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CANADIAN

PHARMACEUTICAL JOURNAL

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Original and Selected Papers.

PHARMACISTS AS SCIENTIFIC INVESTIGATORS.*

BY BARON F. VON MUELLER, PH.D., M.D., F.R.S.

You are all so well aware of the functions expected from pharmaceutic science as one of the main auxiliaries of medicine that it might appear superfluous to dilate at all on the professional positions and any of its duties, which are devolving on you, and are to be maintained and elevated by you. At all events it might be most appropriate, on this my first occasion of meeting you, to encourage your progress by a few words on the great services rendered in times past to the natural sciences by some of those celebrated men who arose from the same profession as your own. In instancing some of the discoveries which emanated from the study and laboratory of pharmacy we cannot go back to times when no strict limitation as yet existed of pharmacy as a distinct profession, when, indeed, the investigation and preparation of chemical substances and organic compounds for therapeutic use formed an integral ordinary part of the medical practitioner's work. Among those who, in the early days of a distinct recognition of pharmacy, distinguished themselves prominently was Marcgraf, a Prussian gentleman, who, about 120 years ago, discovered Magnesia and alumina, and first showed the identity of beet and cane sugar (1747), perhaps little foreseeing at the time what an enormous influence this discovery would exercise in generations afterwards by raising a

* Lecture delivered before the Victoria Chemists' Assistants' Association, and published in the Pharm. Jour. and Trans.

local supply of sugar in countries far outside of the tropical zones, and by providing thus also additional means for the rotation of crops through most nutritious stable food, and for facilitating the due maintenance of the fertility of any arable soil. Soon subsequently arose a still greater genius in pharmaceutic science, Carl William Scheele, a German by birth and descent, a Swede by fame. While an apothecary's assistant in Malmo and Stockholm he discovered fluoric, boracic, hydrothionic, tartaric, citric, and oxalic acids. He analysed first the constituents of bones. In Upsala, still merely an assistant, he became acquainted with the great renovator of zoology and phytology, Linné, and also with Bergmann, so famed for his extensive analyses of minerals and crystallographic researches on them, and here (about 1774) it was, where he made the important discovery of chlorine, solely and also independently of the British divine, Priestley, and Lavoisier, the latter soon slain as a a victim of the atrocities of the first French revolution, while Priestley encountered the furious hatred of fanaticism and jealousy, at a far more recent time than either Galileo, Brahe or Kepler, and was indeed obliged to take refuge in the transatlantic states. Scheele also discovered nitrogen, before he had even established a pharmaceutical business of his own, which took place at the age of thirty-five, and then followed his discovery of baryta, manganese, prussic acid, and some other most important chemical substances. His luminous career, however, was cut off at the early age of forty-four. Some of the researches of Scheele, and subsequently of Davy, led to the first steps towards photography. Vanquelin, who may be regarded as the founder of the qualitive organic analysis, was at first a pharmaceutist; his great countryman, Fourcroy, who was the son of a chemist, had the merit of introducing the new weights and measurements in France, and also of improving vastly chemical nomenclature. Chaptal, born in 1756, passed from the pharmaceutical to the medical career, was minister of home affairs under the first Napoleon, and was raised by Louis XVIII. to a peerage as Count Chanteloup, in acknowledgment of his great chemical discoveries, so well applied to industries and agriculture. Dumas, born in 1800, an ornament to the science of this country, was first a pharmaceutical chemist of Alais. We owe to him many essays on organic chemistry, atomic weights, substitutional proportions, and other chemical compounds; he also was minister of France, holding the portefeuille of trade and agriculture for two years. He has given us a great work, 'Traité de Chimie appliquée aux Arts,' in eight volumes. Had he never done anything else than drawing Pasteur into his luminous path, he would deserve our thanks for all time. I must pass on briefly to other great Frenchmen, such as Pelouze, Pelletier, and Brogniart, who were by descent or early occupation connected with the pharmaceutical profession; Pelletier being the discoverer of quinine and many other alkaloids.

Brogniart still adorns the science of France, and became the principal founder of vegetable palæontology since the earlier part of this century. Of his friendship, and that of another leading palæontologist of his age, the venerable Gœppert of Breslau, who also was active in the pharmaceutic profession during his earlier years, I may well be proud. Forchhammer, in the duchy of Schleswig, was brought up for the pharmaceutical career. A generation afterwards I spent several years in the very house in which this famed geologist and oryctologist received his first education for the natural sciences. His extensive comparative analysis of seawater, also of many algæ, may be known to many in this room. He was Sir Roderick Murchinson's stronghold when the latter investigated the geology of Scandinavia. Oersted, the friend of Forchammer, the brother of a Danish prime minister, the illustrious discoverer of electro-magnetism, was the son of a pharmaceutical chemist and passed himself through the years of pharmaceutic apprenticeship; he even conducted for some time a pharmaceutic business of his own. He was the founder and first director of the Polytechnic School of Copenhagen, and an extensive and ingenious writer on the natural sciences in relation to religion and poetry, not to mention the various original contributions towards physical and chemical science. It is a pleasing recollection to me to have met this leading discoverer and also Forchhammer, at the meeting of the German Association of Medical Men and Naturalists, held in Kiel, in 1846. In Britain also arose some brilliant spirits through early though sometimes brief engagements, in the pharmaceutic career, viz., Sir Humphrey Davy, who acted as assistant surgeon and chemist at the commencement of his studies, whereby probably the first impulses to his investigations were given. although they soon extended to physiological subjects, such as respiration. Without him we might not have had the early discovery of the metalic bases of the alkalies in 1807, nor his safety-lamp for mining, nor his numerous applications of chemistry to agriculture, nor his almost poetic teachings; and more, perhaps, no Faraday would have guided us onward had it not been for Davy.

Sir David Brewster, great through his labours in optics, the founder of the British Association, first, also, if my memory carries me safely, for on it I must mainly rely in this address, imbibed his love for the sciences which he adorned while in the modest occupation of the pharmaceutic *atelier*. Baron von Liebig commenced his world-famed researches in a pharmaceutic laboratory at Heppenheim, where he worked for about a year; and perhaps the great worker through fully half a century, for the lasting benefit of mankind, would have been lost to us had not mere chance brought him first, though very briefly, to your own profession. I need not dwell here on his immensely extended organic chemistry, which through him passed into a new era, while through the practical applications

of his inventions agricultural, physiological, and technological chemistry passed also into a new state. I am proud to possess several letters on scientific subjects, addressed to me by this great man. The family of the Gmelins might be regarded as almost a pharmaceutic one through several generations. I cannot in these cursory remarks refer to many of the very numerous men of science which sprung from this family. One of them was the celebrated traveller, Samuel Gmelin, who went with Pallas, Guldenstedt, and Lapdchin, for the advancement of natural history, through so much of Russian Asia, under the enlightened suspices of the Czar, from 1733–43. George Gmelin traversed with Behring much of Siberia, the results being lasting works on the fauna and flora of that wide tract of country. John Gmelin issued the thirteenth edition of Linneus' 'Systema Vegetabilium,' though engaged also as a professor of medicine and chemistry. Ferdinand Gmelin advanced pathology much in the first half of this century. Christian Gmelin is the great chemical author of more recent date. Leopold Gmelin stands also prominent among the chemists of the century. Carl Gmelin published a large work on the flora of the Grand Duchy of Baden. Perhaps still more familiar to us here are the works of Heinrich Rose on analytic inorganic chemistry; he followed in the first instance the profession of his father and grandfather, who were pharmaceutic apothecaries. Gustav Rose, the brother of the above named famed analyst, has widely advanced mineralogy, and was with Ehrenberg the companion of Baron von Humboldt in his travels through Russian Asia. Buchner, the disciple of Trommsdorf, was one of those who raised pharmacy to a science; he conducted for many years an important journal of pharmacy, originating from his adoption of your profession. Poggendorf, born in Hamburg, entered also the pharmaceutic career, through which many discoveries in chemistry and galvanism took place. An editor of the 'Annals of Physics and Chemistry,' from 1824 to 1867, he issued the colossal series of 134 volumes.

Pettenkofer, educated by his uncle, an apothecary at Munich, was for a long time pharmaceutic chemist to the royal family of Bavaria. We owe to him the best method of obtaining gas from wood, researches on the cholera-poison, on ventilation and on important sanitary measures. Wittstein, whose translated works on the preparation of chemicals used in medicine will be in the hands of most of you, embraced also your profession. A translation of his meritorious new work on organic analysis and on the chemical constituents of plants, is prepared by myself, and would ere this have appeared, had fair support been given to my position among you in this colony during late years.

In illustration of what has been done by the profession of pharmacy for chemical and allied sciences, I have singled out these few representatives among those who advanced leadingly on that

path of discovery; many others have toiled along, but as may be imagined, pharmaceutic gentlemen of high education have vastly promoted also other branches of knowledge. As might be supposed from their peculiar training, they have much advanced botany and also occasionally zoology. In both directions, for instance, Retzius, one of your profession, was active at Lund during the end of the last and beginning of the present century. He left his fame as an inheritage, well maintained by three sons, all professors of medicine, and distinguished for literary attainments. Ecklon, who lived for some time in the town of Husum, where I spent part of my youth, and who for many years was a chemist's assistant in Northern Germany and at Capetown, has rendered largely known the vegetation of Capeland, Caffraria, Hottentot Land, and other parts of South Africa, not merely as an exploring traveller, but as a phytological writer also. Rabenhorst, of Dresden, for forty years a persevering and successful mycologist, was long under engagements simply as an apothecary's assistant. Schacht, celebrated for his anatomic and other microscopic investigations concerning plants, made some of the first discoveries, which drew Schleiden's attention to him, in spare hours, at a chemist's shop.

Nees von Esenbeck, a meritorious botanic writer, was first in active service as a pharmaceutist. Martius, the great Brazilian traveller and naturalist, the author of numerous works, grandest among them that on palms, was the son of a pharmaceutic gentleman in Bavaria, and his brother, while continuing his father's business, became a leading author on materia medica. His friendship will not be oblivious to my memory. Among the three greatest of living bryologists, two are pharmaceutic chemists namely: Hampe of Blakenburg, and Mitten of Hurstpierpoint in Sussex; both remained true through a long life to their adopted profession. Of the three living greatest algologists, also, two are pharmaceutic gentlemen, namely: Kuetzing of Nordhausen, and Sonder of Hamburg; the latter, one of my oldest scientific friends, continues to conduct his original business up to this time, and it is therefore most praiseworhy that he is able, so circumstanced, to elaborate and publish, in co-operation with the late lamented Dr. Harvey, three large volumes of the flora of South Africa. But where am I to pause? There are numerous others, whose noble example should emulate you to raise here also the pharmaceutic standing. The strides of progressive knowledge have given pharmacy a place among the sciences; it is far more than a mechanic's art, if we view it in all its true bearings. An association, such as you have so thoughtfully formed, is well calculated to bring your profession to a deserving recognition. Well may you also aid here in progressive science, where a new country, with numerous of its latent resources, afford you multifarious opportunities to enter the field of independent discovery promisingly for success.

MADDER.

