

His system should enable him to determine whether certain supplies should be purchased in dozen lots or gross lots or great gross lots and should give him ample check upon merchandise ordered but unfilled, upon merchandise in stock, its location, its cost price and its selling price, and the amount to reorder.

In short, the pharmacist's financial system should be builded so snugly about his business that no financial fact of importance can slip through and escape detection, and yet it must be such that it can be operated without taking too much time from productive business. The goal is to obtain the maximum of control over the business end of usable information regarding it with a minimum of effort, but with certainty.

A more detailed discussion of these principles is not feasible in a brief paper of this kind, but I desire to emphasize three facts:

First, any course in Commercial Pharmacy, to be of value to the pharmacist, must be far more than a course in bookkeeping. It must be a training in the real elements of commerce.

Second, such a course is also of greatest value to the under-clerk in pharmacy, for the greater his understanding of these principles, the greater will be his usefulness to his employer, and the greater his opportunity for advancement.

Third, in this day of constantly increasing financial demands, when the cry of everyone to his fellows is for "more! more!" it becomes the duty of every man not only to himself but to his community to master the laws of efficiency and thrift, so that with the wealth and effort at his disposal he may render the most effective service with the minimum of waste and irksome labor.

1820—A BIT OF HISTORY.*

There is no periodicity in the great events which mark the march of human progress. Only happenings correlated to the seasons keep step with the calendar. And when history repeats itself—which it never does except with variations—even numbers of years, or odd numbers, or decimal multiples, have no special significance—of course not.

But it is true that the year 1820 was in many respects like the present—1920. The chronicles of that early period seem strangely modern. We find reference to high prices, labor disturbances, to unstable equilibrium in business affairs, political unrest, and evidence, in Europe particularly, of that abnormal attitude of mind which in our time has led to overt acts on a large scale, and has received a Russian name. The fact is, after a hundred years Europe and America, both, again are passing through a period of convalescence following the exhausting distemper, war. In 1820, as at present, Europe was battle-scarred—then as a result of the campaigns of Napoleon. America was battle-scarred, too, for the burning of Washington and the victory of New Orleans were still discussed as recent happenings. Men had gone to war: some had not returned. Many industries had been ruined. America in 1920 can realize the conditions which obtained a hundred years ago. In 1914, America could not have done so.

But despite conditions seemingly so unfavorable, the period of 1820 marks a glorious renaissance in science and art. In literature, during the war period,

* Extracts from an address by J. W. Sturmer, before the Philadelphia Branch, at the January meeting.

or immediately thereafter, Moore, Shelley, Wordsworth, Keats, Byron, DeQuincy, Scott, Coleridge, Lamb, Goethe, Victor Hugo, were producing masterpieces; yes, and Washington Irving, and J. Fenimore Cooper. It was the era of the romantic movement, the greatest manifestation of literary genius since the era of Shakespeare.

Of composers there were Beethoven, and Schubert, and Mendelssohn, and other masters of the first rank. It was a golden age in music.

In science, there were Berzelius, Humphrey Davy, Faraday, Cuvier, Dalton, Drummond, Gay Lussac, Proust. It was the dawn of the modern productive era of science, which has continued to the present time, making the last hundred years the most prolific in discovery in the history of the human race.

True enough, every sequence is not necessarily a consequence. And wars in the past have not without exception been followed by a notable advance in the conquest of nature. But who will question that the great war exploits which terminated with Waterloo and New Orleans did not stir to the depths the emotions of men, inspiring writers, composers, painters, and also men of science, and in the latter awakening latent imaginative faculties, so useful in research? And if this be true, may we not expect that the stupendous struggle so recently ended will also be followed by a pronounced quickening of creative and inventive genius? And, if so, we may be sure America will furnish its generous share in results.

In 1820, America could not be expected to figure prominently in art or science. Our country was new. The population was largely rural. A considerable portion was distributed over vast areas but sparsely settled, where life was rather primitive, and where men were hard put to it to provide the elemental needs—food, clothing, shelter—then medical service for the sick, rudimentary schooling for the children. And when the scientists of the old world were engaged in extending the frontier of human knowledge, many of our resourceful Americans were engaged in pushing the frontier of the white man's civilization westward. In 1820 the great migration over the Indian trails, which had been transformed into roads, was in full swing. On the Conestoga Road, the covered wagons of the travelers, headed for the land of mystery, adventure, opportunity—the West—were as numerous as the stannic Lizzies on our mountain roads during the summer months of more recent years. These men who with their families, their lares and penates, were moving toward the setting sun, were principally farmers. But with them traveled the carpenter, the mason, the blacksmith, the miller and the millwright, the merchant, the doctor, and the apothecary. When a town of some size had developed, in due course, there appeared the apothecary shop, and the ring of the pestle proclaimed that medicines were being prepared *secundem artem*. And who will say that the inventive genius displayed by our pioneer doctors and apothecaries, in adapting limited resources to many and diverse needs, was not—in certain instances at least—as great as that of many a European research worker who by virtue of his better facilities succeeded in getting results which warranted their being recorded in the annals of science?

