Part One:  
Bibliographies and General Studies

1a—Bibliographies, Encyclopedias, Dictionaries


   A useful reference but limited in coverage.


   The period 1945-48 is covered; a section is devoted to pharmacy. [See Steudel, citation #63 for Vol. 2.]


   An alphabetical list of 2106 imprints with bibliographic descriptions, annotations, and library holdings. The microform Austin Collection contains most of the bibliography's monographs. For addendum, see *Journal of the History of Medicine and Allied Sciences* 20(1965): 59 ff.

A comprehensive, world-wide bibliography that gives complete coverage to pharmacy.


Bibliographic details on the NLM collections arranged alphabetically by author but with some subject headings, e.g., "Pharmacopoeia." Contains some annotation and cross references.


Although there is no special rubric "Pharmacy," this is still a useful guide.


A list by French place names, although many citations are of more than local interest.


Updates George Griffenhagen's 1957 bibliography.

Bibliography in the history of science and technology, published three times a year (since 1947), with an annual index. Pharmacy is classified under "Medicine, Surgery; Pharmacy & Therapeutics."


A seminal source for publications before 1845; includes bibliographic descriptions, some commentary, biographic information on authors and citations to reviews of books listed. Second edition (1962-65, 33 vols.) is an unchanged photomechanical reprint of the 1830-45 edition.


A list of American imprints arranged by decades and alphabetically by author within each decade. Library holdings are included.


Medicine and pharmacy are treated separately for the colonial period and together for the Revolutionary period. Books, monographs, and articles are included.
13. **Current Work in the History of Medicine.** London: Wellcome Institute for the History of Medicine, Jan./March 1954-.  
A list of journal literature issued quarterly since 1954, arranged by subject and followed by an index of authors, addresses of authors, and a list of new books.

A list originally compiled by Georg Dann and updated by Gregory Higby.

Strong historical orientation and ready availability of copies make this a handy source for brief, quick information.

A primary source for bibliographic information on sixteenth-century works. An alphabetical list, with some annotations and cross references.

Pages 495-541 are a detailed A-Z listing of German pharmacoc-chemical publications.

A list of books and articles, topically arranged. Topics include pharmacy, pharmacology, pharmacognosy, and pharmacopoeia, and there are references to pertinent materials in other categories. A précis of each item is provided.


A very rich list, alphabetically arranged by author, with exceptional biobibliographic annotations.


A catalogue describing 1,290 documents.


Over 700 documents are listed and briefly described.
22. Garrison and Morton.

see Norman, citation #49.


A classic list arranged topically and chronologically, with bibliographic descriptions. Cf., Kronick, citation #40.


A detailed, comprehensive reference work for late nineteenth-century pharmacy.


A comprehensive chronologically arranged listing of American imprints, including books, pamphlets, broadsides, almanacs, magazines, and newspapers. Descriptions, collations, library locations, and copious annotations are included, as are lists of reprints, facsimile editions, European publications of American originals, publications by American printed abroad, and indexes.

Index of publications of the Société d'Histoire de la Pharmacie (1913-63) with a 72-page introduction on the evolution of pharmacy.


Index of the general history of pharmacy literature printed before 1860 (international before A.D. 1600 and then French to 1860).


Provides annotated lists of books on medicine and pharmacy, on the history of Islamic civilization, and on reference books and bibliographies (all arranged alphabetically by author), and a list of then-current periodicals.

29. Hedges, Henry T. *A Polyglot Index of All the Principal Articles in the Materia Medica, in Latin, English, French, German, Swedish and Norwegian-Danish, with separate indexes referring to all . . .*. Chicago: 1884. 295 pp.

Common names as well as pharmaceutical names of drugs. Tables and glossaries in back.

A descriptive listing; considerable material is of interest to the history of pharmacy.


A listing of publications, with bibliographic notations, issued under the auspices of the Gesellschaft für Geschichte der Pharmazie and its successor (in 1949), the Internationale Gesellschaft für Geschichte der Pharmazie. The contents of each of the first 30 Bände of the new series (Neue Folge) of the Veröffentlichungen are detailed, followed by listings of the contents of *Zur Geschichte der Deutschen Apotheke* (1933-39), of *Zur Geschichte der Pharmazie* (1949-1965), and of special publications.


Most historico-medical journals that were published are indexed. For help in using the catalog, there is an authoritative article

34. *Isis* Current Bibliography of the History of Science and Its Cultural Influences. Issued as part of *ISIS*, now annually compiled by John Neu, previously under variant titles:

Pharmacy and related fields are included in this international index.


Detailed entries (with short-form literature references); exceptionally useful. Rare.


The annotated list is presented in three categories: The History of Science and its Sources, History and Related Subjects, and General Reference.


Bibliographic descriptions are divided first into general works published in France in three historic periods, then into French local pharmacopeias, and then into pharmacopeias of twenty-three countries other than France.

This supplement lists 27 incunabula and 271 sixteenth-century books not listed in previous NLM catalogues. There is a geographic index and an index of printers and publishers.


Alphabetical listing of approximately 13,000 books printed between 1601 and 1700; includes a large number of pharmacopeias.


An intensive and extensive updating of the Garrison list. Cf. Garrison, citation #23.


A list of 184 pharmacopeial works published in Switzerland with full titles, library locations, and bibliographic notations.

Cincinnati: Lloyd Library and Museum, 1957. 42 pp., index [Reprint from Lloydia Vol. 20, No. 1, March, 1957.]

A large list geographically arranged.


A reprint of five bibliographies issued by Julius Pagel from 1898 to 1902 and of one issued by Theodor Puschmann and Robert Ritter von Töply in 1898.


Listing of American journals, by states, including obscure and local journals.


A comprehensive bibliography, topically arranged, including pharmacy.


Includes a section on pharmaceuticals and some pharmaceutical manufacturing companies.


A highly selective list of reference materials available in the Reference Collection of the Main Reading Room of the National Library of Medicine.


Bibliographic descriptions of 4442 items in the University of Wisconsin Libraries are provided, but more recent titles are absent.


An indispensable reference tool, although pharmacy is not treated extensively.


Catalog of 524 titles, from the collection of Edmond Leclair (historian of pharmacy). Not strictly limited to pharmacopeias; includes official pharmacopeias, regional or national ones, as well as general and special texts (i.e., hospital formularies), from the fourteenth to the twentieth century, international in scope.

A bibliography that traces pharmacology's institutionalization in the major estates of science (and in individual institutions in the case of academe), its presence among societies and journals, and brief biographical sketches for about two dozen prominent pharmacologists—including biographical bibliographies for each—in the nascent years of the discipline.


Issued frequently but irregularly since 1949, these supplements to the *Pharmazeutische Zeitung* list and briefly abstract publications by country. Included are dissertations in the history of pharmacy and lists of reprints.


A seminal source; includes eminent scientists coming from pharmacy.


A monumental work of descriptive bibliography covering up to 1500.


A catalogue that describes each item carefully and provides some references to pertinent literature.


*Chinese Science* is a journal edited by Nathan Sivin. This article, as the title implies, describes the virtual avalanche of reference works that have appeared primarily over the last decade. This is an essential reference.


A "state-of-the-field" article written by an author with access to scholarship from all the major centers of research on the history of Chinese medicine and science. It contains an important annotated bibliography (pp. 73-90).


Bibliographic information on, and succinct descriptions of, over 4000 items.

A very selective bibliography covering (1) historical method, (2) bibliographic aids in the history of pharmacy, (3) sources of biographical data, (4) bibliographic aids in the history of hospital pharmacy, (5) surveys in the history of pharmacy, and (6) publications of the American Pharmaceutical Association.


A listing of the journal literature on dosage forms.


A list of books, journal articles, and archival sources, by state.


An international, topical, cross-referenced, listing of over 7000 items in the historical literature of 1949-1951/52, with an index of personal names. Also includes some biographies. Cf. Artelt, citation #2.

Analytic, bibliographic historical information of works held in seven Toronto libraries is presented in a narrative fashion, organized by time period and subject matter.


Includes many items not usually found listed in bibliographies.


Bibliographic information is provided on 1500 items with no particular arrangement but augmented by full subject, author, and biographical indexes.


Bibliographic essays on history, history of science, and history of medicine are followed by a substantial essay on the bibliography of the history of pharmacy world wide. There is also a listing of general histories of pharmacy and national histories of pharmacy arranged by country.

Sixth in a series of monographs by the University of Granada about the pharmaceutical works in archives and libraries in Spain. Earlier volumes deal with other collections.


Following a considerable historical discussion of pharmacy in Navarre, 822 documents are described.


Over 4000 documents are described and their identifying numbers given. [not seen].


Despite the date on the title page, the volume combines four issues (NF 9, 14, 17, 19) of the *Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie* that appeared between 1956 and 1961 under the title *Topographische Literatursammlung zur Geschichte der deutschen Apotheken*. The first, and major part of the volume is arranged by localities, the second by German lands and provinces, the third covers works pertaining to the German Empire.

Published in the supplement to *Deutsche Apotheker Zeitung*, this bibliography is scattered over the years, designed to give overviews of the literature in each category, occasionally with annotations.


An alphabetical list of the pharmaceutical journals in the German Pharmaceutical Library in the state library at Stuttgart.


A comprehensive listing arranged topically (e.g., General Therapeutics; Preparation, Uses and Modus Operandi of Medicines) and a bibliography individually of 427 articles of the materia medica. Within each category, the arrangement is
chronological. There are Indexes of Diseases and of Authors. Still an indispensable bibliography on therapeutics up to 1878.


A list, almost entirely of journal articles, on the history of pharmacy in the Netherlands on the national level and then by locality.

1b—General Historical Literature and Historiography


Limited to ancient Egyptian and Semitic cultures.


Well-documented and indexed. Includes material on trade. A broader time period was surveyed by Berendes in his *Das Apotheekenwesen; seine Entstehung und geschichtliche Entwicklung bis zum XX Jahrhundert*. Stuttgart, 1907.


The give and take interaction between science and pharmacy in nineteenth-century France are discussed in this essay.