The increased use of aniline dye will, it is expected, lead to the decline of the trade in madder roots. The producers, in view of a diminished demand, have already commenced to limit their cultivation of the plant. The total growth of madder was calculated a few years ago to amount to 45,000 tons, of a value of over £2,000,000 sterling. In 1857 we consumed 109,000 cwt. of ground madder and 294,000 cwt. of madder root in the United Kingdom. The greater portion came from Turkey, France and Sicily. We also imported 42,700 cwt. of garancine. The whole quantity of this dye stuff was valued at more than £1,000,000. The value of that used in Great Britain in 1874, was under £800,000. Dr. F. Versmann, in a paper "On Anthracene and Alizarine," read before the Chemical Section of the Society of Arts, in March, 1874, gave some interesting details on madder. "In the East the madder plant has been known since the earliest time: from there it came to Greece and Italy, thence to the South of France, Alsace, Holland, and Germany. In Holland it has been cultivated more than 300 years; in France it has risen to great importance since the middle of the last century, especially in Avignon, which now produces about one half of all the madder consumed, to the value of about £750,000 per annum. Turkey and South Russia also supply considerable quantities of high quality. Some experiments in cultivaing madder in this country have been made in Derbyshire, some years ago, but with indifferent results. The soil, the climate, and the weather, have the most decided influence upon the growth of the plant, and the subsequent development of the colouring principle. The Dutch madder will dye red, but not purple, and the colour is not fast; Naples madder dyes good red and purple, but the colours are not fast; that of Turkey dyes good red and purple, and is very fast. France supplies the market with two qualities, called rosees, from their dyeing beautiful reds and pinks, and palauds, which give a good purple, besides fine reds, and is the best French quality. The last name is derived from the fact that the plants are grown on marshy land. The cultivation of the plant and the ultimate separation of the colouring principles is a matter of much time and uncertainty. The root must remain in the ground for a long time—in France, two or three years; in Turkey, five or seven years—and after having been dried and coarsely powdered, it must be kept another year or two to develop the colouring principles which are not ready formed in the root. For many centuries, and until the beginning of the present one, the root was used direct, and no attempt was made to separate the colouring matters or to apply them in a concentrated and pure form, but with the developments of

*From the Journal of Applied Science.

technical industry and scientific investigation, the concentration or separation of the valuable constituents gradually commenced. The first step was the manufacture of "fleur de garance," madder deprived of all substances soluble in water, and then dried again, which reduced the bulk to about 60 per cent. The washings contain a considerable amount of sugar, which by some French manufacturers is converted in alcohol. A ton of madder gives about 15 gallons of alcohol, of rather unplesant flavour, but well adapted for technical purposes. Garancine is madder further treated with sulphuric acid, which destroys part of the ligneous fibre, yielding about 25 per cent. in the form of a fine powder of light-brown colour. Alizarine verte and purpurine are the results of treating madder with sulphurous acid, which dissolves both; after adding sulphuric acid to the solution, and heating at 40° C., purpurine separates about half or three-quarters per cent., and on further heating to 100° C., alizarine separates about 3 per cent. Yellow alizarine is obtained by further purifying this alizarine verte. Extracts of madder are mostly obtained by treating the root with boiling water, collecting the precipitates which separate on cooling, mixing them with gum of starch, and adding acetate of alumina or iron. This is, in fact, a mixture of colouring matter and a mordant, which may be used for printing, direct. These are the principal madder preparations; many of which are maufactured in this country." The madder root season in Naples commences with August of each year and terminates in July of the following. It is customary to carry the residue stock of one year forward and to add it to the next season's crop. The estimates are made on bales of 9 cwt. each. The following statement of the produce of Naples madder roots has been supplied by a British merchant engaged in the trade. The shipments go chiefly to Liverpool and Glasgow, to Avignon *viâ* Marseilles, and to Holland:—

Produce	1869	...	...	20,909	bales
"	1870	...	...	20,375	"
"	1871	...	...	16,903	"
"	1872	...	...	38.093	"
"	1873	...	...	19,791	"
"	1874	...	...	22,646	"

The shipments in the last named year were 19,950 bales, viz—to England 5,270 bales, to France 14,084 bales, and to Holland 296 bales; local consumption and shipments in garancine, 2,600 bales leaving a residue with which to commence the new season of 2,396 bales.

ASAFŒTIDAS OF THE BOMBAY MARKET.*

BY W. DYMOCK,

Professor of Materia Medica, Bombay.

Three distinct kinds of asafœtida are found in the Bombay drug market, and are known to dealers as Abushaheree Hing, Kandaharee Hing, and Hingra

Of each of these drugs numerous qualities, more or less mixed or adulterated, are met with, but I purpose to notice the unadulterated varieties only.

Abushaheree Hing is brought from the Persian Gulf ports, principally from Abushaher and Bunder Abbas ; it is produced in Khorasan and Kirman by the *Ferula alliacea* of Boissier.

Specimens of the plant with the gum resin attached have been supplied to me through the kindness of Mr. Ardeshir Mihrban, of Yezd, and these specimens, which show both flowers and fruit, have, with plenty of mature seed, been forwarded to Mr. D. Hanbury, who has kindly taken the trouble of submitting them to Boissier, and has also sent packets of seed to the botanical gardens of Kew, Edinburgh, Oxford, Paris, St. Petersburg, Berne, Strassburg, Florence, Pisa, Naples, Palermo, Athens, and to botanical friends on the Mediterranean coast, in South Africa, and a few other places.

The specimens sent to Mr. Hanbury were collected near Yezd and Kirman, and were from three and a half to four feet in height, and the roots of some young plants which had never flowered were quite fresh when they arrived in Bombay, and exuded a thick milk when cut, which after a day or two became brown and translucent.

It is this drug alone which appears in the Bombay Custom returns as Hing or Asafœtida; all other kinds pass under the name of Hingra. Hing arrives here either in skins sewn up so as to form a flat oblong package, or in wooden boxes. It varies in appearance with age; when quite fresh it is soft and of the consistence of treacle, of a dull olive brown colour, and *purely garlic odour*. It is mixed with about an equal bulk of slices of the root. After having been kept some time the gum resin becomes hard and translucent, and of a yellowish brown colour.

In 1872-73, 3,367 cwts. of this drug were imported from the Persian Gulf.

The method of collection has been described to me by Mr. Godrez Mihrban, of Yezd, and resembles the method of collecting Asa-

* From the Pharmaceutical Journal and Transactions.

etida, as described in the 'Amanitales,' except that the slices of oot are mixed with the juice.

The price of the best Hing in Bombay is from twenty rupees to wenty-two rupees per maund of forty pounds.

Kandaharee Hing is a much rarer article and only occasionally ppears in this market. It is brought from Kandahar packed in oat skins which are sewn up into an irregularly shaped oblong bag vith the hair outside. This Asafœtida, when fresh, is in flaky pieces uite wet with essential oil, of a yellow colour, opalescent, with an odour like a mixture of garlic and oil of carraways. When kept for ome time the gum resin loses its moisture and gradually becomes erfectly transparent, and of a golden yellow colour; the odour also oses much of its aroma and approximates to that of the best Asafœida of European commerce. Some packages of the latter which I have examined this season in Bombay I found to contain small portions of the moist opalescent gum mixed with the ordinary opaque kind, as well as with some fragments of an intermediate character, partly opaque and partly opalescent. I believe this drug will turn out to be the superior kind of Asafœtida noticed by Bellew as obtained from the node or leaf-bud at Kandahar. Kandaharee Hing is little known in Bombay, and is not retailed in the shops. It fetches about double the price of Abushaheree, and is not always obtainable; it is used as a condiment by wealthy people in Northern India.

Hingra or the Asafœtida of European commerce comes to Bombay in large quantities from two sources, viz., Southern Persia and Affghanistan. The Persian drug is met with in two forms, viz., in tears, more or less agglutinated together, and secondly, as a soft, white, viscid mass. It arrives in skins or boxes, and is mostly exported to Europe, but some is used in India as a condiment, or medicinally by the poorer classes. This gum resin is the Anghuzeh-i-Lari of the Persians, and there seems to be little doubt that it is the produce of Kampfer's plant, whichever that may be. In price it varies much; the average for a good quality will be about ten rupees per forty pounds.

The Affghan drug differs somewhat from the Persian in appearance and odour. The best samples occur in small flat pieces or tears, to one side of which a few particles of sand are adherent as if the gum had run out into the ground near the root; these pieces are quite hard and dry, yellowish white externally, and display, when broken, a conchoidal, milk-white surface. Many packages, as already mentioned, under Kandaharee Asafœtida, contain the opaque gum above described, mixed with opalescent pieces and moist yellow particles, together with much dirt; from such packages the best tears are removed, and the remainder, pressed together, forms second sort Asafœtida. Affghan Hingra is generally packed in skins, and the best sort will fetch about twelve rupees per maund of forty pounds.

The adulteration of Hing is carried on in Bombay. It is simply mixed with gum Arabic by treading the two together; the mixture is then packed up in skins so as to resemble genuine packages. Several qualities are prepared containing different proportions of gum.

Hingra is adulterated in Affghanistan and in Persia by the admixture of some white earthy material. The adulterated article which comes from Persia is in dirty white gritty masses and becomes very hard when kept. That from Affghanistan is of a brown colour and in small roundish masses, easily crushed into powder by pressure; according to Bellew, gypsum and flour are the adulterations.

A substance called Heera Hing is also met with here; it is obtained from the packages of Abushaheree Hing; many of these are quite liquid in the centre; the people who ibuy them for adulteration squeeze out this liquid portion and retail t at a high price as Heera Hing; it is of the consistence of treacle, and when dried becomes solid and translucent.

From the examination of a great many bales of fresh Hingra I have come to the conclusion that the Persian variety is produced by a different plant than the Affghanistan. Probably *Scorodosma fœtidum* will prove to be the source of the Persian, and Falconer's *Narthex* of the Affghanistan kind.

SYRIAN SPONGES.*

The latest project before the Acclimatization Society of Paris is the cultivation of the celebrated Syrian sponge in the waters of Southern France, a valuable and most useful product, which, like many another gift of the sea, is in danger of extermination through excessive fishing.

The sponge-producing grounds of Syria occur along the coast, from Mount Carmel in the south to Alexandretta in the north, the centres of production being Tripoli, Ruad, Lattakia and Bartroun, on the coast of Mount Lebanon. The best qualities are found in the neighbourhood of Tripoli and Bartroun. According to a late report of the British Vice-Consul at Beyrout, as many as three hundred boats are engaged in the fishery; the annual yield, though falling off through the exhaustion of the grounds, still amounts to $100,000 to $125,000. The majority of the boats used are ordinary fishing boats, from eighteen to thirty feet in length, three parts decked over, and carrying one mast with an ordinary lug sail. They are manned by a crew of four or five men, one to haul and the rest to serve as divers.

* Scientific American.

In former years the coast was much frequented by Greek divers from the islands of the Archipelago ; the number is now restricted to five or six boats a year, the skill of the Syrian combined with his better knowledge of the fishing grounds, enabling him to compete successfully with his foreign rival.

Diving is practised from a very early age up to forty years, after which few are able to continue the pursuit profitably. The depth to which the diver descends varies from five to thirty "brasses," or from twenty-five to one-hundred and seventy-five feet. The time he is able to spend under water depends on natural capacity, age and training; sixty seconds' time is reckoned good work—in rare instances eighty seconds are spent under water. The Syrian diver uses a heavy stone to carry him quickly to the bottom, and is drawn up by a comrade. On the bottom, he holds the guide rope with one hand and tears off the sponges with the other, placing them in a net which he carries. No knife, spear, or instrument of any kind is used in detaching the sponges; nor does he, like his Greek competitor, ever use the diving dress, having an antipathy to it on the score of its reputed tendency to produce paralysis of the limbs. Two or three fatal accidents occur annually, mainly among the skillful and daring, who sometimes drop the rope to secure a tempting prize, and missing it on their return, attempt to rise to the surface unaided, and are drowned. At other times the diver will be wounded by jagged rocks, or his rope will become entangled, exposing him to great risks where the depth is great.

Though varying much in quality and size, the sponges are roughly divided into three classes : (1) The fine white bell-shaped sponge, known as toilet sponge; (2) the large reddish variety called bath sponge; (3) the course red sponge used for household purposes, carriage cleaning, etc. Two-thirds of the produce of the Syrian coast are purchased by native merchants for exportation, while the remaining third is purchased on the spot by French agents. France takes the bulk of the finest qualities. One-tenth the price received by the finders goes to the government for revenue.

It is possible that this high-priced and durable variety of sponge might be cultivated in our southern waters, as a substitute for the beautiful but tender sponge they now yield. The experiment would be worth trying.

FLUID EXTRACT OF *GOSSYPIUM HERBACEUM.**

BY J. U. LLOYD.

