideration and the exercise of judgement are required.

Although my paper may have shaken your faith in dose tables, I trust it has increased your interest in pharmacology.

Notes on Practical Pharmacy.*

By JOSEPH W. ENGLAND PH. G.

"C. C." COUGH MIXTURE.—Under this name a cough mixture is very largely used in the phthisical wards of the Philadelphia Hospital. It has, in each fluid drachm, the following: Codeine sulphate, one-eighth grain; diluted hydrocyanic acid. two minims; spirit of chloroform and mucilage of acacia, each fifteen minims, and syrup of wild cherry, a sufficient quantity to make one fluid drachm. Dose, one fluid drachm.

DISTILLED EXTRACT OF WITCH HAZEL.—The writer has been informed, on good authority, that the percentage of alcohol in commercial distilled extract of witch hazel is not necessarily an index of its value, for the reason that some dealers buy the cheaper aqueous distillate from the distiller and add alcohol. The only proper product is had by distilling the fresh twigs with a mixture of alcohol and water, whereby a greater quantity of volatile oil is brought into solution than by distillation with water alone.

SYRUP OF WILD CHERRY.—In making this syrup, more especially in summer season, when fermentation takes place readily, it is advisable to add some of the sugar to the percolate as soon as possible to prevent change. The Pharmacopoeial formula of 1870 contained no glycerin, that of 1880 ordered five per cent, and that of 1890 fifteen per cent. by volume. This last increase seems excessive. The greater the percentage of glycerin the greater the amount of tannin extracted, up to a certain point. It is a question whether this increased astringency in the syrup is therapeutically desirable.

BLAUD'S PILLS (IMPROVED).— The usual formula for this much-used, unofficial ferruginous preparation of ferrous sulphate, potassium carbonate, tragacanth and glycerin, can be much simplified and made to yield a more permanent product by using the following formula: Potassium carbonate, one-third grain; potassium sulphate, two grains, and mass of iron carbonate, three grains in each pill. Little or no excipient is required. The pills flatten somewhat on keeping and are best dispensed in gelatin capsules. They are small in size and do not become hard and reddish-brown on fracture as do those made by the old formula.

OINTMENT OF AMMONIATED MERCURY.—This ointment is most difficult to make by the official process and secure entire freedom from "grit" The best method is, for example, to finely powder in a mortar 48 grains of the mercury compound and beat it into a smooth paste with 12 grains of glycerin, and make the official ointment from this as wanted, by admixing one drachm with seven drachms of cerate.

In this connection criticism may be made against the use of alcohol, as in the 1880 Revision, or olive oil, as in the 1890 Revision, to render veratrine smooth in making veratrine ointment. As mall quantity of glycerin is better. Glycerin is also of superior utility in softening extract of belladonna prior to making it into ointment; the Pharmacopoeia specifies diluted alcohol.

MUCILAGE OF SASSAFRAS PITH.—This mucilage is best made by beating the pith in a Wedgewood or porcelain mortar, with a small quantity of *sterilized* water until it gets pasty, expressing through cheesecloth, returning residue to mortar, adding more of the water and continuing as before. In this way, in a short time, a dense and syrup-like mucilage may be had, very different in physical appearance from the watery product gotten by following the official directions of simple maceration in *water* for three hours and straining.

As this preparation is used as an emollient in inflammatory conditions of the eye ball and mucous membranes, it is obvious that the greater the percentage of mucilage in solution the more soothing it will be. In these days of asepsis, the use of *water* in making the official mucilage is an unpardonable sin in the eyes of oculists. Sterilized water, *i.e.*, water or distilled water boiled and cooled, only should be employed. The hour's time in making the preparation is far too long, when it can be better done in a few minutes.

HOPE'S CAMPHOR MIXTURE. This old preparation has been gradually increasing in use, and is recognised by the National Formulary, under the name of Mistura Camphora Acida, which authority follows the formula of Ellis (Griffith's Formulary, 1866, p. 160) in using *nitric* acid. The original formula of Hope, however, specified *nitrous* acid. The formula we have used for years is: Fuming nitrous acid, 2 fluid drachms; tincture of opium, 80 minims, and camphor water, 1 pint. Parrish's Pharmacy (1884) refers to the mixture as follows:

"This formula was originally made public after twenty-six years' experience of its use in dysentery, by Thos. Hope, Esq. surgeon, Chatham, in the Edinburgh Medical and Surgical Journal, January, 1824. Dr. Hope was in the habit of directing *nitrous* acid, *not* nitric, which he says he has "not found to produce any good effect." I have been careful to follow his formula literally, and have for the purpose prepared nitrous acid by the process given on p. 200: though nitrous acid passes into nitric acid by contract with water, this reaction does *not* occur in the presence of an excess of nitric:

*Read before the Pennsylvania Pharmaceutical Association.

acid. Few remedies have a more general and widespread reputation than this; it is now frequently prescribed, more than eighty years after its virtues were originally discovered."

The nitrous acid used is known in commerce as fuming nitrous acid or fuming nitric acid, holding in solution nitrous acid fumes, which latter may be wholly removed by boiling, or largely by simple and continued exposure to air; so that the commercial product varies considerably in strength of absolute nitrous acid.

Remington's Pharmacy (1885), p. 1027, specifies nitrous acid in the formula for this mixture, as does also the National Dispensatory of 1884 (p. 75) and 1894 p. 76) Hope's Camphor Mixture is still largely used, at least with us, in summer dysenteries, and if Mr. Hope's contention as to the necessity of using only *nitrous* acid, *never* nitric is correct, then the National Formulary decidedly errs in following the formula of Ellis and specifying the latter.

The objection sometimes raised as to the difficulty of securing good fuming nitrous acid can be met. The pharmacist can easily make his own nitrous acid, extemporaneously, from sodium nitrite and nitric acid, using quantities sufficient to yield the amount of acid in the formula, which is small. Messrs. Rosengarten & Sons state that sodium nitrite of the new official strength (97.6 per cent.) is readily obtainable.

MEDICATED WATERS.—In the making of medicated waters—save those prepared by distillation or direct solution—the new Pharmacopœia directs precipitated calcium phosphate as the distributing medium in about the same proportion as that directed for magnesium carbonate in the 1870 issue. As was pointed out by the writer ten years ago (A. J. P., 1884, p. 65), in advocating the use of precipitated calcium phosphate for this purpose, it is essential in order to properly distribute the oil, that the lime compound be used in *double* the quantity of magnesium carbonate usually employed, on account of its much less bulk. The official quantity of the lime compound should be 8 gm. to the 1,000 cc. of the medicated water, and not 4 gm. as directed.

It is best to add, as the Pharmacopœia directs *all* the water, to the admixed lime compound and oil before filtration. The practice of some pharmacists adding only a *part* of water, throwing on a filter and then adding further water from time to time, to the contents of the filter until the required amount has filtered through, cannot result in as strong a solution as if the oil had been brought in intimate contact with all water at once.

There is one detail whereby the official proces can be greatly improved, and that is by using in place of the distilled water *hot boiled* water *i.e.*, water boiled and cooled to a point just short of boiling. In following this practice, the writer adds the water to the admixed lime compound and oil, places it in a proper vessel, covers tightly and filters after it has stood for some hours, preferably over night.

The use of hot, boiled water has a number of very decided advantages. These are a maximum solution of the oil and an increased pungency of the water. Boiled water is far more germ proof than the usual distilled water of commerce, which is bellieved to be, in some cases at least, simply condensed steam waste.

Criticism may be made against the use of nearly boiling water for making aromatic waters, on the ground of loss of volatile oil, but practical experience will show that this loss is more apparent than real, that the amount of volatile oil lost by volatilization is insignificant in comparison with the greatly increased amount brought into solution.

Synopsis of a Paper on French Pharmacists and Pharmacy.

Read before the Three Towns and District Chemists' Association, on July 11th.

BY C. J. PARK, M.P.S.

The author, after having paid a well-deserved compliment to the hon. secretary for the energy, persistency and diplomatic way he set about obtaining papers from the members, proceeded to explain that there were two grades of *pharmacien* recognized in France as in England; and that they were easily distinguished by the simple titles of first and second class, the author regarded this as possessing an advantage over the English titles of pharmaceutical chemist and chemist and druggist. He pointed out that the *pharmacien*, first class, could purchase or open a pharmacy in any part of France, whilst the *pharmacien* second-class was restricted to a certain degree in this respect.

Elèves, or assistants, were required to have passed certain standards at the Lycée or schools before they could be registered as *Elèves en Pharmacie* and commence their studies at one of the schools of pharmacy.

All these schools, situated in different parts of France, and generally associated with a school of medicine, with the exception of one at Lille, were under the control of the State, who appointed the professors, fixed fees, etc. Certain only of these schools had the power of granting diplomas of the first class. Students had to be 25 years of age before presenting themselves for examination, and were required to have been six years engaged in pharmacy, and to have followed the course at one of the schools for three years.

The fees for the two examinations were respectfully 200 and 900 francs. Students are furnished with registers, which are signed up each year by the professors and duly appointed authorities, and any change of school or situation has to be duly noted therein. The subjects taught at the schools are:—Natural history, botany, physics, theoretical and practical chemistry, and toxicology.

Assistants not qualified, and not attending a school of pharmacy, are not exempted from military service, but have to serve in the army in any way they may be requestioned.

French chemists are only allowed to have one shop, and are not allowed to have a pharmacy in conjunction with unqualified persons. It is illegal for a medical man, in conjunction with a *pharmacien*, to give gratuitous advice and reap a benefit from prescriptions.

Pharmaciens have the sole right of compounding and retailing medicines destined for the use of the human subject either for internal or external use. Medical men, situated in rural districts where there is no chemist, are allowed to dispense medicines, but if they visit a patient where there is an established chemist, they are not entitled to send medicines. Hospitals and religious communities can compound medicines for their inmates. Secret medicines are strictly illegal, the formulæ of all specialities have to be submitted to a board appointed by the State, and approved of before being allowed to be placed before the public.

The French pharmacies open generally at 7 a.m. and close at 10 p m., all the year round, Sundays included, and some one is supposed to be present at all hours for cases of necessity. Their sales are confined strictly to drugs, chemicals and mineral water, and it would be considered *infra dig.* to handle the variety of toilet articles, etc., which is often an important part of the business of their English *confreres.*

The social status of the French *pharmacien* is higher than in England, and if serving in the army he ranks as a commissioned officier the same as a surgeon.

The chief poisonous drugs and chemicals are required by law to be kept in a locked cupboard in the pharmacy, and the pharmacies are visited at least once a year by officers appointed, who examine scales, poison cupboard, register of poisons sold and prescription book, and stock; they are empowered to confiscate anything faulty, if found, and the owner is fined in that case.

The Codex, which corresponds to our B.P., is hardly up to the date of modern pharmacy, and contains many substances which might very well be eliminated. The French compilers of this work, like our own, being evidently very conservative ir their ideas.

Prescriptions are written in the mother tongue, and the weights and measures used are the metric system. The directions are frequently in consequence omitted to be written on tne label, and simply marked mixture, lotion, (or whatever it may be), *selon l'ordonnance*, according to prescription.

All substances are weighed—not an unmixed advantage considering the different specific gravities of the substances employed.

Wines and syrups are largely used as vehicles in dispensing; cachets are largely used. Suppositories are generally about 30 grs., of a conical shape, resembling an ordinary wooden vent plug. Dosimetric granules, resembling homœopathic pilules, are largely prescribed. These are generally used when prescribing potent medicines, such as strychnine, digitalis, arsenic, etc. Small gelatine capsules, termed "perles," are in frequent use, containing ether, chloroform, turpentine, creasote, apiol, etc., Liniments are largely prescribed, and alcohol, being of a low price they can be used freely without entailing a large expense to the patient.

Bains, or preparations for medical baths, are also generally in demand; also ointments known technically as *pommades*..

The author of the paper strongly recommends young English assistants *after*, certainly not before, having passed their examinations, to endeavor to pass 18 months or more in a continental pharmacy, as tending to give many pleasant recollections in later life, and to broaden their views of life generally, and of pharmacy in particular.—*Brit. and Col. Drug.*

NEROLI OIL. During the whole of the season the price of this article has remained unchanged. The climatic conditions prevailing during April are decisive of the result of the flower harvest, which takes place in May.

It is reported that during the whole of the present year the sale of neroli oil has dragged heavily, and it is, therefore, thought that considerable stocks will be carried over into the coming season.

ODOURLESS IODOFORM.—According to *Lucas Champonniere*, the penetrating odour of Iodoform can be successfully masked in the following combination:—

Iodoform		Equal parts.
Powdered benzoin		
" cinchona		
Mag. Carbonas		

made up with a little eucalyphis oil.

Women's Medical Journal.

PHARMACEUTICAL NOTES.

NEW TEST FOR MORPHINE.—Mr. Lamal describes at a meeting of the Belgiam Academy of Medecine, a new color reaction of Morphine. 2 to 10 drops of the solution to be tested, and an equal quantity of a solution made by dissolving 30 centigrams of uranium acetate and 20 centigrams of sodium acetate in 100 cc. of distilled water, are placed in a porcelain capsule and evaporated to dryness on a water bath, if the solution contains morphine, the residue consists of concentric rings of a brownish red, or hyacinth red. Mr. Lamal has tried this reagent on many other alkaloids, but the residues obtained were colorless or only slightly colored by traces of uranium.

AROMATIC COD LIVER OIL.

	Parts.
Cod Liver Oil	1,000
Lemon Oil	5
Oil of Neroli No 00.	2
English Peppermint Oil	1
Vanillin	0.1
Coumarin	0.01

Dissolve the last two ingredients in the etheral oils by the aid of a gentle heat and mix the solution with the cod liver oil.

IODO-FERRATED COD LIVER OIL.

