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CANADIAN DRUGGIST,

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Study and Progress in Pharmacy.

An extract from an address delivered by T. LAUNDER BRUNTON, M. D., before the Pharmaceutical Society's School of Pharmacy.

Your studies should not cease when you pass your examinations. They ought to continue throughout your whole life. And I think you are particularly fortunate in having such subjects of study as those which you have chosen, for drugs and their actions and uses are alike interesting to the savage who depends on them for obtaining his food or defending himself from wild beasts, to the romancer of the middle ages, in whose works charms, philtres, and potions played a prominent part, and to the modern novelist, as shown, for example, in 'The Count of Monte Christo.'

The method of preparing drugs for use is always rude at first, and becomes more and more refined as knowledge advances. Primitive man is content to get drunk on simple fermented liquors, but as he becomes civilized he tries to find out the essence or spirit of this liquor, and discovers alcohol. Who first made this grand discovery it is hard to say. According to Christopher North—

"No wonder that the Irish boys should be so free and frisky,

For St. Patrick was the very man who first invented whiskey."

If St. Patrick really did this, he has the priority in point of time, for he flourished in the 4th century, while Albucaeus, who was the first person quoted by Pereira as acquainted with distilling, in Europe at least, only lived in the 12th century.

The crude materials once employed must often have been very disagreeable both to sight and smell. The ingredients of the witches' cauldron mentioned by

Shakespeare are not unfair specimens of the kind of drugs formerly used.—

"Scale of dragon, tooth of wolf,
Witches' mummy, maw and gulf
Of the ravin'd salt sea shark;
Root of hemlock, digg'd i' the dark.
Liver of blaspheming Jew,
Gall of goat, and slips of yew,
Sliver'd in the moon's eclipse,
Nose of Turk, and Tartar's lips;
Finger of birth-strangled babe,
Ditch-delivered by a drab,
Make the gruel thick and slab,
Add thereto a tiger's chaudron,
For the ingredients of our cauldron.
Double, double toil and trouble,
Fire, burn, and cauldron bubble."

The plan here described of measuring the time for which the cauldron should boil is a primitive one, and yet I believe it is still used in the present day. Usually when one wants to boil an egg, one puts it in boiling water and allows it to remain three or four minutes by a watch. But when watches were not so plentiful the time used to be measured by an hour glass, in which the sand slowly ran through a narrow aperture. A still simpler way is to sing or chant a few verses of some song, and I believe this is yet sometimes sometimes done. If the boiling is to be long continued it will make the measure of time more accurate to dance as well as sing, because the rhythm of the song and dance together will tend to fall into the natural rhythm of respiration, which is about sixteen or eighteen a minute. In this way, both Shakespeare's witches and the primitive pharmacists could regulate the time of boiling their drugs pretty precisely without either an hour glass or a watch. For longer periods of preparation the moon was used, and we still have a remnant of this practice in the word "menstruum," so frequently used in place of "solvent," which obtained its name because many drugs were allowed to soak during a whole month in the liquid which was to dissolve out the active part.

In Shakespeare's lines we also find the idea of the month as the time for preparing active substances, although here the preparation consists in the secretion of poison by a "toad which, under the cold stone, days and nights hath thirty-one, sweated venom." There is an object also in catching it asleep, for it would thus have less opportunity of discharging any of the venom contained in the skin before it was popped into the pot. The history of toads and the ideas which have prevailed about them is very instructive, for it shows how the beliefs of one generation may be scouted by another and again re-

established on a firmer footing many years afterwards. I remember reading as a child a story of how King John was poisoned by a friar who dropped a toad into his wine, but sober books of natural history forty or fifty years ago scouted the idea of toads being poisonous at all. A little while ago, however, Dr. Leonard Guthrie sent me an interesting account of a wicked Italian woman whose husband was dying of dropsy. He took so long about it that his wife became tired of the process, and thought that she would help him on. She accordingly caught a toad and put it in his wine, so that he should drink the liquid and die, but instead of doing this, to her astonishment and disgust he completely recovered. Forty years ago this story would have been scouted as equally mythical with that of King John, but now we know that it is precisely what the woman would have expected if she had only been acquainted with the researches of modern pharmacology. For the skin of the toad secretes a poison, the active principle of which—phrynin—has an action very much resembling that of digitalis, which is the remedy, par excellence, for dropsy depending on heart disease. It is quite possible that some of these days we may get some enterprising firm advertising essence of toad as of superlative virtue for the cure of dropsy. In the same way as one formerly laughed at the idea of toads being poisonous at all, one may sneer at the exactitude with which rules were laid down for the collection of herbs, so that the witches were careful to collect the root of the hemlock at night. But the researches of Sachs, and more recently those of Horace Brown, have shown that starch is formed in the leaves of plants during the day and is consumed during the night. I do not know whether a similar process goes on in the root or not, but, if so, a given weight of a plant collected during the night would be more active than the same weight collected during the day. It is just possible, then, that Shakespeare's witches showed more wisdom in their mode of collecting plants than we moderns do, but even if this be so, we are far ahead of them in knowing the active principles to which the plants owe their physiological and remedial action.

It was just about the beginning of the present century that the first alkaloid, morphine, was discovered. And by whom was this discovery made? Not by a man who had all the appliances of a large in-