In the January number of this Journal, Prof. Maisch calls our attention to a fraud in the shape of a spurious bark, purporting to be that of the *Gossypium herbaceum*. This bark was obtained from a wholesale store, and was, either intentionally or through ignorance, thrown upon the market as that of the officinal cotton-root bark. Be this as it may, however, the above mentioned article in the January journal was the means of directing the attention of physicians and druggists generally throughout the country to this bark and its preparations, and they are now disposed (very justly) to examine rather critically any pharmaceutical that comes within their observation which is purported to have been prepared from this bark.

A short time since, one of our retail druggists complained to me of a specimen of this fluid extract. It was prepared by a reliable manufacturer of pharmaceuticals in this city, and when purchased by him seemed prime and trustworthy. It was originally of a rich deep red color, and evidently gave satisfaction. At any rate there was no complaint made of it, and, if I mistake not, he dispensed it several times. However, when about one-fourth of the bottle had been used, he was surprised one day upon attempting to fill a prescription to find the remainder had gelatinized, or, perhaps, the word curdled would better express it; for when it was exhibited to me it presented the form of a brown, soft curdy mass, from which, upon inclining the bottle, a very small amount of an almost colorless liquid would exude. The extract had lost its rich red color, and the liquid that dripped from the coagulated substance exhibited a decided acid reaction.

The brown magma would not dissolve in either alcohol or water, while dilute acids and alkalies alike seemed not to affect it.

Afterwards, another of our city apothecaries, in speaking of this preparation (fluid extract of gossypium), mentioned the variable appearance of the different lots of extracts he had found upon the market; for, while some specimens were of a brownish-yellow color, others would be of a deep red, and the question which presented itself to him in connection with the above-mentioned facts was whether some of them were not prepared from spurious barks?

Messrs. Wallace Brothers, of Statesville, N. C., may be considered excellent authority upon the subject of the crude root, its collection, &c., and in a letter to me they say: "The root and bark of the root are gathered in October, immediately after the cotton is harvested, before the wet weather sets in; for at this time they turn

* From the American Journal of Pharmacy.

to a deep brown color, and become unfit for use." I have seen specimens of bark upon the market corresponding with the above description of the injured (deep brown) bark, and, indeed, have attempted to prepare an extract by way of experiment from the same. The experiment was a failure, however; for, although the preparation possessed some of the characteristics which pertain to extracts prepared from good bark, any one with much experience would readily perceive it to be a very inferior article, but could scarcely confound it with any other fluid extract.

The bark of the *Gossypium Herbaceum*, when prime, is of a yellowish-brown color externally, while internally it is much lighter, almost approaching in some instances to white; when chewed, it imparts merely a sweetish astringent taste. When the fluid extract is prepared from the above named quality of bark by the officinal process, it is at first often of a brownish-yellow color, without a tinge of red; to the taste it is a true representation of the bark with the exception of the increased sweetness, which is imparted by the glycerin. It is neutral, altering neither the color of reddened nor blue litmus paper. It contains a large amount of tannin and considerable glucose. Upon standing, the extract undergoes a chemical alteration; it gradually changes (sometimes quite rapidly) to a reddish color, ultimately becoming of a very beautiful bright red, while at the same time it becomes very acid, immediately changing blue litmus paper to red, and even effervescing with bicarbonate of potassium. This alteration proceeds as readily in the dark as when exposed to the light, while securely protecting it from the atmosphere will neither retard nor increase the decomposition. The above striking alteration I consider peculiar to this extract, for, although many of our fluid extracts are prone to decompose, the remarkable change in colour in my opinion is a characteristic of *Gossypium*.

Occasionally the chemical decomposition proceeds until the extract is completely disintegrated. This is seldom the case, however, but once in awhile we come across a specimen that has abruptly solidified or curdled (while samples I have purposely placed aside most positively refuse to do likewise, although standing longer than some that have spoiled). The property of coagulating, however, is possessed by fluid extract of *Geranium maculatum*, which, as regards color, is nearly like *Gossypium* after the change to red. However, fluid extract of geranium is red when first made, and so very astringent as to forbid it ever being mistaken for fluid extract of cotton-root.

From the foregoing remarks it will appear that a genuine fluid extract of *Gossypium* may at different periods vary in color from a brownish-yellow to a deep red, and that the several shades found upon the market, perhaps, are prepared from the true *Gossypium*; however, if any of the specimens are not red, and age fails to effect a change to this color, I feel that I may be warranted in saying they were either prepared from spurious barks, or worthless *Gossypium*.

Fluid extract of cotton-root, as I have said, turns invariably to a deep red after standing a time, and occasionally will decompose and coagulate after reaching the above colour, which, although rendering the extract worthless, is a proof of its having been genuine ; for of the red extracts *Geranium maculatum* is the only one that to my knowledge will gelatinize, and *Geranium* cannot be mistaken for *Gossypium*.

Regarding color alone, either the fluid extract of *Pinus canadensis* or *Geranium maculatum* might be substituted for *Gossypium*, but their taste and properties would forbid, while all of the species of *Populus* I have operated with differ from the true *Gossypium* in every respect. Taking everything into consideration, the probabilities are that the larger share of worthless fluid extract of *Gossypium* is prepared from *Gossypium* bark, but from the kind Wallace Brothers speaks of as being *dark brown*, for to my experience we have much of this stuff to contend with.

CINCINNATI, Ohio, June 1st, 1875.

NOTE.—The gelatinous mass is probably one of the pectin compounds, perhaps pectosic acid, produced by what has been termed the *pectic fermentation*. Similar changes, the precise causes for which are but little understood, occur in many concentrated liquid preparations of vegetable drugs, and it is curious that occasionally only a portion of such a liquid gelatinizes, while another portion prepared at the same time and kept apparently under the same conditions, refuses to gelatinize. In some instances the change may be prevented by exhausting the drug with a stronger alcohol, or by adding to the preparation if strongly acid, a little alkali. But no general rule can be laid down, applicable to all cases.—ED. AM. JOUR. PHARM.

WHICH IS THE BEST SARSAPARILLA ?*

BY EDWARD MARQUIS.

The *Achiv der Pharmacie*, 1875, pp. 331–352, contains an essay on this subject, detailing the results of an exhaustive investigation, such as have been made for some years past in the Pharmaceutical Institute of the University of Dorpart, Russia, under the supervision of Prof. Dragendorff. We can give only a brief abstract of this interesting paper.

The air-dry substance, in coarse powder, was dried at 110° C. (330° F.); the loss indicated the moisture. The powdered root was exhausted by digestion with 30 per cent. alcohol, and the resulting dry extract weighed. The extract was exhausted with cold distilled water, and its sugar determined in the filtrate; the residue was exhausted with boiling alcohol, which left a minute flocculent residue of a brown color. After the evaporation of the alcohol and drying,

*From the American Journal of Pharmacy.

the brownish-yellow mass was weighed as smilacin. The residuary root powder from the previous experiment was exhausted with cold distilled water, and the resulting dry extract weighed. This extract was again dissolved in water and the solution mixed with five times its volume of alcohol; the precipitate, after drying, was weighed as mucilage; it was found to contain but a trace of albumen. The mucilage was incinerated and the ashes weighed. The starch was estimated by Fehling's solution after converting it into glucose by continued boiling with diluted sulphuric acid. The total percentage of ashes was determined by incinerating fresh portions of the root. The following table gives the results obtained for 100 parts of the air-dry roots:

SARSAPARILLA.	Moisture.	Alcoholic extract.	Smilacin.	Alco. ext soluable in water.	Aqueous extract.	Mucilage.	Ashes of mucilage.	Aq. ext. sol. in alc.	Starch.	Sugar.	Ashes of Root.
Honduras, 1874.	10·39	5·5	0·45	4·96	2·6	2·04	lost.	0·56	45.0	none	4·74
" "	10·3	5·44	0.58	4·86	2·56	2·1	0·42	0·46	45.0	"	4·8
" 1865.	10·32	13·38	1·26	12·12	6·98	4·46	0·4	2·27	6·25	"	6·15
Caraccas, 1868.	11·33	9·62	1·5	8·12	3.1	2·5	lost.	0·60	23·68	"	4·23
" "	11·2	9·42	1·6	7·82	3·18	2·5	0·2	0·68	23·68	trace	4·2
Italian, 1865.	11·12	8·43	0·86	7·57	3·36	2·7	0·16	0·66	20·27	none	4·10
Lisbon, (Rio Negro) old.	11·62	9·16	0·86	8.30	4.81	4·3	lost.	0·51	20·49	"	6.46
" " 1866	10·97	8·66	0·86	7·80	5·00	3·46	1·14	1·54	14·34	"	4·35
Jamacia, 1865.	11·16	12·34	1·68	11·66	9·74	8·5	lost.	1·24	4·39	"	8·15
" "	11·19	12.22	1.78	10·44	9·82	8·44	1·38	1·38	4·39	"	8·21
Vera Cruz, without rhizome, 1874.	10·7	9·2	1·42	7·78	7·5	3.08	0·48	4·42	6·92	trace	6.80
Vera Cruz, without rhizome, unwashed, 1865.	9.8	14·8	1·5	13·3	7.1	4·06	0·38	3·05	6·92	none	12·4
Vera Cruz, rhizome, old.	8·11	7·84	1·24	6·60	3·2	1·82	0·24	1·38	3.1	"	3·26
" " roots, old.	9·8	9·22	1·48	7·74	10.1	8·38	0·52	1·72	9·37	"	6·88
Smilax aspera.	9·1	13·98	5.12	8·86	3.92	2·14	0·6	1·78	15·0	trace	4·3
" China.	12.53	3·54	0.68	2·86	3.3	2·28	0·1	1·02	30·0	none	1·59

Thirty years ago the percentage of smilacin had been determined as follows:

	Vera Cruz.	Lima.	Caraccas.	Lisbon.	Honduras.	Jamaica.
By Adrian.	1.688.	1.458.	1·282.	1·125.	1·083.	1·042.
By Ingenohl.	1·880.	——	——	1·410.	1·100.	——

Since the virtues of sarsaparilla are most probably due to smilacin, it would appear that the Vera Cruz and Jamaica varieties are the best for medicinal purposes.

HINTS ON THE STORAGE OF DRUGS.

The following useful suggestions are taken from the *Laboratory*, and were originally published in the *Price Current* of Messrs. Southall Bros & Barclay, Birmingham :

Cantharis—Ergotæ.—If kept in a bottle half full, and shaken up from the bottom once a week, the growth of insects will be prevented.

Carbo Ligni.—Should be carefully excluded from the air, as its medicinal value depends largely upon its antiseptic and absorbent properties.

Confectio Sennæ.—Should be kept in a very dry but cold place, to prevent fermentation.

Ferri et Ammon. Cit.—Ferri et Quiniæ Citras.—These scale preparations should not be exposed to strong light, and are best kept in *tightly corked* bottles, with perfectly round necks, and a piece of gutta percha tissue under the corks.

Anthemis.—Should not be kept in a warm or too dry place, as they lose their aroma and fall to pieces at the least touch if made too dry.

Ammoniæ Acetatis.—Should never be kept in white bottles, as it dissolves the lead which is generally present in white glass.

Ol. Limonis—Ol. Bergamotte.—The stock of these articles should be kept in a dark and cool place, and only a small bottle kept for use ; *all essential oils are better kept from the light.*

Oleum Amygdalæ Dulc—Oleum Morrhuæ—Oleum Ricini (Italian).—These oils, and especially the fine varieties of Oleum Morrhuæ, should be kept closely corked and in a perfectly dark and cool place. It is especially urged that these oils should not be kept for show in and about the window, as they are thus seriously deteriorated, becoming in a short time quite rancid by the action of the light.

Potassii Iodid.—Pulv. Gum. Guaiaci.—Quiniæ Sulph.—Santoninum.—Hydrarg. Subchlor.—Vin Ipecac.—Should not be exposed to direct sunlight.

Sp. Ætheris Nit.,—Will contract acidity much faster if exposed to the light ; it is best kept in a dark place or in bottles covered with yellow paper.