Colloquium proceedings that include discussions of contributions to historiography of George Urdang and others and discussions of writing in the history of pharmacy in France, Great Britain, and the United States. Medieval Arabic pharmaceutical literature and aspects of medical historiography are also discussed.


Organized topically; documented, but with no bibliography or index.


Shows how the history of civilization can be understood via a history of pharmacy, which reflects cultural, scientific, and religious developments of a particular time and place.


Looks at professional pharmaceutical standards throughout history, using the concept of freedom for individual pharmacists and for the profession.


With 308 illustrations (half in color) drawn from sources ranging from archaeological artifacts to photographs of contemporary practices, including pharmacies, equipment, portraits, paintings,
prints, postcards, caricatures and advertisements, along with a thorough text covering the major events in pharmaceutical history.


Historiographic review of the changing views of Paracelsus and his role in the development of pharmacy.


The incorporation of chemistry into pharmacy during the sixteenth and seventeenth centuries is discussed. Article is a summary of the author's *The Chemical Philosophy*.


In his evaluation of early modern chemistry, Debus stresses the importance of medicinal chemistry over quantification.


This textbook contains fifty readings for pharmacy students divided into eight parts: introduction, history, biographies, international pharmacy, drug discovery, education, issues in pharmacy, and pharmacy in the arts. Several of the readings are now quite dated, but some of them are excellent primary sources, such as John Uri Lloyd's memoirs of his apprenticeship and J. Edgar Hoover's provocatively titled, "The Druggist, Secret Agent of the FBI."

Outlines the difficulties of evaluating drug action in the seventeenth century, based on the available scientific information and techniques. As a result, the materia medica remained largely unchanged, despite advances in other scientific areas.


Historiography of the history of pharmacy in a number of countries as well as general discussion by various authors.


Well-illustrated general history of the profession of pharmacy, the pharmacy, and its contents. Primarily German.


Designed as a textbook, this work covers the early history of pharmacy in a general way and spends more time on post-seventeenth-century history, with a focus on the development of the profession in England.

A booklet that examines the activities of the three trade groups from which English pharmacy would evolve as a separate profession (with the founding of The Worshipful Society of Apothecaries, in 1617).


Joseph Needham, the patriarch of historians of Chinese medicine and science, now in his nineties, continues to be the driving force behind his self-styled "gigantic enterprise." This work, begun nearly forty years ago and originally intended to be contained in seven volumes, has grown into a mammoth fifteen fascicles so far and is still growing. The works of particular value to the history of pharmacy are volume five, which deals with all aspects of chemistry and volume six, which deals with biology. Volume six, subsection 45 (forthcoming) will deal with the history of pharmaceutics. All volumes contain extensive bibliographies of both Asian and Western sources.


The author's earlier publication, "The Bibliography of the Polish Pharmaceutical Historiography (1861-1971)" [in Polish], 1973, contains a list of all the history of pharmacy literature in Poland. Here in this publication, he only outlines the main historical investigations.


Reviews recent literature dealing with ancient drug lore. Translations and editions of source material from the ancient Near East and Greece, as well as poetic sources and fragments
from the Hellenistic period are discussed in this extensive bibliographic essay.


A monumental reference work; still widely useful. Covers antiquity to Middle Ages by culture areas and by centuries. Painstaking documentation; bibliography; detailed index.


Studies the many factors that contribute to the development of medicine from 1600 to the 1930s. Looks at American developments.


The most comprehensive reference work in English on the history of pharmacy. Fully documented with useful appendices, including a historical glossary, this work is an appropriate starting place for many inquires. The first half of the text covers the development of the pharmaceutical profession in Europe from its ancient and medieval antecedents. The second half charts the course of American pharmacy, using a topical structure that facilitates further reading and research. Published in 1976, the book is becoming somewhat dated.

A useful pot pourri; indexed. No documentation or bibliography except abbreviated citations in text.

1c—National Studies


Articles in several languages; includes information on South Africa, Netherlands, Moldavia, Egypt, Spain, Hungary, China, and New Guinea.

1c—National Studies: Africa


Covers British influence on pharmaceutical supply system in Africa and the subsequent effect of independence on the system.

1c—National Studies: Arabic


Review of major contributors to Arabic pharmacy from the ninth through the twelfth centuries, as well as a description of Arabic contributions to pharmacy in general. Contains minimal documentation.

Describes development of pharmacy as a distinct profession, up to the twelfth century, focusing on the contributions to the literature and nature of the discipline.

1c—National Studies: Argentina


Covers education, legal aspects of pharmacy, and literature. Brings the comprehensive history up to the twentieth century, with detailed notes.

1c—National Studies: Australia


Emphasis is on early schools of pharmacy in Australia, with particular focus on the Victorian College of Pharmacy (celebrating its centennial).


Lively presentation of the history of pharmacy in Australia, from the early years to the period of developing national organization. Includes many photos, appendices with the code of ethics, and an editorial on improving pharmacy education.

Covers the legal, commercial, ethical, and political aspects of pharmacy in New South Wales, with a focus on the influence of British heritage as well as the life and circumstances of the colony on the developing profession.


Very general; abstract of a paper presented at a conference. Demonstrates the influence of the United Kingdom on Australian pharmacy through two administrators of the late nineteenth-, early twentieth-century pharmacy organization. No notes.

1c—National Studies: Austria


Ten articles covering topics on Austrian history of pharmacy, Austrian pharmacists, and pharmacies.
1c—National Studies: Belgium

111. Guislain, André. *Contribution à l'histoire de la pharmacie en Belgique sous le régime français (1794-1814)*. Brussels: Impr. Dioncre, 1959. 174 pp., illus., index, bibl.

Examines history of pharmacy in Belgium during this era of French control. The changes that took place in pharmacy are viewed not as an aberration of the traditional order, but in terms of great changes in the profession where the imposition of laws unified the profession.

1c—National Studies: Brazil


Outlines the Portuguese influence on the pharmacy profession in Brazil, including their introduction of new plants, and pharmaceutical legislation.


Brief review of French influence on Brazilian pharmacy.

1c—National Studies: Britain

The first 143 pages written by Bell in 1842 was an introduction to the *Pharmaceutical Journal*, with the remaining pages composed by Redwood in 1880 to cover the years 1841 to 1868.


Condensed chronological outline of the growth of pharmacy as a profession in Ireland, covering the period from the seventeenth century to the early twentieth century.

116. Matthews, Leslie G. *History of Pharmacy in Britain*. Edinburgh: Livingstone, 1962. 427 pp., illus., bibl., index.

Comprehensive classic history covering the profession from Roman times to the modern world. Covers literature, biography, equipment and manufacturing, and education.


The role of the purveyors of drugs in England is placed within a broader historical context. The book provides detailed coverage of the thirteenth through eighteenth centuries, with relatively summary treatment of more recent events.

1c—National Studies: Canada


General history of pharmacy in this province, with material on educational history, the development of pharmacy in individual towns of rural Manitoba, and biographical sketches.

Contains three articles to commemorate the centennial, with Glenn Sonnedecker covering "Education," Ernst W. Stieb on "Organization," and David R. Kennedy on "Legislation" for the period under consideration.


History of education in each of the provinces is dealt with in a section (pp. 30-90) that deals with the history of pharmacy across Canada. Undocumented and with names of original authors removed.


A series of short histories, including some related to education, such as the Association of Faculties of Pharmacy of Canada, the Canadian Foundation for Pharmacy, the Pharmacy Examining Board of Canada, and the Canadian Association of Pharmacy Students and Interns.


Development of pharmacy in Ottawa. Includes biographical information from interviews.
National Studies

1c—National Studies: China


Dr. Bretschneider (1833-1901) was a polymath of the late nineteenth century who served as physician to the Russian Legation in Peking from 1866-1883. Joseph Needham claims "No one can do anything on the history of Chinese botany without a copy of his *Botanicon Sinicum* on one's desk . . . ." See Needham, *Science and Civilisation in China* (citation #94), Vol. VI:1 for an extended bibliography of Bretschneider's work.


This is a significant work on the pharmaceutical literature written by a prominent historian of Chinese pharmacy and medicine. Unschuld provides a wealth of information on the most important works of materia medica from earliest times to the present. This is a revised and expanded edition of *Pen-ts'ao. 2000 Jahre traditionelle pharmazeutische Literatur Chinas*, Munich, 1973. The German edition published by H. Moos contains some beautiful illustrations not reproduced in the American edition.


Excerpt of a translation and adaptation of the *Pen-ts'ao—200 Years of Chinese Pharmaceutical Literature.* [not seen].
1c—National Studies: Cuba


Outline history of pharmacy in Cuba, in the context of public health. Includes important names and dates in Cuban pharmacy.

1c—National Studies: Egypt


Very general history with no documentation.

1c—National Studies: France


Primarily a history of French pharmacy before 1900, covering individual regions of France as well as general history of the country. There is a section on foreign countries (pp. 565-645).


Considers various aspects of the history of pharmacy in France, including discussion of specific medications, development of the profession, commercial, and legal aspects of pharmacy. Some interesting illustrations and colored plates.

Alchemy and Paracelsian medicine continued to have an influence in eighteenth-century chemistry. This understanding is useful as a background to nineteenth-century chemistry.


Extensively documented piece about pharmacy in Montpellier. This book includes biographical information on apothecaries and pharmacists from the Middle Ages to the twentieth century.


A condensed general history of pharmacy that includes the history of French pharmacy organizations.


From a thesis about the pharmaceutical industry c.1957, and its demographics and statistics. Prices, specific drug products, and manufacturing are discussed. The third section deals with the pharmaceutical industry.


Professional organization of pharmacists.

The first full-length general history of pharmacy to be published in France. Deals mostly with French pharmacy. Still useful, but flawed.


A valuable source of information on the organizational and legal structure of pharmacy in France, especially relating to the numerous apothecary guilds of the Old Regime.

1c—National Studies: Germany


This important history includes extensive tables summarizing and listing laws, taxes, and the different kinds of pharmaceutical literature in Germany from the twelfth century to the early twentieth century.


The emphasis of this brief historical survey is on German pharmacy, especially sixteenth century to twentieth century. Includes chronology of pharmacy literature, including periodicals.