	Parts.
Iron, in fine powder	2
Iodine	4
Ether	10
Cod Liver Oil to make	1000

Rub the iron, iodine, ether, and 40 parts of cod liver oil together until a black mixture results, then add sufficient cod liver oil to make 1000 parts by weight.—*Dieterich's Manual.*

At a general meeting of the members of the Royal Institution on July 2, the offer of Mr. Ludwig Mond, of the firm of Brunner, Mond & Co., to endow a "Faraday-Davy Research Laboratory" in connection with the Royal Institution, was accepted. Mr. Mond, last year, bought the large freehold house, No. 20 Albemarle Street, contiguous to the buildings of the Royal Institution, and formerly the residence of the Earl of Albemarle. This house he was resolved to convey in fee simple to the Royal Institution. He further proposes to defray the whole expense of converting it from its present uses into a laboratory of chemical and physical research, and of equipping it with everything needful for conducting scientific research upon a large scale. In addition, he proposes to endow the new laboratory, first, with an income sufficient to defray all the expenses of rates, taxes, and maintenance; and, secondly, with a further, and of course much larger, income, sufficient to pay the salaries and incidental expenses of a trained scientific staff, and generally to carry on the work of an institution of this kind in an adequate and business-like manner. It is intended that the new laboratories shall afford opportunities for students to carry on investigations in chemical and physical science. The laboratory is to be free to all persons, without distinction of sex or nationality, who, in the opinion of the mangers of the Royal Institution, are fully qualified to undertake scientific investigation, preference being naturally given to those who have actually done original work. The laboratories will be fitted up with all the conveniences they can possibly require. For Mr. Mond, who has had much experience of continental research laboratories, is determined that the new premises shall be in no way inferior to the existing establishments of the kind. The managers of the Royal Institution have accepted the posts of honorary directors of the new laboratories. The premises are next door to the Royal Institution, and close to the classic spot where Davy first isolated potassium and sodium. The trust which Mr. Mond has handed the Council, and through them to the nation, is estimated at upwards of 100,000*l.*

—*Chem. and Drug.*

THYROID EXTRACT.—Take the fresh thyroid glands of the calf or sheep carefully free from fat and membranous tissue, chop fine and mucerate for 24 hours in twice its weight of glycerine, then express and to the liquid add alcohol as long as a precipitate is produced, which is then washed with alcohol drain and moist magma mixed well with infusorial earth, the alcohol allowed to evaporate. The percentage of extract present may be determined by deducting the weight of the infusorial earth added from that of the finished product.

ON PICEINE, A GLUCOSIDE OF THE LEAVES OF PINUS PICEA.—Mr. Tanret—Piceine, hydrated or anhydrous, crystallises in prismatic silky needles, soluble in one part of boiling water and in 50 parts at 15°, in 20 parts of alcohol at 70°, 68 parts at 90°, and 534 parts of adsolute alcohol in the cold (15°), 33 parts of absolute boiling alcohol, and 123 parts of acetic acid at 15°. It is insoluble in either and chloroform. Piceine is læeo-rotatory: $a_D = -84°$ in solution in water and $a_D = -78°$ in solution in alcohol at 70°. Anhydrous piceine melts at 194°. Under the action of emulsine piceine fixes a mol. of water and is split up into glucose, $C_6H_{12}O_6$, and piceol, $C_8H_8O_2$. Piceine is neither precipitated by tannin nor by basic lead acetate. Piceol behaves as a monatomic phenol.

INFLUENCE OF BORIC ACID ON THE SOLUBILITY OF CERTAIN PHENOLS. Mr. Bernin (Bul. de Pharm. de Lyon) has found that boric acid increased the solubility of thymol, phenol, sa-

lecylic acid to a considerable extent. The solubility of thymol is distilled water which is about 1 in 800 is more than doubled in the presence of boric acid, 3 gm. dissolving easily in a litre of boric solution. For phenol, its solubility is doubled, but it is more particularly on salicylic acid that the solvent power is most marked, while distilled water does not entirely dissolve 1 gm. per litre, with boric solution 8.75 gm. can be dissolved.

Antiseptic Powder.

DR. A. PICK (*N. Y. Med. Jour.*)

The following formula has given the author very satisfactory results in all cases where iodoform is ordinarily employed:

Corrosive Sublimate.....$\frac{1}{5}$-$\frac{1}{3}$ grn.
Boric Acid .....1 ounce.
Tannic Acid.... .....10 grains.
Milk Sugar....sufficient for 2 ounces.

one fifth grain of corrosive sublimate, in this mixture, gives a 1:5000 trituration of bichloride and ⅓ grain, one of 1:3000.

The sublimate should be mixed very gradu ally and thoroughly with the milk sugar,—the other ingredients being slowly added one by one, in order to obtain a uniform distribution of the bichloride.

The author states that this powder is more reliable than any iodoform preparation and has no odor. The tannic acid may be omitted, if its desiccating or styptic action is not wanted.

Science among Codfish.

Artificial propagation and rearing of osseous or salt-water fish is a science which is yet, comparatively speaking, new, but which, according as knowledge advances and new discoveries are made, promises, when aided by proper legislation and protection, to be a most effective means of maintaining and increasing our food supply.

The progress science is making and has made during the last decade, and the vast amount of knowledge gained in a comparatively short period respecting the life, habits and food of various species of fish, as well as of the physical condition of the element in which they live, is remarkable, considering the difficulties under which such work has to be carried on.

Not only is knowledge being gained in the artificial propagation of fish, which is increasing the supply of available material, but the very fish themselves, after having grown large enough to become of mercantile value, are subjected to new modes of science, that turns out articles of merchandise that were thrown away as valueless till of very recent date.

Newfoundland is leading the van to a great extent in these scientific methods, both in the propagation of fish and the manufacture of articles from them.

The fish hatchery on Dildo Island, in Trinity Bay, has, during the past four years, planted over 423,000,000 of young codfish, which were able to swim about and take care of themselves before they were given their liberty in that large bay.

It was often stated by many that these codfish would swim off in the broad Atlantic and never be heard of again; but a curious phenomena presents itself, and proves that Newfoundland is a most desirable spot for fish culture. The cold Arctic current which sweeps past the mouth of this large bay, besides bringing an inexhaustable supply of food to the fish, also acts like a fence in preventing them from migrating, as the temperature on the outside is too low for codfish to live in, and of course turns them back to the warmer strata and shoals on the inside.

The local fishermen are the ones that are best qualified to decide on the benefits accruing from this hatchery.

The oldest men say that not since they were boys have they seen such immense quantities of codfish as have appeared there this year on grounds that they thought were depleted, and the fish are mostly of small size, being one, two and three years old.

So much for the success of the propagation of codfish. Now let us turn to see what use is made of the codfish after the fishermen catch it.

If we proceed to Harbor Grace, where the most improved styles are now in vogue, we will see vessels landing thousands of quintals of the finest codfish, drawn only a few days before from the depths of the ocean, and which, after a few days handling, are turned out again in assorted boxes, 5, 10, 20 and 40 lbs., labelled "Pure Boneless Codfish."

But what becomes of the bones and skins which are separated from the fish in the preparation of making this well-known household article?

We have only to turn in another direction, and we see large ovens employed in drying and parching these bones, while at a short distance are crushers worked by steam, grinding the bones to a powder; and finally fish fertilizer, that contains about double the essential ingredients of the ordinary fertilizer, is turned out, ready for sale on the market. A mixture of this bone-dust and water is guaranteed to made flowers bloom all the year round.

We pass along to another factory, and here are vats and tanks, with codfish skins soaking in water, in preparation for making Munn's Liquid Fish Glue, that rivals everyth ng known in the adhesive line. Here we see

large boilers steaming as the glue is being boiled and strained, and put up thin for mucilage, or in thicker form for heavy work.

This is not all that can be utilized from the codfish. The tongues are extracted, packed fresh in tins, similar to oysters, and prove a great luxury.

The Newfoundland manufacturers were not satisfied when they saw the Norwegians taking a higher standard than theirs, but they set to work, and found out all the secrets of the Norwegian non-freezing process, and now, in recent experiments, it has been demonstrated that Newfoundland oil, when properly manufactured, stood the cold test at 19° below freezing point without showing a sign of any change, while samples of Norwegian, said to be non-freezing, began to turn at the freezing point, and at 14° below were perfectly thick.

Another advantage which Newfoundland oil has, and which needs time to demonstrate, is that it digests more easily, even on the most delicate stomach, than any Norwegian. This has undoubtedly been proved in hospitals, both in Paris, Halifax and Boston, by well-known and leading physicians.

Again, it is an undisputed fact that Newfoundland codfish are the finest in the world; and there is every reason for saying that, with proper care and attention, the articles produced from this fish must be superior to those put up from inferior fish.

The firm of Munn & Co. have taken the lead, in many respects, in more fully utilizing the codfish, and at great risk and enormous expense have sent Newfoundland oil as a result (far that alone will interest our druggist readers) to the markets of the world, equal in every way, and superior as to cold test, to any cod liver oil ever furnished by the Norwegian factories It takes time for a knowledge of the quality of this oil to become known; but it would seem as if the days must be really numbered for the trade to pay 50 cents per gallon more for oil from Norway than for an equally good article, at any rate, from Newfoundland.

Waterborne Typhoid Fever.

The remarkable epidemic of enteric fever which has been running its course in Paris during the past six weeks seems likely to be full of interest from an etiological point of view. For some years there had been a notable diminution in the prevalence of this disease, when suddenly, in the middle of February, at a time of year when typhoid is not especially common, and when the general mortality was below the normal, an outbreak occurred which quickly ran up the number of those in hospital to a considerable figure. We gather that from January 1st to Feb. 18th not more than an average of 11 cases of typhoid fever a week entered the Paris hospitals, when suddenly the numbers rose to 237 in the last week of February, and 217 in the first week in March. Or, putting the matter another way, while on February 21st there were 79 patients under treatment, on March 13th there was 588. since March 9th, the number of fresh cases has been decreasing. Here we have a sudden break such as is characteristic of waterborne typhoid. The sources of supply are, then, of great interest, and especially the relation of the areas of distribution of the different waters to the intensity of the epidemic. Paris is supplied with drinking water, *eau de source*, from the sources—Dhuys, the Vanne, and the Avre, and in many of the different districts served by these sources shows that the part of Paris supplied by the Dhuys is but little affected by the epidemic, also that served by the Avre, while that of the Vanne has been specially attacked. For each 1 000 inhabitants the mortality is in the Vanne district 0.46, in the Avre 0.20, in the Dhuys 0.16, showing a large preponderance of epidemic on the Vanne supplied district. On further inquiry into the incidence of this outbreak of fever, we note the following important facts: 1. The onset of the epidemic was sudden and unforseen, recalling rather at attack of acute poisoning than the gradual spread of an ordinary epidemic. 2. The typhoid fever remained exclusively confined to the *enceinte* of Paris and to the garrison within the walls. 3. The barracks supplied with Vanne water were alone attacked; those supplied with water from Dhuys, the Marne, and even the Seine have furnished no case of typhoid fever. Under these circumstances it is a matter of great interest to hear at Sens, a town situated on the Yonne, near the point where it receives the Vanne, 70 miles or so above Paris, an epidemic of typhoid fever was in progress at the same time. We shall await with much curiosity the report of the Commission which has proceeded to Sens to investigate the affair. For both Paris and Sens are supplied with Vanne water.—*Brit. Med Journal.*

Nature reports the results of Dr. Alessi's experiments upon the effects of sewer gas on typhoid fever. The rats, rabbits and guinea pigs used when exposed to the inhalations of sewer gas became so predisposed to infection that a small dose of an almost harmless cultivation of typhoid germs killed them. The animals not so exposed rallied from the same, and even far larger doses. Long continued exposure to the sewer gas was apparently much less dangerous than a short exposure. They evidently became used to the gas, so that effect was less pronounced.—*Popular Science.*

Correspondence.

Transpotration Committee of the American Pharmaceutical Association.

To the Editor of THE MONTREAL PHARMACEUTICAL JOURNAL.

SIR,—Thomas F. Main, chairman of the committee, having resigned, President Patch has appointed in his stead as chairman Caswell A. Mayo, 37 College place, New York city. The committee is actively engaged in perfecting their arrangements as regards rates An uniform rate of one and one-third fares has been promised from some sections, and will probably be granted from all over the United States. To obtain advantage of these rates, it will be necessary for persons attending the meeting to pay full fare going, and obtain a receipt for the ticket at the full rate from the ticket office at which it is purchased on an Association certificate. This receipt, when countersigned by the secretary of the association at the meeting, will enable the delegate to purchase a return trip ticket for one-third the regular rate. In some sections it may happen that the regular summer excursion rate will be less than one and one-third fares, in which case the delegates will probably be advised by the local members of the transportation committee to purchase regular excursion tickets. Details of the arrangements have not yet been completed, but will soon be published.

The names of the committee are as follows: Caswell A. Mayo, chairman, New York city; Harry Sharp, Atlanta, Ga.; S. A. D. Sheppard, Boston, Mass.; A. E. Ebert, Chicago, Ill.; W. J. M. Gordon, Cincinnati, Ohio; Charles M. Ford, Denver Col.; A. K. Finlay, New Orleans, La.; M. W. Alexander, St. Louis, Mo.; William M. Searby, San Francisco, Cal.

Yours very truly,

CASWELL A. MAYO,
Chairman.

EUCALYPTUS OIL. The influenza epidemic has exercised a considerable effect upon the consumption of this oil and, a few months back, provoked a lively trade in this article. Since about two months, however, we have again to record a material decline.

In order to meet the sharp competition of the Australian product, the distillers in Southern France and Algeria have been compelled to make concessions in price to preserve their outlet for the distillates of the globulus variety. This oil, when deprived of its low-boiling fractions and well rectified, has a eucalyptol percentage of from 60 to 70, and is undoubtedly the best quality of eucalyptus oil obtainable in commerce.

Another fact which tends to diminish the direct consumption of many kinds of eucalyptus oil is this, that, owing to its cheapness pure eucalyptol is being employed more and more. This alone ought to be used wherever there is a question of precise scientific therapeutics.

A new kind of eucalyptus oil, said to be distilled from the leaves of *Eucalyptus Risdonia*, has been imported into London. Samples sent to us showed it to have a sp. gr. of 0.915 and an optical rotation, in a 100 mm tube, of 4°49′. This oil has a very pleasant, mild odour, and is moderately rich in eucalyptol, in addition to which, however, it also contains phellandrene.

College Announcements Received.

Thirty-fifth Annual Announcemennt of the Chicago College of Pharmacy. Hon. Emil Thiele, Ph.G., president; W. B. Day, actuary.

Catalogue of the School of Pharmacy, University of Kansas. Lucius Elmer Sayre, Ph.G., dean; E. F. Engel, secretary, Lawrence, Kan.

Ontario College of Pharmacy. Chas. F. Heebner, Phm B (Tor.), Ph.G., dean; Isaac T. Lewis, registrar, Gerrard street East, Toronto.

Massachusetts College of Pharmacy. Twenty-eighth Annual Catalogue. Chas. G. Williams, Ph.G., M D., actuary, Boston.

Philadelphia College of Pharmacy. Seventy-fourth Annual Announcement. Chas. Bullock, Ph.M., president; Thos. W. Wiegand, actuary.

JOURNAL NOTES.

SOURIS, P.E.I.