Acid Hydrocyanic,—Should be kept in well-corked bottles, lying on their side, in a cool, dark place.

Strong Mineral Acids,—Should be kept in a cool place, Sulphuric Acid, if left in an un-stopped bottle, rapidly absorbs moisture from the air, and in a short time is very considerably reduced in strength.

Alcohol Absolute.—The remarks about Sulphuric Acid equally apply to Alcohol.

Chloroform;—Should be kept in well-stopped bottles in a cool place, and not exposed to a strong light.

Cortex Aurantii,—Cortex Limonis.—These should be kept cool, dry, and in the dark.

Hydrarg. C. Creta,—Is liable to become oxidized if long exposed to the action of the air, and to become contaminated with peroxide if exposed to the action of both air and light.

Potassa Sulphurata—Stock should be distributed in small bottles sealed down, and should be rejected when it ceases to have an aloetic fracture.

GENERAL DIRECTIONS.

Essential Oils,—Should be kept in a cool place and not exposed to *direct sunlight.*

Extracts,—Should be kept excluded from the air as far as possible, and in a dry, cool place, to prevent evaporation and the development of fungoid growth.

Infusions,—Should be kept in a cool place, whether freshly prepared or in a concentrated form. Those which contain essential oils, such as Cascarilla, ought not to be filtered; this, though frequently done, especially with concentrated infusions, greatly deteriorates their value.

Juices,—Should be kept in a cool, dry place. Lemon and lime juice, when freshly expressed, must be allowed to deposit the albuminous matter, and the juice should then be bottled off, taking care that the bottles are nearly filled; they must then be corked and tightly sealed.

Leaves,—Should be kept in tins or bottles in a cool place, and the stock of English Leaves, as Conium, Hyoscyamus, Digitalis, Belladonna, and Stramonium, renewed annually.

Lozenges,—Should be kept as dry as possible; a moderate warmth is not objectionable.

Ointments,—Ought to be kept in a cool, dark place, and it is of the greatest importance to thoroughly scald and well dry the jar before putting in the fresh stock.

Pill Masses,—Should be kept in jars well covered, and in a cool, dry place, to prevent the dissipation of essential oils, and the mass from becoming dry and hard.

Powders,—Should be kept in a cool place and not exposed to a strong light, as light tends to bleach some powders and oxidize those containing essential oils. Heat renders valueless many powders by dissipating the essential oils they contain.

Roots,—Should be kept in a dry, airy place; and in the case of rhubarb and others, which are liable to be attacked by insects, as soon as it is noticed that this is the case, the portion so affected should be separated from the bulk, for if this is not done the whole will soon be attacked.

Silver Salts,—Should be kept from contact with organic substances, and not exposed to the light.

Suppositories, Pessaries and Bougies,—Should be kept in a cool place.

Syrups,—Should be stored in a cool place. *In storing*, care should be taken that the cork is loosely inserted; if the syrup should ferment, the best plan to stop fermentation and drive off air and carbonic acid gas, is to heat it to about 120° Fah.

Tinctures, Wines and Spirituous Preparations Generally,—Should be kept cool and not exposed to a strong light.

ON GLYCONATED EMULSION OF COD LIVER OIL.*

BY T. D. M'ELHENIE, PH. G.

The writer desires to call the attention of the profession to a new combination of this valuable agent The formula, somewhat modified, is that proposed by Dr. Geo. M. Beard in the "Archives of Electrology and Neurology" for May, 1874. I have prepared the emulsion frequently for Dr. Bartlett, of this place, who esteems it highly as a brain and nerve food, and in an atonic condition of the nervous system. It is well borne by the most delicate stomach; and when well prepared, will keep sweet a long time. Below are given the formula and details which the operator will appreciate after using.

First prepare glyconin ʒxviii by thoroughly triturating in a half-gallon mortar

Glycerin	
Yolk of egg, ...	*aa* ʒix
Then add Oil of bitter-almond, . . .	ʒi

And triturate until the mixture thickens and becomes a creamy yellow.

Prepare a strychnia solution as follows:

Take of Strychnia sulphate, . . .	gr.i
Distilled water, ...	ʒii
Jamaica rum, ...	ʒiv

Add eight fluidounces of filtered cod-liver oil very slowly to the glyconin mixture, preferably by steady dropping from a vial having a grooved cork, and at intervals add small portions of the strychnia solution.

All this is to be done by active and constant trituration, the success of the process depending upon the fidelity with which this is performed. The finished product will measure about twenty fluid-ounces, until, by subsidence, the air bubbles have escaped. An incidental benefit to the operator is a superb development of the flexor muscles.

As proposed by Dr. Beard, the mixture contained diluted

* From the American Journal of Pharmacy.

phosphoric acid. At the request of Dr. Bartlett, I substituted strychnia. He gives the dose, a dessertspoonful, containing 1-64 grain of the salt. Phosphorus in etherial solution, Fowler's solution of arsenic, pyrophosphate of iron, etc., may be readily substituted. The formula, of which this is a modification, appeared in the June number of the "Druggists' Circular."

The "glyconin" without the oil of almonds, soon separates, and with the oil, soon becomes too thick to flow from a wide-mouthed vial.

Experiments, with a view to preparing it in a ready form for all emulsions are thus far unsuccessful, but will be further prosecuted, and the result announced later, if favorable. The writer is disposed to lay stress on the two facts that the above mixture *does not nauseate* and *does not separate.*

The designation "Glyconated Emulsion" may serve a good purpose when, from idiosyncracy, the *name* of col-liver is unpalatable.

Flatbush, L. I., June, 1875.

LEECHES IN ANJOU.*

BY C. MENIERE, OF ANGIERS.

It is well known to the leech fishers of Anjou that certain wates cannot support leeches, and that the conformation of the banks may be prejudicial to their reproduction, whilst others, on the contrary, yield continually a relatively abundant collection. If some industries progress there are others that remain stationary; for although in Anjou on rare occasions a leech fisher may be seen who uses a net with fine meshes, fixed at the end of a pole intended to stir up the marshy waters, there are others who content themselves with placing their legs in the midst of the swamp and allowing the leeches to fasten on to them.

The fishers usually like calm weather, with not too high a temperature; some prefer to work in stormy weather, before sunrise, or in the evening at sunset. Moreover, upon searching, with the aid of a lamp, the borders of a marsh where the vegetation is developed, a good number of leeches may be found attached to the branches and leaves of certain plants.

Anjou possesses nearly all the species of leeches as well as numerous varieties. There exists a considerable difference in certain species, according to the marsh in which they are found. For instance, the experienced fisher can distinguish the official leech which has lived in a marsh in the midst of vegetation, for in other

* From the *Repertoire de Pharmacie*, iii., 306.

conditions it no longer presents the same character. It is also believed by some persons that the colour of the water influences the colour of the leech, and the greater or less development of the characters by means of which they are classified. Although the author attributes only a secondary importance to this point, he considers that the chemical nature of the water affects the abundance or scarcity of the leeches. Thus they are not found in the calcareous ferruginous waters, whilst the waters reposing upon schist beds, which are slimy at the bottom and charged with aluminous *debris*, yield seven or eight species.

The author describes some leeches as parasites and some as sedentary. He uses the term "parasite" because, for instance, the leech of the species *Pisciola piscium*, as soon as it possesses sufficient agility, attaches itself to the tench, roach, or back of the young pike, making its way to the neighbourhood of the gills, sucking the blood and growing; neither is it detached until it is well gorged and developed. Hence this species is found not only in ditches and marshes, but also in open water in rivers, among stones, and especially slates.

The *Hirundo geometra* is not rare in Anjou. It never remains in the marshes—at any rate while young—preferring the schistous sides of streams, and clinging to the young fish which seek the borders of limpid streams. These two species, which appear to have the same habits, become in their turn a prey to the pike.

The other species, which he calls sedentary, scarcely quit their native marshes. The *Hirudo vulgaris* is sometimes carried by the current into a river, but it prefers the running water of ditches, or brooklets covered at the bottom with vegetable *debris*, such as twigs and branches, which serve it as a resting place. The *Hæmopis sanguisuga*, commonly called the horse leech from its fastening on the flesh of horses turned into the marshes or humid pastures, is always found where the water is shallow, and by preference in that which is miry. It lives very well in water charged with organic matters, and attacks salamanders, frogs, the fry of fish, etc.—*Translated in the Pharm. Jour. and Trans.*

PHOSPHORUS PILLS.*

BY WM. H. WALLING.

Various excipients have been proposed for phosphorus, a few only of which I shall notice.

At the request of physicians, I have used balsam of tolu, dis-

* Read at the meeting of the Philadelphia College of Pharmacy, and published in the American Journal of Pharmacy.

pensing the pills under water, also coating with mucilage gum arabic and French chalk. The balsam is very easily handled by triturating it and the phosphorus together under hot water.

After repeated experiments with various substances, I adopted the following formula, viz :

Take of Butter of cacao, . . .	gr. 300
Powdered white castile soap . . .	gr. 200
Phosphorous	gr. 25

Melt the butter of cacao in a capsule, transfer to a quinine bottle, add phosphorus and shake vigorously; add the soap and continue agitation, applying some heat, if necessary, until the phosphorus is all taken up. The mass is easily, if rapidly, worked. Make into five hundred pills, containing one-twentieth grain of phosphorus each. Coat with mucillage of gum arabic and French chalk. They will stand a dry heat of 110° without running together. Their behaviour under heated water compared with other excipients is as follows :

No. 1. Pills made according to the foregoing formula ; No. 2, by Bullock & Crenshaw ; No. 3, by Warner & Co., and No. 4, made with balsam of tolu.

All were placed in water at 90° F. and heat gradually raised. In two minutes coating on No. 2 entirely dissolved, but pill hard.

In five minutes No. 1 completely liquified.

The heat was now up to 98°, showing little effect upon No. 3, and none whatever upon No. 4.

In six minutes coating on No. 3 was slowly dissolving. Heat raised to 110° No. 3 coating dissolved and pill with No. 2, slowly separating, but not softened much. No. 4 soft, but retaining form. After half an hour's digestion, Nos. 2 and 3 still undissolved, no change in No. 4. From these simple experiments, we see the relative solubility in the stomach of the various excipients used in making these pills.

One of our physicians made several experiments with some of the above pills, the results of which are given in connection with this paper. These pills can be made of any desired strength, and will keep indefinitely. I present a sample made as above. It is not the purpose of this article to enter into the discussion of the action of phosphorus upon the system, but that its effects and doses ought to receive more attention no one will dispute, especially as it is being extensively used, and in such variable doses.

EFFECT OF PHOSPHORUS AND THE PHOSPHATES IN PUTREFACTION.*

In 1866 Collas showed that isinglass dissolved in water, in which was suspended some phosphate of lime, putrefied much more rapidly than usual, and also that meat chopped up and mixed with phosphate of lime decomposed very soon. He explained this phenomenon on the supposition that the organisms of putrefaction assimilate the phosphate of lime, the conditions for their development being more favorable then than without the addition of a phosphate. J. Lefort has recently repeated these experiments, and his results entirely confirm those of Collas. He has also extended them farther, and shown that phosphate of magnesia possesses this power in a less degree; other salts of lime and magnesia, as well as the soluble alkaline phosphates, do not show it at all. It is well known that fish begin to decay much sooner than the flesh of animals, and Lefort refers this to the greater quantity of earthly phosphates in them. According to Bibra's analyses, the ashes of perch and carp contain 44.3 and 44.2 per cent. of earthly phosphates, while the flesh of oxen and calves contain only 20.6 and 16.4 per cent. Animal fluids which contain much phosphates, like the urine, do not decompose any more rapidly after the addition of gelatinous phosphate of lime than before.

Lefort could easily detect sulphuretted hydrogen evolved from decaying animal matter, but no volatile phosphorus compounds. From this he concluded that the ordinary explanation of the garlic odor and phosphorescence observed as being due to the evolution of phosphoretted hydrogen is incorrect. He believes that in certain stages of decomposition sulphide of phosphorus might, under certain circumstances, especially if the decaying meat be eaten, act as poison.

