

## BACK TO THE CHEMIST'S SHOP.\*

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There is something eminently proper, dignified, and altogether fitting in calling a drug store by its English title—The Chemist's Shop. That is precisely what it should be, but, sadly enough in America to-day, seldom is. When we speak of the chemist's shop, it immediately calls to mind the many struggles, trials, and hosts of associations of the past. It explains, in a measure at least, our evolution as a distinct group of men devoted to a definite calling. It shows also very clearly how intimately pharmacy and chemistry have always been associated with each other and how the two have gone hand in hand until recent years, when, with the tremendous accumulation of chemical data in numerous fields not directly associated with medicine, it has become a profession of its own already highly specialized and divided. Historically the pharmacist has a good right to be called a chemist; logically and practically that is precisely what he ought to be, at least in part, and in this capacity he should serve the community in which he lives and labors. The pity of it is that instead of anchoring ourselves to the past, and from this sure point of vantage advancing into the future, we are setting out upon a sea of pure commercialism, going we know not whither, and entirely forgetting our true place and function as professional men.

But, let us ask, can the pharmacist of to-day afford to let go of this rich heritage of the past? Should he sever all real connection with things chemical and devote himself entirely to other fields of endeavor? Is it desirable that the extreme commercialism which has already made such destructive inroads upon our retail drug practice should continue? Evolution implies growth; advancement means progress. We cannot stand still; we must either grow or decay. And there are few of us who will not be forced to admit, if we be honest with ourselves, that however keen and progressive we may be as men of business, we are miserably lacking when it comes to professional strength and development. If we would continue, therefore, to call ourselves pharmacists and professional men, we must begin a radical improvement in our methods and practice.

Many pharmacists have for years cherished as an ideal the idea of operating a drug store in which only physicians' prescriptions were compounded. It is reasoned thus: "If we could only get rid of the side lines, such as patent medicines, cigars, sundries, and the like, with which we are now burdened, but which we find absolutely necessary to keep us alive, how happy we would be. Then could we be real pharmacists. This is the goal for which we would strive." The real drug store, they would say, is the one that only compounds physicians' prescriptions and sells drugs. To them to be a prescription compounder covers all that the word pharmacist implies. Here they reach their goal; their professional ambitions are satisfied.

That this point of view is better than a purely commercialistic one is undoubtedly true; and yet we have all of us witnessed many pharmacists failing miserably because of their inability to secure an adequate patronage when attempting to conduct their business purely along these lines. A pure prescription business is undoubtedly desirable, and yet when all is said, to be only a compounder of drugs must not be the only aim of the pharmacist nor must this occupy all of his time

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and energy. The pharmacist who, in the future, decides to establish a business of this sort, ignoring all else, will probably meet the same fate that his brother pharmacist has in the past. If an exclusive prescription business has been impossible in the majority of instances in the past, the changing conditions of the present make a similar attempt to-day harder than ever to realize. *We must not ignore the fact that the profession of medicine is marching onward at a tremendous rate, and that the practices which pertained yesterday do not hold at all to-day.* When I was an apprentice in pharmacy, twenty odd years ago, every prescription that came into the store usually consisted of mixtures of four, six or eight ingredients. I well remember hearing my employer say this or that physician who did not prescribe a vast, complex mixture did not know very much. He was a poor doctor or he would have written a more complex prescription. But witness the change. Every year that goes by finds a decrease in the number of drugs used. Prophylactic medicine is taking its hold. We are curing diseases nowadays by keeping our bodies fit, by proper food, by pure air, by mental suggestion. The pharmacist cannot fill these prescriptions, and so the old idea of an exclusive prescription store, however desirable it may have been, must be abandoned.

To say this does not mean to say that the physician will cease to write prescriptions. On the other hand, it seems rather safe to say that as the educational requirements and professional training of the physician increase, he will progressively abandon dispensing his own medicine, as he now often does, and leave that work to the pharmacist. There will thus be more prescriptions written by different men, but in all probability each man will not write as many prescriptions as he formerly did. Physicians will not be as elaborate in the number of ingredients and variety of drugs used. There will be no need of carrying a huge stock of pressed herbs for making infusions, an endless assortment of plasters and salves, hundreds and hundreds of pills, fluidextracts, elixirs, and syrups. There will rather be a few drugs of recognized value whose strength will be carefully standardized and whose action, well known. These it will be the duty of the pharmacist to dispense.