On the morning of August 2nd, Mr. T. M. Doyle, druggist, of Souris, P.E.I., died suddenly, his death being attributed to an overdose of some fatal drug. He came to Souris last spring from Halifax, but was formerly a resident of Charlottetown. He was thirty years of age, and leaves a wife and one child.

NOVA SCOTIA.

On Tuesday, 7th August, the Nova Scotia Pharmaceutical Society elected the following gentlemen as officers for the ensuing year: J. B. Hattie, president; George Sterns, vice-president; A. H. Buckley, secretary; W. H. Hamilton, registrar; L. J. Mylius, treasurer.

W. C. Sutherland, formerly of River John, has opened out a branch store in Stellarton, N. S.

Trouble and Loss in Storing Stock.

BY PROF. E. L. PATCH, BOSTON.

Presented to the Mass. State Pharmaceutical Association, Worcester, June 26, 1894.

In our previous paper on "Deliquescence, Effloresence and Change," we called attention to many changes in salts or chemical com pounds inflicting loss upon the pharmacists, and in this we give brief mention of the loss of chemical solutions, galenical solutions and drugs from natural causes, that are so well known as often times not to be considered.

We will arrange these changes under the headings—1st. Changes produced by Cold. 2nd. By Heat. 3rd. By Age. 4th. By Exposure.

1st. CHANGES PRODUCED BY COLD.—Our common light wines in winter are often injured by freezing, from exposure in transit or careless storage. Beef, iron and wine, coca wine and other of our medicinal wines may become unsightly from this cause.

Many of our syrups being nearly saturated solutions, if exposed to cold during transportation from one point to another, or in storing, will crystallize and lead to unjust complaints.

Floral waters and antiseptic solutions become turbid and are sometimes hastily condemned when a normal room temperature would restore them to their standard condition.

Some of our elixirs are subject to this change. Elixir triple phosophates is a notable example. We have known it to become very unsightly from this cause.

Elixir calisaya, from the bark, becomes turbid from cold as does aromatic spirit of ammonia, soap liniment and many colognes. Tincture citrochloride of iron that has been made by the N. F. and contains an excess of saline matter precipitates on being subjected to a temperature lower than that in which it was prepared.

Many solutions of salts, as solution of citrate of magnesium, are decomposed by excessive cold.

Face lotions, face creams, etc., mixtures of chalk, bismuth, etc., with perfumed waters, or emulsions of fixed oils or fats may be injured by freezing, or, in the latter class, decomposed by low temperatures.

Emulsions of cod liver oil are sometimes split and badly granulated by exposure to low temperatures.

The thickening and partial solidification of some of the fixed oils by cold is well known; yet we recall the return to a wholesale house of a five gallon can of oil that had been exposed for a few hours to a temperature of 10° F. below zero because it was not limpid enough to suit the purchaser when it first entered the store. He was a trained pharmacist, but temporarily a thoughtless one.

2nd. CHANGES PRODUCED BY HEAT—A very common experience is the injury of aromatic drugs by exposure in paper packages on upper shelves of a store-room where the temperature is often excessively high

Drugs containing fixed oils are sometimes similarly stored, the oil is absorbed by the packages, is oxidized and the rancidity imparted to the entire mass. Ground flaxseed is a familiar example

Again, wine of coca, beef, iron and wine, and similiar preparations are placed in a window, exposed to the sun. The corks dry, the alcohol is volatilized, the product ultimately soured and decomposed, the formula condemned, and yet the entire fault is careless storage. You have all seen windows filled with goods of this class without protection from the sun's rays, although a moment's thought would convince one of the impropriety, and observation would show how soon the alcohol strength can be reduced from 20 or more per cent. to less than 14 per cent.

The heat may induce precipitation without reducing the alcohol strength abnormally.

Tinctures and fluid extracts in show bottles upon upper shelves become very much overheated, especially by combined heat of furnace and gas light in a close store of a winter's evening. The alcohol volatilzes to the upper part of the bottle, lifts the stopper and escapes, weakens the alcohol strength and causes precipitation. We have known tightly stoppered bottles to break under the pressure induced.

Pills and tablets of salol, salol and phena cetine and other salol combinations are softened and made unsalable by exposure to an elevated temperature.

We have known a druggist to complain of these products becoming adhesive, citrate of iron and quinine pills bursting and many extract pills spirting. Examination showed that they were stored on the upper shelf of a prescription case in a poorly ventilated corner and in close proximity to the gas lamp.

Pills containing large quantities of extracts are liable to change on long keeping unless they have been hardened by use of an excess of gum in making the pill.

Pills of extract of cascara, pills consisting largely of aloes, ergotin, ext. damiana, ext. gentian, ext. hyoscyamus, copaiba, etc., require long drying before coating or special care in massing and careful storage to prevent loss of shape and softening.

The oxidation and darkening of ferrous iron preparations is too familiar to call for extended notice. So also is the gradual decompcsition of syrup of hydriodic acid.

Ointments containing oil of cade or oil of tar change from a light brown to a very dark color. Ointments containing iodine darken, while those containing iodoform change more radically. Syrups of the hypophosphites change and give an acid reaction and are often wrongfully condemned, They sometimes decompose with the formation of fungus growth. This is quite different from the first change referred to.

Syrup of lactophosphate of lime and other lactophosphates in solution cause trouble in the same way unless special care is used.

The darkening of syrup of phosphates of iron, quinine and strychnine with the precipitation of basic phosphate of iron combined with strychnine and quinine is familiar to every druggist of experience.

Elixir pepsin and bismuth and elixir pepsin, bismuth and strychnine sometimes precipitate on standing. It may be caused by loss of ammonia in the ammonia-citrate of bismuth or by gradual reaction.

Elixir calisaya from the bark must be substituted by that made from alkaloids if all precipitation is to be avoided.

Coca wine, if containig five to ten per cent. of leaf, always precipitates on standing, and requires filtration to keep it clear.

Basham's mixture, sol. acetate of iron and tincture acetate of iron all precipitate from the gradual formation of basic acetate of iron, or oxyacetate. Ten per cent. oleate of mercury reduces, and metallic mercury precipitates.

Oleate of morphine changes a very deep brown color. Solution of subacetate of lead and lime water each become unsightly from formation of carbonate from occasional exposure to the air. Solutions of potassa and soda absorb carbonic acid and change from hydrates to carbonates. Many granular effervescent salts lose their effervescence, darken in color, and become less soluble.

Lozenges containing much sugar and extractive absorb moisture and becomes soft and porous. Some, like guaiac lozenges, change from brown to green in color.

Cacao butter suppositories require care in keeping. The change in color of those containing extracts and those containing iodoform, etc., are familiar to you all.

Nearly all recognize the change in flavor and aroma brought about by aging liquors, as whisky, brandy, wines, etc.; they also know that colognes and other perfume extracts are much changed by storing, but forget that fluid extracts and elixirs undergo the same modifications in taste and color, by similar treatment. Practical experimentation will convince anyone of this.

4th. CHANGES PRODUCED BY EXPOSURE.—There are reduction and decompositions brought about by exposure to the sunlight, decomposition and darkening by oxidation, decomposition and precipitation from evaporation. The decomposition of the volatile oils with development of ozone and formation of resins is familiar to all.

The changes in chemical salts by efflorescence, deliquescence and decomposition and the changes in chemical solutions from exposure have been previously referred to in detail.

Pills of valerianate of iron, or the valerianates of iron, quinine and zinc, of salicylic acid, of iodide of iron, protochloride of iron and nitrate of silver are liable to change.

Collodion is often rendered too viscid for use by the evaporation of the ether solvent, which should be replaced before dispensing.

Ointments. Common lard being a mixture of solid stearin and liquid olein, is easily separated and made granular by a slight elevation of temperature and subsequent cooling.

The pharmacist learns that lard oil, the olein of the lard, can be separated from it by simple pressure, and that it varies as it is cold pressed or warm pressed, yet he queries when his lard or his ointments made from it become granular on storing. It is supposed to liquify at 100° to 104° F., and this permits zinc oxide and many other heavy insoluble medicaments to precipitate, while extracts may separate out.

The U. S. P. 1890 suggests the addition of 50 per cent. or more of white wax in summer time to obviate this trouble, but in winter the product would be too firm in some sections of the country.

Belladonna Ointment	
Chrysarobin	"
Stramonium	"
Iodine	"
Iodoform	"
Iodide of Lead	"
Iodide of Potass	"
Nutgall	"
Zinc Oxide	"

have caused trouble on account of the alternate fusing and cooling of the lard base. The hard white masses observed in the ointment consist of separated stearin. Where these ointments are sent out to the patient in porous boxes, permitting the absorption of the olein, the product constantly changes, and all the more readily becomes rancid from oxidation over the large surface exposed.

Iodoform is decomposed by elevated temperatures. Sugar-coated pills and lozenges may likewise be impaired by over heating, causing the mass to stain the coating unless it is first subcoated.

3rd. CHANGES PRODUCED BY AGE.—These are either the formation of precipitates, the change in color, or the formation of decomposition products.

In many fluid extracts, precipitation must, inevitably occur if the preparation is made with a menstruum of full strength, or one capable of removing all the soluble principles of the drug employed. This is due, in part, to the alteration in the character of the solvent as it passes through the mass of drug operated upon. It is influenced by the temperature of extraction in comparison with the temperature of storage, and is also the result of changes in the character of extractive, but little understood. These latter may be oxidation changes, reduction changes or reaction changes. Familiar examples are the precipitates occuring in

Fl. Extract of Buckthorn Bark,
" " " Chestnut Leaves,
" " " Kola nut,
" " " Marigold,
" " " Pareira brava,
" " " Queen of the Meadow,
" " " Senega,
" " " W. Cherry, B'k, 1880, 1890,
" " " Broom,
" " " Ipecac, 1890,
" " " Malt,
" " " Licorice Root,
" " " Sarsaparilla,
" " " Uva Ursi,
" " " Witch Hazel leaves,
Tincture of Belladonna,
" " Galls,
" " Marigold and others.

Parallel changes are the gelatinizing of fl. ext. kino, tincture kino, fl. ext. marigold, fl. ext. gravel plant, fl. ext cinnamon, etc.

The pharmacist is aware that he finds it necessary to filter the contents of his shelf bottles, that his tinct. Cinchona, tinct. rhubarb, tinct. gentian comp., etc., shall be clear, bright and free from deposit, but expects that he can purchase these products and the more concentrated fluid extracts and have them kept indefinitely. Sober judgment should convince him that the produce must vary in drug strength or menstruum from the standard, or be stored until long precipitation has brought about the desired result, if he is furnished such products.

Marked changes in color are still less understood and often lost sight of. We instance the change in color of syrup of garlic from its colorless fresh condition to a black color on standing. We have known this to make serious difference in a prescription dispensed at different stores, and have known a pharmacist to declare that it never was colorless.

Fl. ext. malt is another example. When freshly made it is a pale amber color, but gradually changes to a very deep, rich, brown color,

We once heard of a professor of chemistry who informed his class that the dark fluid extracts were colored by overheating during evaporation and should be rejected. If he has been observing he may now know that a fluid extract made by repercolation and not subject to heat will inevitably grow dark colored. It was simply a case where a wrong conclusion and false instruction came from insufficient knowledge.

THE DRUGGISTS' BOGIE MAN.

BY CHAS. M. TROPPMANN, PH. G.

Night succeeds the day, and day succeeds the night; the earth is round, and gravity causes water to seek the lowest level; but I am not going to hire a hall to inflict upon you the proofs of the earth's rotundity, nor a dissertation upon gravity, nor the reasons for the alternations of day and night. I do wish, however, even at the risk of being tedious, to rehearse and rehash a fact which is just as much of a chestnut as either of these mentioned and upon which our opinions are equally unanimous, and a circumstance, too, which all of us equally deplore. I allude to the woeful scrawl which a great many physicians make on their prescription blanks, blindly and wildly conjecturing in their innocence that they are characters which really convey a meaning which some one else will be able to decipher and understand. I tell you the man that must read prescriptions is a small potatoe and few in a hill, and is very often made to feel it most keenly. The reckless haste which allows the physician to send forth an illegible prescription is really a very serious fault and one which is as exasperating to the druggist as it is dangerous to the life of the one for whom the prescription is written. Illegibility is a bad enough defect in anyone nowadays; in the man with a college training, even such as is obtained in a medical college, it is somewhat inexcusable; but when that same man's indifference to every one but himself permits him to send forth his unintelligible scrawls, where the health and welfare, and even the life of others is at stake, then it becomes a most serious and unpardonable fault indeed. If he is not afraid of his own judgement, skill and learning, why does he not take a little pains to make his meaning clear, or has he really such an exalted opinion of our—the druggists' —skill, penetration and cleverness in reading occult and cabalistic mysteries that he need only think his thoughts over a piece of paper and make any kind of mark thereon, and we, the compounders, will at once fathom his idea and put the prescription up correctly? Possibly he has. But the sequel seldom bears the notion out, for the very next morning he'll be

around to make a kick, and he can kick—and a howl—and he can howl, because you dispensed syrup of anything instead of syrup of about the same thing, when he had distinctly marked what he wanted with a scrawl that looked more like a tangled fishline than it did like the name of any pharmaceutical preparation. It is claimed by some that this habit of writing in a scrawling, and all but undecipherable hand, is a piece of affection often practiced by newly fledged M. Ds. to hide the fact that they are mere tyros at the business, and to make the public believe that they are thoroughly versed in the minutest details and mysteries of their profession. If this be so, they exhibit in this practice one disqualification for the profession which ought to offset all the qualifications, the possession of which they claim by virtue of a duly signed and sealed diploma. It no doubt often is due to haste, but can there be any excuse for jeopardizing health and life for the sake of saving one or two minutes of time? It is impossible too, that some doctors really cannot write better than they do. A physician told me not many months ago, after I had criticized his writing, that he once wrote a contract for a society of which he had been chosen the physician, and that for some some error it was returned to him for correction, and that he was puzzled himself, as he could not read his own writing any more—and for such men we risk our reputation. Another M. D. told me once when I spoke of his penmanship that if I got stuck I should give anything.