ACTION OF BOILING DISTILLED WATER ON FEHLING'S SOLUTION.—MM. E. Boivin and Loiseau remark that the blue colour of Fehling's solution, which is weakened on boiling with distilled water, remains unchanged if river water be employed; indeed, if ordinary water be used, the boiling liquid may be concentrated till it is nearly dry without losing its colour. The nondecolorisation of the solution is attributed to the foreign soluble bodies found in ordinary water. By a series of careful experiments, it is satisfactorily proved that the purer the distilled water used, the less is required to decolorise the solution, whilst the presence of calcium salts even in minute quantities, neutralises the decolorising power. This fact will be found of importance in estimating correctly small quantities of glucose by the Barreswell method, as in using the latter it is necessary to dilute the cupro-potassic solution with water.—*Chemist and Druggist.*

*From the Journal of Applied Chemistry.

Editorial.

THE JOURNAL has been delayed a few days beyond its usual date of issue in order that certain points affecting its circulation could be decided upon at the Council meeting. It was thought better to pursue this course as the present number forms the commencement of a new volume—the ninth of the series—and thus affords a fit opportunity for changes or additions.

"OFFICIAL" OR "OFFICINAL."

As to the correct interpretation and application of these terms there has lately been quite a little passage at arms. In Professor Attfield's *Chemistry* the author gives his opinion to the effect that the word "official," from *officium*, an office, should be held to denote those preparations which are recognized by the Pharmacopœia; while "officinal," from *officina*, a shop, is applicable to the contents of the pharmacist's shop. Dr. Miller, of Philadelphia, takes exception to this view, and in a paper read before the College of Pharmacy of that city, questions not only the correctness and expediency of the change, but says that both words are derived from the same root, and the distinction is therefore purely arbitrary. Mr. Ince takes the field in defence of Prof. Attfield, and in a paper in the *Pharmaceutical Journal and Transactions*, says the terms are not directly taken from the same root; that *officina* which gives "officinal," is the contracted form of *opificina*, from *opifex*, the workman, and means a workshop; hence a laboratory, a shop, or place where manual labor is performed. *Officium*, which gives "official," is the contracted form of *opificium*, the working, or the work; and does not involve one solitary allusion to mechanical employment. "In the second place, not only may varied forms of words, drawn from one ultimate common source, be adopted with extreme advantage, but the *same* word, bearing totally different applications, may be traced to the same root; and it would be unsound in etymology to assimilate the meaning of either, or force them into convertible terms. Such a course would make havoc of the English language."

Mr. Stanford, speaking as an authority who has been for a long time engaged upon a new etymological dictionary, now appears upon the scene, and though evidently leaning to Mr. Ince's view in regard to the new acceptation of the words, differs with him about the original derivation, stating his opinion to the effect that in all probability all the terms are traceable to the same root.

Taking a plain common sense view of this matter, and leaving to abler hands the tracing out of nice philological distinctions, we think that the meaning of the terms, official and officinal, as given by Professor Attfield, will be generally acceptable to pharmacists, and will serve to make a distinction where one was really needed.

PHARMACEUTICAL ASSOCIATION OF THE PROVINCE OF QUEBEC.

At the first meeting of the new Council, held last Friday, the following gentlemen were elected officers for the coming year :— Henry R. Gray, President; Edmond Giroux (Quebec), First Vice-President; Alexander Manson, Second Vice-President; James Goulden, Treasurer; E. Muir, Secretary and Registrar. We understand it is the intention of the Board of the College of Pharmacy, in connection with this Association, to raise the standard of their lectures, and place the institution on a footing second to none on this continent. With this object in view, the following professors have been appointed to fill the different chairs :—J. Baker Edwards, Ph. D., Chemistry; A. H. Kollmeyer, M.D., Materia Medica and Toxicology, and J. B. McConnell, M.D., Botany.

Removal of Anilin Ink Stains from Paper.—It may not have occurred to everybody that most of the anilin inks may by the use of alcohol be removed entirely from paper. Writing may be completely effaced by soaking the paper in strong spirit, or pouring it over its surface. The readiness with which this operation may be performed, and the fact that the ink may be altogether removed, leaving no trace behind, are sufficient reasons for discouraging the use of these pretty but unbusiness-like substitutes for iron and galls. Their use might, indeed, be continued in the correspondence of

ladies, the writing of billets-doux, or other epistolary efforts belonging to the domain of Cupid, and containing promises or pledges the stability and permanence of which are not generally considered essential qualities. The idea of the removal of these inks, by alcohol, occurred to us lately while examining a new ink substitute which has been recently introduced into this country. It takes the form of a pencil, and was invented by Dr. Jacobsen, of Berlin. Writing made with this pencil at first resembles that made by ordinary lead, but, when moistened, it assumes a violet color, and may be copied by an ordinary press. This color is at once removed by alcohol; but dark-colored marks remain, which can be effaced by india-rubber. The material of which the pencils are made is undoubtedly black lead, with which has been incorporated, while in a pasty state, a quantity of some of the anilin violets in powder.

DRUGGISTS' PIC-NIC.—The usual annual pic-nic given by the Messrs. Lyman to their employees, was held on Monday, July 26th. The party numbering about two hundred, embarked on board the steamer "Bouquet," which had been chartered for the occasion, and early in the forenoon were conveyed to Mimico Grove. Here dinner was provided, after partaking of which various games were entered upon with spirit, and prizes competed for in running, jumping, &c. The day was very pleasantly spent, and, in the evening the party re-embarked, and during the sail home quietly enjoyed the cool breeze from the lake, or engaged in dancing to the enlivening strains of the band. On nearing the city a vote of thanks was proposed to Mr. Lyman, and that gentleman having responded, the party disembarked and separated.

Mr. Shuttleworth has been elected an Honorary Member of the Pharmaceutical Association of the Province of Quebec, and a Corresponding Member of the Philadelphia College of Pharmacy.

Editorial Summary.

THE EFFECTS OF PARIS GREEN ON VEGETATION.—The following remarks are made by the editor of the *Druggists' Circular*, in answering a correspondent of that journal, who makes enquiry (1st) whether the tubers of the potato vine are not liable to become poisonous by the use of Paris green on the tops; (2nd) whether it will not injure the plant; (3rd) will not succeeding crops be injured by the accumulation of arsenic in the soil:—Arsenic is not one of the essential constituents of plants, and being a foreign substance, is not so readily absorbed as the elements that are necessary to their proper growth and perfection, as potash, silica, lime, etc. The questions mooted have been but little examined, although it is the duty of the Agricultural Department at Washington to experiment on all such subjects. According to some observations made by Dr. Davy and Mr. Horsley, turnips and other vegetables grown on soils manured with superphosphates containing arsenic, acquired a notable impregnation of that element. It is probable that if the comparatively small quantity present in a manure could give such results, that the use of Paris green in the proportions indicated by our correspondent would be attended with a still greater absorption, *provided* the plant is capable of taking up more than a certain small quantity, which is a fixed quantity for any given species. There would seem to be some likelihood that plants are without this capability, when we consider the very large quantity of the chemical under consideration which is used annually in the protection of the potato crop, and yet, to our knowledge, no serious complaint has been made. Bearing upon the latter query of your note is the following quotation from Liebig: "Arsenic must deprive the organs of the principal property which appertains to their vital condition, namely, that of suffering and effecting transformations; or, in other words, organic life must be destroyed." Directly disagreeing with this, however, are the results obtained by Dr. Davy's experiments, which are as follows (see Phil. Mag. xviii, 108.) A young pea plant was watered daily for three or four days with an aqueous solution of arsenious acid, and then the operation was discontinued; the plant grew to the full size, flowered, and produced seed: the leaves, stocks, and pods, on the application of the proper tests, showed conclusively the presence of arsenic. A cabbage plant and turnips grown upon soil mixed with arsenical superphosphates, in the proportion adopted in agriculture, also showed abundant evidence of containing the poison, both by Reinsh's and Marsh's tests; and, as in the case of the pea plant, the growth or perfection of the plants seemed not to be in the least affected, although it was said that sheep preferred the turnips grown on land

to which no fertilizer had been applied. The conclusions to be derived from those experiments, which seem to have been conducted with care and to be thoroughly reliable, are, *first*, that arsenic can be absorbed by plants, and as it is an accumulative poison, the great danger from the use, as food, of plants containing it, is apparent; and *secondly*, that plants can absorb a certain amount of arsenic without its having any tendency to kill the plant or prevent its maturing.

ELIXIR OF HOPS.—Mr. J. B. Moore *(Am. Jour. Pharmacy)* has found the following formula to yield a very superior preparation :

Powdered Hops (No. 20)	2 Troy ounces.
" Cloves (No. 60)	1 drachm.
" Canella (No. 60)	1 drachm.
" Cassia (No. 60)	80 grains.
Oil of Orange (fresh)	2½ fluid drachms.
Sugar	12 Troy ounces.
Alcohol, Water	A sufficient quantity.

Mix the powder. Then to twenty fluid ounces of a mixture, consisting of ten parts of alcohol and twelve parts of water, add the oil of orange, shake well and moisten the powders with two fluidounces and a half, or a sufficient quantity of the mixture. Set it aside in a closed vessel to macerate for twenty-four hours; then pack it firmly in a *cylindrical* glass percolator, and pour upon it, first the remainder of the menstruum, and, when this has all been absorbed, continue the percolation with a menstruum consisting of ten parts of alcohol and twelve parts of water, until twenty-four fluidounces of percolate have been obtained. To this, in a bottle, add the sugar and shake the mixture occasionally until the sugar is dissolved, then filter through paper. In the elixir, as thus prepared, the aroma and peculiar bitter taste of the hops are very strongly marked; but the latter so nicely blended with the flavoring ingredients as to be quite agreeable to the palate. Each fluidounce contains the active properties of thirty grains of hops, which is very nearly half the strength of the officinal tincture. The usual dose for an adult would be from a dessertspoonful to a tablespoonful every two or three hours, or as necessary.

RESTORATION OF WRITING EFFACED BY SEA WATER.—Mr. Thos. Garside, (*Pharm. Jour. and Trans,*) says that writing so effaced may be restored of a deep red colour by brushing over the paper a solution containing one part of sulphocyanide of potassium

in twenty parts of water, and, while the paper is still damp, holding it over a dish containing hot hydrochloric acid. A letter which had been submerged in the wreck of the "Schiller," and in which the writing was quite illegible, was treated in this way and readily deciphered. The rationale of the process is said to be this. The iron of the ink is precipitated as peroxide upon the fibres of the paper, and remains when all other colouring matters are washed away. Being, however, in an insoluble form, no effect is produced by the re-agent until the fumes of the acid have rendered it soluble. Mr. Garside thinks that the ferrocyanide of potassium would answer as well, or better, than the sulphocyanide.

A SECOND ALKALOID IN JABORANDI.—In our last number we announced the discovery and isolation of pilocarpine and its identification as being the active principle, or one of the active principles of jaborandi. From the *Pharm. Jour. and Trans.* we now learn that in a recent communication to the Societe de Therapeutique, Mr. Ernest Hardy attributes to jaborandi a more complex composition. By successive treatment with water and alcohol, he has obtained first an alkaloid, which he terms pilocarpine ; a volatile body forming voluminous crystals, and having the properties of an acid ; and finally a second alkaloid. The latter body has not yet been thoroughly examined, nor can anything be said in regard to its therapeutical properties.

NOTE ON THE RECTIFICATION OF ALCOHOLIC TINCTURES, &c. —In the preparation of fluid extracts, and similar preparations, a considerable quantity of spirit is left in the dregs, and in the distillation of these, or of a liquid extracted from them, much trouble is often experienced from the frothing of the liquid in the still, especially from such residues as sarsaparilla. Mr. J. U. Lloyd *(Am. Jour. Pharm.)* finds that by giving the liquid a slight acid reaction, by means of sulphuric acid, the disagreeable result is altogether obviated.

