

On the other hand, in order to secure the necessary share of purely Commercial Business that is necessary to keep their business on a profit-paying basis, since the number of prescriptions being filled will not support a drug store, better courses in modern merchandising are necessary. The drug store has become an economic necessity and the public is looking to them for many other things than drugs. Therefore, a pharmacist should also be trained to meet this new and demanded service.

(3) A large prescription business is not entirely dependent upon the location of the store. Many other factors have far more weight. What are they? Teachers of Dispensing Pharmacy should instill these essential factors to develop more purely professional stores. With a thorough knowledge of these, I believe more professional stores would be in existence. Few know the essentials necessary for opening and successfully conducting such a pharmacy.

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### THE BIRTH OF THE SCIENTIFIC JOURNAL.\*

BY FRED B. KILMER

Pharmacy moves forward or recedes under the influence of the arts and sciences, especially those to which it is particularly related.

Historians put labels on ages, periods and centuries, and thus the Seventeenth Century has been characterized as the "Golden Century." It was a period during which great strides were made in the realm of knowledge. During this century methods and means of scientific advance were established. Many important scientific facts were discovered.

During the Seventeenth Century "experiment was introduced into science," leading into that form of investigation which we now characterize as research. On the intellectual and spiritual side in this age there appear Shakespeare and Milton, Cervantes and Moliere. In science came Newton and Leibnitz, Bacon and Descartes, Galilio, Copernicius and a host of others.

#### SOCIETIES.

Science in this period was adopted by what has been termed "science-loving amateurs"—men of wealth, nobility and influence, and from other classes of society. These men delved in the realm of science "not as a livelihood, but for the love of it." This, in a way, is akin to our more modern "endowed research," with the difference that in the older period the patron himself took part in the research work. As one historian puts it: "Science has become the employment of the rich and great."

As a natural sequence, men of science came together for discussion and mutual aid. Unions of scientific workers, leading to the formation of learned societies, some of which still exist, form a striking mark of the period. These societies were the forerunners of the great national and international societies and congresses which so profoundly affect the progress of science in our time. The most important of these societies were:

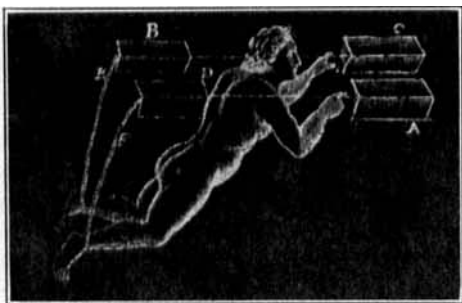
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\* Section on Historical Pharmacy, Rapid City meeting, 1929.

The Accademia del Cimento (Academy of Experiments) of Florence, Italy. The Academi des Sciences, in France. The Royal Society, in England. The Collegium Curiosum sive Experimentale, in Germany. In Germany there was also formed the Collegium Naturae Curiosum, a union of physicians whose investigations were those which were considered of importance to medicine. Apothecaries who had attained the Doctor's Degree were admitted to this society. The society's objective was: "The advancement of medicine and pharmacy." In the publications of this society and its successors the historian finds interesting data in relation to chemistry, pharmacy and medicinal plants.

#### THE BIRTH OF THE SCIENTIFIC JOURNAL.

Prior to the latter half of the Seventeenth Century the only means of scientific intercommunication was private correspondence. Most interesting and amusing to the historical searcher are the voluminous personal communications which passed between scientists. At times these carried acrimonious discussions. There were bitter, biting accusation and long-drawn-out quarrels. Under these conditions knowledge of scientific progress or of important discoveries could not be disseminated.



Man-propelled flying-machine, described and illustrated in "Journal des Scavans," 1678.

Here arose a man who filled the need and became the first editor and publisher of a scientific journal. He was a Frenchman, Denis de Sallo—a scientist who had the habit of abstracting from books and manuscripts such items as he deemed of importance and filing them for reference. It came to him to print some of these abstracts for the edification of his fellow workers.

Thus began the first periodical devoted to science, the "Journal des Scavans," published in Paris in 1665. The purpose of the journal, as outlined in its first number, was: to describe new books, especially those pertaining to science; to give obituaries of famous men of science; to describe experiments in and new discoveries in the Arts and Sciences, including curious inventions, useful machines, observations in physics, chemistry and astronomy, medicine (including pharmacy), and "current events in the world of letters."

Within a few months the editor encountered the antagonism of the Church, and publication license was withdrawn. The journal was, however, revived and placed under the direction of a board of editors. The journal, issued weekly, consisted of twelve pages, sheets seven by nine inches, twelve point type (type size of page, 4 x 7). A feature of the issue was that the illustrations were engraved on steel plates and the impressions from the engraved plates were made separately from the printing of the type matter. The paper was apparently of linen fibre. The ink was made of lamp black and oil. The copies which have been preserved are in excellent condition.