However, it matters very little from what causes the doctors of whom we complain write so very illegibly. The fact remains that a great many do so, and that it often leads to serious results. Scarcely a week passes but we hear of some more or less serious mistake on the part of some compounder, which can be directly traced to the bad caligraphy of the prescriber, and then, will the careless prescriber protect you? No, he will not. He will assert that it was written as plain as it possibly could have been, and that you could not make it out, and of course you are not a fit person to prepare his prescriptions. Should one of those scribbled recipes reach you, and you should not be able to communicate with the scribbling doctor either by telephone or message, and you are compelled to give the prescription the benefit of the doubt, and you prepare something, not that which the doctor intended, then the doctor will kick, instead of protecting you, but will he do it? No, a thousand times no; and though you have been located forty or fifty years in that neighborhood and possess the confidence and respect of everybody, and prepared what you thought was right and it was wrong then you might as well sell out or move away, as the entire neighborhood will say, "he has made a mistake in making a prescription." It is difficult to say how this practice can be stopped; but if we can do nothing more I think it is proper that we at least enter a protest. It would be difficult enough to decipher most of these hieroglyphics even if the names of the preparations prescribed were written out in full, but the importance of distinct caligraphy, even to the most skilled and experienced pharmacist in order to avoid mistakes, becomes still more apparent in view of the arbitrary manner in which almost all doctors abbreviate the names of drugs and pharmaceutical preparations. It is really astounding what liberties they take in the matter of abbreviations. The doctor seems to forget that the names of many drugs even if written out in full are very similar, and when it comes to seeing them abbreviated in this peculiar and arbitrary manner, they become absolutely indistinguishable. Then add to this the perplexities hurled at us by the foreign doctor—the French, German, Italian, and Russian, or what not, who has not yet familiarized himself with the nomenclature of the U. S. P. druggist and our cup of misery is about to overflow. I repeat, the American who must read prescriptions is a small potatoe and few in a hill.

Another item is the careless way of writing the directions—such an important matter, too. I present here a sample of one, and only after inquiry from the doctor by telephone was I enabled to write the directions—and such has frequently been the case—or are we to cover up the carless writing by saying, "As directed"—although we frequently have to make use of that phrase—and I do say, right here, a physician should never use the phrase, "As directed," but give the fullest instructions possible; but nevertheless such is the case. We might be able to decipher the prescription, but by all means let the directions be plain. Should it not be, and you inquire from your customer what directions the doctor gave, doubts will at once be raised of your ability and fright infused into their minds, and probably the doctor seen, and you are the poor innocent creature who will catch fits. Is it not so? Before my closing argument, permit me, just for a matter of facts, to present to you the signatures of many of our most prominent M.D's. I go so far as to bring six separate signatures by the same doctor, and had these several signatures been attached to checks five of them would have been refused by the paying teller. Had you ever to step out from behind your *sanctum sanctorum* and ask—for no other reason than to affix it to the label—the doctor's name, and when asked why, you had to say the doctor either forgot

to sign it, or it was so badly written that you could not make it out—and if you could not read the thoughts in your customer's mind, you could easily imagine them. Why should a physician do that? Why should he abbreviate his signature? It is as necessary as the names of the ingredients. Look at these signatures, and I am willing to wager that if those signatures be placed before the most intelligent professor at Oxford, Frankfort or Berkeley, and be their special branch the Hebrew, Greek or Chinese language or Egyptain, Aztec, Malay, or other hieroglyphics, they would not be able to decipher 10 per cent. True, most of these signatures we druggists become familiar with; but alas, we cannot be familiar with them all, and that is the very reason why each doctor should endeavor to write his name in full and in plain letters. I admire the lady doctor in this regard; if nothing is plain in her recipe, the signature is positively so.

I do not intend to criticize and individual doctor, nor ridicule him in any way; I am far from that. But it is a necessity for him to write plainly and carefully if he wishes to avoid mistakes.—*Prov. Cal. Phar. Society.*

THE PRACTICAL USE OF THE METRIC SYSTEM.

By John E. Groff, Ph. G., R. I. Hospital, Providence, R. I.

It is difficult to sum up all the advantages coming from the use of a system in which the measures of length, capacity, gravity and expanse are all directly related to one another, and from any given one of which, all the others may be derived. Such advantages *do* exist, however, and are constantly making themselves manifest to those individuals using the system.

More difficult than the summing up of those advantages by those persons who know them, is the task of unlearning the *old* systems by those who would learn the new.

There is a large class who, for various reasons, know little or nothing of the metric system and its practical use. Many, calling themselves good, hard-headed business men, without disparaging the system in any way, will leave it alone until fairly driven into contact with it, *unless* they see money in it. They have neither the time nor the inclination for a thing that does not pay. In endeavoring to give a few hints concerning metric weights and measures and their practical use, it will be taken for granted that the reader has, or will, inform himself as to the origin of the unit of the system, and is at least aware of the existence of tables of weights and measures, and of the terms expressive of their multiples and subdivisions.

In the U. S. Pharmacopœia of 1890 we find that the terms gramme (abbreviated Gm.) and cubic centimeter (abbreviated Cc.) are the only terms used. Furthermore we find by reference to the table that there are a number of terms beside those just mentioned, which are *not* used in the Pharmacopœia. Let us consider *why* so many terms are given and so few used. In our system of money we have mills, cents, dollars, eagles and double eagles. A stock broker makes or breaks fortunes on the rise or fall in value of one *mill* per bushel of wheat. But although he owes so much to a *mill* per bushel, he never speaks of a mill by name. He says the tenth of a cent. Similarly he never speaks of eagles or double eagles, but applies the name dollar and numbers them by tens, hundreds and thousands. Just as in our monetary system we commonly discard the use of the terms mill, eagle and double eagle as being unnecessary and burdensome, so with the terms of the metric system, we reserve just those which are necessary to express such quantities as we ordinarily handle, rejecting, as liable to confuse, all the others.

If we were coal dealers we should find kilogrammes useful. If milk dealers, liters would be our measures, but as dispensing pharmacists, grammes and cubic centimeters are all we need. Ordinarily a physician writes for drams of solids and drams of fluids. The solids are weighed, the fluids measured. The *sign* used in both instances is the same, viz., ℥ i. So also in the metric system, the cubic centimeter being the fluid measure of one gramme by *weight* of water, the same decimally written figure stands for either, as the case may be. Thus, by quinine—1. and water—1. we are to understand that one gramme of quinine is to be *weighed* and one cubic centimeter of water is to be *measured*. Grammes, then, and cubic centimeters are represented by the same figures. A. B. Taylor, of Philadelphia, in Oldberg's unofficial Pharmacopœia, suggested long ago, as a great help, the use of the terms grammes and *fluid* grammes, the same as we say *drachms* and *fluid* drachms.

In the fractional parts of grammes and cubic centimeters we also throw out as many terms as possible We say milli-grammes or millicubic centimeters.

In writing a prescription on the plan adopted in this country, of *weighing* solids and *measuring* fluids, abbreviations of the terms become unnecessary.

Morphine sulphate..... 1
Water..... 30
M. ft. sol. Dose, 5 M.

Here we understand one gramme of morphine sulphate is to be *weighed* and thirty *fluid* grammes or cubic centimeters of water are to be *measured*. It is as easy, surely, to weigh one gramme as it is to reduce it to grains and weigh them, and it is an easy to measure thirty fluid grammes or cubic centimeters as it is to reduce them to fluid drams and measure them, for the adoption of the system as the official standard should be followed by all those calling themselves good pharmacists supplying themselves with weights and measuring glasses to correspond. As soon as he has done this one great stumbling block has been removed, and he has no more *reducing* to do. There are two other difficulties. One is the trouble in learning to *think* in the new system; this is overcome by practice. The other is one which is likely to present itself to us for a long time to come, if not always, and that is that the common people who *take* the medicines will be directed to take them by drops, by teaspoonfuls, by tablespoonfuls, etc., etc. By *thinking* in the new system I mean that ability to tell by experience, how much we want. We say we want an ounce, or a pound or a pint of anything, because we are familiar with the bulk represented by those names. So in dosing, we understand that one grain is a certain small quantity and that 1/100 of a grain is a *very* small quantity, but when we are asked for a dose of one hundred and twenty milligrammes of quinine in thirty cubic-centimeters of whiskey, the figures have a dangerously big sound to the ear, for we are unfamiliar with them. There are two good ways to overcome this first difficulty. We *must* learn by heart a few comparative figures and then we must make use of some price list printed in the new system. Those of Squibb and Merck perhaps, one containing a price list at so much per Kilo, etc., and the other giving the doses in both systems, are two as good as can at present be obtained. I have found the following table of figures very helpful:

·065 (Sixty-five milli-grammes) = 1 grain, about.

·065 (Sixty-five milli-cubic centimeters) = 1 minim, about.

1. (One gramme) = 15 grains, about.

1. (One fluid gramme or one cubic centimeter) = 15 minims, about.

4. (Four grammes) (of 15 grains each) = ℥ i, about.

4. (Four fluid grammes or 4 fluid centimeters of 15 minims each) = f ℥ i, about.

30. (Thirty grammes) of 15 grains each = ℥ i, about.

30. (Thirty fluid grammes or 30 cubic centimeters of 15 m. each) = f ℥ i, about.

500. (500 grammes of 15 grains each) = 1 lb. Avoir., about.

500. (500 fluid grammes or 500 cubic centimeters of 15 m. each) = 1 pint, about.

1000. (1000 grammes or 1 kilogramme) = 2 lbs. Avoir., about.

1000. (1000 fluid grammes or cubic centimeters or one liter) = 2 pints, about.

It will be noticed that the figures are not exact equivalents, nor is it necessary. That is not the object. When that great pioneer in good pharmacy, Dr. E. R. Squibb, labels some of his preparations as containing *about* so-and-so, there is no inaccuracy implied. It is an honest acknowledgment that the nearest *practical* approach to perfection has been made. So with these equivalent figures; they are sufficiently near for all practical purposes. As an illustration, I take the following figures from two works in wide circulation and of recognized authority.* One gives approximate and the other accurate figures. One says morphine sulphate may be given in doses of one-eighth to one-fourth of a grain, or ·008 to ·016 (eight to sixteen milligrammes). The other says from one-twelfth to one-half grain, or ·0054 to ·0324 (five and four-tenths to thirty-two and four-tenths milligrammes). This latter would be something like saying from one-twelfth and four-tenths of a twelfth to one-half and four-tenths of a half grain for a dose.

See, too, how easy the fractional parts of a grain become:—

1 grain being the same as ·065 (65 milligrammes); ¼ grain is one-quarter of ·065, which is ·016 (16 milligrammes); ⅛ grain is one-eighth of ·065, which is ·008 (8 milligrammes); 1/16 grain is one-sixteenth of ·065, which is ·004 (4 milligrammes); 1/32 grain is one thirty-second of ·065, which is ·002 (2 milligrammes); 1/64 grain is one-sixty-fourth of ·065, which is ·001 (1 milligramme). So one-third of a grain would be ·020 (20 milligrammes), and one-fifth of a grain would be ·012 (12 milligrammes).

·001 (one milligramme) is the smallest metric weight which has a name. It is equivalent to one-sixty-fourth of a grain, and is as small a quantity as we ordinarily use Occasionally, however, we do run across substances given in smaller doses than that even. In such cases we speak of them as fractional parts of a milligramme, and write them decimally, leaving the decimal point to be understood.

For instance, atropia is dosed at .0006 to .0012—which we read 6/10 to 1 and 2/10 milli-

* Remington's Pharmacy and Pharmaceutical Era Key o U. S. P.

grammes. $^6/_{10}$ of a milligramme is $^6/_{10}$ of $^1/_{64}$ of a grain or $^6/_{640}$ or $^3/_{320}$ of a grain.

Duboisine is given in doses of from .0002 to .0004—two-tenths to $^4/_{10}$ of a milligramme. Two-tenths of a milligramme is $^2/_{10}$ or $^1/_5$ of $^1/_{64}$ or $^1/_{320}$. Four-tenths twice that much, etc.

Remembering by a not *very* great effort the above approximate figures; frequently consulting some price list printed in the metric system; granted a desire to be up to date on all the requirements which go to make up a ready pharmacist, and I know from experience that it will take but a short time for anyone to become practically familiar with the seeming puzzles of this system of weights and measures. I append several examples. The first one showing the necessity of being able to reduce from one system to the other owing to the dosing by teaspoonfuls:

Quinine sulphate, 4. = 60 grains; Strychnine sulphate, 030 = ½ grain; Diluted sulphuric acid, 4. = 60 ℥; Distilled water to make 120. = 30 fl. 3. Dose: teaspoonful = fl. drachm.

Just as in adding up figures in a ledger we use lines in place of decimal points to insure a regular column, so in writing the metric figures lines are preferable to dots.

The equivalents are given at the right.

In reading the prescription we say 4 grammes of quinine sulphate, 30 milligrammes of strychnine sulphate, 4 fluid grammes or cubic centimeters of diluted sulphuric acid and 120 fluid grammes or cubic centimeters of distilled water.

The dose is one fluid drachm, which is 4 cubic centimeters. There are as many doses in the whole mixture as 4 cc. are contained in 120 cc. which are 30 doses. Then $^1/_{30}$ of 4 grammes of quinine is $^1/_{30}$ of its equivalent, 60 grains or 2 grains $^1/_{30}$ of 30 milligrammes of strychnia is 1 milligramme, which is about $^1/_{64}$ of a grain. The prescription is a safe one.

As an illustration of the uncertainty in the mind of a person not thoroughly familiar with the system, caused by the great difference in the figures standing for the same quantities, take the formula for opium pills:

Powdered opium	6·5	= 100 gr.
Soap	2·	= 30 gr.

Make 100 pills.

Here is an opportunity to show one of the reasons for discarding the use of the *terms* deci and centi, in figuring. To obtain one-one-hundredth of 6·5 is easy enough, but to read 6·5 as six grammes and five deci-grammes, or as six grammes and one-half, and then obtain one-one-hundredth of it is not so easy. But we read it sixty-five hundred millegrammes, and one-one-hundredth of that number is sixty-five millegrammes 0·65, or one grain to each pill. But the figure 0·65 is very different from the figure 1 grain, and at first it is difficult to believe both are the same.

After all it comes to this: A careful reading of the subject as given in any of our standard books, a continual endeavor to *think* in the system, daily practice with the pencil, and in conversation with fellow-clerks about the store, are the ways leading to familiarity with the subject.—*American Druggist.*

CAMPHOR.

In our last report we called attention to the growing competition of the Formosa (Chinese) product in the camphor market. This variety has now become the one by which the course of the Japanese market itself is regulated, in spite of the strenuous opposition of the Japanese dealers. The exports from Hong-Kong (the chief emporium of Formosa camphor), have multiplplied almost tenfold in the course of the last few years. In well-informed quarters the shipments from that port during the year 1893 are estimated at 30,000 piculs at least.

The following figures show that this increase has been at the expense of the Japanese trade:—

CAMPHOR EXPORTS FROM JAPAN.

in 1893..... .....23 821 Piculs

against

in 1892..... .....28,720 Piculs
in 1891.....43,905 Piculs

The subjoined table shows the exports and price-fluctuations, for each month of the past year:—

CAMPHOR EXPORTS FROM HIOGO IN 1893.