THE BOTANICAL SOURCE OF GAMBOGE.—Some ten years ago the late Mr. Hanbury came to the conclusion that the Gamboge plant was *Garcinia Morella*, var. *pedicellata*, and this decision has been embodied in the *British Pharmacopœia*. We learn, however, from the *Pharm. Jour. and Trans.*, that Dr. Hooker has found this variety so distinct as to be entitled to be ranked as a distinct species, and proposes "the name of *G. Hanburyi*, after our eminent pharmaceutist."

THE ALKALOID OF JABORANDI.—Mr. A. W. Gerrard, whose researches on jaborandi were alluded to in our last number, has since succeeded in obtaining the nitrate and hydro-chlorate of pilocarpine in a crystallized condition, and Dr. Ringer has experimented with the first named salt, and found its effects to be similar to those of the crude drug.

DETECTION OF THE MINERAL ACIDS IN VINEGAR.—M. Witz proposes methyl-anilin violet as a test for this purpose. Its color is unaffected by acetic acid, but the slightest trace of any of the mineral acids changes the colour to a greenish-blue.

Students' Department.

Answers to the following questions must be sent in so as as to be received by the editor before the twentieth of each month. Competitors must be engaged in the drug business, not being proprietors or having passed examination, and must furnish, with the answers sent, their real names and addresses. Answers to each of the questions must be written on *separate sheets* or slips of paper, and must be followed by the name and address of the competitor. It is trusted that all answers sent will be the *bona fide* work of competitors, and that no assistance will be sought except such as is afforded by books. Any attempt to copy *verbatim*, or in part, from any published work, will impair or altogether nullify any value which might otherwise have been assigned to such answer.

The same competitor may not carry off more than one First Prize and one Second Prize during the term of six months.

Answers requiring calculation and involving fractions must be given in decimals, which need not be carried beyond the third place.

The following books are offered this month as prizes:

FIRST PRIZES.	SECOND PRIZES.
PARRISH'S *Pharmacy.*	GRAY'S *First Lessons in Botany.*
GARROD'S *Materia Medica.*	WITTSTEIN'S *Pharmaceutical Chemistry.*
GRAY'S *Manual of Botany.*	ROSCOE'S *Chemistry.*
FOWNES' *Chemistry.*	PAREIRA'S *Selecta e Præscriptis.*
ATTFIELD'S *Chemistry.*	*British Pharmacopœia.*
SQUIRE'S *Companion to the Pharmacopœia.*	*U. S. Pharmacopœia.*
BENTLEY'S *Manual of Botany.*	KAY-SHUTTLEWORTH'S *Principles of Modern Chemistry.*
REDWOOD'S *Supplem't to the Pharmacopœia.*	PRESCOTT'S *Proximate Organic Analysis*

Successful competitors may select from any of the above works, and, on notifying the Editor, the book selected will be forwarded by post.

Contestants may forward their answers by book post, at the rate of two ounces for one cent, provided the rules be adhered to of leaving open the ends of the package, or cutting a strip off each end of the envelope; not enclosing any matter which could be deemed correspondence; and endorsing the packet "*Manuscript. By Book Post.*"

Address *Can. Pharm. Jour.*, BOX 517, TORONTO.

QUESTIONS.

1. *Chemistry.*—Enumerate the *Liquores* of the *British Pharmacopœia*, and give formula showing chemical changes where such occur in the preparation of these solutions.

2. *Pharmacy.*—Enumerate the officinal decoctions; state the general mode of preparation; and give cases in which the process is varied in any details or particulars.

3. *Materia Medica.*—What are the sources of Cantharides, Colocynth, and Borax? Name preparations into which they enter.

4. *Botany.*—Describe the structure of leaves; state what purpose they serve; describe general outline of six of our common leaf forms, naming plants to which they belong.

5. *Dispensing.*—A customer desired to purchase a supply of a white powder, of which he did not know the name. It was found to be insoluble in water, but soluble in HCl with effervescence. The solution was tested with H_2S, and boiled, but no precipitate was produced. To a fresh portion of the solution AmCl and AmHO in excess were added and then a little AmHS, a precipitate was produced. To a fresh portion of the original solution KHO was added, and a white precipitate produced soluble in excess. This solution was acidified with HCl, and AmHO in excess added. No precipitate was produced. What was the white powder? and by what tests may the conclusion arrived at be confirmed?

6. *Prescriptions.*—Translate the following prescription and point out errors in dose, compatibility, etc.:

Recipe—Liquoris Potassæ Arsenitis, guttas quadraginta.
Confectionis Opii, scrupulos quatuor.
Aquæ Menthæ Viridis, uncias quatuor.
Misce. Capiat partem quartam post jentaculum, prandium, et cœnam.

LAST MONTH'S QUESTIONS.

We are glad to say that we have succeeded in tracing out and regaining the missing ratings and answers of last month's questions. The package containing them was insufficiently paid, and thus got out of the ordinary course.

The answers subjoined were sent by Mr. R. McCormick, of Ottawa, and though this young gentleman is not entitled to another prize this session, his papers are the best which have been received. We may also note that in regard to neatness, cleanliness, and general appearance, they are almost better in manuscript than in print.

1. *Chemistry*—

(a) The temperature of the mixture will be 80° centigrade.

(b) The temperature of water boiling in a closed vessel in

which the pressure of the confined vapour equals ten atmospheres, is 182° centigrade.

(c) The method of estimating the specific gravity of a solid, as potassium. The sp. gr. of mineral naphtha is first obtained at 60° F.; the potassium is next weighed in air, then suspended by a horsehair and weighed in the naphtha; the difference is the weight of an equal bulk of the naphtha. The weight of an equal bulk of water is ascertained by rule of three:

Sp. gr. of naphtha.	Sp. gr. of water.	Observed bulk of naphtha.	Equal bulk of water.

The exact weights of equal bulks of potassium and water being thus obtained, the weight of a bulk of potassium, corresponding to one of water, is shown by a rule of three sum, *i.e.*, divide the weight of potassium by that of equal bulk of water, the quotient is the sp. gr. of potassium.

2. *Pharmacy*—

The principal points of difference are that the B. P. directs the materials to be macerated 48 hours in three-fourths of the menstruum ordered, and then percolates with the remaining one quarter of menstruum, and presses the residue, adding sufficient menstruum to make up the required quantity; while the U. S. P. only moistens the materials with part of the menstruum, and then proceeds to percolate, adding menstruum until the required amount of liquid has been obtained. In the U. S. P. the fineness of the powders is also more definitely stated, whereas in the B. P. it is not so definite. The B. P. process, in most instances combining both maceration and percolation, ought more thoroughly to exhaust the materials, but has the disadvantage of requiring longer time. The U. S. P. process is more speedy, and consequently has the advantage in point of time; also the definite fineness of the powders is an important advantage.

3. *Materia Medica*—

Acids.	Doses.	Medicinal Properties.
Acidum Aceticum.		Stimulant, Rubefacient, Escharotic.
" " Dilutum	1 to 2 fld. Drachms.	Externally Stimulant.
" " Glaciale		Rubefacient, Vesicant or Caustic.
" Anseniosum	1-60 to 1-12 of a gr. in solution	Tonic, Escharotic.
" Benzoicum	10 to 15 grains.	Stimulant, Errhine.
" Carbolicum	1 to 3 "	Antiseptic, Disinfectant, &c.
" Citricum	10 to 30 "	Refrigerant, Antiseptic.
" Gallicum	2 to 10 "	Astringent, Tonic.
" Hydrochloricum	1 to 5 mins.	Tonic, Antiseptic, Diuretic.
" " Dilutum	10 to 30 "	" " "
" Hydrocyanicum "	2 to 8 "	Sedative.
" Nitricum	5 to 8 drops.	Tonic, Antiseptic. Antisyphilitic, Escharotic
" "		
" " Dilutum	10 to 30 mins.	" "
" Nitro-Hydrochloricum Dilutum	5 to 20 "	Stimulant, Tonic, Antiseptic.
" Phosphoricum "	10 to 30 "	Tonic, Refrigerant, Aphrodisiac.
" Sulphuricum		Escharotic, Stimulant, Rubefacient.
" " Aromaticum	5 to 30 "	Tonic, Astringent, Refrigerant.
" " Dilutum	5 to 30 "	Stimulant, Tonic.
" Sulphurosum	½ to 1 fld. drachm.	Antiseptic, Disinfectant.
" Tannicum	2 to 10 grains.	Astringent.
" Tartaricum	10 to 30 "	Refrigerant Antiseptic.
Metallic Salts.		
Antimonii Oxidum	1 to 4 grains.	Expectorant, Emetic, Diaphoretic.
Antimonium Nigrum		
" Sulphuratum	1 to 5 "	Emetic, Diaphoretic.
" "		Cathartic, Alterative.
" Tartaratum	1-16 to 1-6 of grain.	Diaphoretic.
" "	1 to 2 grains.	Emetic.
Argenti Nitras	1-6 to 1-3 grain.	Tonic, Escharotic, Antispasmodic.
" Oxidum	½ to 2 grains.	Antispasmodic, Tonic.
Bismuthi Carbonas	5 to 20 "	Tonic, Antispasmodic.

Metallic Salts.	Doses.	Medicial Properties.
Bismuttri Subnitras	5 to 20 grains.	Tonic, Antispasmodic.
" Oxidum	5 to 15 "	" "
Cadmii Iodidum		Alterative, Discutient.
Cerii Oxalas	1 to 2 grains.	Sedative, Tonic.
Cupri Sulphas	½ to 2 "	Astringent, Tonic.
" "	5 to 10 "	Emetic, Escharotic.
Ferri Arsenias	1-16 to ½ "	Tonic, Alterative.
" Carbonas Saccharata	5 to 20 "	" Emmenagogue.
" et Ammoniæ Citras	5 to 10 "	Tonic, Emmenagogue, but not astringent.
" et Quiniæ "	5 to 10 "	Astringent, Tonic.
" Iodidum	1 to 5 "	Tonic, Deobstruent.
" Oxidum Magneticum	5 to 10 "	"
" Peroxidum Humidum	½ to ½ ounce.	As an antidote to Arsenic.
" Peroxidum Hydratum	5 to 30 grains.	Tonic.
" Phosphas	5 to 10 "	" Emmenagogue.
" Sulphas	1 to 5 "	" "
" " Exsiccata	½ to 3 "	" "
" " Granulata	1 to 5 "	" "
Ferrum Tartaratum	5 to 10 "	" Deobstruent.
" Redactum		
Hydrargyrum Ammoniatum		Detergent.
Hydrargyrum cum Creta		
Hydrargyri Perchloridum	1-16 to 1-8 grain.	Stimulant, Antisyphilitic, Alterative.
" Iodidum Rubrum	1-16 to ¼ "	Excitant, Alterative.
" Subchloridum	½ to 5 "	Alterative, Stimulant.
" Iodidum Viride	1 to 3 "	Irritant, Alterative, Stimulant.
" Oxidum Rubrum	1-8 to 1 "	" Stimulant.
" " Flavum		" "
" Sulphas		
Magnesia (Magnesium is by some placed as a metal of the alkaline earth)	10 to 60 grains.	Antacid, Laxative.
" Levis	10 to 60 "	"
Magnesiæ Carbonas Levis	10 to 60 "	" Laxative.
" "	10 to 60 "	" "
" Sulphas	60 grains to ½ ounce.	Hydragogue Purgative.

Metallic Salts.	Doses.	Medicinal Properties.
Manganesii Oxidum Nigrum		
Plumbi Acetas	1 to 4 grains.	Astringent, Sedative.
" Carbonas		" Desiccative.
" Iodidum		Alterative, Discutient.
" Nitras		Antiseptic.
" Oxidum		Desiccant, Astringent.
Zinci Acetas	1 to 2 grains.	Tonic.
" Acetas	10 to 20 grains.	Emetic.
" Carbonas	2 to 10 "	Desiccant and Astringent.
" Chloridum		Escharotic.
" Oxidum	2 to 10 grains.	Dessicant and Astringent.
" Sulphas	10 to 30 "	Emetic.
" "	1 to 3 "	Tonic.
" Valerianas	1 to 3 "	Tonic Astringent.