And, again, the preparation of the few drugs the physician will use will in all probability be best carried out by the large first-class pharmaceutical houses now in existence, who have every facility for collecting, preparing, examining, and properly checking the raw and finished products, which the retail pharmacist with his little store possibly cannot have. And there should be no difficulty for us in accepting this point of view. We should not be so loath to stop making a few galenical preparations which we have heretofore considered as a mark of our professionalism. If we but consider, we will remember that one-half to three-fourths of the drugs we have always used have been made, not in our own stores, but in the larger manufacturing establishments. For example, few pharmacists have ever felt that they should make their own pepsin, pancreatin, or oil of wintergreen. Why, then, should we care if the percolators in the back rooms of our stores are not turning out a few such simple preparations as tr. arnica, tr. opium, or fluidextract of sarsaparilla? To be sure, the prospective pharmacist should be taught how these preparations are made and actually make them in his preliminary college training, just as he should also be instructed concerning all the known drugs in the materia medica, whether they are for the moment in actual use or not. But in his actual retail practice, he can well afford to abandon this time-consuming and not particularly skilful work and devote himself to the chemical and pharmacological examination of the finished products he buys. As prescription specialist, he should rather serve his customer by guaranteeing the strength and reliability of the few ingredients he puts into the prescriptions that he compounds, that incompatibilities are avoided, and that the dose is safe and accurate.

Where, then, you will say, is our field? If we cannot hope to do an exclusive prescription business, if we must even abandon the preparation of the drugs we use in our prescriptions, to manufacturing houses, are we not doing the eminently proper thing by increasing our side lines, by changing to the opposite extreme and becoming purely commercial in our methods? No! a thousand times, No. Let us rather shift our point of view; adjust ourselves to the conditions we find ourselves in; abandon some of the ideals we have had, and in their place adopt newer, better, and larger ones.

The young man who has graduated from a first-class school of pharmacy has received, in addition to his training in botany, pharmacognosy, materia medica, prescription compounding, and galenical preparations, a good training in inorganic and organic chemistry, in qualitative and quantitative analysis. He may, especially if he has elected a three- or a four-year course, even have taken one or two courses in drug analysis, bacteriology, food analysis, sanitary and water analysis. On the whole he has a more thorough training in these subjects than the physician has. He is really better fitted, therefore, to undertake analytical work along chemical and bacteriological lines than the physician, who has to devote his energies chiefly to surgery and diagnosis. Now, if the practice of medicine is becoming more simple, so far as the administration of drugs is concerned, it is becoming ten times more complex and elaborate as regards chemical and bacteriological examination of body fluids for the purpose of diagnosis. These absolute checks are increasingly being demanded by the physician who, in anticipating disease, will advise his patients that analyses of this sort be made at regular intervals rather than wait until they are actually stricken. Beginnings of this sort are seen even now in our large cities, where certain physicians are devoting themselves to doing analytical work for their colleagues rather than entering into regular practice for themselves. *The modern pharmacist could and should do this work.* He has the better chemical training, has a large store which he can use for a laboratory, has an abundant stock of chemicals and other supplies which are needed for carrying on this work. All he needs to do is to familiarize himself with the special technique of these methods, which is easily done, granting that he has the preliminary training we have spoken of. The physician, moreover, will welcome a departure of this sort on the part of the pharmacist, because he has not the time or the energy to keep adequately informed on the details of this work and would gladly turn it over to the pharmacist, did he but know that he would handle it. There is a vast amount of this diagnostic laboratory work, which awaits but the proper men to do it. Suppose, now, that the pharmacist did devote himself along these lines. Suppose he established a departure of this sort in connection with his retail practice. He could, in a short while, if he gave it proper attention, abandon selling many of the sundries which he has no interest or desire to sell. He could devote himself to this work and in addition maintain his prescription department, and this combination would give him ample field for all of his energy and in addition make him a truly professional man. To make the statements that I have made specific, I have drawn up the following list, which includes some of the analyses physicians might desire to have made in relation to their work in diagnosis. The beginnings made along these lines could be slow and modest, and as the business developed, the field could be enlarged.

Detection of tubercle bacilli in sputum.

Detection of diphtheria bacilli from throat swab.

Detection of malarial parasites.

Counting of red blood-corpuscles.