Month.	Quantity in Piculs (of 133⅓ lbs.)	Price fluctuations in $ per Picul
January	2125	56.— to 47.50
February	1090	47.50 " 56.25
March.....	2760	53.50 " 49.—
April.....	3713	49.50 " 46.25
May.....	2580	46.25 " 45.—
June	1832½	44.90 " 52.—
July.....	2275	52.— " 57.50
August.....	987½	55.— " 55.50
September.....	1745	52.50 " 53.75
October.....	1175	53.60 " 55.50
November	1300	55.50 " 55.75
December.....	1538	51.— " 48.—

Total 23,821 Piculs.

The Japanese will no doubt be compelled to to regulate their quotations in accordance with those of the Chinese, otherwise the trade

in the drug may undergo further displacement of a character which must seriously affect the Japanese share of it.

The quotations of both varieties have declined about 35 per cent from the highest point reached by them about the middle of last year. The refiners owing to the continuous loss which they have suffered, have become distrustful of the article, and have for some time adopted a waiting policy. In view of the speculative nature of the business it is impossible to say when the decline will touch bottom.

According to recent information from Japan the manufacture of refined camphor is being pursued there with the utmost energy. Three refineries are already in active operation in the country, viz:—

1. That of Sumitomo, with a capacity of production of 40,000 lbs. monthly. This factory turns out 2 lbs. tablets and 1 oz. blocks.

2. Fuso-kunni refinery, which produces about 10,000 lbs. monthly in tablets of 2 lbs, 8 oz, 4 oz., 1 oz., and ½ oz., and of 50, 25 and 10 gr.

3. The Japan Camphor Co., with a capacity of production of 10,000 lbs. monthly.

The first two are Japanese companies, the third an American concern.

During the year 1893, the two Japanese refineries exported about 183,000 lbs. to Europe and India.

We continue, as before, to manufacture a technically pure camphorin powder-form. This is sold in minimum lots of one case containing 25 or 50 kilos.—*Shimmel's Report.*

Gazogene Powders.

THREE PINT CHARGE.

Sodium bicarbonate	420 grs.
Acid tartaric	340 "

FIVE PINT CHARGE.

Sodium bicarbonate	640 grs.
Acid tartaric	520 "

EIGHT PINT CHARGE.

Sodium bicarbonate	1,280 grs.
Acid tartaric	1,040 "

PURIFICATION OF DRINKING WATER.—One part of peroxide of hydrogen added per thousand parts of water, *i.e.*, rather more than one drachm to the gallon is stated to effectually destroy cholera and thypnoid germs, etc. (*Ibid.*)

Bacilli in the Air.

I ask a glass of water or of claret or of beer;
I go to kiss a pretty maid—she turns away with fear;
I eat some lemon jelly that's been standing on the sill,
And they tell me all are loaded—that they're warranted to kill.
I'm not much up in science, but I know a thing or two;
I know that if I do not eat or drink or kiss a few
Of those fashionable, dreaded germs I certainly will die.
For I'd have to give up breathing to escape the bacilli
Bacteria, bacteria! I'm not afraid of you—
The world will roll around the sun for all that you can do;
So on pound notes and papers and on kisses and on food
Just hand me common bacilli—I'm not a science dude.
And what's the use of living if you cannot eat or drink,
If pretty girls and banker's notes and even printer's ink
And country fairs and pencils are only other terms
For the rapid transit system of the scientific germs?

—*Bulletin of Pharmacy.*

THE PHARMACEUTICAL ASSOCIATION and the Montreal College of Pharmacy are sending a joint invitation to the American Pharmaceutical Association to hold their '95 convention in Montreal.

MR. J. E MORRISON, Editor of the MONTREAL PHARMACEUTICAL JOURNAL, will represent it at the Asheville Convention of the A. P. A., and has also been appointed delegate of the Quebec Association and the Montreal College of Pharmacy.

AN APPLICATION FOR TOOTHACHE.—Chloralis hyd, gr. xxx.; Glycerini, ℥ ss.; Acid, carbolic, ℥ ss. A small piece of cotton-wool to be dipped in the solution, and placed in the cavity of the aching tooth.—B. H. BRODNEX, in *Medical Press.*

The Secret of Chocolate.

Hance Brothers & White say: "Chocolate syrup made be made from first-rate breakfast chocolate. But the flavor of common chocolate is too poor for soda water; the time taken to separate the greasy cocoa-butter is prohibitory; besides, it costs more, not less. And if you use the finest Dutch cocoa, the cost is several times as much with no advantage in flavor over ours. Our chocolate is as fine as the finest; and costs just half as much. Packed in attractive, handy screw-cap canisters; 1 lb. can, 50c; 5 lb. can, $2.50; 10 lb. can, $4.25.

"We have given away the secret of fine chocolate; same as in everthing else; the best raw materials manufactured for quality. Our fruit juices excel all others; expect the same of our chocolate.

"The secret of soda is plenty of ice, thin glasses, daintiness, courtesy; red Messina orange, cherry ripe, chocolate, pineapple and a lot more—all made for quality.

"If you have our merry cherry ripe you want our merry picture cards. Write for 'em. If you haven't cherry ripe you won't be merry till yon have it. Everybody likes merry cherry ripe. When you get it be sure to get the merry cards."

If you want to know more about the secret of chocolate, write to Hance Brothers & White.

Have you their "Help at Your Soda Fountain." If not, they will send it to you on receipt of your postal.

Antirabic Vaccinations at the Pasteur Institute.

In the *Annales de l'Institut Pasteur* of March 25th, Mr. Henri Pottevin gives statistics of the antirabic inoculations performed in the Pasteur Institute of Paris during 1893. The total number of persons who went through the complete course of treatment was 1,648. Of these, 6 died of hydrophobia, in 2 of whom the first symptoms of the disease showed themselves less than fifteen days after the last inoculation and should therefore, according to Mr. Pasteur's contention, be excluded from the list of cases in which the treatment failed; this leaves a total of 4 deaihs among 1,648 treated, a mortality of 0.24. Three persons were seized with hydrophobia during the inoculations; a fourth, who, in spite of all remonstrances, insisted on discontinuing the treatment, also died. As the treatment in these four cases was incomplete, they are not included either in the number of cases treated or in the deaths after inoculation. The statistics for previous years are as follows:—1886: total number of persons treated, 2,671, with 25 deaths, a mortality of 0.24 per cent.; 1887: total 1,770, 14 deaths, or 0.79 per cent.; 1888: total 1,622, 9 deaths, or 55 per cent.; 1889: total 1,830, 7 deaths or 0.38 per cent.; 1890; total 1,540, 5 deaths, or 0,32 per cent.; 1891; total 1,559, 4 deaths, or 0.25 per cent.; 1892: total 1,790, with 4 deaths, or 0.22 per cent. The figures with those above given for 1893, make up a total of 14,430 persons treated during the last eight years with 72 deaths, being an average death rate of 0.50 per cent. Of the 1648 persons, treated in 1893, 1,470 were French and 178 foreigners. Among the the latter the largest contingent (43) came from Spain; Greece stands second with 35; then comes England with 23 and Belgium with 22; Egypt furnishes 18 patients, British India 14, Switzerland and Holland 9 each, Portugal 6, Germany and Turkey 2 each, and Austria the United States, Brazil, Russia and Morocco, 1 each.—*Brit. Med. Journal.*

Copra Oil for Suppositories.

Copra oil is the name given an oil of high melting point which seems to consist of cocoanut oil freed probably by expression, from the liquid portions of the oil. It melts at 30.3°C. and congealsat 28°C (cacao butter melts 31 to 32° and congeals at about 23 C.) Copra oil is recommended as a succedaneum for cacao butter for making suppositories. It contracts considerably on congealing and thus is easily taken out of the moulds. Experiment showed that suppositories of copra oil were solid within ten minutes after being poured into the mould and had a polished surface whereas 50 minutes were required for solidifying the cacao butter suppositories. The method of making suppositories is the same with both oils. Copra oil will, it is said, take up 50 per cent of water. Copra is the name of the cut and dried cocoanuts imported from the South Sea Islands.—*Am. Drug.*

A Prominent Quebecker Dead.

One of the oldest and most conspicuous figures in Quebec public life, in the person of Dr. Rinfret, M.P.P., was removed by the hand of death, at the age of seventy-six years. The deceased, who was a staunch Liberal, represented Quebec Centre in the Local Legislature from 1874 until the last general elections when he was defeated by Mr. Chateauvert, and retired to private life, since which he has been ailing with the illness that finally carried him off. He was also a member of the City Council for nearly thirty years, sitting as alderman for St. John's ward, and filling the useful position of chairmain of the civic health commitee.

TRADE NOTES.

In Typhoid Fever.

Dr. Joseph D. Rush, reports favorably in *Virginia Medical Monthly*, two cases of typhoid fever, where results were obtained from the exhibition of Antikamnia and Salol.

1st. Female, aet. 24, married. Fever at end of seventh day reached 105° F. Calomel, sodium and quinia having failed, then gave

℞ Antikamnia.
Salol.....aa. ʒ ss
M.—Make into twelve capsules. Sig.
—one every three hours.

This treatment for twelve days, secured convalescence. Alcoholic baths to the spinal column once a day, the diet being boiled milk and tea.

2nd. Male, aet. 13. Temp. 105°, same treatment, same result.

He concludes that salol as an internal antiseptic combined with the antipyretic qualities of antikamnia, promises all than can be desired in the treatment of low and continued fevers with bowel complications.

"Antikamnia and Salol Tablets" are put up in exactly the dosage as given above, each tablet containing 2½ gr. Antikamnia and 2½ gr. Salol, by The Antikamnia Chemical Co, St. Louis, Mo., which please specify.

NEW!

The center support is a new device put in the bottom of every tangle foot holder. It is a simple mechanism calculated to raise and support the center of the sheet of fly paper in the holder. A sheet thus raised will catch flies much faster than if it lies flat. The support can be lowered readily when desired to place the holders in piles.

Ten holders are placed in every case (one in each box) and are intended for presenting with every first liberal sale of tanglefoot from the box.

Every time you sell a case of tanglefoot, you have an opportunity to please ten customers by giving them gratis, just what they care for when buying fly paper. The careful dealer takes advantage of this.

The holders are protected by letters patent.

Our readers will notice the advertisement of Messrs. Coutts & Sons, London, Glasgow and Manchester, in our columns.

As their acid cure is a well known remedy, having the endorsement of prominent prominent professional and civic magnates all over the world, we have no hesitation in introducing Acetocura to our readers. We have obtained a brief explanation of the method by which their remedy achieves its remarkable curative results and have pleasure in submitting this:—We have no doubt that "Acetocura and Spinal System of Treatment" will be warmly welcomed throughout Canada.

The beneficial action of Acetocura in disease arises from two effects of the treatment. First, the acid, by virtue of its chemical affinity to the waste matter in the body combines with this and carries it off in gaseous vapour and greasy waste thus loading the capillaries and reducing congestion, thereby relieving the whole system. Secondly, as a stimulant, bringing an adequate supply of arterial blood to the nerve-centres in the brain and spinal cord, giving these healthy and renewed activity. *The reason for rubbing until a flush or smarting or both* is produced on the skin, is that these effects prove that the pure life-giving blood has been brought to the nerve-centres and the skin. Congestion has been relieved and prolonging the rubbing for the time is unwise, as further application only makes the skin tender, and might possibly render the regular daily treatment, so necessary to the curative process impracticable

This succinct statement explains the action of Acetocura. We refer all interested in the treatment, and every druggist should be thoroughly acquainted with the rationale of an old established system of treatment like the Acid Cure, to the pamphlet issued by the firm who are sending a quantity as advertising matter to every druggist in Canada.

Now that Messr Coutts have opened a branch establishment in Canada we may expect the Acid Cure to make a home here and achieve a ready and steady sale. It will no doubt be taken up by the medical profession and become as popular here as it is in the Old Country and Australia, as well as other parts of the world.

PHARMACEUTICAL NOTES.

Chrysarobin vs. Chrysophanic Acid.—G. B. Schmidt states that these are not identical and criticises the synonymous use of the terms by the Pharmacopœia. Chrysophanic acid is described by Andouard as golden yellow klinorhombic prisms, melting at 162° C., nearly tasteless, insoluble in water, soluble in 224 parts of boiling 81 per cent. alcohol, or in 1125 parts of 30 per cent. alcohol. Soluble in acetic acid, chloroform and benzol, and readily soluble in alkaline solution to which it imparts a dark red color; with sulphuric acid it gives a red color, and with melted caustic potash a blue color. These reactions distinguishes it from chysarobin, which gives a yellow color with sulphuric acid and a brownish color with caustic potash.—(*Phar. Jour. and Trans.*)—*N. E. Drug.*

PRICES CURRENT.

JULY, 1894.