LEAVES.	PLANTS.	CLASS.	ORDER.	TRIBE.	GENERA.	SPECIES.
(a)						
Aconite	Aconitum Napellus	Dicotyledonæ	Ranunculaceæ	Helleborineæ	Aconitum	Napellus
Bearberry	Arctostaphylos Uva Ursi	"	Ericaceæ	Arbuteæ	Arctostaphylos	Uva Ursi
Belladonna	Atropa Belladonna	"	Solanaceæ		Atropa	Belladonna
Buchu	Barosma Betulina " Crenulata " Serratifolia	"	Rutaceæ		Barosma " "	Betulina Crenulata Serratifolia
Cherry Laurel	Prunus Laurocerasus	"	Rosaceæ		Prunus	Laurocerasus
Digitalis	Digitalis Purpurea	"	Scrophulariaceæ		Digitalis	Purpurea
Hemlock	Conium Maculatum	"	Umbelliferæ		Conium	Maculatum
Hyoscyamus	Hyoscyamus Niger	"	Solanaceæ		Hyoscyamus	Niger
Matico	Artanthe Elongata	"	Piperaceæ		Artanthe	Elongata
Stramonium	Datura Stramonium	"	Solanaceæ		Datura	Stramonium
Tobacco	Nicotiana Tabacum	"	"		Nicotiana	Tabacum
Senna Alex.	Cassia Lanceolata	"	Leguminosæ		Cassia	Lanceolata
" "	" Obovata	"	"		"	Obovata
" Tinnivelly	" Elongata	"	"		"	Elongata

(b) The office of starch in seeds is to provide for the future growth of the plants in germination. The difference in the deposit of starch in the bean and corn is, that the former has it in the embryo itself; while the latter has it around the embryo.

5. *Dispensing*—

Dilute hydrocyanic acid may be speedily prepared by mixing forty-one grains of hydrochloric acid with one fluid ounce wine measure of distilled water, and adding fifty and one-half grains of cyanide of silver, and shaking the whole together in a well stoppered vial; when the insoluble matter has subsided, pour off the clear liquid and keep it for use. The following equation represents the reaction that takes place :—AgCy + HCl = HCy + AgCl.

6. *Prescriptions*—

The following are the errors in the Prescription :

(1) You cannot get eight ounces and seven and a half fluid drachms into an eight ounce mixture.

(2) A tablespoonful for a dose is also an error.

(3)—

	Dose in prescription if it were an eight ounce mixture.		Pharmacopœial Dose.
Tinct. Digital. . .	ʒij = 1 fluid drachm	(an error) from	10 to 30 minims.
Liq. Arsenical . .	ʒss = 15 minims	" "	2 to 8 "
Acid Carbolic . .	ʒij = 7½ grains	" "	1 to 3 grains.
Liq. Strych. . .	ʒiss = 5⅝ minims	" "	5 to 10 minims.
Tinct. Ferri. Mur.	ʒiij = 1½ fluid drachms	" "	10 to 60 "
Spt. Ammon. Arom.	ʒiij = 1½ " "	" "	½ to 1 fld. drm.

(4) The prescriptions would be more correct as under :

Recipe—Tinct. Digital, ... ʒij.
Liq. Arsenical, ... ʒss.
Acid Carbolic, ... gr. ij.
Liq. Strych. . . . . ʒss.
Tinct. Ferri Mur. . . . . ʒiij.
Spt. Ammon. Arom. . . . . ʒiij.
Aquæ ad . . . . . ʒviij.
Sig. Coch. Med. ter in die.

(5) Tincture of Perchloride of Iron is incompatible with Tincture of Digitalis, Liq. Arsenical, and Arom. Spt. Ammon.

(6) Liq. Strych. is incompatible with Arom. Spt. Ammon. and Liq. Arsenicalis.

(7) Tincture of Digitalis and Liq. Arsenicalis are incompatible.

Prescriptions.—J. F. says: "I think Digitalis decreases the heart's action while Liquor Ammonia increases it, so that the one would counteract the effects of the other." Very probably J. F. is right, but we do not think it is within the province of the dispenser to criticise the therapeutical effects of a prescription, so long as the doses ordered are within reasonable bounds. The physician would, very justly, resent such an interference, whilst he would feel obliged if an error in dose were pointed out.—E. G.

ORDER OF MERIT.

Maximum Number of Marks = 60.0.

No.	NAME.	Chemistry.	Pharmacy.	Materia Medica.	Botany.	Prescriptions.	Dispensing.	Total.
1	R. McCormick, Ottawa	10	9	10.0	9.5	10	10	58.5
2	J. E. Shore, London	10	9	7.5	10.0	8	8	52.5
3	A. R. Fraser, Toronto.....	7	8	9.5	9.0	10	9	52.5
4	" Cassia," St. Catharines.....	8	8	10.0	10.0	6	9	51.0
5	" Competitor," Renfrew.....	10	10	8.5	8.0	9	5	50.5
6	" Ethyl," Toronto	7	10	8.0	9.0	8	8	50.0
7	" Aloes," Pembroke	10	8	9.3	8.7	1	7	44.0
8	J. Forbes, Fergus.....	7	8	7.0	7.0	8	6	43.0
9	A. J. Thompson, Strathroy	10	3	6.0	7.0	8	9	43.0
10	W. J. Wilson, Kingston	3	10	8.0	9.0	5	7	42.0
11	J. Douglas, Owen Sound	4	5	7.0	10.0	5	10	41.0
12	J. A. Perry, Simcoe	7	1	3.0	8.0	8	9	36.0
13	R. G. Scott, Sarnia.....	3	4	7.5	8.0	6	7	35.5
14	H. Jarmuth, Mitchell.....	7	6	4.0	5.0	7	5	34.0
15	C. D. Daniel, Toronto	7	0	4.0	9.0	5	7	32.0
16	G. R. Sanderson, St. Catharines	5	5	7.0	8.0	2	5	32.0
17	"Aurantium, Pembroke.....	3	0	6.5	6.0	1	8	24.5
18	N. C. Bushell, Kingston	5	7	6.0	2.0	1	0	21.0

We have carefully revised our ratings of those answers sent by the first five gentlemen on the above list but can make no alteration, and as we have still a month's prizes to our credit, have therefore decided to give First Prizes to Mr. J. E. SHORE, London, and Mr. A. R. FRASER, Toronto; and Second Prizes to "Cassia," (Mr. D. B. MILLS, St. Catherines), and "Competitor," (Mr. JAMES CLARK, Renfrew.)

Varieties.

IMITATION STRAWBERRY SYRUP.—Simple Syrup, 1 gallon; German Cherry Juice, 4 oz.; Tincture of Orris Root, 1 oz.; Citric Acid, 6 drams; Strawberry Flavor, 3 drams.

IMITATION RASPBERRY SYRUP.—Simple Syrup, 1 gallon; German Cherry Juice, 8 oz.; Tincture of Orris Root, 1 oz.; Citric Acid, 6 drams; Raspberry Flavor, 3 drams.

Cauterizing pencils of sulphate of copper are best prepared, according to W. Steffen, by heating the crystals slowly in a porcelain dish, stirring constantly. The salt fuses at first and after a short time acquires a pasty consistence; the plastic mass is now rolled out upon a warm board or plate, like a pill mass, into any desired form, thickness or length. Such pencils may be kept for years and can be pointed like a lead pencil. Pencils of alum and of a mixture of alum and sulphate of copper may be made in the same manner. After a few trials the proper degree of consistency is easily attained.—*Phar. Centralh.* 1875, *No.* 11, *in Am. Jour. Pharm.*

Registrar's Notices.

Renewals Continued.

Allison, S. E., Port Perry.
Atkinson, W. T., Oshawa.
Austin, C. A., Simcoe.
Austin, Jonathan, Simcoe.
Beardsley, A. W., Barrie.
Blaicher, P. C., Hamilton.
Bower, J., Perth.
Bromley, E. M., Clifton.
Brook, J. W., St. Catharines.
Brown, R., Morrisburg.
Brown, T. H., Paris.
Caldwell, O. B., Ingersoll.
Caniff, B. M., Belleville.
Carman, F. B., Morrisburg.
Caton, Allan, Newburgh.
Clark, F. G., Chatham.
Corbett, W. J., Shelbourne.
Cox, W. H., Toronto.
Cull, J. W., Mitchell.
Cullingford, J., Cobourg.
Doan, D. W., Aurora.
Eastman, D. W., Smithville.
Foster, W. O., Simcoe.
Garvey, J. M., Delhi.
Harvard, A., Toronto.
Harper, H., Cookstown.
Hallamore, J., Toronto.
Holbrook, R. C., Hamilton.
Holden, S., Markham.
Hopkins, J. F., Dundas.
Jackson, T. G., Wingham.
Lang, A. B., Owen Sound.
Lang, G. J. B., Owen Sound.
Lee, J. R., Toronto.
Livingston, J. Jr., Listowell.
Livingston, W. M., Simcoe.
Lutz, C., Elmira.
Lloyd, W., Stouffville.
Mitchell, J. A., Port Hope.
Morris, E., Bowmanville.
Muir, A., Brussells.
McBride, J., Port Dover.
McKnight, R., Meaford.
McLaren, Alex., Sarnia.
Nasmyth, J. H., Stratford.
Phillips, Robt., Fergus.
Robinson, Wm., Port Colborne.
Saunders, Wm., London.
Shaw, R., Arnprior.
Shepherd, T. T., Ottawa.
Small, H. B., Ottawa.
Smith, R. J., Port Perry.
Springer, M., Strathroy.
Stevenson, T., Orangeville.
Thompson, D., Toronto.
Thompson, W. B., Cornwall.
Tibbetts, Wm., Port Dover.
Warren, J., Brooklyn.
Weeks, A. D., Uxbridge.
Wideman, J. L., St. Jacobs.
Williams, J., Worcester, Mass.
Williams, J., Brockville.
Wildern, J., Vienna.
Wilson, John, Simcoe.
Wilson, J. G., St. Marys.
Wilson, R., Cobourg.
Wood, J. O., Toronto.
Wood, R. A., Toronto.
Wood, R , Erin.
Wright, J., Toronto.
Wright, J. P., Kincardine.
Zielinski, J., Kleinburg.

