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**PRODUCTION: THE MANUFACTURER'S PART IN PRACTICAL PHAR-  
MACY AND DISPENSING.\***

BY JOSIAH C. PEACOCK.

To be ready with standard drugs and preparations and to promptly dispense the same is the pharmacist's idea of preparedness.

If the name of this Section implies the functions which pharmacy performs for the consuming public, the term "practical pharmacy" as thus differentiated from "dispensing," must be taken to mean the production of those things which are called for in dispensing.

Now in a strictly economic sense dispensing is distribution, which in turn calls for a source of supply. And in actual practice, such source for a large part of the necessary stock is found in the economic correlative "production"—that modern term for manufacturing.

Indeed, our vocation would seem out of joint with time, if the economic influences, which through specialization in production have developed so many other lines of endeavor, had not produced a similar effect in pharmacy.

All specialization comes about through operation of the economic fact that to be developed to the highest efficiency, a task must be divided into its parts and each pursued with masterly attention.

Production, then, as carried on by the manufacturing pharmacist should be viewed as specialization in practical pharmacy, which has developed in keeping with our social progress.

To-day, it would be no more practical for a dispenser to undertake to produce the full variety of medicines needed, than it would be for a soldier to make his ammunition while on guard.

Since a review of all pharmaceutical activity is within the intent of this ASSOCIATION, it seems appropriate to present before this Section a paper which deals

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specifically with this function which the manufacturer has elected to perform; surveying it, not from the standpoint of either manufacturer or dispenser, but entirely from that of the fundamental interest which this ASSOCIATION has in economic pharmaceutical progress.

To do that, there is no need to go back into history to find the time when these two functions began to develop separately, for this division of the task has long been accepted as an accomplished fact.

But it would be a wrongly-stated thought to say that these two functions have developed in opposite directions; for, plain it is, that, although separated for purposes of attention and effort in development, they must forever remain interdependent, keeping always abreast and constantly reuniting in coöperation to give the full service of pharmacy which they collectively perform.

There is good reason to believe that all of this is fully compensated for to both dispenser and manufacturer through the fuller opportunity to perfect their respectively chosen rôles.

Since, in this relation of producer and dispenser, it becomes necessary to assume that the manufacturer is a practical pharmacist, it is entirely proper to ask how well the manufacturer is performing his part, to learn what "production" means in the sense and form of practical pharmacy.

That production as carried on by those who specialize as manufacturing pharmacists is in fact practical pharmacy is convincingly attested by both the variety and quality of the products of the laboratories.

Economic production in pharmacy demands and has developed much mechanical advantage for its purposes; it utilizes every phase of pharmaceutical and other knowledge and skill that serves its ends. It draws on the sum total of human accomplishments.

With the manufacturer, production has long since ceased to be a mere mechanical turning-out of packaged articles to stock the drug store shelf. Production needs outlet, and outlet must be had through appreciation of utility, which must be demonstrated through uniform dependability, a certainty and a constancy in use which amount to value.

Therefore, production must stand for truth exemplified in demonstrable worth, for neither stable industry nor permanent reputation can be built on less than proven value in product and in service.

Integrity, therefore, is made the cornerstone of production, just as it is that of dispensing.

To the dispenser, likewise, production means more than the bare supplying of goods by the manufacturer. In addition to the foregoing comprehension of required quality, it means complete relief from the tedious and extensive preparation of the tested and standardized, galenical, biological, synthesized or otherwise improved *materia medica* of to-day.

If one but reflects on what the dispenser would be called upon to do in order to produce the commonly stocked of those items to which reference has just been made, production becomes an almost interminable list of advantages to the dispenser through the many ramifications of economy, convenience and satisfaction which would necessarily concern him; for, of the products offered by the manufacturer, the dispenser takes but such portion as he may need, and as wanted, and

without the necessity of useless expenditure of either thought or funds to produce them. And, as cost is prorated, the dispenser makes no investment except in his own and only immediate needs.