- Counting of white blood-corpuses.
- Differential blood-count.
- Percent of hæmoglobin.
- Widal test for typhoid fever.
- Wassermann test for syphilis.
- Complement-fixation for gonorrhœa.
- Examination of smears for gonorrhœa.
- Identification of blood-stains.
- Preparation of autogenous vaccines.
- Preparation of sterile bandages, sterile water, and other solutions, syringes, needles, etc.
- Examination of milk.
  - Specific gravity.
  - Reaction.
  - Total protein.
  - Casein.
  - Fat.
  - Milk-sugar.
  - Detection of preservatives.
    - (1) Sodium carbonate.
    - (2) Salicylic acid.
    - (3) Formaldehyde.
    - (4) Boric acid and borax.
- Hydrogen-ion concentration of urine and fæces.
- Examination of gastric contents.
  - Detection of free hydrochloric acid.
  - Detection of butyric acid.
  - Detection of acetic acid.
  - Detection of pepsin.
  - Detection of rennin.
  - Detection of protein digestion products.
  - Detection of carbohydrate digestion products.
- Quantitative determination.
  - (1) Of total acidity.
  - (2) Free acidity.
  - (3) Combined acidity.
  - (4) Acidity due to organic acids and acid salts.
- Urine.
  - Qualitative examination.*
    - Specific gravity and reaction.
    - Albumin.
    - Sugar.
    - Acetone.
    - Diacetic acid.
    - Indican.
  - Quantitative determinations.*
    - Total nitrogen (Kjeldahl).
    - Urea (Van Slyke's Urease Method).
    - Uric acid (Folin's microchemical method).
    - Chlorides.
    - Dextrose (Benedict's method).
    - Albumin (Folin's turbidimetric method).

There is but one drawback to our entering this profitable phase of truly professional work and that, I am sure, is none other than the pharmacist's tremendous inertia and lack of confidence when dealing with things professional, his phobia of not daring to proceed along these lines from the known to the unknown without some one to show him exactly what ought to be done and how to do it.

The work mentioned above refers only to a few of the diagnostic methods which the physician requires. But the pharmacist's possibilities in chemical and bacteriological work, if he once enters upon this field, do not by any means end here. He may, for example, in addition, devote himself to the analysis of foods and food products, milk, cream, cooking oils, fats, meats, candies, flavoring extracts—all commodities, in fact, which are used as foods, or he may make sanitary water analyses, gas analyses, iron and steel analyses, the various analyses required of him in his capacity as city chemist. The field is limited only by the energies which he chooses to put forth. *Why can we not, as a profession, begin, at least in a small measure, to abandon the selling of soda-water, cigars, sundries, paints, and ham sandwiches, for this more skilful, and more truly professional work?* Our preliminary training has been all along these lines. Why should we not make some use of the information we have spent so long a time acquiring? It is granted that the beginnings will be hard, but that should make us all the more eager to attempt them.

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#### A SUBSTANCE COAGULATING INULIN.

The roots of chicory, and dahlia tubers, contain a substance which is an energetic coagulant of the juices extracted from these organs, and also causes the precipitation of solutions of pure inulin. Although not possessing all the characters of a diastase, this substance so far resembles these ferments that it is proposed to call it inulo-coagulase. When freshly expressed the juices of these roots quickly become turbid and soon set to a gelatinous mass, due to the action of the coagulant. If boiled, however, it loses this peculiar property, and the inulin is gradually deposited in a crystalline form. This boiled juice will often contain from 12 to 15 percent of inulin. If a few drops of the fresh unboiled juice are added to the boiled liquid it quickly coagulates. This proves that the coagulase is destroyed by boiling: but the fresh juice is very active on the inulin in boiled juice. Precipitation of the inulin, instead of coagulation, may be obtained as follows. The juice is diluted with an equal volume of water and divided into two portions. One is boiled: the other is quickly frozen, which causes the precipitation of the greater part of the inulin. It is then melted and filtered. On adding a single drop of this filtrate to 10 mls of the boiled juice a flocculent deposit of inulin is formed in 10 or 12 hours. The amount of precipitate is increased in direct proportion to the quantity of the refrigerated juice added up to a certain point. If the frozen juice is boiled, or even kept at 60° C. for 15 minutes, its coagulating power is lost. Inulo-coagulase is precipitated by alcohol in a similar manner to the diastases.—J. Wolff (*Comptes rend.*, 1916, 162, 514).