Drugs, Medicines, &c.	$ c.	$ c.
Acid, Acetic, fort	0 13 @	0 14
Benzoic, pure	0 22	0 27
Citric	1 35	1 50
Muriatic	0 03½	0 05
Nitric	0 10	0 13
Oxalic	0 22	0 23
Sulphuric	0 03	0 05
Tartaric, pulv	0 49	0 50
Ammon, carb. casks	0 22	10 24
" jars	0 23	0 24
Liquor, 880	0 25	0 28
Muriate	0 14	0 15
Nitrate	0 45	0 60
Æther, Acetic	0 45	0 50
Nitrous	0 40	0 42
Sulphuric	0 50	0 50
Antim. Crude, pulv	0 15	0 17
Tart "	0 55	0 65
Alcohol, 95 per ct.....Cash	1 97	2 07
Arrowroot, Jamaica	0 18	0 22
Bermuda	0 50	0 65
Alum	0 02¾	0 03½
Balsam, Canada	0 33	0 38
Copaiba	1 10	1 15
Peru	3 40	3 75
Tolu	2 00	2 10
Bark, Bayberry, pulv	0 18	0 20
Canella	0 17	0 20
Peruvian, yel. pulv	0 35	0 50
" red "	1 60	1 70
Slippery Elm, g. b	0 18	0 20
" flour, packets	0 28	0 32
Sassafras	0 15	0 18
Berries, Cubebs, ground	0 20	0 25
Juniper	0 06	0 10
Beans, Tonquin	0 62	1 10
Vanilla	18 00	20 00
Bismuth, Alb	2 50	2 75
Carb.	2 65	2 90
Camphor, Crude	0 33	0 40
Refined	0 43	0 47
Cantharides	2 20	2 30
Powdered	2 30	2 40
Charcoal, Animal	0 04	0 06
Wood, powdered	0 10	0 15
Chiretta	0 23	0 30
Chloroform	1 10	1 55
Cochineal, S. G	0 58	0 70
Black	0 75	0 90
Colocynth, pulv	0 60	0 65
Collodion	0 70	0 80
Elaterium	3 20	4 00
Ergot.....oz	0 70	0 75
Extract Belladonna	1 90	2 00
Colocynth, Co	1 25	1 75
Gentian	0 50	0 60
Hemlock, Ang	0 co	0 95
Henbane, "	1 80	1 90
Jalap	5 00	5 50
Mandrake	1 75	2 00
Nux Vomic.....oz	0 40	0 50
Opium.....oz	1 40	
Rhubarb	5 00	5 50
Sarsap. Hon. Co	1 00	1 20
" Jam. Co	3 50	4 00
Taraxacum, Ang	0 70	0 80
Flowers, Arnica	0 17	0 25
Chamomile	0 28	0 32
Gum, Aloes, Barb. extra	0 70	0 80
" " good	0 40	0 50
" Cape	0 16	0 20
" " powdered	0 20	0 30
" Socot	0 50	1 35
" " pulv	1 00	0 00
Arabic, White	0 38	0 60
" powdered	0 60	0 75
" sorts	0 19	0 24
" " powdered	0 42	0 50
" com. Gedda	0 13	0 16
Assafœtida	0 40	0 42
British or Dextrine	0 13	0 15
Benzoin	0 35	0 75
Catechu	0 12	0 15
" powdered	0 25	0 30
Euphorb, pulv	0 35	0 40
Gamboge	1 00	1 20
Guaiacum	0 45	1 00
Myrrh	0 50	0 85

Drugs, Medicines, &c.—*Contd.*	$ c.	$ c.
Sang Dracon	0 60	
Scammony, powdered	5 50	6 00
" Virg. "	14 50	—
Shellac, Orange	0 80	0 85
Gum, Shellac, liver	0 60	0 70
Storax	0 40	0 45
Tragacanth, flake	1 10	1 75
" common	0 53	0 65
Galls	0 22	0 30
Gelatine, Cox's 6d	1 15	1 20
Glycerine, common	0 18	0 23
Vienna	0 25	0 28
Prices	0 60	0 75
Honey, Canada, best	0 16	0 17
Lower Canada	0 14	0 16
Iron, Carb. Precip	0 20	0 25
" Sacchar	0 40	0 55
Citrate Ammon	1 40	1 50
" & Quinine, oz	0 52	0 55
" & Strychine	0 20	0 25
Sulphate, pure	0 08	0 10
Iodine, good	4 30	5 00
Resublimed	5 30	6 00
Jalapin	1 25	1 50
Kreosote	2 40	2 50
Leaves, Buchu	0 22	0 32
Foxglove	0 25	0 30
Henbane	0 35	0 40
Senna, Alex	0 27	0 60
" E. I.	0 14	0 20
" Tinnevilly	0 20	0 30
Uva Ursi	0 15	0 17
Lime, Carbolate.....brl	5 50	—
Chloride	0 05	0 06
Sulphate	0 08	0 12½
Lead, Acetate	0 15	0 16½
Leptandrin.....oz.	0 60	—
Liq. Bismuth	0 50	0 60
Lye, Concentrated	1 50	1 60
Liquorice, Solazzi	0 50	0 55
Cassano	0 23	0 40
Other brands	0 14	0 25
Liquorice, Refined	0 35	0 45
Magnesia, Carb. 1 oz.	0 20	0 25
" 4 oz.	0 17	0 20
Calcined	0 65	0 75
Citrate.....gran.	0 60	0 75
Mercury	1 40	1 50
Bichlor	1 40	1 50
Chloride	1 60	1 70
C. Chalk	0 65	0 70
Nit. Oxyd	1 80	1 90
Morphia Acet	4 15	4 25
Mur.	4 15	4 25
Sulph	4 30	4 40
Musk, pure grain.....oz	25 00	—
Canton	0 60	1 20
Oil, Almonds, sweet	0 45	0 47
" bitter	14 00	15 00
Aniseed	4 00	4 25
Bergamot, super	8 00	8 25
Caraway	3 20	3 50
Cassia	2 00	2 25
Castor, E. I	0 13¾	0 14
Crystal	0 22	0 25
Italian	0 26	0 28
Citronella	1 05	1 15
Cloves, Ang	3 75	3 80
Cod Liver	1 25	1 50
Croton	1 40	1 50
Juniper Wood	0 80	1 00
Berries	2 75	3 00
Lavand, Ang.....oz.	0 00	1 00
Exotic	1 25	1 50
Lemon, super	3 80	4 00
ord	3 20	3 40
Orange	3 00	3 25
Origanum	0 65	0 75
Peppermint Ang	15 00	16 00
" Amer	5 50	7 00
Rose, Virgin	8 50	8 75
" good	7 00	7 25
Sassafras	0 75	1 90
Wintergreen	5 25	5 50
Wormwood, pure	4 00	6 00
Ointment, blue	1 20	1 40
Opium, Turkey	8 00	8 25
p[illegible]	11 00	12 00

DRUGS, MEDICINES, &c.—*Cont'd*	$ c.	$ c
Orange Peel, opt.	0 35	0 36
" good	0 15	0 20
Pill, Blue, Mass	1 20	1 30
Potash, Bi.chrom	0 18	0 20
Bi-tart	0 33	0 35
Carbonate	0 14	0 20
Chlorate	0 35	0 40
Nitrate	8 00	9 00
Potassium, Bromide	65	0 75
Cyanide	0 60	0 70
Iodide	3 80	4 00
Sulphuret	0 25	0 35
Pepsin, Boudault's...oz	1 40	—
Houghton's..... doz.	8 00	9 00
Morson's.....oz.	0 85	1 10
Phosphorous	1 10	1 20
Podophyllin	0 50	0 60
Quinine, Pelletier's	—	2 45
Howard's	2 10	—
" 100 oz. case.	2 05	—
" 25 oz. tin..	2 05	—
Root, Colombo	0 13	0 20
Curcuma, grd	0 12½	0 17
Dandelion	0 17	0 20
Elecampane	0 16	0 17
Gentian	0 08	0 10
" pulv	0 15	0 20
Hellebore, pulv	0 17	0 20
Ipecac, "	1 50	1 60
Jalap, Vera Cruz	90	1 15
" Tampico	0 70	1 00
Liquorice, select	0 12	0 13
" powdered	0 15	0 20
Mandrake "	0 20	0 25
Orris, "	0 20	0 25
Rhubarb, Turkey	2 0	2 25
" E. I	0 75	0 90
" " pulv	1 60	1 10
" " 2nd	0 60	0 70
" French	0 75	—
Sarsap., Hond	0 53	0 60
" Jam	0 88	0 90
Squills	0 10	0 15½
Senega	1 00	1 10
Spigelia	0 25	0 30
Salt, Epsom	2 50	3 00
Rochelle	0 30	0 32
Soda	0 02½	0 03
Seed, Anise	0 13	0 16
Canary	0 17	0 17
Cardamon	2 00	2 10
Fenugreek, g'd	0 08	0 09
Hemp	0 06½	—
Mustard, white	0 14	0 16
Saffron, American	0 75	0 85
Spanish	12 00	13 00
Santonine	8 50	8 75
Sago	0 08	0 09
Silver, Nitrate.....Cash	14 85	16 50
Soap, Castile, mottled	0 11	0 14
Soda, Ash	0 03⅜	0 05
Bicarb. Newcastle	5 75	6 25
" Howard's	0 14	0 16
Caustic	0 05½	0 05¾
Spirits Ammon., arom	0 35	0 35
Strychnine, Crystals	2 00	2 20
Sulphur. Precip	0 10	0 12½
Sublimed	0 03½	0 05
Roll	0 03	0 04½
Vinegar, Wine, pure	0 55	0 60
Verdigris	0 35	0 40
Wax, White, pure	0 70	0 80
Zinc. Chloride.....oz	0 10	0 15
Sulphate, pure	0 10	0 15
" common	0 06	0 10
DYESTUFFS.		
Annatto	0 35 @	0 60
Aniline, Magenta, cryst	2 65	2 80
" liquid	2 00	—
Argols, ground	0 15	0 25
Blue Vitrol, pure	0 09	0 10
Camwood	0 07	0 08
Copperas, Green	0 01½	0 02
Cudbear	0 16	0 25
Fustic, Cuban	0 03	0 04
Indigo, Bengal	2 40	2 50
Madras	0 85	0 90
Extract	0 26	0 30

DYESTUFFS—*Continued.*		
Japonica	0 07	0 08
Lacdye, powdered	0 33	0 38
Logwood	0 01⅞	0 03
Logwood, Camp	0 01⅝	0 03
Extract	0 12½	0 13
" 1 lb. bxs	0 15	—
" ½ lb. "	0 14	—
Madder, best Dutch	0 11	0 12
2nd quality	0 10	0 11
Quercitron	0 03	0 05
Sumac	0 06	0 08
Tin, Muriate	0 10½	0 12½
Redwood	0 05	0 06
SPICES.		
Allspice	0 11½@	0 12
Cassia	0 26	0 28
Cloves	0 55	0 60
Cayenne	0 22	0 28
Ginger, E. I	0 19	0 20
Jam	0 30	0 30
Mace	1 40	1 60
Mustard, com	0 20	0 25
Nutmegs	1 15	1 25
Pepper, Black	0 20	0 21
White	0 31	0 32
PAINTS, DRY.		
Black, Lamp, com	0 07 @	0 08
" refined	0 25	0 30
Blue, Celestial	0 08	0 12
Prussian	0 65	0 75
Brown, Vandyke	0 10	0 12½
Chalk, White	0 01	0 01½
Green, Brunswick	0 07	0 10
Chrome	0 16	0 25
Paris	0 30	0 35
Magnesia	0 20	0 25
Litharge	0 07	0 09
Pink, Rose	0 12½	0 15
Red Lead	0 07¼	0 08
Venetian	0 02½	0 03½
Sienna, B. & G	0 07	0 08
Umber	0 07	0 10
Vermillion, English	1 50	1 60
American	0 25	0 35
Whiting	0 1	0 1½
White Lead, dry, gen	0 08½	0 09
" " No. 1	0 07	0 08
" " No. 2	0 05	0 07
Yellow Chrome	0 12½	0 35
" Ochre	0 02½	0 03½
Zinc White, Star	0 10	0 12
COLORS, IN OIL.		
Blue Paint	0 12 @	0 15
Fire Proof Paint	0 06	0 08
Green, Paris	0 30	0 37½
Red, Venetian	0 07	0 10
Patent Dryers, 1 lb tins	0 11	0 12
Putty	0 03⅜	0 04½
Yellow Ochre	0 08	0 12
White Lead, gen. 25 lb. tins	2 45	—
" No. 1	2 20	—
" No, 2	1 95	—
" No. 3	1 70	—
" com	1 30	—
White Zinc, Snow	2 75	3 25
NAVAL STORES.		
Black Pitch	3 90 @	4 25
Rosin, Strained	3 80	4 25
Clear, pale	5 75	7 25
Spirits Turpentine	0 45	0 47
Tar Wood	3 90	4 25
OILS.		
Cod	0 63 @	0 70
Lard, extra	1 10	1 20
No. 1	105	1 10
No. 2	0 90	0 95
Linseed, Raw	0 60	0 66
Boiled	0 63	0 65
Olive, Common	1 05	1 10
Salad	1 80	2 30
" Pints, cases	4 20	4 40
" Quarts	3 25	3 50
Seal Oil, Pale	0 70	0 75
Straw	0 65	0 70
Sesame Salad	1 30	1 35
Sperm, genuine	2 65	
Whale refined	0 70	0 75