Thus while production vouchsafes to the dispenser the necessary pharmaceutical attributes of its output, it saves him from all concern to tie up capital in such investments as raw material, equipment, finished stock and stock in process; also, insurance, floor space and other overhead, not to mention losses through depreciation and deterioration.

Besides, for the dispenser, production obviates such perplexities as the need to select, train, supervise and remunerate labor.

Even such ordinarily inconspicuous considerations as freight rates, most usually handled at production sources, result in advantage to the dispenser; while the economies which the purchasing department alone of a production laboratory is able to bring about through quantity prices touch practically every item which the dispenser uses and, thereby, in addition to effecting a saving for him, offers him opportunity for a wider margin of profit.

While it is true that dispensing to some extent involves the preparation of certain pharmaceuticals both for immediate use and for future stock, now that standardization is applied to such uncomplicated preparations as the tinctures the dispenser in most instances turns to the manufacturer for galenicals, as well as for chemicals and biologicals.

But the manufacturer's knowledge of pharmacy plainly tells him that it is not practical to supply the dispenser with every item called for at the prescription counter. Besides, the manufacturer has neither wish nor intention for such an opportunity, for he knows that some preparations are best when freshly prepared, while others are called for but occasionally, and still others are demanded in but very limited amounts. True also it is that some preparations can be as conveniently, and perhaps even more economically made in the store; for often the preparation of them from ample supplies on hand involves no more work or time than compounding of an average prescription. However, but for these exceptions, the dispenser's problem is a production problem as well.

Naturally, then, it is only those things which can be made to definitely better advantage for the dispenser that the manufacturer wants to produce; as a limited or an irregular demand for an item may not warrant its production in a quantity that a manufacturer would find economical to make.

When solicited, it is certainly judicious for the dispenser to consider every aspect which the manufactured product presents, weighing these against his own equipment, outlay and opportunity together with all other determinable advantages and his own inclination to produce these same items in his needed quantities in preference to purchasing the same ready-made, at the stipulated price, as needed.

The manufacturer welcomes all such scrutiny of facts in every transaction as the opportunity he needs to have his entire service to the dispenser fully comprehended. He knows that it is only through such understanding of his service that business can be built; for the successful operation of production depends, of course, upon actual sales and consumption, and these to be repeated must in turn produce satisfaction in product and price for both dispenser and consumer.

It is, therefore, plain to be seen that production assures to the dispenser both quality and service, and, through competition, a price as consistently low as is compatible with these two important features.

Why production so obviously implies these things may be gathered from a further examination of what the manufacturer is doing to serve the dispenser.

For instance, the daily contact and experience in most prescription departments with the products and catalogs of the manufacturers reveal the many lines and great variety of items placed at the dispenser's command.

As such acquaintance serves better than words to demonstrate the visible attainments of these items in quality, finish and general excellence, it is less important to enumerate or describe the products furnished, or to tell of the volume of them produced, than to learn of the kind and quality of interest which the manufacturer is taking in practical pharmacy; in effect, to ascertain his attitude toward his part of the pharmaceutical task.

A review of the work which the manufacturer is doing shows that he is seriously interested, intentioned and engaged with his part of practical pharmacy in a determination to meet, in every detail and respect, his responsibility to the dispenser; for, as said, he knows full well that in every process, product and purchase he must prove his worth to his inseparable colleague, whose right it is to ask all this.

To meet this obligation the manufacturer is handling a great volume of wonderfully diversified tasks; problems which in variety and intricacy, as will be noted, are the equal of those being studied by any other group.

The range of these activities and the importance of these problems may be judged by the work which the manufacturers are carrying on within their organizations and their individual laboratories.

Among organized manufacturers, sections are being conducted for the furtherance of improvements which it is not only the will of all practical pharmacy to study, but the economic need as well; in order to so serve the consumer, that both the efficiency of pharmaceutical products and the essentiality of pharmaceutical service be made secure.

In some instances the subjects are subdivided for study as follows:

Biological, crude drug, medicinal chemical, pharmaceutical and scientific sections. While along with these considerations of quality, economic aspects are given every specialized attention toward the betterment of price and service.