Acetum cantharides	lb	$0 60	
" colchici corm	lb	50	
" ipecac	lb	40	
" opii	lb	1 20	
" scillæ	lb	12	
Acetanilid	lb	90	oz. 15
Acid. acetic glac	lb	50	demi 16 00 ea.
" " fort P.B	lb	15	carboy 11
" benzoic German	oz	15	lb 1.75
" " " ozs. Hwds		25	Bulk 20
" boracic	lb	18	pulv. 20
" butyric conc	oz	30	lb 3.75
" camphoris	oz	60	
" carbolic No. 5 Cal	gl	1 50	
" " common	gl	90	
" " cryst	lb	40	10 lbs 35
" " No 1 Calverts	lb	2 25	
" " No. 2 "	lb	1 40	
" " " "			10 lb tins 1.10 lb
" chromic	oz	10	lb 1.00
" chrysophanic	oz	30	
" citric	lb	60	10 lb. 50
" " pulv	lb	65	
" gallic	oz	10	lb 1.25
" hydro-bromic dil	lb	45	
" hydrochloric	lb	5	carboy 2½
" " C P. s.g.1.19.	lb	25	Wins. 20
" hydrocyanic P B	doz.	90	in 1 oz. 10c per oz.
" " Scheele's	doz.	1 00	do 10c do
" hypophosphor	lb	1 10	
" hydrofluoric (in patent ceresine bottles)			½ lb bottles .50 ea. 1 lb " 1.25
" lactic dilutum	lb	1 15	
" " conc. pur	lb	2 75	
" nitric	lb	15	Wins. 12 carb
" " C.P. s.g.1.40.	lb	30	Wins. 25
" oleic pur	lb	45	
" osmic	gm	1 75	
" oxalic	lb	12	50 lb 10
" perchloric	oz	35	
" phos. dilut	lb	17	Whr. qt. 14
" " cone S.G. 1.5.	lb	50	
" " glac. pur stick.	lb	1 20	
" " syr s.g .1.750	lb	50	Whr. 45
" picric	lb	75	
" pyrogallic Schering's	oz	35	8 oz. 30
" " Merck's	oz	33	8 oz. 28
" pyroligneous	lb	10	gall 50
" salicylic	lb	1 50	
" sulphuric	lb	5	carboy 2½
" " C.P. s.g.1.84.	lb	25	Wins. 20
" " pur Eng		20	Wins. 18
" " aromat	lb	65	
" sulphuros	lb	12	
" tannic	lb	80	5 lb 75
" tartaric pulv	lb	35	10 lbs 30
" valerianic	oz	40	
Aconitina exot	gr	¼	60 gn. 3
Adeps benzoatus	lb	35	
Æther S. G. 735	lb	40	Whr. qt. 35
" acetic	lb	55	do 50
" butyric	oz	15	lb 1.50
" chloric	lb	65	Whr. qt. 30
" Anæsthetic tin 500 gms		1 50	each. } Squibbs
" " 250 "		80	" }
" " 100 "		40	" }
" " L. S & Co	1 lb tins	1.00	each
	½ lb tins	0 55	"
	¼ lb tins	0.30	"
Alcohol brl	cash	3 85	10 gall 4.15 5 gall 4.20 1 4.25 in a/c

Alcohol absolut .....lb	1 00	Wr. 9	
" methylated .....gal	2 00	5 gals 1 90	Brl. 1.70
Aloes Barb opt.....lb	30	10 lb 25	cash
" " pulv.....lb	35	do 32	
" Cape.....lb	15	10 lbs 13	
" Cape pulv .....lb	25	do 23	
" Socotrina.....lb	60	do 55	
" " pulv.....lb	70	do 65	
Aloin .....oz	30		
Alumen lump.....lb	3	brl 1⅝	
" pulv.....lb	4	brl 2¼	
" chrom.....lb	15		
" exsiccat .....lb	20		
Alumnol.....25 gm	50	each	
Ammonii benzoas, from gum oz	25	lb 3 00	
" bromid.....lb	65		
" carb .....lb	15		
" " kegs .....lb	11		
" " pulv.....lb	20		
" " resub.....lb	55	c. b.	
" chlorid .....lb	12	100 lb 10¼	
" " gran .....lb	12	100 lb 11	
" " pulv .....lb	13		
" " pur .....lb	25		
" hydrosulph sol ...lb	40		
" hypophosph.....oz	25	lb 3 00	
" iodid.....oz	45	lb 5.50	
" molybdas.....oz	25		
" monocarb.....lb	35		
" nitras gran.....lb	33	25 lb 30	
" " crist .....lb	35	25 lb 30	
" oxalas pur.....lb	75		
" phosph.....lb	1 25		
" salicylat.....oz	40	lb 4.75	
" sulphas com.....lb	9	pur 25	
" valeriau.....oz	40		
Amygdala amara.....lb	50		
Amyl nitras.....oz	15		
" nitrite .....oz	15		
" valerian. .....oz	35		
Amylum pulv.....lb	9	cwt. 8	
Annatto Hispan opt .....lb	70		
" Fullwood ½ oz & 1 oz lb	1 00		
Antim crocus pulv.....lb	20		
" nigrum pulv.....lb	12	50 lb 10	
" oxid .....lb	65		
" sulphurat precip....lb	50		
" tartarat pulv.....lb	45	10 lb 42	
Antikamnia .....oz	1 30		
Antipyrin Knorrs'.....oz	1 10	5oz 1.05	10-25oz 1.00
" Swiss .....oz	1 00	5 ozs. .95	10-25oz 90
" " .....lb	12 75		
Apiol green .....oz	65		
Apomorph hydroch.....gr	2	5 and 10 grain tubes.	
Aqua anethi.....lb	10		
" anisi.....lb	10		
" aurantii flor trip....lb	25	Win qt 20	
" camph.....lb	10		
" carui .....lb	10		
" cassia.....lb	10		
" cinnam.....lb	20		
" destillata.....gl	12	carboy 10	
" floridæ .....gl	5 00		
" lauro cerasi.....lb	25	Whr qt 20	
" menthæ pip.....lb	10		
" rosæ .....lb	25	Whr qt 20	
" sambuci flor .....lb	25		
Argenti chloridum.... ....oz	2 50		
" iodide.....oz	2 50		
" nitras cryst.L B & Co.oz	85	8.50 lb	cash
" " fus (4 to oz)oz	1 00		
" oxidum.....oz	2 40		
Aristol.....oz cartoons	1 85		
Arsenicum alb. pulv.....lb	10		
" rub " .....lb	15		
Arsenici bromid.....oz	40		
" iodid.....oz	60		

Arsenici tersulph pulv.....lb	25	
Asphaltum exot.... .....lb	15	100 lbs 12
Atropina pure.....dr	80	oz. 4 00
Atropinæ sulphas..... ...dr	80	oz 4 00
Auri chloridum (15 gr)....doz	4 00,	3 doz 3.75, 6 doz 3.50
" " L B & Co.doz	4.25	
Baccæ aurantii.... .....lb	25	
" capsici..... ...lb	25	pulv. 30
" cassiæ.....lb	35	pulv. 40
" cubebæ.....lb	60	
" " pulv .....lb	65	
" juniper.....lb	8	10 lb 7
" juniper pulv .....lb	12	10 lb 11
" xanthoxylon ..... .lb	50	
" pimentæ.....lb	12	
" " pulv.....lb	14	25 lb boxes 13
Balsam canad..... .....lb	40	Winch. 35
" copaibæ.... .... ..lb	75	Whr. qt. 70
" peruvian.....oz	25	lb 3.00
" totlu.... .....lb	60	
Barii carb pu..... ..... lb	35	
" chlorid pur .....lb	25	
" hypophos ... .oz	25	
" nitras exsic .....lb	20	
" nitrate C. P.....lb	35	
" sulphate pur .....lb	50	
" sulphide " .....oz	10	
Bath Pipe.....lb	40	
Bay rum St. D.....gal	3 75	sec. 2.75
Beberinæ hydroch.....dr	50	
Beberinæ sulphas.....oz	90	
Benzine refined .....gal	40	
Benzoyl Guaiacol.....oz	2 00	
Bismuthi Benzoas .....oz	1 00	
" carb.....lb	2 75	
" citras..... .....oz	20	
" et ammon-cit.....oz	35	lb 4.50
" salicylas .....oz	25	
" subgallas.....oz	35	
" subiodid .....oz	50	
" subnitras.. .....lb	1 90	
" valerian.. .....oz	50	
Bismuthum (metal).....lb	3 25	
Bole armen..... lb	6	
Borax .....lb	11	keg 9
" pulv..... .... . lb	12	do 10
Bromine .....oz	20	
Bromoform .....oz	30	
Cadmium..... .....oz	15	lb 1.80
Cadmii bromid ....oz	20	lb 2.25
" iodid .....oz	45	
" sulphas.....oz	20	
Caffeina pur.... .....oz	25	lb 3 50
" citras.....oz	25	
Calamina præparata.....lb	7	
Calci bromid.... .....oz	20	lb 2.25
" carb. præcip.....lb		V. Creta precip.
" chlorid. cryst .....lb	25	
" " fusum pure..lb	30	
" " fused crude..lb	15	
" hypophosphis.....lb	1 40	
" iodid..... oz	50	
" lactophosph.....oz	15	lb 2 00
" nitras.... .....lb	75	
" phosphas præcip....lb	20	
" sulphas.....lb	4	
" sulpho-carbolas.....lb	2 50	
" sulphid.....lb	50	
" sulphis.... ....lb	18	pulv. 20
Calx chlorinata.... .....lb	5	keg 4 brl. 3
" " in packets 1 lb	7, ½ 8, ¼ 9	
Camphora Ang. Hd's .....lb	60	
" " " ozs ....lb	65	
" " " flowers,lb	80	
" Dutch .....lb	55	
" " ozs.....lb	60	
Camphor monobromid.....oz	20	
Cantharides Russian.....lb	1 40	pulv. 1 50
Cantharides Chinese.....lb	—	pulv. 75
Cantharidine.....grain	8	
Cap papav. alb.....100	1 00	
Carbo animalis pur pulv...lb	12	
" ligni.....lb	6	
" ligni pulv.....lb	10	brls 5.50 each
Carbon bisulphidum..... "	20	Whr qt 15 drums
Carmine..... ....oz	40	lb 5 25
Caryophyllum, Zanzibar ...lb	18	22 Pulv.
" Amboya....lb	25	
" Penang ....lb	50	
Cassia fistula.....lb	30	
Castoreum..... .....oz	1 40	
Celloidine Schesing's.....oz	1 20	
Cera alba.....lb	65	sec 45
" " paraffin, opt.....lb	25	50 lb 20
" " " .....lb	18	50 lb 13
" flav opt .....lb	40	secs 35
" " lithographers....lb	50	
Cerii oxalas .....oz	10	lb 1.20
Cetaceaum.....lb	55	10 lb 50
Cetrar Iceland.....lb	16	
Chirata Incis.....lb	45	
Chloralamid ..... oz.	35	
Chlorodyne Lyman's .....lb	2 00	
Chloral Hydrate recryst....lb	1 10	
Chlorof pure Smiths 1 lb g.s. bs.lb	90	10 lb 80 Whr. qt 65
" D. F. & Co's pur....lb	1 80	5 lb 1.75
" " meth...lb	90	5 lb 85
" " blue label.lb	90	
" Merck 1 s .....lb	65	
" " 28-lb tins...lb	55	
Cinchonidin sulph.....oz	15	Hds. 20
Cinchoninæ murias Hds....oz	18	
" sulphas " ....oz	18	
Civet ....dr	1 00	
Cocaine hydrochlor crys,..oz	6 50	Merck's 7.00
" phenate.....ot	10	
Cocculus Indicus.. .....lb	10	pulv 20
Coccus cacti S. G .....lb	40	pulv 45
Codeina pure .. ..dr.	90	oz 6 50
" Phosphate .....dr.	1 25	
" Sulph .....dr.	90	oz 6.00
Colchici corm.....lb	30	
Collodium ....lb	65	
" vesicans, P. B...lb	2 25	
" flexile.... ..... "	65	
Colocynthis Turc select....lb	60	pulv 85
Confectio rosæ Gallic .....lb	50	
" sennæ.... .....lb	40	
Cortex aurantii Ang.....lb	70	
" " coml. .....lb	15	
" " opt ¼s ....lb	20	
" canellæ..... ....lb	20	pulv 25
" cascara sagrada.....lb	25	
" cascarillæ .....lb	25	
" cassiæ.... .....lb	13	pulv 18, 25 lb box 16
" cinchon flav.....lb	90	pulv. 1.00
" " " coml. ..lb	30	pulv. 35
" " rubquill...."	60	pulv. 70
" granat fruct....."	20	
" " radicis....."	60	
" limonis ang opt ...."	65	
" " com....."	16	
" mezerei....."	25	
" myricæ (bayberry)..."	20	
" pruni virginianæ ..."	15	20 lbs 12
" quillaiæ.....lb	15	grd. 20 pulv. 25
" sassafras.....lb	15	pulv. 22
" ulmi.....lb	16	pulv. 16 grd 14
Creolin, Pearson's.....lb	60	litre bot. 1 10 each,
Creosot. Ang (Morson's)....oz	20	lb 2.00
" (Beechwood) Merck's lb	1 50	Whr. 1 35
" (Beechwood) French lb	2 75	
" white, from coal tar.lb	75	
" Carb .....oz	1 00	
Creta gallic.....lb	18	
" " .....lb	5	bgs. 3½

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

Extract hyoscyam pulv ....oz	25		
" " exot ....oz	15	lb 1.50	
" ignatia amara.... .oz	60		
" ipecac acetic.....oz	1 50		
" jaborandi.... ....oz	60		
" jalapæ.....oz	25	lb 3.50	
" " pulv.....oz	35		
" krameria.....oz	25	lb 3.50	
" lactucæ..... ....oz	20	lb 2.20	
" logwood..... ...lb	11	(15 & 30 lb boxes)	
" logwood 1 lb pkts..lb	15	(30 lb boxes)	
" " ½ lb pkts .lb	16	"	
" " ¼ lb pkts..lb	17	"	
" " asst. pkts..lb	16½	"	
" lupuli..... ...oz	25	lb 3.00	
" malt..... .....lb	25		
" mezerei æther.....oz	60		
" nucis vomic..... .oz	40	lb 5.40	
" " " pulv...oz	40		
" opii..... .....oz	90	lb 13.50	
" " pulv ....oz	1 00		
" " liquid..... ..lb	1 25		
" papaveris ....oz	16	lb 2.25	
" physostigmatis....oz	2 00		
" podophylli.....oz	25	lb 3 00	
" quassiæ.....oz	20	lb 2.40	
" rhamni frang.....oz	50	lb 5.00	
" ramni pulv..... oz	40		
" sarsæ jam.....oz	30	lb 4.00	
" rhei £. I.....oz	2!	lb 3.50	
" sarsæ jam co.. ....oz	28	lb 3.25	
" sarsæ hond co ....oz	20	lb 2.75	
" stramonii fol.....oz	20	lb 2.50	
" stramonii pulv ....oz	25	lb 3.00	
" taraxaci..... . ..lb	50		
" valerian.....oz	15	lb 2.00	
" veratri viride.....oz	45		
Fabæ physostigmatis... ...lb	50		
" tonca para.....lb	1 00		
" " surinam.....lb	1 75		
" " angostina.... ..lb	2 75		
" vanillæ, short .....lb	3 00		
" " medium ....lb	5 00		
" " 7½ in..... lb	6 50		
Fehling's solution.....lb	1 00		
Fel bovinum purificat.....oz	20	2.00 lb	
Ferri ammon chlorid.....lb	60		
" " persulph(iron alum) lb	40		
" " protosulph.....lb	25		
" " tartras.....lb	75		
" arsenias..... .....oz	15	lb 1.60	
" bromidum .....oz	20	lb 2.00	
" carb. precip.....lb	15		
" carbonas sacch.....lb	30		
" citras soluble .....lb	65		
" et ammonii citras....lb	70		
" et quin. cit., 4%.....oz	15		
" " " .....lb	1 75		
" " 10%.....oz	20		
" " " .....lb	2 50		
" " P. B....oz	22		
" " " .....lb	2 75		
" " Hd's....oz	25		
" " amorph....oz	15		
" " " .....lb	1 75		
" " et strych. cit, oz	35		
" " " Hd's, oz.	40		
" et strychn. citras 1%.oz	15	10 oz 13 lb 1.75	
" hypophosphis..... .oz	20	lb 2.50	
" iodide..... .....oz	40		
" lactas..... .....lb	75		
" perchlorid..... ....lb	35		
" phosphas.... .....lb	85		
" pyrophosph.....lb	80		
" succinate ....oz	35		
" sulphas commercl....lb	2	brl 90 gross	
" sulphhs exsic .....lb	9		