History interspersed with pictures and documents.

140. *Quellen und Studien zur Geschichte der Pharmazie*. 1960-.

Monograph series published by the Wissenschaftliche Verlagsgesellschaft, usually dealing with the history of German pharmacy, although the general history of pharmacy is also included.


Seven articles on different aspect of medical care and the common man (sixteenth and seventeenth century), including pharmacy. Also includes illustrations and catalog of publications and artifacts.

1c—National Studies: India


With foreword by George Urdang. This volume only covers ancient and medieval pharmacy. Descriptions of pharmaceutical apparatus and preparations used in early pharmacies as well as background to pharmaceutical literature.

1c—National Studies: Indonesia

History of pharmacy during the Dutch colonial period. Includes names and dates of pharmacists in Indonesia in the nineteenth and twentieth centuries.

1c—National Studies: Italy


Botany was one of the most lively and fast-moving disciplines associated with sixteenth-century medicine. Its appeal extended to medicine, pharmacy, and others outside the profession.


Examines the influence of botany and chemical medicine on pharmacy in Venice. He shows pharmacists' strong interest in botanical research, and the entrance of chemical medicine through the techniques employed.


Well written and informative. Provides a valuable historical insight into Franco-Italian pharmacy.

1c—National Studies: Japan

General overview of historical periods in Japan, the rise of Dutch science in Japan, and nineteenth- and twentieth-century influences. No documentation.

1c—National Studies: Latin America


Discusses German Jesuit "mission pharmacists" in South America, Mexico, and the Philippines. The nature of colonial pharmacy in the seventeenth and eighteenth centuries as well as individuals and the works are surveyed.

1c—National Studies: Malta


Reviews the British influence on Maltese pharmacy (nineteenth and twentieth centuries), in terms of structure, literature, and professionalism.

1c—National Studies: Mexico


Based on chroniclers' writings about Aztec culture, the author places pharmacists (as sellers of medicinal products as well as users and preparers of the products) in the context of their society and religion.
151. Perez, Valentin Islas, and Juan Francisco Sanchez Ruiz. *Breve historia de la farmacia en Mexico y en el mundo*. Mexico: Asociación Farmacéutica Mexicana, 1992. 188 pp., bibl., illus.

Although lacking documentation (other than a five-page bibliography) this book fills a gap in knowledge about the meaning of "pharmacist" in Aztec culture as well as presenting a general history of pharmacy in Mexico.

1c—National Studies: New Zealand


Not intended as a definitive history, this collection of records from colonial times to 1980 gives a first-hand view of pharmacy in New Zealand.

1c—National Studies: Romania


Comprehensive coverage of pharmaceutical development, influences, and laws up to 1921 in this region.
1c—National Studies: Russia


Emphasizes close links between pharmacy and commerce in the sixteenth and seventeenth century, and the evolution of Russian medicine under British influence from 1581-1718.


Excellent coverage of a subject generally neglected in English publications. Emphasis is on eighteenth through early twentieth centuries, with attention given to organization, education, professional literature, regulation, and economics.

1c—National Studies: Spain


Includes development of the pharmacy profession, military pharmacy in Spain. The chronology is from earliest times to the twentieth century. It is international in scope but with an emphasis on Spain, with some special chapters devoted to Spanish pharmacy.

Papers dealing with various aspect of history of pharmacy in Spain, arranged in chronological categories, from the thirteenth to the twentieth century.


Covers the many influences on pharmacy in Valencia, including historical, geographic, and cultural. Special emphasis on legal privileges accorded to pharmacy over this period.

1c—National Studies: Switzerland


Relationship between doctors and pharmacists in Switzerland affected more by external influences (i.e., epidemics, politics) than by legal constraints in this period.

1c—National Studies: United States


Schmitz, "The Medical and Pharmaceutical Care of the Hessian Troops in the American Revolution."


Series of essays with listing of general sources that cover this historical period.


Contains a wealth of information on pharmacy in the United States between 1857 and 1907, in the form of biographical sketches, recollections, essays on schools and associations, etc.


Through the records of Browne, the author gives an unusual look at pharmacy practice in seventeenth-century America.


A copiously annotated catalog topically arranged, followed by a chronological listing and an alphabetical list of authors. A library location is given for each item. Facsimiles of eighty-five of the eighty-nine out-of-print books are indicated as available as a microfiche collection or as selected individual soft bound volumes from University Microfilms International. These eighty-nine volumes were selected to represent the core of pharmaceutical literature during this period. Brief biographical
information about the authors and characterization of the content of the books follow each entry.

165. LaWall, Charles H. *Four Thousand Years of Pharmacy: An Outline History of Pharmacy and the Allied Sciences*. Philadelphia: Lippincott, 1927. 665 pp., illus., index.


The first place to look for overview of American pharmacy and sources on its history. Well-documented.


This review of pharmacy in the early history of the United States was reprinted along with a second article by Urdang ("Pharmacy in the United States Prior to the Civil War" *The Merck Report*, July 1947) in a booklet distributed by the American Institute of the History of Pharmacy entitled: *Pharmacy in the United States: In Colonial North America; Prior to the Civil War*, 1976.
1c—National Studies: Yugoslavia


Doctoral thesis, Paris, 1956, with monographs on individual cities, rules governing the profession, and biographies. Takes on a difficult task, since no general study of this question has been done.

1d—Company Histories


Includes brief company histories, with illustrations, for the following companies: Abbott (pp. 212-16), Bayer (pp. 217-21), Boehringer Ingelheim (pp. 223-25), Ciba-Geigy (pp. 227-32), Eli Lilly & Co. (pp. 233-37), Glaxo (pp. 239-40), Hoffmann-La Roche (pp. 241-48), Merck (pp. 249-250), Sandoz (pp. 251-56), Schering AG (pp. 257-61), Searle (pp. 262-63), Squibb (pp. 264-70), Upjohn (pp. 271-72), Wyeth (p. 273), Wellcome Foundation Ltd. (pp. 275-77).


Script from a lecture that gives an overview of Squibb's life but places most emphasis on subsequent development of the company.

The first five volumes cover from colonial America to the beginning of World War II; volume 6 is devoted to company histories (includes: Abbott; Burroughs Wellcome & Co.; CIBA; Frische Bros.; Heyden; Hoffmann-La Roche; Hynson, Wescott & Dunning; Eli Lilly; Mellon Institute; Merck & Co.; Miles Laboratories; Norwich Pharmacal; Parke, Davis & Co.; S. B. Penick & Co.; Charles Pfizer & Co.; Pharma Chemical Co.; Rexall Drug Co.; Rohm & Haas Co.; Sandoz Chemical Works; G. D. Searle & Co.; Sharp & Dohme; E. R. Squibb & Sons; Sterling Drugs, Inc.; Takamine Laboratory, Inc.; The Tilden Co.; Upjohn Co.; William R. Warner & Co.). Haynes includes some attention to the pharmaceutical industry. This is a definitive history of the chemical industry, and the author's proximity to the industry, according to one of the leading historians of chemistry, make the copious data in Haynes's many tables perhaps even more reliable than government statistics.


Describes modern (1960s-on) industry in the USSR, showing the various stages in drug development.


Brief histories of 24 German firms. [not seen].


Good general work.

Includes chapters discussing the following companies: Ayerst Laboratories, Burroughs Wellcome, Central Pharmaceutical, Hoechst-Roussel Pharmaceuticals, Eli Lilly, Merck Sharp & Dohme, Miles Laboratories, Norwich Eaton Pharmaceuticals, Reed & Carnick Pharmaceutical, A. H. Robins, Schering-Plough, SmithKline Beckman, Walker Corp & Co. Not definitive histories at all, but the chapters generally include information about the early years of the company and highlights in pharmaceutical developments related to the company. Useful for understanding some of the name changes and mergers within the industry. Only volume 1 is published.


Pictures and text on the pharmaceutical industry of the period, divided into a section on "American Laboratories": Schieffelin & Co.; N. Y. Quinine & Chemical works; E. R. Squibb & Sons; John Wyeth & Brother; Sharp & Dohme; Keasbey & Mattison; Fraser Tablet Triturate Manufacturing Co.; Frederick Stearns & Co.; Wm. R. Warner & Co.; Johnson & Johnson Laboratories; Upjohn Bill & Granule Co.; Billings, Clapp & Co. A section on "Wholesale Drug Houses": McKesson & Robbins; Smith, Kline & French Co.; Meyer Bros. Drug Company; Morrison, Plummer & Co.; Lehn & Fink; Charles N. Crittenton Co.; and paragraphs on other small drug houses. There is also a section entitled "Manufacturing Industries of the Drug Trade": Fairchild Bros. & Foster; Schering & Glatz; California Fig Syrup Co.; Merck & Co.; Pabst Brewing Co.; Merz Capsule Company; Plantan's American Medical Capsulary.
1d—Company Histories: Abbott


For the general reader, this book covers the first seventy-five years of the firm.


A synopsis of the major events of each of the first 100 years of the company, with illustrations.


Brief review of the early developments in this company.

1d—Company Histories: Allen & Hanburys


A narrative account of Plough Court pharmacy, describing the historical and political context of the growing industry.

Company Histories

Not designed as a comprehensive history but as a concise account of the growing industry, taking into account earlier histories of the company. The goal was to bring the history up to date and add more information on business developments. Well-illustrated.

1d—Company Histories: Bayer


Covering the many components that go into the development of a multi-national industry, this book delves into social history, environmental issues, and legal concerns, as well as the basic scientific components of research and development. The pharmaceutical side of Bayer is only one of the topics covered in this very readable and well-illustrated history.

1d—Company Histories: CIBA


General text, starts with late Middle Ages, and includes chapter on pharmaceuticals.

1d—Company Histories: CIBA-Geigy


The business history of this merger is related, based on an insider's view.
1d—Company Histories: Dodge & Olcott


Commemorating 150 years of business in manufacturing essential oils, vanilla derivatives, flavor bases, etc.—serving the drug industry. The company grew from a drug importing business.

1d—Company Histories: Geigy


One of the best histories of a firm, fully documented, especially on Geigy's specialty as a dye company.