The multiplicity and magnitude of interests which are handled in the manufacturer's sections are evidenced in the preëminently practical topics dealt with in one of their scientific sections:

Alkaloid and Drug Standards, Analytical Assay Methods, Chemical Tests and Standards, Control Assays, Crude and Milled Drugs, Digestive Ferments and Glandular Products, Diluents, Excipients, Drug Extracts, Essential Oils, Pharmacological Assays, Synthetic Organic Chemicals, and Surgical Dressings and Plasters.

Such topics as "The Relation of Pharmacology to Rational Therapeutics" and "Scientific Therapy and Pharmaceutical Research," which are constantly before the manufacturers' organizations, reveal the disposition of production to know the progress of the times and meet its needs.

Some of the papers presented to the manufacturers' sections in research are brought in substance before our own sections by members of this ASSOCIATION who have participated in the work. The results involved in these contributions are of especial interest to contemporary workers on the particular problems, besides the common good of all who are concerned.

Production continually faces the necessity to study problems which are not so commonly recognized as vitally urgent; *e. g.*, "Stability and Physiological Properties of Solutions of Local Anæsthetics" is to the manufacturer a prime importance, in offering such emergency items as cocaine and procaine products.

Due to his position as producer, the manufacturer is found in the front line of defense of the dispenser against impure and sub-standard drugs and other raw materials. For which reason, to a large extent, indeed almost entirely, the manufacturer has relieved the dispenser of the necessity to watch the raw material market for supplies of proper purity, for price, or even for available supplies.

The technical equipment and personnel of the laboratory of production enables all of this to be done at much less cost but with no less certainty; while with greater convenience and fully equal satisfaction to the dispenser.

Consequently, production includes the task of testing and assaying drugs, of producing standard and sterile medication, in galenical, chemical and biological products; all of which arrangement is accepted by the dispenser as not only an economic advance but also as an economic advantage. As testing is done chiefly by the manufacturer, improvement in the tests themselves, naturally devolves in large part upon production.

Stabilization of unofficial standards as a means of avoidance of many disagreements in labels, or otherwise arising, is a well-defined purpose of production, and often eventuates in the adoption of the decision as official standard.

Thus the manufacturer aims to make it simpler and easier for the dispenser to know his products and his service. His organizations, as well as the individual, are giving sympathetic and systematic thought to all demands which are made upon the dispenser and the function which the latter performs in their coöperative service to the public.

The manufacturer well knows the need to do this, fully realizing that the dispenser is depending upon him to give constant supervision to and prompt service on authorized changes, changing customs and the varying demand which may be incident thereto.

The continuous simplification of catalogs is another illustration of the attention to these matters which manufacturers are giving to their entire lines. For several years past there has been a movement among manufacturers to, as far as practicable, have all adopt simplified and uniform names and formulas as a way to removing a large proportion of the confusion which sometimes arises in consulting the various lists.

Catalog simplification, by eliminating many strengths in such generally stocked items as tablets, pills, capsules, hypodermic tablets, etc., necessitates less stock of such items and assures better turnover of the fewer strengths carried.

Reduction in the number of kinds of coatings on stock tablets, pills, etc., further illustrates the practical revision which is being given to these many minor details.

Production is cooperating with federal research in numerous contacts of both scientific and economic importance. In line with the fundamental studies which are being advocated by such survey bodies, even the standardization of glass containers is being undertaken by the manufacturer as a substantial economy in production.

Plainly, then, production is developing knowledge through committees and sections, which, in continuously critical survey parallel those of other research groups; as for example, the revision committees of the U. S. P. and N. F., with which two bodies the manufacturer has invariably and diligently collaborated from the inception of his specialization.

It is therefore obvious that the manufacturer is endeavoring to meet every exaction of standard, known or devisable—by devoting proper and progressive thought to quality in drug, advantage in process and value in finished preparation.

Thus the manufacturer is seeking by study and research to improve every item which he produces; and, on the basis that production is to be improved by research; research virtually is made part of every lot in production.