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

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

Iodum resub.....oz	40	lb 5.25	
Jalapin ang.....oz	1 00	lb 13.50	
Kamala.....lb	60		
Kousso.....oz	10		
Kava Kava.....lb	90		
Lactopeptin ozs.....doz	8 50		
" ½ lbs.....lb	10 50		
Lactucarium ang.....oz	70		
Lanolin.....lb	85		
Lapis calam. prœp.....lb	7		
Lapis pumicis select.....lb	8	ordinary 6	
" " pulv.....lb	7	100 lb 5	
Leptandrin.....oz	45	Keiths 50	
Lichen Hibern opt.....lb	20	Sec 15	
Licorice Corig.....lb	35		
" Solazzi.....lb	45		
" Zuvia.....lb	30		
" Windsor, 4,8 or 16 1-5 lb	35	25 lbs 30	
" Y & S. stick.....lb	35		
" Pellets Y. & S.....lb	40		
" " M. & R.....lb	40		
Lignum guaiaci rass.....lb	7		
" qoassiæ incis.....lb	10	50 lb 9	
" sant flav. grd.....lb	65	Rub 10	
Liniment aconiti.....lb	90	Whr. qt. 80	
" belladon.....lb	95	" 85	
" camph.....lb	55		
" camph comp.....lb	60	Whr. qt. 55	
" iodi.....lb	1 50		
" opii.....lb	90		
" saponis co.....lb	45		
" " c pot iod..lb	90		
" terebinth.....lb	30		
Liquor ammon. acet conc...lb	35		
" ammon fort s. g. 880 lb	12	12 Whr. qts. 10	
" antim. chlor.....lb	22	W. qt. 20	
" arsenicallis.....lb	10	pt., Whr. qt. 8	
" arsenii et hyd. iod. .lb	25	W. qt. 20 (Donovans)	
" ferri Acet	35		
" " " Ft	60		
" " perchlor fort...lb	12	Whr. qt. 11	
" " pernit.....lb	14		
" " persulph.....lb	25		
" plumbi subacet.....lb	12	Whr. qt. 10	
" potassæ.....lb	7		
" santal flav comp. ..lb	1 50		
" sodii chlor.....lb	16		
" strychnine.....lb	50	Whr. qt. 45	
Lithii bromid.....oz	25		
" carbonas.....oz	25	lb 3.20	
" citras.....oz	20	lb 2.75	
" hippurate.....oz	1 50		
" iodid.....oz	50		
" salicylat.....oz	30		
Litmus.....lb	60		
Lucilline.....1 lb tins	20	each	
" .....5 lb "	90	"	
" .....10 lb "	1 60	"	
" ..... 25 lb tubs	13	lb.	
" ..... 50 lb tubs	12	"	
Lupulinum.....lb	60		
Lycopodium.....lb	80		
Lysol.....½ kilo bottles	75	each	
Macis.....lb	1 20	pulv 1.30	
Madder compound.....lb	10	carboy 9	
" Dutch.....lb	12	brl 10	
Magnes citr. gran. Bishop..lb	80	7 lb 75	
" " " Lyman. lb	35		
" calcined ....1 lb tins	50		
" " .... " bots	65		
Magnesii carb levis 1 oz pkt lb	22	10 lb 20	
" " " 2 " lb	20	" 18	
" " " powd..lb	25	1 lb tins	
" chloride.....lb	30		
" sulphas.....lb	3	Brl. 1.50	
Magnesium, wire or ribbon .oz	75	Powder 50	
Maltopepsin ¼ lb bots.....lb	6 85		
" bots.....doz	6 35		
Maltose xtls.....oz	1 50		
Mangan chlorid.....lb	50		
Maganese hyphospdite.....oz	30		
" oxyd. nigr.....lb	10	brl. 7½	
" sulph. pur.....lb	60		
Manna flak select.....lb	1 75		
Maranta Bermuda.....lb	45	10 lb 42	
" Jamaica.....lb	15		
Mel. canadensis.....lb	15	10 lb 14	
Menthol.....oz	55	lb 8.00	
Morphinæ acetas.....oz	1 70	10 ozs. 1 60	
" hydrochloras....oz	1 70	" 1.60	
" sulphas.....oz	1 80	" 1.70	
Moschus, in grain.....dram.	5 50	4.50 3.50	
Myrtol.....oz	1 00		
Naphtha mineral.....lb	50		
Naphtha vegetable.....lb	60		
Napthaline resublimed.....lb	30		
Naphthol Beta.....oz	10	lb 1 .40	
" " Bengoate ...oz	40		
Nickel sulph cryst.....lb	75		
" ammon. sulp.....lb	35		
Nux. areca select.....lb	20	pulv 35	
" kola.....lb	50		
" myristicæ (limed)....lb	90	pulv 1.00	
" " opt.(unlimed)lb	1 00		
" vomica.....lb	12	pulv 25	
Olio Resin Capsici.....oz	85		
" Cubeb.....oz	50		
Ol. absinth.....oz	30	lb 4.00	
" amygd. dulc.....lb	50	Whr. qt. 45	
" " essent. sine acid pruss.....oz	50		
" anethi Ang.....oz	35	lb 4.50	
" anisi.....lb	2 75	Whr. qt. 2.50	
" anthem Ang.....oz	2 00		
" aurantii.....lb	2 50	Winch. 2.25	
" bergam super.....lb	3 00		
" buchu.....oz	3 00		
" cadi.....lb	35	Whr. qt. 30	
" cajeputi.....oz	10	lb 1.00	
" carui.....lb	2 50		
" caryoph.....lb	1 25		
" cassiæ.....lb	1 50		
" cedri opt.....lb	75	Whr. qt 70	
" chaulmoogra.....oz	20		
" cinnamomi ver.....oz	1 70		
" citronellæ.....lb	80	bot. 70 lb	
" cocoanut.....lb	15		
" cognac.....oz	1 75		
" colegne.....oz	60		
" conii....spruce.....lb	70	Whr. qt. 65	
" copaibæ.....lb	1 25		
" coriandri.....oz	70		
" crotonis.....oz	10	bot. 1.20 lb	
" cubebæ.....oz	40		
" cymini.....oz	50		
" erigerontis.....lb	3 25		
" eucalypti.....lb	1 25		
" fœniculæ dulc.....lb	1 50		
" gaulther.....oz	25	lb 3.00	
" " synthetic....lb	2 00		
" geranii rosx.....oz	50		
" " super.....oz	1 00		
" juniperi bacc.....oz	15	lb 2.00	
" " lig.....lb	60	Whr. qt. 55	
" lauri.....lb	40		
" lauri essent Bay.....oz	40	lb 5.00	
" lavand ang.....oz	2 00		
" lavend exot.....lb	3 50	sec 2.50 1.50	
" limonis super.....lb	2 00	copper 1.50	
" macis.....oz	25	lb 3.50	
" menth. pip. Amer....lb	4 00	Whr. qt. 3.75	
" " " English..oz	1 00	lb 14.00	
" " " Japan...lb	4 00		

Ol. menth virid ....oz	25	lb 3.50	
" morrhuæNorweg .....gl	1 50		
" " Nfld. by Norweg. process	1 00	kegs 18 gals 90	
" myrbane.....lb	30	Whr. qt. 25	
" myristicæ.....oz	30	bot. 25	
" neatsfoot, pale.....gl	1 10		
" neroli, opt..... ..oz	4 00		
" olivæ sublime salad ..gl	2 50		
" olive sublime salad 1 gal	original tins incl. 2.50 each.		
" " green.....gl	1 40	brl. 1.20	
" " " opt .....gl	1 50	brl. 1.35	
" " yellow.....gl	1 40	brl. 1.15	
" " yellow opt .....gl	1 50	brl. 1.25	
" " (Salad American)gl	1 00	brl. 85	
" origani.....lb	85		
" " Sec.....lb	50	Winch 45	
" palmæ select.....lb	15		
" patchouli opt.....oz	75		
" petit. gran.....oz	75	Sec. 45	
" picis.....lb	12	Whr. qt. 10	
" pimentæ.....oz	25	lb 3.20	
" pini silvestris.....lb	1 50		
" pulegii hed.....lb	2 25		
" rapii.....gl	1 00		
" rhodii.....oz	80		
" ricini E. I.....lb	11	case 8 tins 9	
" " Gal water pale..lb	12	brls 8½	
" " Virgin.....	15	tins 13	
" " Ital.....lb	20	tins 18	
" rosmarini exot.....lb	70	W. qt. 65	
" rutæ.....oz	25		
" sabinæ.....lb	1 30		
" sambuci vir.....lb	30		
" santali ang.....oz	50	lb 7.50	
" " "W.I.....oz	40	lb 5.00	
" sassafras.....lb	70	Whr. qt. 65	
" sem. santon.....oz	25	lb 3.20	
" sesame .....gl.	1 35	cask 1.25	
" sinapis essent.....oz	65	lb 3.50	
" sperm.....gl.	2 00		
" spike .....lb	25		
" succin. rect .....lb	65	Whr. qt. 60	
" tanaceti opt .....oz	30	lb. 4.25	
" terebinthinæ.. .....lb	50		
" terebinthinæ coml....gl.	65		
" theobromatis.....lb	55	(tablets)	
" valerian.....oz	1 00		
" verbenæ.....oz	10	bot. 9	
" vini.....oz	25	lb 3.50	
" ylang-ylang.....oz	7 00		
Opium Turc.....lb	4 00		
" " pulv.....oz	40	lb 5.25	
Os sepiæ.....lb	25	select 40 pulv 35	
Otto rosæ comb. .....oz	6 50		
" virgin.....oz	9 00	opt 11.00	
Pancreatine, Morson's.....oz	1 00		
" Merck's.....oz	50		
" " absolute oz	75		
Papoid.....oz	3 25		
Paraffinum durum.....lb	20	50 lb 15	
Parald hyde.....oz	20	lb 2.25	
Paris Green.....100 lb irons	14		
" ..... 25 lb "	15		
" ..... 1 lb tins	18		
Pellaterine Tannate..... gm	45		
Pepsin .....lb	225		
" pur. sol pulv. Merck's.lb	3 00		
" Merck's scales .....lb	5 00		
" ang. coml.....oz	30	lb 3.50	
" Boudault's.....oz	1 20		
" medicinal Morson's..oz	85		
" porci Morson's..... oz	2 25		
" sacchar.....oz	25	lb 3.50	
" Jensen's scales " .oz	1 25		
" Armour's.....oz	90	lb 12.00	

Petrol Barbadens..... ...lb	15		
Petroleum, see Lucilline			
Phenacetine Bayer.....oz	35	lb 4.75	
Phenocol.....gm	25		
" Hydroch.....25 gms	1 50		
Phenolphthalein.....oz	1 00		
Phosphorous...11 lb tins..lb	85	1 lb bots 1.00	
Pil. hydrarg.... .....lb	70		
Pilocarpin Hydrochlor ....gr	20	5 or 10 qr tubes	
" nitras..... ....gr	20	5 or 10 qr. tubes	
Pipe clay..... ..... lb	5	100 lb 4	
Piperinæ ..... oz	1 00		
Piperazin Bayer, ½ oz bottle.oz	3 50		
" tablets...10x16 gr	2 00	each	
Piper alba..... .....lb	20	pulv 22	
" cayenne .....lb	25	10 lb 20	
" nigrum.....lb	17	pulv 18 25 lb 15	
Pix Burgund bladders.....lb	10	20 lb 9	
Platinum Bichlor.....oz	8 00		
" " 10% soiut oz	1 25		
" Foil .....grm	60		
" Wire .....gum	45		
Plumbi acetas brown .....lb	10	50 lb 9	
" " Xtls .....lb	12	50 lb 10	
" " C. P .....lb	25		
" iodid.....oz	35	lb 4.50	
" nitras coml.....lb	16		
" oleas.....lb	1 00		
" oxyd pulv.....lb.	9	keg 7½ (litharge)	
" " rub.... .....lb	8	keg 6 (red lead)	
Podophyllin resin.....oz	35		
Potassa caustica sticks.....lb	55		
" sulphurata.....lb	35		
Potassii acetas.....lb	45	gran 50	
" bicarbonas .....lb	16		
" " pulv.....lb	17		
" bichromas.... ...lb	15	keg 12½	
" binoxalas.....lb	23	10 " 22	
" " pulv.... .lb	25	10 lb23	
" bitart ....lb	30	keg 24 brl 28	
" bromid.....lb	60	5 lb 55	
" carbonas.....lb	14	10 lb 12	
" carbonas pearl ashes lb	10	100 lb 9	
" chloras.....lb	26	keg 24	
" " pulv.....lb	27	keg 25	
" chlorid. pur.....lb	30		
" chromas .....lb	50		
" citras neutral.....lb	70		
" cyanid. C. P.....lb	1 00		
" " gold plater.lb	75		
" " fused ....lb	45		
" hypophosph.....lb	1 50		
" iodid.....lb	4 00	5 lbs $3 75	
" nitras..... .....lb	10	112 lb keg 7	
" nitras pulv.....lb	11	(Gran) 10 keg 7½	
" " C.P. Mercks..lb	30		
" oxalas, neutral ....lb	25		
" permangan pur....lb	35	10 lb 30	
" pruss. flav.....lb	35		
" " rubr.... ..lb	75		
" silicas..... .....lb	30		
" " Liq.....lb	20		
" sulphas.....lb	12	pulv 13	
" sulpho-cyanid.... .oz	15		
" sulphocarb.....lb	1 90		
" sulphuret .....lb	35		
" tartras .....lb	80		
Potassium.....oz	2 00	dr 40	
Propylamine..... .....oz	75		
Pulv. aloes c. canella.... ..lb	40		
" antimonialis P. L....lb	60		
" catechu comp.....lb	70		
" cinnam comp.....lb	75		
" cretæ aromat P.B.....lb	1 20		
" " " c. opiô P B lb	1 50		
" " comp Ph. 8d..lb	50		
" " comp c. opiô ..lb	75		