1d—Company Histories: Glaxo


From the early days in New Zealand to a leading pharmaceutical company in Britain. A good history of Glaxo, where the authors had access to extensive company records as they traced the business and scientific developments of the company.
1d—Company Histories: Lehn & Fink

188. [Lehn & Fink]. *Fifty Years. Commemorating the Fiftieth Anniversary of the Founding of Lehn & Fink*. NY: 1924. 47 pp., illus.

   Good photographs of the labs and manufacturing areas of the company.

1d—Company Histories: Lilly


   Primarily illustrations of the laboratories, showing the manufacturing process.


   Lively narrative that focusses on people.


   Includes addresses presented at the opening of the Lilly Research Laboratories, with presentations by J. K. Lilly, Irving Langmuir, Frederick Banting, and Henry Dale on various aspects of research and manufacturing. Includes illustrations of the labs.
1d—Company Histories: Merck


Through short biographical sketches, this history of Merck calls attention to the individuals behind the company, beginning with the founding of Merck & Co. in New York in 1891. The research component is also revealed through individuals and their impact on the company. Many elegant photos and company data at the end complement the text.


History of the firm that includes manufacturing pictures and some discusses of the scientific basis of manufacturing. Has some lab illustrations.


Public relations work, mostly pictures.

1d—Company Histories: Meyer Bros.

195. Meyer, A. C. *The Early Years of the Drug and Allied Trades in the Mississippi Valley*. St. Louis: 1948. 164 pp., illus., index.

History of Meyer Bros. as well as a general history of wholesaling in the late nineteenth century.

Company Histories

A series of articles and pages from *The Meyer Druggist* that gives a practical picture of the American drug trade and the wholesale business.

1d—Company Histories: Michigan Drug Co.

197. [Michigan Drug Co.]. *One Hundred Years*. Detroit: 1919. 42 pp., illus.

Chronology of the company that served retail merchants for 100 years.

1d—Company Histories: Miles


An interesting history of many of the well-known Miles products and their role in the company's development. This history takes into account personalities and the marketing aspects of drug development as well as the scientific considerations.

1d—Company Histories: Mulford


Inspirational review of the company's history—undocumented.
1d—Company Histories: Parke, Davis


An anniversary booklet by the company.


Brief history of Parke, Davis with account of their advances in pharmacy and medicine. Includes a chronological list of drugs introduced by Parke, Davis. Good review.


Under the guiding principle of growth for the future, Parke, Davis developed a research and manufacturing program as outlined in this article.

1d—Company Histories: Pfizer


Narrative history, partly based on interviews, presented as a drama for the general reader.


Taken from a speech, with illustrations.
1d—Company Histories: Sandoz


The various departments of Sandoz present their history. The pharmaceutical department, founded in 1917, describes the development of techniques to isolate the active principles of medicinal plants.

1d—Company Histories: Schieffelin


Reveals the history of this firm through biographical information about the Schieffelin family.


Traces the history of the self-proclaimed "oldest Drug House in America." Includes a family history and presents the development of this company as an example of the growth and expansion of the American economy.


General history from the period of Lawrence & Schieffelin (1794) on. Appendix has illustration of material from their archives and an essay, "One Hundred Years of Chemistry and Pharmacy."
1d—Company Histories: SmithKline


A brief historical dialogue about SmithKline Company, interspersed with colorful illustrations.

1d—Company Histories: Squibb


One of a number of brief inspirational articles about leaders in American pharmacy in this journal. With the basic theme expressed by the introduction: "From drug store apprentice to a leader with influence."

1d—Company Histories: Upjohn


Covers early years under W. E. Upjohn, discussing changes in manufacturing, advertising, and business practices. Based partly on sources in Upjohn's historical archives.


A history presented through biographical information about critical individuals in the company's development.
Company Histories


Upjohn history without notes, references, or bibliography.


Concise review of the history of the company.

1e—Biographies


Cites literature (at the end of each brief biographical sketch, a-z) published in the period between about 1500 and the mid-nineteenth century.

50th anniversary issue. Brief biographical sketches for each individual, including a small portrait, and covering the second half of the nineteenth century.


Biographies and portraits of 38 important French pharmacists whose lives reflect the development of pharmacy in France during this 50-year period.


Focus on the important names in the history of pharmacy in Austria. Reviews various references for biography in German-speaking countries.


Multivolume work that contains biographies of scientists through history, written by major historians of science. Most biographies also contain references for further reading as well as bibliographies of the subject's work. Includes significant pharmacists and pharmaceutical scientists.


Includes references to works by or about biographees. [not seen].

Volumes 1 (A-L) and 2 (M-Z) include the life and accomplishments of German pharmacists from the Middle Ages to the modern period, who died before 1950. The Supplement volume (Bd. 55 of Veröffentlichung) (see citation #223) contains pharmacists who died between 1950 and 1970. Criteria for inclusion also requires that subjects belonged to pharmacy profession, and had significant accomplishments (in pharmaceutical and other spheres). In terms of geography, they consider the German cultural and language areas as one entity, which means Austria and German-speaking Switzerland are included. Also includes pharmacists born near Germany who later moved away and those foreign-born pharmacists as long as a substantial part of their life was in Germany. Important works by the pharmacist are listed as well as biographical sources in which they are listed.


This completes the set of biographies of German pharmacists begun in 1975 with Band 43 of the Veröffentlichung. This supplement included those pharmacists who died between 1950 and 1970, as well as those that were missed in the two earlier volumes of the set. (See citation #222.)

The "A2" classification in this extensive manuscript file contains biographical information about pharmacists, past and present. Focus is on history of American pharmacy.


2468 biographies that record the publications of individuals as well as biographical details.


Includes materials publications from the sixteenth century to the present. Unique 1,079 page international bibliography encompasses collective biographies, bio-bibliographies, bibliographies of individual and collective biographies, and selected portrait catalogs.


Professional biographies, with portraits, of: John Maisch, Edson Bastin, Julius Schlotterbeck, Albert Schnedier, Henry Kraemer, Lucius Sayre, Otto Wall.


Well known apothecaries from German-speaking areas. Portraits accompany brief biography and literature review. Vol. 1 covers fifteenth-eighteenth centuries. Although vol. 2 purports to covers
multiple nations (nineteenth-twentieth centuries), the coverage is still mostly German, with some French and English individuals.

1e—Biographies: Abel, John Jacob (1857-1938)


   Includes illustrations of the exhibit materials, including photographs of Abel at various stages in his life.


   Abel's career is closely tied to the establishment of the profession of pharmacology in America.

1e—Biographies: Albert-Buisson, François (1881-1961)


   Portrait and outline of his life and work.

1e—Biographies: Allen, William (1770-1843)

Discusses William Allen, English pharmacist who became a well known chemist.

1e—Biographies: Arny, Henry V. (1868-1943)


Presents Henry V. Arny as editor, author, professor and Dean at New York College of Pharmacy; includes his views on the state of pharmacy at that time.

1e—Biographies: Attfield, John (1835-1911)


Describes his contributions to the field of pharmacy.


Brief review of Attfield's career, in memorium.


Overview of the professional life of John Attfield, English pharmacist, professor at Pharmacy School of the Pharmaceutical Society of Great Britain, and author of a textbook widely used in the U.S. and England.
1e—Biographies: Avicenna (980-1037)


Translation of Avicenna's autobiography.

1e—Biographies: Bache, Franklin (1792-1864)


Includes portrait. Very brief biography.

1e—Biographies: Balard Antoine Jérôme (1802-1876)


Issue entirely devoted to Balard's life and times, chronology, applications of discovery of bromine, includes descriptive catalog of Balard exposition at Montpelier on centennial of his death.


Reprint of a 1926 study of Balard, with illustrations, covering his years at Montpellier.

Annotated bibliography, indicating location of portraits.

1e—Biographies: Banting, Frederick Grant (1891-1941)


Reveals a portrait of the man, not so much the scientist. The author had access to more documents than available to earlier biographers.

1e—Biographies: Barton, Benjamin Smith (1776-1815)


Corrects view of Barton's education and raises questions about the sort of man he was.

1e—Biographies: Bartram, Moses (1732-1809)


Moses Bartram, son of famous botanist (John) and pharmacist in Philadelphia. Pages 191-92 give brief details of his heritage.
Biographies

1e—Biographies: Baumé, Antoine (1728-1804)


A doctoral thesis at the Faculté de Pharmacie de Strasbourg. This biography emphasizes Baumé’s contributions to chemistry and analyzes his major writings. The thesis lacks complete documentation.


Review of his life and professional career, stressing his attachment to pharmacy. Color portrait and bibliography. This issue contains other articles about Baumé.


Life and works.

1e—Biographies: Beecham, Thomas (1820-1907)


Colorful personal story of Thomas Beecham and the development of his company. Focuses on his personality and the historical and social context of his career.
1e—Biographies: Bliven, Charles W. (1911- )


Outlines achievements and affiliations of Charles A. Bliven, first full-time Exec. Sec. of AACP (1961-74).

1e—Biographies: Bobst, Elmer Holmes (1884- )


A candid memoir by the man who headed the American branch of Hoffmann La Roche, and then became chief executive officer of Warner Lambert.

1e—Biographies: Brockedon, William (1787-1854)


Biography of this inventor who devised a tablet and lozenge compressor.

1e—Biographies: Buchheim, Rudolf (1920-1879)

Biographical details about Buchheim as well as his scientific work with documentation.


Sketch of his life and contributions to pharmacology.

1e—Biographies: Carson, Joseph (1808-1876)


Review of his education, teaching, and other work.

1e—Biographies: Caventou, Joseph Bienaimé (1795-1877)


French pharmacist who investigated alkaloids. He discovered strychnine, brucine, veratrine (with Meissner), quinine, and cinchonine (after Gomes). He also named chlorophyll and wrote a textbook on pharmacy.

1e—Biographies: Cordus, Valerius (1515-1544)

Covers what details of his life and family are known, with references and illustrations.

1e—Biographies: Cushny, Arthur Robertson (1866-1926)


Reminiscence done by his daughter, with portrait.