It has long been appreciated that the facilities and exactions of quantity production may offer opportunity to develop improvements which the limited process, that the dispenser would ordinarily be justified in carrying out to meet only his own needs, might not afford.

And indeed it is pertinent to ask on what process or product could a survey by authorized or other observer be more advantageously made than on those of the manufacturer? From what more suitable or better representative source could authoritative information be gathered for the general regulation, or for potential improvement, than from the knowledge and skill of experienced workers and the results recorded in mass production?

It is largely through just such means, that production has automatically standardized itself. And since production leads to the devising of standard methods and qualities, continued production promises continual improvement.

It must, then, seem that production truly has one hand on the pulse of progress in chemistry, pharmacy, medicine, biology and allied arts and sciences, to use every improvement or help which these may offer for physical advantage; while with its other hand, it is exploring every economically accessible avenue of advantage.

Therefore, just as other words through time and use have gathered value in their significance, so this term "production," as here used in reference to the function which the manufacturing pharmacist performs for the dispenser, has crystallized into a clear-cut understanding in the minds of both these votaries of pharmacy.

Both have come to know "production" not as just an unceasing hum of industry which is merely giving an end result, but as a common interest; for both the manufacturer's ideal and the dispenser's trust demand that it embody in each commodity every advantageous quality known to human skill.

Accordingly, to-day, with both manufacturer and dispenser, production stands for an inclusion of truth, expressed in terms of intrinsic value through a uniform and standard quality that insures dependability. For such cogent reasons, production may not only properly be called practical pharmacy, but should also be regarded as actuated by every ideal of true pharmaceutical service.

Through specialization in production, the manufacturer has become economically an indispensable factor in pharmacy; for he is not only doing his part well, but doing it to the satisfaction of the dispenser. It is proper to note that production has voluntarily and deliberately, as well as necessarily, sought all of this responsibility, and has so ably and dependably met its every phase that the dispenser who relinquishes it does so with every confidence.

Assuredly, this Section is the logical place of conference by the two functions for exchange of ideas. The manufacturer is far from being a stranger in this ASSOCIATION; for here was the cradle of his early days, and, regardless of all economic growth his feet forever stand on practical pharmacy and dispensing.

Since, for the dispenser, production means freedom from these many costs and cares, it permits him to more advantageously devote his full time and talent to attracting more customers and to cultivating the opportunities of his particular service to his clientele.

### ALL THINGS COME TO THOSE WHO WAIT.\*

BY JOHN URI LLOYD.

Possibly this statement is not literally true. But yet it is a something that needs be treasured by those who otherwise might get impatient or despondent because of problems, little or great.

Some decades ago while attempting to study systematically the problem of the American materia medica from pioneering days (which then lay not so far back as they do at the present time) I was confronted with the necessity of obtaining certain publications to which references were continually made in the Dispensatories and by other authorities.

Chief among these were three, whose titles I will name in the order of their sequence. They were:

1. "Schoepf's *Materia Medica Americana*," 1787.
2. "Peter Smith's *Indian Doctor's Dispensatory*," 1813.
3. "Rafinesque's *Medical Flora of the United States*," two volumes, 1828-1830.

Even at that date, these books were practically out of the market. Disconsolately I accepted that I could not hope to find them. But the motto, "The unexpected happens," may be taken for one's encouragement. To attempt to force a thing is liable to breed discouragement.

1. Writing to Erlangen, Germany, where was published Schoepf's *Materia Medica Americana*, the reply came that only recently had every copy in the hands of the publisher's successor been destroyed, as it was considered merely waste paper. However, the Erlangen library loaned me their copy, which was reprinted, facsimile, and distributed, gratuitously, to scientific societies as a Bulletin of the Lloyd Library. Later, Dr. Charles Rice discovered in a second-hand book store in Italy a copy of this much needed work, purchased it and presented it to the Lloyd Library, where it is now on the shelves.

2. A party of fishermen at Middle Bass Island, Lake Erie, were sitting one

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\* Read before Section on Historical Pharmacy, Diamond Anniversary meeting, St. Louis, 1927.