Pulv. cretæ c. camph.....lb	25	10 lb 20	
" glycyrrh comp.....lb	30		
" ipecac comp.....lb	1 40		
" jalap comp.....lb	75		
" kino comp..... ....lb	1 25		
" rhei comp.... .....lb	75		
" sapo cast..... .....lb	25		
" " " alb.... ....lb	35		
" scammon comp..... oz	30		
" seidlitz Howards.....lb	25	7 & 14 lb	
Pyoktannin.....25gms	1 25		
Pyridin Puriss..... ....oz	25		
Quassine, ⅛ oz vials.. .....oz	4 00		
Quininæ bisulph.....oz	50		
" bromid..... .....oz	75		
" citras..... .....oz	80		
" hydrobrom.....oz	90		
" hydrochlor ..... oz	85		
" hypophos.....oz	1 50		
" iodid.... .....oz	1 00		
" phosphas.....oz	75		
" salicylas.... .....oz	65		
" sulph German.... oz	40	100oz tin 29 25 oz 30	
" " Howards...oz	45	100 oz 40	
" " " .4 oz	40		
" sulphocarbolas....oz	1 50		
" tannate ....oz	50		
" valerian..... .....oz	85		
Rad aconiti.....lb	20		
" " contus.....lb	25	pulv 30	
" anchusæ.... .....lb	20		
" angelicæ.....lb	30	pulv 35	
" arctii (burdock).....lb	15		
" belladon.....lb	18	contus. 30	
" calam. aromat.....lb	30		
" calumb.....lb	20	pulv. 20	
" curcumæ Madras.....lb	10	" 12	
" galangal minor.... ..lb	15		
" " pulv.....lb	25		
" gentian, select.....lb	10		
" " ground.....lb	12		
" " pulv .....lb	15		
" ginseng..... ....lb	4 50		
" glycyrrh decort.... }			
" " incis .... } lb	25	10 lb 22	
" " dec't pulv....lb	60		
" " bundles ....lb	12		
" " small bundles super.....lb	18		
" " grd..... . .lb	12	brl. 11	
" helleb alb.... .....lb	12		
" " " pulv.....lb	16	keg 14 br. 13	
" ipecac..... lb	2 00		
" " pulv..... ....lb	2 25		
" iridis Florentine ....lb	50		
" " pulv .lb	60		
" jalapæ .....lb	45		
" " pulv.... .....lb	55		
" krameriæ opt.....lb	30		
" pareiræ brava..... .lb	40		
" pyrethri..... .....lb	35		
" rhei E. I. opt..... .lb	1 25	cubes 1.00	
" " " sec..... .lb	75		
" " " elect opt...lb	2 25	fingers 1.50	
" " pulv elect opt ...lb	2 50		
" " " E. I. opt...lb	1 25		
" " " " sec...lb	80		
" sanguinariæ.....lb	14	pulv 16	
" sarsæ Hond.... .....lb	45	incis 50	
" sarsæ Jam..... ....lb	70	" 75	
" " Mexican.. ...lb	18	20 lb 16	
" scillæ sicc.....lb	12		
" " pulv.... .....lb	30		
" senegæ.... .....lb	65		
" spigeliæ..... .....lb	45	pulv 65	
" sumbul..... .....lb	90		
" taraxac sicc.....lb	18	10 lb 15	

Rad tormentillæ.....lb	40		
" " pulv ....lb	50		
" zingib. Afric. u. b....lb	16	20 lb 15 bag 13	
" " " pu'v...lb	18	30 lb 16	
" " Jam. u.b....lb	25	brl 23	
" " " bleached.lb	30	10 lb 28	
" " " pulv opt.lb	30	10 lb 28	
" " " " sec.lb	25		
Resin flav.....lb	4		
" " pulv.....lb	5	50 lb 4	
Resorcin xtls.....oz	25	lb 3.00	
" resublim .....oz	50		
Rhizoma arnicæ.....lb	30	contus 40	
" cimicifugæ.....lb	15		
" podophylli.....lb	14		
" serpentariæ.....lb	55	pulv. 90	
" valerianæ.....lb	15	pulv. 22	
Rouge—Jewellers.....lb	75		
Rubidium chloride.....gm	40		
Saccharine.....dram	20	oz 1.20	
Sacch. lactis pulv.....lb	30		
Sago perlat. parv.....lb	6	bag 5½	
Sal prunellæ glob. .....lb	20		
Salicinum.....oz	20	lb 2.75	
Salipyrine.....50 gms	2 50	each	
Salol.....oz	30	lb 3.75	
Salophen Bay .....oz	1 50		
Santoninum.....oz	20	lb 2.75	
Sapo Castile Alb. Contis....lb	16	box 15	
" " " Shell.....lb	12	" 10	
" " " Virgin....lb	12	" 10	
" " " cakes box,	5 00		
" " Mottled opt ...lb	12	box 11	
" " " com..lb	10	" 9	
" " " cakes gross	4 75		
" mollis ang.....lb	10	20 lb 8	
" " German Green.lb	35		
" " Green opt.....lb	55		
Scammoniæ resin pulv.....lb	3 75		
Scoparii cacumin.....lb	25		
Secale Cornut .....lb	75		
Seidlitz Mixture hds .....lb	22		
Sem. canary.....lb	5	bag 3¾	
" cardam .....lb	1 75	1.50 & 1.00	
" cardam decort.....lb	1 00		
" " pulv.....lb	1 50		
" celery.....lb	30		
" chenopodii.....lb	25		
" colchici.....lb	55	pulv. 65	
" cydoniæ.....lb	50		
" cymini.....lb	20	pulv. 25	
" fœnugræci.....lb	5		
" " pulv.....lb	7	ground 6 brl 5	
" hemp.....lb	5	bag 3¾	
" hyoscyam.....lb	60		
" jambul.....oz	20		
" lini sifted.....lb	4	brl. 3½	
" lini crushed.....lb	5	brl. 4	
" " " No. 2....lb	4½	brl. 3½	
" " " No. 3....lb	4	brl. 3¼	
" lobeliæ inflatæ.....lb	50	pulv 55	
" maw.....lb	15	10 lb 14	
" millet.....lb	5	bag 3½	
" pumkin .....lb	25		
" rapii.....lb	8	bag 7	
" santonicæ.....lb	18	pulv. 28	
" sinapis alb.....lb	10		
" staphisagriæ.....lb	35		
" ctramonii.....lb	25		
Soda caustica stick.....lb	45		
" caustica cake.....lb	40		
Sodo crystals .....lb	2	brl 1.25 per 100 lbs	
" tartarata.....lb	28		
Sodii acetas pura.....lb	25		
" arsenias.....oz	10	lb 1.20	
" benzoas.....oz	15	lb 1 50	
" bicarb. pulv Morson's lb	10		
" " " lb Hd's...	16	14 lb 15	

Sodii bicarb pulv. coml. ..	lb	4	keg 2 75
" bisulphis....	lb	25	
" bisulphas pure.....	lb	30	
" bromid.....	lb	65	
" carb. recryst..... ..	lb	15	
" carbo'as pur.....	lb	3 50	
" chlorate xtls.....	lb	50	
" citr.s	lb	1 00	
" hypophosphis.....	lb	1 40	
" hyposulphis.....	lb	5	keg 112 lbs. 3.00
" iodid.....	oz	40	lb 5.50
" nitras pur....	lb	25	coml 8
" oxalas.....	lb	50	
" phosph pur.....	lb	15	pulv 25
" potass tait pulv.....	lb	25	
" salicylas 1 lb boxes	lb	1 75	5 lb bulk 1.60
" silicas xtls.....	lb	15	
" " solut conc.....	lb	10	
" sulphas.....	lb	3	brl. 1¾ Hds 5 [brl. 4.
" " exsicc. pulv...	lb	15	
" " pur recryst....	lb	30	
" sulphid.....	lb	60	
" sulphis.....	lb	7	pulv. 8
" sulpho carbolas.....	lb	1 10	
" valerian....	oz	50	
Sodium.....	oz	40	
" molybdate.....	oz	40	
" succinate.....	oz	35	
Sol. acid osmic 1%.....	oz	1 50	
" cocain 4%.....	oz	60	
" nitro glycerin 1%.....	lb	1 75	
Somatose—Bayer, 2 oz tins.	oz	70	
Spartein sulph	⅛ oz	30	ea. 1 oz. 1 75
Spice pickling.....	lb	40	
Spt. ætheris comp.....	lb	60	
" " nit S. G. 845.	lb	65	Whr. qt. 60
" ammon. arom.....	lb	60	" 55
" " fœtid.... ...	lb	85	
" camphor.....	lb	70	" 65
" chlorof. S. G. 871....	lb	70	" 65
" cinnam.....	lb	2 00	
" menthæ pip....	lb	1 10	
" methylated.....	gl.	2 09	Brl. 1.75 cash
" myristicæ....	lb	90	
" rectificatus 65 o/p....	gl	4 25	5 gl. 4.20 in a/c.
" " " ..	Brl	3 85	cash.
" vini gall.....	gl	4 75	opt. 6.50
Spongia usta.....	lb	2 50	
Stanni chlorid. crist.....	lb	40	
" oxid (putty-powder).	lb	50	
Stannum gran.....	lb	50	
Stearin.....	lb	15	
Strontii nitras exsicc.....	lb	20	10 lb 18
" chloridum xtls....	lb	30	
Strychnina cryst.....	oz	1 00	10 oz 90
" sulph.....	oz	1 20	in ⅛ oz bots 25 extra
Styrax liquid....	lb	50	
Succus conii.....	lb	75	
Succus limæ fruct W. I....	gl	90	brl. 80
" rhamni.....	lb	25	
" scoparii....	lb	70	
" taraxaci.....	lb	65	
Sulphonal—Bayer.... ..	oz	35	lb 4.50
Sulphur Lac.....		12	10 lb 11
" præcip (B. P.)	lb	20	10 lb 18
" rotund....	lb	3	brl 2
" sublim....	lb	4	bag 110 lbs 2¼
" vivum.....	lb	6	10 lbs 5
Sulphuris iodid.....	oz	40	
Svapnia, ½ cz bottles.....	oz	5 00	
Tamarindus, W. I....	lb	14	10 lb 12
Tapioca flake	lb	8	
" pearl.....	lb	8	
Terebene.....	lb	65	
Terebinth canadensis.....	lb	45	
" chian	oz	35	
" Venet.....	lb	15	
Terpine Hydrat	oz	20	
Terpinol.....	oz	30	
Terra Japonica (Gambier)..	lb	10	
Thallin Sulphate pure ...	drm	40	
Thiol liquid.....		2 00	gm. tins 1 25
Thymol.....	oz	40	
Trional-Bayer.....	oz	1 25	
Tripoli.....	doz.	90	
Triticum repens.....	lb	20	
Troch. acid carbolic G'sT.H.	lb	75	
" " tannic "	lb	1 25	
" aconite	lb	90	
" bath pipe	lb	45	
" black currant, Gibsons	lb	90	
" boracic acid .. T. H.	lb	90	
" bronchial P D & Co..			5 lb can 1.75 each
" cachou dwf bouquet.	lb	52	
" " floral gems...	lb	52	
" camphor	lb	75	
" capsici Gibson's	lb	65	Domestic 35
" catechu "	lb	80	
" chlorodyne.....	lb	65	Gibson's 90
" coltsfoot.....	lb	40	
" cubeb T. H.	lb	90	
" gelatine	lb	60	
" glycerin [jujubes]..	lb	75	
" guaiaci T. H.....	lb	1 10	
" ipecac.....	lb	75	
" kramariæ T. H.. ...	lb	1 25	
" lactucæ,... .T. H ...	lb	1 25	
" licorice (pipe).....	lb	35	
" mentha pipC.S Gibson's	lb	65	1lb bottles 75
" mentha pip [XXX]	lb	50	
" morphinæ.....	lb	1 00	
" " et ipecac.	lb	1 00	
" mosch Gibson's	lb	80	
" opii.....	lb	75	
" paregoric.....	lb	70	
" pontefract.....	lb	30	
" potass. chlor.....	lb	50	Tablets 60
" pyrethri T. H.....	lb	90	
" rosæ Gibson	lb	80	
" sedative T. H.....	lb	90	
" tolu.....	lb	70	
" tussi [cough]..... ..	bot	1 20	Gibson's
" " "	lb	50	[Preston's]
" " " Watsons.	tin	1 25	each
" vermifuge.....	lb	50	worm
" voice [jujubes]....	lb	85	
Uranii acetas	oz	60	
" nitras	oz	60	
Urethane	oz	60	
Veratrina.....	oz	1 75	
Verdigris.....	lb	35	powd 40
Vinum rubrum [port].....	gl	3 00	qr. cask 2.90
" " opt "	gl	3 50	" 3 25
" xericum [sherry]	gl	1 75	" 1.65
" " opt. "	gl	3 00	" 2.75
" " " fine...	gl	3 50	" 3.25
Witch Hazel extract.... ..	gl	1 50	5gals 1.25
Whiting.....	lb	1	brl 60c per 100 lb
Xylol	lb	60	
Zinci acetas.....	lb	45	
" bromid.....	oz	25	
" carb..... ...lb		35	
" chlorid. sticks.....	oz	15	½ lb 45,lb 75, bt. free
" iodid.....	oz	60	
" oleas.....	lb	1 20	
" oxidum Howard's P P	lb	70	
" oxidum Coml	lb	15	10 lb 12
" phosphas pur.....	lb	1 25	
" phosphid....	oz	60	
" sulphas com....	lb	6	10 lbs 5
" " pur Merck's ..	lb	10	10 lbs 9c.
" sulphocarb.....	oz	10	lb 1 00
" valerian.....	oz	30	b 4.00
Zincum granulatum.....	lb	30	
Zinci iodiodol	oz	1 50	

This cut shows a sectional view of the

Stoneware Filter

Styles 1 and 2,

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

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

PRICE LIST.

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

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

THOS. L. PATON, - Agent,

MONTREAL.

BEST POLISH IN THE WORLD.

RISING SUN STOVE POLISH

DO NOT BE DECEIVED with Pastes, Enamels, and Paints which stain the hands, injure the iron, and burn red. The Rising Sun Stove Polish is Brilliant, Odorless, and Durable. Each package contains six ounces; when moistened will make several boxes of Paste Polish.

WAS AN ANNUAL SALE OF 3,000 TONS.

SUN PASTE STOVE POLISH
DUSTLESS-LABOR SAVING-DURABLE
BEST IN THE WORLD
10 CENT TIN BOX
MANUFACTURED BY MORSE BROS.
TOP'S RISING SUN POLISH
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