1e—Biographies: Domagk, Gerhard (1895-1964)


General biography emphasizing scientific achievements. Portrait.

1e—Biographies: Dorvault, François-Laurent (1815-1879)


Biography focusing on the career of François-Laurent Dorvault.

1e—Biographies: Dyott, Thomas W. (1771-1861)


Study of Dyott the merchant and business man, with many illustrations of his glass containers.
Biographies

1e—Biographies: Ehrlich, Paul (1854-1915)


   The development of his scientific ideas and career. Extensively documented.

1e—Biographies: Florey, Howard Walter (1898-1968)


   Focuses on Florey's development as a scientist, with the climax of his work on penicillin.


   Devotes most of the book to Florey's life after his appointment to the Chair of Pathology at Oxford, 1935. Complements McFarlane's biography (see citation #262).

1e—Biographies: Flückiger, Friedrich August (1824-1894)

An extensive biography supported by Flückiger correspondence. Covers his life and career.


Reveals Flückiger's American connections, with notations.

1e—Biographies: Fourcroy, Antoine François (1755-1809)


Briefly covers life and career, with one section focusing on his interest in pharmacy.


1e—Biographies: Fourneau, Ernest (1872-1949)

Fourneau's training, career, family life, and personality are described by his son, with lots of photographs and bibliography.

1e—Biographies: Geiger, Philipp Lorenz (1785-1836)


Extensively documented biography of both private and professional life.

1e—Biographies: Gmelin, Johann Friedrich (1784-1804)


Genealogy of Gmelin family dating from the seventeenth century.

1e—Biographies: Göttling, Johann Friedrich August (1755-1809)


Documented sketch of Göttling's life and his connection with Goethe, with illustrations.
1e—Biographies: Hallberg, Carl Svante N. (1856-1910)


Obituary and comment. More material in succeeding issues. Portrait facing p. 531.

1e—Biographies: Hébert, Louis (1580-1627)


General biography, although not much personal data is available. Links are made with the history of the period.

1e—Biographies: Helmont, Jean Baptiste van (1577-1644)


Only a general review of his theories.


Aspects of van Helmont's life are covered as they reveal the context for his philosophy and writings.
1e—Biographies: Hildegard of Bingen (1098-1170)


This biography of Hildegard deals with the broad scope of her life, although chapter 5 (of the ten in the book) examines her writings on simple and compound remedies. This book is documented and includes a short bibliography.

1e—Biographies: Hoffmann, Frederick (1832-1904)


Portrait.


Describes Hoffmann's important influence on the development of American pharmacy, includes some early biographical information.

1e—Biographies: Humboldt, Alexander von (1769-1859)


Beautifully produced book covering the diverse aspects of his career and life. Chapter devoted to pharmacy.

Describes the influences and contacts in pharmacy, from his early education, throughout his expeditions, and in later years.

1e—*Biographies: King, John (1813-1893)*


Describes the life and goals of the author of *American Dispensatory*, with attention to the influence of Eclectic medicine. With illustrations.

1e—*Biographies: Kipp, Petrus Johannes (1808-1864)*


"Kipp is still known as the inventor of a compact and simple gas generator, which bears his name (1844). . . . In this article a survey is given of the life and work of Kipp. In addition the trade in scientific instruments and the academic education in Delft are summarized." From the English summary.
Biographies

1e—Biographies: Klaproth, Martin Heinrich (1743-1817)


A detailed biography of Klaproth, including pharmacy, with a bibliography of Klaproth's works, and a literature review of works about Klaproth.


Presents a brief sketch of his training in pharmacy, with an emphasis on his scientific contributions.

1e—Biographies: Krayer, Otto (1899-1982)


Personal history and scientific achievements in cardiovascular pharmacology.

1e—Biographies: Kremers, Edward (1865-1941)


This is a broad biographical sketch, intent less on detail than noting influences and contributions.
1e—Biographies: Laubert, Charles-Jean (1762-1834)


Chief pharmacist of the French army during this period.

1e—Biographies: Lawrence, Henry C. (1820-1862)


Pulls together available information on Lawrence, in whose store Eli Lilly served as apprentice.

1e—Biographies: Leake, Chauncey D. (1896-1978)


Autobiographical note revealing the progression of co-workers, mentors, and educational settings for his work and philosophy.


Review of the main points in Leake's career. Not documented.
**Biographies**

1e—Biographies: **Li, Shih-chên (1518-1593)**


Li Shih-chên (1518-1593) was China's greatest naturalist. His most famous work, *Pen-ts'ao kang mu* (*Systematized Materia Medica*) (1596), is a vast storehouse of historical material.

1e—Biographies: **Lilly, Eli (1885-1977)**


Includes a detailed study of scientific management methods at one of the major drug companies in America. A unique contribution to the literature.

1e—Biographies: **Limousin, Stanislas (1831-1887)**


Commemorative booklet devoted to life and work of Limousin; in French. Brief discussion of his invention of ampuls.

1e—Biographies: **Lloyd, John Uri (1849-1936)**


Compilation of anecdotes about Lloyd.

A chronicle based on papers and letters of Lloyd, to preserve the facts of his life.


Overview of Lloyd's influence.

1e—Biographies: Long, Crawford (1815-1878)


Personal documents of Crawford are used to describe Long's role in ether anesthesia. Presented in commemoration of the 100th anniversary of the first application of ether anesthesia.

1e—Biographies: Lukasiewicz, Ignacy (1822-1882)


Biographical review in English.
1e—Biographies: Lyman, Rufus A. (1875-1957)


Lyman (1875-1957) was founding editor (1937-1955) of the American Journal of Pharmaceutical Education, dean of two schools of pharmacy, and influential within the American Association of Colleges of Pharmacy and pharmaceutical education generally in the USA.


Reflections of his personal philosophy that influenced his work in the profession of pharmacy.

1e—Biographies: Magendie, François (1783-1855)


Documented biography that examines views of Magendie's experimental science by his contemporaries.

1e—Biographies: Maisch, John Michael (1831-1893)


Excellent portrait and biographical sketch.
1e—Biographies: Markoe, George F. H. (1840-1896)


Biographical information about the "father" of the Massachusetts College of Pharmacy.

1e—Biographies: Marshall, Charles (1744-1825)


First President of the Philadelphia College of Pharmacy, and son of Christopher Marshall.

1e—Biographies: Martius, E. Wilhelm (1756-1849)


Perhaps the oldest known pharmacist autobiography.

1e—Biographies: Mattioli, Pietro Andrea (1501-1577)


Some biographical information included with the history of Mattioli’s work on Dioscorides.
Biographies

1e—Biographies: Mésué, Johann, Sr. (777-857)


The authors sort out the biographical details of Jean Mésué, who died in 857, as the only one known in the medical literature of the High Middle Ages, whose therapeutics exerted considerable influence through the end of the Renaissance.

1e—Biographies: Meyers, Christian F. G. (1830-1905)


Founder and head of Meyers Bros. Drug Co., St. Louis. [not seen].

1e—Biographies: Milhau, John (1795-1874)


Considers his role in the U.S. Pharmacopoeia and the development of the profession in the nineteenth century.
1e—Biographies: Mitchill, Samuel Latham (1764-1831)


This pen portrait by a friend, almost 30 years after his death, concentrates on his natural history work. Nothing is mentioned regarding the U. S. Pharmacopoeia.


Only a brief discussion of his work on the Pharmacopeia.


Portrait. Excellent summary of Mitchill's life and involvement with the U. S. Pharmacopoeia.

1e—Biographies: Mohr, Friedrich (1806-1879)


His innovation in instrumentation and his contribution to a classic text in pharmacy are covered in this annotated biography. Illustrations.
Biographies

1e—Biographies: Moissan, Louis (1885-1914)


Bare outline of the facts of his short life. Portrait and bibliography.

1e—Biographies: Monardes, Nicolas (c.1493-1588)


Shows the many parallels and influences in the lives of Garcia d'Orta and Monardes.

316. Guerra, Francisco. *Nicolas Bautista Monardes: Su vida y su obra (c. 1493-1588)*. Yale University. Department of History of Medicine, publ. #41. Mexico D.F.: Compania Fundidora de Fierro y Acero de Monterrey, S. A., 1961. 226 pp., bibl., illus.

Discusses Monardes' life, financial ventures, medical theories, scientific contributions, and writings. On the basis of new evidence, corrects some previous biographical errors.

1e—Biographies: Morton, William T. G.


Not as much a biography as a history of his work on anesthesia.
Ie—Biographies: Neumann, Caspar (1683-1737)


Author suggests reasons why Neumann's contribution to eighteenth-century pharmacy is recognized but not his work as a pharmaceutical chemist.

Ie—Biographies: Niemann, Albert (1834-1861)


He began in practical pharmacy and continued with scientific studies, most notably under Wöhler. Fills in and connects what sketchy information is available on Niemann.

Ie—Biographies: Orta, Garcia de (16th c.)


Shows the many parallels and influences in the lives of Garcia d'Orta and Monardes.


Brief recounting of the general points of his life and contributions to pharmacognosy.
1e—Biographies: Paracelsus, Theophrast von Hohenheim (ca.1493-1541)


General presentation of the life of Paracelsus based partly on autobiographical elements in Paracelsus's work.


A thorough analysis of the details known of Paracelsus's life as well as his philosophy, influence, and sources. The revised edition's addenda corrects many misstatements of facts about Paracelsus that have been uncovered since the first edition (1958). A well-documented source that provides good context for Paracelsian ideas.

1e—Biographies: Pelletier, Pierre Joseph (1788-1842)


Pelletier's work in pharmacy, his personal life, and university career are reviewed. Bibliography.

1e—Biographies: Perkin, William Henry (1838-1907)


His career touches on the major developments in the history of nineteenth-century chemistry, including the birth of the pharmaceutical industry. Illustrations.
1e—Biographies: Pinkham, Lydia


Personal life and links to her business are described.

1e—Biographies: Power, Frederick B. (1853-1927)


The biographical sketch here is reprinted from The First Century of the Philadelphia College of Pharmacy. Lists his publications and awards.