The writer has deposited in the Library and Museum of the AMERICAN PHARMA-

CEUTICAL ASSOCIATION a bound volume carrying the issues of the "Journal des Scavans" for the year 1678. This year there were thirty-eight issues of the Journal, with a total of 459 pages. The bound volume carries an index of the more important articles which had appeared in the Journal during the year. Through the pages things pharmaceutical appear sometimes as separate items; at other times mingled with chemistry and medicine. Much attention is given in the volume to astronomical problems, with records of observations of an eclipse of the moon in October 1678. The discovery of perpetual motion is announced, followed by a dissertation showing its impossibility. A foot-propelled flying machine is described, and we see a man flying like a bird through the air under his own power.

The French journal was promptly followed in England, Italy, Germany and Holland by the publication of journals devoted to science in the language of the country where issued. A mere list of the illustrious contributors to these early journals would make up a "Who's Who in Science" of the period. It would include such names as Descartes, Halley, Boyle, Grew, Leewenhock, Ray, Newton, Leibnitz, Papin, Tournefort, Lemery and many more.

The Journal was an ambitious venture for the time when it was inaugurated. Prior to its beginning scientific books and pamphlets had been issued in the Latin language. An aristocracy of science, a caste of the learned, had been created. With the coming of the societies whose transactions and experiments were conducted in the vernacular, and again with the advent of the scientific journal printed in the common tongue, the door to the reading of science was flung open. Science was made popular and democratic.

The work of the societies, and especially their discussion of science in the language of the people, met with opposition in the universities. In the universities lectures, instructions, examinations, thesis papers, even communication between students, were in Latin. To discuss or study science except in the classic Latin was to render it "vulgar and profane." The popularization of science creates an outstanding mark of progress for the Seventeenth Century. If we move forward to the Twentieth Century we note a striking contrast. In every civilized land man, woman and child reads each in his own tongue of the discoveries and development of scientific progress. Science fills pages of the magazines, crowds the newspaper columns. Books and pamphlets devoted to science become the "best sellers." The movies bring science in pictures. The waves of science engulf the home through the radio. Every hour of the day and of the night the cornucopia of science is emptied out upon mankind.

#### PRESENT-DAY LITERATURE.

Since the first Journal of Science was born the stream of scientific literature has risen to oceans that flood the earth. One journal of a dozen pages in the Seventeenth Century has become nearly thirty thousand in the Twentieth Century—millions of printed pages of scientific journalism.

When we add to this the portentous volumes of transactions, year books, the vast quantities of stated volumes devoted to science; pile upon this the science in secular magazines, newspaper science; science that floats through the air from the radio; we are overwhelmed by the avalanche of science. No man can read, much less "mark or inwardly digest" this mass.

A critic of modern scientific literature (Singer) notes its lack of form: "Many scientific publications are but semi-literature; they are often incoherent in presentation and even more frequently unnecessarily diffuse." "The unliterary character of scientific writing bids fair to pass from being a mere nuisance to become a great scientific evil."

The present-day output of scientific literature is the result of mass production. Historians lament the destruction of the Alexandrian Library. No library in the world is large enough to store the literary output of even a few decades of the present era. Our first Journal of Science was printed on linen paper with carbon inks. Save for a slight yellowing, after two centuries and a half its pages remain clear and readable. Barring accidents, they will be preserved for several centuries hence. Our modern volumes carry within their make-up the elements of self-destruction. They are printed on paper which is the product of scientific discovery, chemicalized pulp, with chemicalized inks. In a few decades they become tender and fade; disintegration follows. Two centuries hence they will have returned to dust. Possibly this is a righteous retribution. To issue these pages we denuded the land of its forests. Floods and disasters followed: and now the literature which we created disappears.

Out of the journals devoted to generalized science, which had their origin in the Seventeenth Century, have been evolved the journals devoted to special branches of science. The first journal devoted to pharmacy was the "Bulletin de Pharmacie," founded in Paris, 1809. The second was the "American Journal of Pharmacy," established in Philadelphia, 1825. From this beginning have come a hundred or more publications that in whole or in part are devoted to pharmacy.

To the pharmaceutical journals a full measure of credit is due for the advancement of pharmacy. Through their support pharmacy has become organized. Wise legislative measures have been enacted. Pharmaceutical education has moved forward.

In the humble beginnings here summarized there was laid the solid foundation of modern science. In the evolution and the revolution which followed we trace the advancement of modern pharmacy.

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#### U. S. PHARMACOPEIA XI.

##### The Chairmen of the Sub-Committees of the Committee of Revision are:

*Scope*—Dr. Reid Hunt; *Therapeutics and Pharmacodynamics*—Dr. Henry A. Christian; *Biological Assays*—Dr. C. W. Edmunds; *Biological Products and Diagnostic Biological Tests*—Dr. George W. McCoy; *Botany and Pharmacognosy*—F. L. Newcomb; *Proximate Assays*—C. B. Jordan; *Inorganic Chemicals*—John C. Krantz, Jr.; *Organic Chemicals*—George D. Beal; *Reagents and Test Solutions*—Ernest Little; *Volatile Oils*—W. O. Richtmann; *Extracts, Fluid-extracts and Tinctures*—Wilbur L. Scoville; *Waters, Solutions, Spirits, Syrups and Elixirs*—H. A. Langenhan; *Cerates, Ointments, and Miscellaneous Galenicals*—Leonard A. Seltzer; *Tables, Weights and Measures*—Theodore J. Bradley; *Nomenclature*—A. G. DuMez.

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