This was a truly heroic period in our country's history: it was the period of nation building, the various phases of which absorbed a large share of the energies of energetic men—the men with initiative. "In the four quarters of the

globe, who reads an American book? or goes to an American play? or looks at an American picture? What does the world yet owe to American physicians and surgeons? What new substances have their chemists discovered, or what old ones have they analyzed?" Thus wrote Sydney Smith in the January number of the *Edinburg Review* in the year 1820. We need not take issue with him, although he was seemingly quite ignorant of American progress. Indeed, we may admit frankly that books of the first rank were not yet numerous. Odysseus was too busy to devote time to the composing of Odysseys. But some promising youngsters were playing marbles in American school yards—Whittier, Longfellow, Emerson, Hawthorne, Holmes—to mention a few; and in this year of the Missouri Compromise, 1820, the author of the Gettysburg address was doing his chores on a primitive Indiana farm.

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American science and American art were in the formative period. There were houses to erect, bridges to build, canals to dig, roads to be made passable. Just as American literature was principally political in character, American science was largely applied science, and art, industrial. As for the pharmacist, he was busy in providing the most necessary medicaments, and had—speaking generally—as yet no time for scientific experimentation.

We must not overlook the fact, however, that at a time when America as a whole was still in the pioneer stage, the older and more densely populated districts near the Atlantic seaboard had attained to a high degree of culture. Here we find the colleges and universities of that period, and the learned societies, and the literary organizations and the book publishers. It is here that we must look for the first developments in Pharmacy.

In 1820, Philadelphia, which had served as the national capital, and where all the great Americans of the early days had sojourned, the largest city in the country at that time, with 130,000 inhabitants, an important seaport, in close touch with the old world civilization—Philadelphia, the seat of a university, and of the Institute founded by Franklin—became, as a matter of course, a center of learning. And medical sciences found here a particularly favorable atmosphere for development. And hand in hand with the progress in medicine, we find early progress of pharmacy.

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—To be sure the apothecary of 1820 was practicing his art as it had been developed in Europe. If he was American-born, he had, in all probability, received his training under an apothecary who had in turn been an apprentice in a European pharmacy. If he was a rather recent accession to the population, he used, as a matter of course, the methods and the textbooks of his native land. The pharmacopoeias of London, Edinburg and Dublin were at that time in constant use. Uniformity of practice was conspicuous by its absence; for there was no pharmacopoeia as yet for this new nation; nor were there any purity standards for drugs or medicines. As for legislative regulations governing the practice of pharmacy, no laws of that character had as yet been passed. There were neither pharmaceutical organizations nor pharmaceutical journals. The important text-

books for pharmacists, with the exception of the American Dispensatory, then already in its fourth edition, were foreign.

The drugs which the apothecary had on his shelves were imported; and so were his bottles, his jars, and in fact, even his window-panes, which made up his odd little show-windows. At this time, when Fulton's great invention, the steam-boat, was still a novelty, and the word sailor still had its original meaning, the Delaware harbored ships from the most distant shores. And the inventories of cargoes, as published in the old-time newspapers, include a large and varied list of drugs. It is from these inventories, in fact, that one may best reconstruct the old-time drug stock, for very few indigenous medicinal plants had received recognition. Here are some of the drugs which were deemed important in 1820—for they were obtained from overseas in large quantities: Aconite, Aloes, Asafetida, Belladonna, Benzoin, Camphor, Cantharides, Capsicum, Castile soap, Cinchona, Colchicum, Colocynth, Copaiba, Cubeb, Ipecac, Gamboge, Licorice Root, Licorice Extract, Hyoscyamus, Jalap, Lobelia, Myrrh, Nux Vomica, Opium, Rhubarb, Castor Oil, Sarsaparilla, Scammony, Squill, Tolu, Tragacanth, Valerian, Veratrum Album, Veratrum Viride, Ginger. Yes, the general aspect of the 1820 drug store, with its old-fashioned shelf-ware, was odd enough; but the antique bottles held drugs which have retained their popularity to the present day.