Covers the main periods of Powers' career, with brief summary of some of his most well-known work.

1e—Biographies: Procter, William, Jr. (1817-1874)


A landmark in the historiography of American pharmacy, this well-documented biography covers his personal and professional
Biographies

history. Procter was an indefatigable worker in pharmacy, striving to elevate pharmacy from a trade to a profession and deserving of the sobriquet "Father of American Pharmacy."

1e—Biographies: Reber, Burkhard (1848-1926)


Review of the career of the chief pharmacist at the cantonal hospital in Geneva, who was also a prolific collector and writer in the history of pharmacy. With bibliography.

1e—Biographies: Redwood, Theophilus (1806-1892)


Outlines Redwood's career in teaching, editing, and writing pharmacy.


Detailed note on Redwood.


Portrait. Fairly detailed early biographical information, with a discussion of the changing nature of the profession during this period.
1e—Biographies: Rice, Charles (1841-1901)


The best biographical treatment of the most enigmatic character in American pharmacy. Rice was head of the largest hospital pharmacy operation in North America, centered at New York's Bellevue. He led the reform of the United States Pharmacopeia in 1880, as well as the revision of 1890. For all his achievements, almost nothing is known about his background or personal life. In contrast to other sketches, this article is fully documented.

1e—Biographies: Richards, Alfred Newton (1876-1966)


Describes his career, especially his teaching and laboratory work, with a list of his publications.


This memorial volume brings together reminiscences and articles about his life and work, which covers a number of important topics in the history of pharmacology.

1e—Biographies: Rusby, Henry Hurd (1855-1940)

Biographies

A colorful review of Rusby's life and work.

1e—Biographies: Scheele, Carl Wilhelm (1742-1786)


Pioneering work on Scheele, using a comprehensive selection of Scheele's papers.


Photographs complement the biographical sketch of the apothecary-chemist Scheele, filling a need for an English text on Scheele.


Reveals his personal life and the important role pharmacy had in his scientific development. Major text for biography of Scheele.

1e—Biographies: Sertürner, Friedrich Wilhelm Adam (1783-1807)


Covers his life and the discovery of morphine, using excerpts from journal articles.

Translation from a German article. Includes a bibliography and references to biographical information on Sertürner.

**1e—Biographies: Spalding, Lyman (1775-1821)**


The text of a previously unpublished letter by Spalding is featured in this short note.


Chronicle style of biography with limited use. Primarily valuable because of transcribed letters to Spalding.

**1e—Biographies: Squibb, Edward R. (1819-1900)**


Using the many volumes of Squibb's personal diaries, the author describes Squibb in his role as a crusader for pure food and drugs, and a manufacturing pharmacist, as well as Squibb's personal goals and ambitions.
1e—Biographies: Stahl, Georg Ernst (1660-1734)


His life and chemical work are summarized.

1e—Biographies: Stearns, Frederick (1831-1907)


Reviews Stearns' early career and his problems with the American Pharmaceutical Association.

1e—Biographies: Thomson, Samuel (1769-1843)


1e—Biographies: Trommsdorff, Johannes Bartholomaeus (1770-1837)

Excellent 3-part series that details the significant interaction between Trommsdorff and the development of chemistry and pharmacy.


A monograph with 9 articles about Trommsdorff and his contributions to pharmacy and chemistry, as well as biographical information.


Testimonial (on the 100th anniversary of his death), emphasizing his influence in putting pharmacy on a scientific basis.

Ie—Biographies: Tschirch, Alexander (1856-1939)


Outline review of his achievements, honors, and list of students.


On the 100th anniversary of Tschirch’s birth, a review of his life and career.
**Biographies**

1e—Biographies: Urdang, George (1882-1960)


Biography and character sketch of this major figure in the history of pharmacy.


Tribute to Urdang from a long-time friend and colleague. Especially valuable for Urdang's life before he came to America. Other memorial vignettes also appear in this volume.

1e—Biographies: Virey, Julien Joseph (1755-1846)


Places Virey within the utilitarian and scientific context of French pharmacy. Virey saw pharmacists as exercising a public health function.

1e—Biographies: Wiegleb, Johann Christian (1732-1800)


One of the last of the "phlogiston" school of chemistry in Germany. Well-documented.
1e—Biographies: Wilbert, Martin Inventius (1865-1916)


The biographical details included in this article are rather scanty, but it does contain a full bibliography of Wilbert's writings. Describes his career at the German Hospital in Philadelphia.

1e—Biographies: Wilder, Hans M. (1831-1901)


Short biography of Hans Wilder is one of fifty in this issue (pp. 81-94), highlighting distinguished pharmacists of the previous fifty years. Portrait.

1e—Biographies: Wiley, Harvey W. (1844-1930)


Gives an interesting, convincing character analysis by a contemporary.


Although slanted for a defense of Wiley's life and work, this autobiography presents a colorful personal view of his battles.
Biographies

1e—Biographies: Wood, Horatio C. (1841-1920)


Reveals Wood's personality.


Outlines Wood's importance in the development of pharmacology and a general history of his professional life.

1e—Biographies: Wyeth, John


Illustrations. Colorful summary of Wyeth and early years of the company.
Part Two:
Special Subjects

2a—Practice of Pharmacy


This well-illustrated guide, part of the National Drug Store Survey, contains several case studies of remodeled stores. Several different floor plans are compared and contrasted. This booklet is full of tips and hints, especially about usually ignored subjects such as fixtures and storage.


This dialogue between a pharmacy owner, "Proprietor," and his young apprentice, "the Junior," considers several practice challenges confronting pharmacists at the end of the nineteenth century. Modern readers should read this book with caution, however, since it represents an ideal level of practice (with all preparations made in-house rather than bought ready-made) that existed in only the most prestigious pharmacies.

This well-documented article describes a side of over-the-counter practice usually ignored by historians.


The "therapeutic arts" covered by Brockbank are enemas, cupping and leeching, counter-irritation, and intravenous injection. Although limited in scope, Brockbank provides a great amount of information in a readable text. The short book is well illustrated.


In the early 1930s, the country drug trade was quite different from that of the city. Because orders to wholesalers were larger and less frequent, country store owners had problems balancing credit and cash flow. This booklet, part of the National Drug Store Survey, reports on areas such as store location, soda fountains, show windows, cleanliness, rent, advertising, sales, and wholesaler relations. (Compare with Edward J. Carroll, *Merchandising in City Drug Stores*, Domestic Series #70.).


In 1778, a small hospital formulary written by William Brown was published in Philadelphia for use by the revolutionary army. The "Lititz Pharmacopoeia" as it is called is provided here in facsimile (in Latin) with a translation on facing pages and explanatory notes by Edward Kremers. The ingredients and a few manipulations are also analyzed by Kremers.

The contents of a collection of letters connected with Caleb Taylor's business as a wholesaler are analyzed in brief. The article's greatest value is its list of over three hundred "drugs, chemicals, dyestuffs, equipment and sundries" sold by Taylor during the covered period.


This chapter consists of a glossary of dosage forms and preparations with many of the entries containing historical information. Each entry is referenced to a primary or secondary work.


This report, part of the National Drug Store Survey, is similar to that of Bromell on country drugstores, except it is lacking the volume of detail. As with Bromell, Carroll asked 250 store owners about location, customer entrances, soda fountains, show windows, rent, advertising, sales, and so forth.


In contrast with the rest of the National Drug Store Survey, this study looks at a single, unnamed business. Data on the stocking and sales of many different goods are described in 75 tables. Unfortunately, the basics of wholesaling are not discussed, so
the reader must go elsewhere to discover the utility of these "middlemen."


This work is divided into three sections: Part I on General Pharmacy (basic apparatus and techniques), Part II on Practical Pharmacy (dosage forms), and Part III on Pharmaceutical Chemistry (synthesis and analysis). What distinguishes this primary source is its excellent illustrations, often showing apparatus in use.


The approach of Charters to educational planning was direct — study how people practice pharmacy and design curricula to meet those practice needs. The resulting work contains information such as tabulated inventories from 27 stores and a chart for personality trait analysis by pharmacists. Unfortunately, this work helped to fossilize pharmaceutical education for a generation.


First published in 1885 as *Practice of Pharmacy* under the pen of Joseph Remington, this textbook has remained the "bible" of American pharmacy practice up through its most recent edition (1990). The eighth edition is the last that bridged the character of the old "Remingtons" with modern developments. For example, chapter 17 covers the classification of biologicals, while chapter 124 describes homeopathic pharmacy.

Most of this book contains details pertaining only to organized pharmacy in West Virginia, but the first 30 pages contains colorful (and enlightening) anecdotes concerning pharmacy practice.


Although mainly concerned with the drugs used in therapy, this article does touch as well on prescribing and dispensing practices. Unfortunately, this groundbreaking approach has not been duplicated widely.


This short booklet contains a mixture of primary material on pharmacy practice and historical commentary. Although it has a definite Newfoundland flavor, the booklet sheds some light on community pharmacy practice in North America and provides a few provocative interpretations.


This is a study of the prescriptions from 13 stores in the St. Louis area, as part of the National Drug Store Survey. Careful
analysis is done of several aspects of prescription practice including legibility of writing, extent of doctor dispensing, frequency of ingredients, and the number of liquor prescriptions. Most of the information is provided in tabular form.


By "professional pharmacy" the authors meant stores "in which the majority of the business is in prescriptions, and in which only the professional phase is promoted." Of the estimated 60,000 drug stores in the USA in 1933, only about 400 met these criteria. These were not "pure pharmacies," however, and several had cigar counters, soda fountains, and other "conveniences." Although descriptive of the elite of American pharmacies, this four-part series is full of pithy analysis of prescription pricing and hints about pharmacy management.


Although a bit dated, this book is still a good introduction to the subject, with some documentation and an index.


This rare volume contains a brief history of the founding of PCP, its by-laws, and similar internal information. About half the manual is dedicated to a listing of drugs and other items stocked in shop with columns for prices by the pound, quarter pound, ounce, and drachm. Lists of Latin and English synonyms are followed by French, Spanish, and German indices. The book concludes with about 40 pages of tables dealing with weights
and measures, specific gravity, incompatibilities, and abbreviations. A table of doses is included, which reminds us that the pharmacist's role as prescriber and prescription checker is an old one.


In this book Fantus approaches the physician-pharmacist interface, that is, the prescription, and thereby sheds light on the practical interactions between the professions. Fantus also discusses some of the nitty-gritty practical issues surrounding the parts of the prescription and incompatibility issues from the physician's perspective.


This is the summary report of a national audit of pharmaceutical services in hospitals, directed by Don Francke. With a multitude of tables and graphs, *Mirror* describes the status of hospital pharmacy in American and puts forward new directions just before the era of "clinical pharmacy" began.


Chapter five of this book contains an early description of the historical development of the American drug trade. The chapter also contains sketches of several pharmaceutical manufactureres, wholesalers, and retailers of the mid-nineteenth century, especially in the Philadelphia area.

As chairman of the National Formulary Revision Committee, Gathercoal collated seven prescription surveys done between 1885 and 1932, with the purpose of aiding the revision of the NF and the U. S. Pharmacopoeia. The data from the five most detailed surveys is tabulated together alphabetically by proprietary or official title. All told, over 500,000 prescriptions were analyzed.


This version of Ginzburg's reminiscences, edited by Cleo Sonnedecker, touches on several aspects of Russian pharmaceutical life and practice. It contains details about daily pharmacy work that could be compared profitably with practices in other nations.


An illustrated introduction to the form and function of the pharmacy from ancient times up to the early twentieth century.


In 1833 Dr. Andrew Rodgers of Charlestown, Indiana, died, and an inventory of his shop was taken. The inventory includes his personal belongings (horses, furniture, and so forth) as well. There is limited discussion about most of the medicinal items listed.

This short review includes descriptions of the materials and techniques used in pill and tablet coating as well as capsule filling by pharmacists in the nineteenth and early twentieth centuries. Most of the article, however, deals with more modern, manufacturing developments. The authors focus on timed-release dosage forms: Unna's enteric coating with Karatin in 1884, Smith Kline and French's Spansule system of 1952, and contributions of Theeuwes and Higuchi to the recent development of the Gastro-Intestinal Therapeutic System.


Provides in outline form the basic responsibilities and tasks of American pharmacists of the late twentieth century. The standards are concrete and direct, advocating a high level of practice but short of an ideal level.


Before becoming a writer, Charles Deshler worked as a drug clerk (employed pharmacist). His reminiscences of his experiences came into the hands of Kilmer, who edited them for publication. Although heavy on anecdotes, Deshler provides valuable details about day-to-day practice in the 1830s in New Jersey.

Pharmacist-historian George Urdang served as the technical editor of this overview of American pharmacy practice. Much of the work covers the preparation of dosage forms, and some of the authors included historical background on their subjects.


This compact manual covers the essential aspects of English pharmaceutical practices ca. 1900. Its chatty style is in contrast to the stiff prose of American manuals.


The study was based on survey replies from 1,723 independent store owners in 1944. It provides a snapshot of the "average" drugstore of the period. For example, of the stores surveyed, 9.4% had marble floors, 73% extended credit to customers, and 75% had soda fountains. With peace at hand, about 50% planned on remodeling their stores.


This book contains 26 essays on modernizing pharmacies covering topics as diverse as location, personnel, promotion, and lighting. The second part of the work deals with pharmacy interiors, exteriors, and displays, including floor plans and several illustrations of contemporary stores. It is a mixture of ideal elegant pharmacies and the traditional corner drugstores.

In contrast to Procter's edition of Mohr and Redwood's *Practical Pharmacy*, Parrish's *Introduction* is truly illustrative of American pharmaceutical practice at mid-century. Parrish had been teaching pharmacy to physicians for several years and his book reflects the reality of a nation where most prescriptions were not compounded by pharmacists.


In this general study of American manufacturing and distribution, the authors include a short case study of Troth and Company, a Philadelphia drug wholesaler. Although just a small part of the book, the treatment is excellent and insightful.


Although focused mainly on the history of the organization, this article does portray the differences in hours, practice, and pay between owners and employee pharmacists in the early twentieth century.


This small book not only describes the practice of military pharmacy in the mid-nineteenth century, it also touches upon general practices as well. The main context of the book deals with the manufacturing efforts of E. R. Squibb, John Maisch, and others. Full documentation is included as well as a copy of the U. S. Army's drug supply table.

The theoretical and practical sides of French pharmacy at its height are described by Soubeiran. Emulated by Procter in the USA, Soubeiran had great influence on American practice through Procter's *Syllabus of Study*. There are only a few illustrations in these two volumes, so Mohr is much more valuable for information about mid-nineteenth century apparatus.


In his introductory essay, Sprowls pulled together much of the historical material scattered throughout previous editions of *American Pharmacy*. His comments on the ancient world should be used cautiously, but his later analysis appears more sound.


An edited and annotated set of 122 letters from Joseph Cruttenden, a London druggist, to his overseas customers during the years 1710-1717. Sprinkled among the letters (mainly to Boston, New York, and Barbados) are many references to drugs and their prices. The historical information about the drugs given by the editor is scanty and should be verified by the reader. Above all else, the letters document the difficulties of cross-Atlantic trade in the early eighteenth century.

Dr. John Sappington’s Anti-Fever Pills are the focus of this piece. The author compares surviving samples of the Pills with replicas he made using the original formula.


This textbook is a mixture of original essays and classic articles on various aspects of pharmacy practice from a social science perspective. Several of the contributions to the book analyze practice issues historically. Full references are provided for all articles.

2b—Basic Pharmaceutical Disciplines


Much more technical than other historical articles on this subject but useful because the coverage extends to the mid-twentieth century.


For the most part, this concentrates on contemporary teaching of toxicology, but it also has a brief discussion on the growth (or absence) of this discipline in pharmacy schools, and the reasons why.

A sequel to the article by A. Conti and M. H. Bickel on drug metabolism in the nineteenth century (citation #418). The introduction cites several histories of the field besides Conti and Bickel. It covers conjugation reactions, the mechanisms of which awaited elucidation until the twentieth century; metabolism of selected compounds (e.g., barbiturates, morphine, and sulfonamides) that received considerable attention; and the physiological role of drug metabolism reactions. The authors have several useful tables with chronologies, publication output from different institutions, and principal workers in the field, and they cite over 260 primary sources.


Useful research resource, principally on nineteenth- and twentieth-century Europe and America. This is a guide to manuscript collections that has much on scientists, institutions, and subjects (each category is indexed) relevant to pharmaceutical sciences. For example, it includes citations to papers of Carl Voegtlin, Robert Robinson, A. N. Richards, and Vincent DuVigneaud.


Useful source of information on the pre-1900 German pharmaceutical industry. It has a dozen tables, including a list of human and veterinary drug manufacturers and their date of
establishment. Also included in the tables are manufacturer, therapeutic use, and date of introduction of analgesics and antipyretics, anesthetics and hypnotics, antiseptics and disinfectants, diuretics and antiarthritics, purgatives and vermifuges, tonics, alkaloids, and biologicals.


This series of 23 short articles was written by a septuagenarian pharmacist looking back over his years of practice. Mixed among various "old yarns" are details about pharmacy design, in-shop manufacturing techniques, relations with physicians, and general practices not available elsewhere.


A brief article that emphasizes drug metabolism work in the nineteenth century by Buchheim, von Mering, and Schmiedeberg. It mentions the slow recognition of the importance of drug distribution and the kinetics of drug elimination, due to limited progress in analytical chemistry. On the other hand, author cites the work on sulfas and antimalarials in the 1930s and 1940s as trailblazing with respect to distribution and elimination kinetics.


A special number of the *Revue* devoted to this key figure in the early history of pharmaceutical chemistry. This issue has several articles and appendices of note, including P. Rossignol.
on Pelletier's work on alkaloids (pp. 135-52), and a guide to a Pelletier exhibit in honor of the event at the Faculté de Pharmacie de Paris (pp. 233-40).


Useful reference source on the institutionalization of pharmacology in America; includes biographical information about notable pharmacologists.


Includes presentation (and reactor panels) by L. W. Busse on the history of pharmaceutical research; B. J. Poulsen on research vs. development in industry; S. T. Crooke, K. C. Kwan, and J. A. Mollica on drug delivery systems; and T. Higuchi and G. Levy on educating the pharmaceutical scientist in industry and pharmacy schools.


With the preceding work by Bachmann and Bickel (citation #410), the most comprehensive study of the subject. It is arranged by major pathways (oxidation, glycine conjugation, etc.). While quite technical, this article includes a useful section on "General Comments," a chronology of developments, and nearly 150 references to the primary literature.

A brief but useful examination of the historiography of science as a component of the history of pharmacy. He attributes the lack of much attention to science in the history of pharmacy to George Urdang’s vision that history of pharmacy be established as an independent discipline. The author advocates the addition of pharmaceutical science to the study of history of pharmacy.


Excellent treatment of the transition from materia medica to pharmacology in American medical education, eighteenth century to the present. He conveys the character of how each discipline was presented, how and why the teaching changed, and he relates some of the principals involved, including John Morgan, John Jacob Abel, and Arthur Cushny.


Overview of the contributions of American pharmaceutical scientists to the development of pharmacokinetics, from the 1950s forward. Included are Sidney Riegelman, Joseph Swintosky, Edward Garrett, John Wagner, and Gerhard Levy.

The theory and practice of iatrochemistry in the sixteenth and seventeenth centuries, including the impact of Paracelsus on England.


Although quite broad in scope, this has much on the ideology of drug preparation and administration.


Some biographical information on these two leading figures in the history of pharmaceutical chemistry. This article describes their methodology in isolating the many alkaloids on which they collaborated.


Examination of theories and supporting experiments of drug action along nerves vs. blood transport, from the seventeenth to the mid-nineteenth centuries. This draws on the work of John Jones and others to represent the neural route, and Felice Fontana, François Magendie, and James Blake to suggest drug action via blood circulation. The neural route was not fully discredited until the second half of the nineteenth century.