The apothecary's stock was, however, not limited to vegetable drugs: he had a sundry supply of chemicals, as follows: Hydrochloric Acid, Nitric Acid, Sulphuric Acid, Citric Acid, Arsenic, Alum, Ammonium Chloride, Black Antimony, Barium Sulphate, Lime, Chalk, Marble, Copper Subacetate, Copper Sulphate, Prussian Blue, Iron, Sulphate Mercury, Calomel, Corrosive Sublimate, Magnesium Carbonate, Magnesium Sulphate, Lead Oxide, White Lead, Saltpeter, Potassium Carbonate, Cream of Tartar, Salt, Borax, Sodium Carbonate, Sodium Sulphate, Zinc Carbonate and Zinc Sulphate. His stock included the elements, Antimony, Bismuth, Copper, Iron, Mercury, Lead, Zinc, and Sulphur. These chemicals he bought, for they were even then produced industrially.

But many chemicals now made exclusively on the industrial scale were early in the nineteenth century made by the apothecary in his own little laboratory. To be sure, there were some then, as at present, who chose to buy rather than to manufacture. But the list of chemicals actually made in stores at that time is surprisingly large, and included the following: Solution of Ammonium Acetate, Tartar Emetic, Solution of Magnesium Bicarbonate, Silver Nitrate, Solution of Potassium Arsenite, Subnitrate of Bismuth, Lead Plaster, Iron Acetate, Iron Carbonate, Iron Oxide, Red Oxide of Mercury, Subsulphate of Mercury, Potassium Acetate, Rochelle Salt, Sodium Phosphate, Ointment of Mercuric Nitrate, Zinc Acetate, and Zinc Oxide.

Of pharmaceutical preparations there was a large and varied list. It included Medicated Waters, Medicated Wines, Medicated Honeys, Medicated Vinegars, Spirits, Infusions, Decoctions (made when required), Tinctures (made by maceration), Solid Extracts, Mixtures (some of which were Emulsions), Liniments, Ointments, Cerates, Plasters, and Pills and Powders, and Confections.

It is indeed strange that the furniture and shelf-ware and equipment of the apothecary should have become in a hundred years so strikingly antique, while

the materials which he dispensed, and with which he worked, should to so large a degree have continued in use, uninterruptedly to the present day! How many drugs in the old inventories of ship cargoes are now obsolete? Very few. And as to preparations, note how many have passed through nine pharmacopoeial revisions, experiencing radical alterations, but not deletions.

It is a common error to picture the apothecary himself as an aged recluse, sitting at his desk, dressed in medieval garb, with steel-rimmed spectacles on his nose, "dandruff on his coat collar and a far-away look in his eye"—sitting there inactive, surrounded by alembics and other gimcracks of the alchemists' stage properties—a man with whom we have nothing in common. For then, as at present, men were old, or young, or middle-aged; and they exhibited many variations in personality. But we may be quite sure that the apothecaries of 1820, living at a period of great activity, when stirring events were transpiring, when political interest was keen, when Philadelphia was conspicuously progressive, when the men of the hour were men of action—that these old-time pill rollers lived an active and full life, with varied interests and that they were factors in this community.

But they indited no books. They published but little. The histories of Old Philadelphia fail to chronicle their doings. Their shops and stocks have disappeared. The very buildings in which they lived and worked have, in many cases, made room for larger structures of modern architecture. Yes, the old apothecaries of Philadelphia have vanished. "Like streaks of morning clouds they have melted into the infinite azure of the past."

The beginning of a new year always induces a retrospective mood, and it may even lead us to read history. But why should we have a particular interest in 1820, aside from the interest which attaches to a time an even hundred years ago? The fact is, 1820 marks the close of an epoch. It marks the time when pharmacy, until then wholly dominated by European thought and precedent, awakened to its opportunity and struck for a certain independence. That very year the first national pharmacopoeia was issued. A few months later, in Carpenter's Hall, the first organization of apothecaries was formed. And a few months after that, this organization—The Philadelphia College of Apothecaries—opened its doors to the first class of American students in pharmacy.

Hence, 1820 has a special significance for pharmacy. What 1776 is to us as Americans, 1820 is to us as American pharmacists.

SYMPOSIUM ON SCIENTIFIC PHASES OF U. S. P. REVISION.*

CHARLES H. LAWALL: As Chairman of the Revision Committee and one who has been associated with the work during the past ten years, I have been asked to express to you some of the features, some of the developments, some of the possibilities in connection with the handling of the scientific phases of U. S. P. revision work. It must be clearly apparent to any one who has studied the method of Pharmacopoeia revision that we have arrived at a time when some marked, radical changes will have to be made in the interest of speed and in the interest of the completeness of the work. The method which has been pursued for the past two decades has been largely based upon correspondence, mimeographing—tremendously voluminous, with

* Presented as part of the program of the Scientific Section, A. Ph. A., New York meeting, 1919.