Discusses the efforts of the nascent Pharmaceutical Society to institute systematic scientific training for pharmacists in 1840s Britain.


Compares the ballooned materia medica of the early eighteenth century with the subsequent relational approach to therapeutics, relying on animal experimentation to demonstrate the effects of poisons and drugs. He follows with a discussion of the increasing attention to route of administration and posology vis-à-vis debates over neural versus vascular drug distribution in the body. Finally, he discusses the impact of the isolation of active ingredients from crude drugs.


The 3,000 entries in this extended glossary describe drug materials used before the first academic pharmacology laboratory was established in 1849 and the physiological rationales for their use.


Emphasizes the data used by Withering and early nineteenth-century investigators in assessing the efficacy and safety of digitalis. Especially chapters 4-7.

This paper uses a naval surgeon's unusually detailed patient record to show how and why drugs were given in various sequences in conventional eighteenth-century medicine.


The author uses graphs and table to show how and why drugs were used in the treatment of fevers, the most prevalent of all illnesses, before 1870.


Outlines the Shakers' entry into pharmaceutical manufacturing and the grey area between their enviable reputation for high quality drugs and the several commercial distributors who exploited them.


At the end of the eighteenth century, the French pharmacist Pierre-Charles Rouyer traveled to Egypt and documented the drugs found in Cairo shops. The authors analyze and tabulate Rouyer's findings in this unusual article.

Presents data Withering used in making his conclusions.


Good general history.


Part of an ongoing series, "Beiträge zur Geschichte der Pharmazeutischen Wissenschaft." This installment covers the significance of Sertürner's discovery of morphine in alkaloid chemistry.


Useful intellectual context for the more chemically-oriented pharmaceutical sciences.


Now in its 8th ed. (1990), "Goodman and Gilman" is a historically conscious source that addresses the evolution of pharmacological and clinical knowledge of drugs or drug groups of current therapeutic interest. On the development of this source, see Henry Swain, "G & G: The textbook which structured American pharmacology." *The Pharmacologist* 26 (1984): 41-44. Historical backgrounds are given for most major
drugs and drug classes, but they tend to become shorter over successive editions, and are not updated even in the face of important new research. The material presented in the successive editions over fifty years is itself a major primary source for the history of pharmacology.


Survey of developments since the nineteenth century, beginning with pill coatings and pill encapsulations. The authors focus on timed-release dosage forms: Unna's enteric coating with Karatin in 1884, Smith Kline and French's Spansule system of 1952, and contributions of Theeuwes and Higuchi to the recent development of the Gastro-Intestinal Therapeutic System.


Covers drug standards in these four countries, comparing the different scientific, social, and political contexts for their development.


Cites a number of histories, with a brief annotation of each source. He mentions several works that do not appear in this bibliography—although many of his citations are far broader than pharmacognosy alone.

Extracts from important works in the history of pharmacology and toxicology, chronologically arranged. The emphasis is on contributions of the nineteenth and early twentieth centuries, with extensive discussion and biographical information preceding excerpts from crucial sources. *Readings* is a valuable tool.


Probably the best overall survey of the subject in print, although from time to time new details of the story have appeared.


Traces Schmiedeberg’s arrival at Strassburg, prejudices against pharmacology by clinicians at the time, Schmiedeberg’s role in establishing pharmacology as a discipline, and most useful of all, details on Schmiedeberg’s view of the function of pharmacology, especially with respect to therapeutics.


Essential institutional background (there is purposely no discussion of biochemical science per se) for evolution of pharmacology and some of the other basic pharmaceutical sciences, ca. 1850-1950.

First two parts focus (almost filiopietistically) on the great men in the history of pharmacognosy, such as Flückiger, Tschirch, Maisch, and others. The last part takes a more topical approach, examining the role of chemistry and crystallography and drug standardization methodology.


Begins with the contributions of Rudolf Buchheim, who set up the first real institute of pharmacology in 1847 at the University of Dorpat and published one of the earliest texts devoted to pharmacology two years later (*Beiträge zur Arzneimittellehre*). He mentions the resistance to pharmacology by some of the established medical faculty in Germany. Finally, he covers the furtherance of pharmacology as a discipline under his successor at Dorpat in 1869, Oswald Schmiedeberg.


This is the only narrative history of pharmacology yet published. It contains several errors, and only short bibliographic citations are given in the text.


Looks at some specific themes in pharmacology, such as the relationship between dose and therapeutic effect, drug absorption, and the mechanism of drug action (each of which are covered in far greater detail in later articles by others). Includes
a useful bibliography on classic works, current texts, and periodicals.


Good general history.


Puts Sertürner's discovery of morphine in the context of chemical theories of acids and bases of the day and explains why French chemists exploited this discovery. This was a crucial period in the history of pharmaceutical chemistry, involving the recognition of a new class of chemical compounds, the plant alkalis, as a result of the isolation of morphine and its identification as a salifiable base.


A discussion not so much of the research itself as where the research was coming from; little research was actually being done at this time. This addresses APHA's query system as a means of stimulating research in the nineteenth century and mentions several of the leaders in research by the late nineteenth century. Finally, the article discusses the disappointment with productivity from pharmacy schools and how this might be alleviated. Undocumented.

This issue is devoted to the centennial of the birth of Robert Robinson, a twentieth-century giant in the synthesis of numerous therapeutically significant substances of natural origin. Several articles discuss his life and work.


Describes Abel's role in establishing pharmacology as a discipline in the United States. He identifies several elements that constitute discipline formation in this field, including creation of a national society and expansion of the workforce into government and industry. The coverage is from the nineteenth century to about World War II.


The personnel and character of the work, c. 1900 to World War I, of the Division of Pharmacology of the Hygienic Laboratory, the United States Public Health Service, and the Bureaus of Chemistry, of Plant Industry, and of Animal Industry in the United States Department of Agriculture.


Contrasts Voegtlin's views about the mechanism of action of organic arsenicals with those of Ehrlich. Both concluded that arsenicals worked by combining with sulphhydryl groups of the pathogen molecule, but Voegtlin's conclusion came from a series of premises that explicitly criticized Ehrlich's assumptions.

Discusses arguments by those who championed physical properties (surface tension, osmotic pressure, etc.) as an explanation for drug activity as opposed to chemical composition and structure. A. R. Cushny, H. H. Meyer, C. E. Overton, and even the early Ehrlich illustrate the former group. He concludes that both sides were right to some degree, and the debate facilitated a broader view of drug action.


Examines the increasingly sophisticated efforts of James Blake, Benjamin Ward Richardson, Alexander Crum Brown, and Thomas R. Fraser in the nineteenth century to experiment with inorganic and, later, organic compounds, from which they tried to draw generalizations or even laws about the relationship between chemical constitution and expected therapeutic action. But neither general rules nor rational therapeutic applications could be derived from their work.


Definitive treatment of the intellectual foundation of chemotherapy. This discusses the evolution of Ehrlich's ideas about selective affinity, the side-chain theory of immunity and why he was at first reluctant to apply this drug action, the application of his theories to produce Salvarsan, modification of the side-chain theory to explain chemotherapy, and his principal therapeutic tactics stemming from his theories of chemotherapy.

A lucid account of the pioneering contributions of Paul Ehrlich and John Newport Langley to the development of receptor theory. Addresses the development of Ehrlich's side-chain theory of immunity, his reluctance to extend this to drug action, and how J. N. Langley's own work on receptors as an explanation of drug action, together with Ehrlich's studies on drug resistance, eventually led Ehrlich to postulate his receptor theory of drug action.


Examines the nineteenth-century resistance to introducing pharmacology in pharmacy schools, the pioneering role of the University of Michigan and especially Rufus Lyman at the University of Nebraska in the late nineteenth and early twentieth centuries, the slow acceptance of the discipline in pharmacy schools between the World Wars, and the role of *The Pharmaceutical Curriculum* in establishing pharmacology after World War II.


Volumes are devoted to psycho- and neuropharmacology (vol. 1), hemodynamics, hormones, and inflammation (vol. 2), and pharmacological methods, receptors, and chemotherapy (vol. 3). Each volume has up to a dozen essays, each essay followed by a bibliography. Most essays examine a drug or drug group, with the evolution of pharmacological and clinical understanding of the drug or drugs.

A succinct study of the culture of the biomedical researcher, including the image of industrial pharmaceutical research, at the time of publication of Sinclair Lewis's *Arrowsmith* in 1925.


This essay is essential for understanding the shift in public and professional acceptability of drugs in the later nineteenth century.


The most comprehensive source on the subject; coverage from antiquity to the mid-twentieth century.


Very useful discussion of problems in defining "pharmaceutical chemistry." His emphasis is on the German literature; it is especially useful in identifying segments of broader works (not included in this bibliography) that address this subject.

467. Sheehan, John C. *The Enchanted Ring: The Untold Story of Penicillin*. Cambridge, MA: MIT Press, 1982. 224 pp., illus., bibl., index.
Despite its focus on a single drug group, an excellent source on an important episode in the history of medicinal chemistry—structural elucidation and synthesis of penicillin, and elaborations of this knowledge. A first-hand account of the unraveling of penicillin's structure, its first use in patients, and the difficulties of getting it into production.


The only work of its kind. Nothing is as literate and as broad (chronologically and topically). It emphasizes a social and institutional approach over an internalist, discipline-by-discipline study. It is desperately in need of updating, but it is still required reading for historians or anyone else interested in biomedical research.


Discusses posology as a function of assumed drug action in the case of quinine in the nineteenth century.

470. Stechl, Peter. “Biological Standardization of Drugs Before 1928.” (Ph. D. diss., University of Wisconsin, 1969. vii + 317 pp., illus., bibl.)

The only book-length history of bioassay. It examines the need to standardize drugs, chemical efforts to meet this need and their shortcomings, the usefulness of bioassay in selected drugs, differences between the chemical and biological camps, gradual acceptance of bioassay, and international efforts to unify biological standards for insulin.

Includes much on the evolution of drug analysis from antiquity to the nineteenth century.


On the significance of different institutional settings for drug research. This looks at different typologies of research interaction between two estates of science and the impact of this collaboration on each side.


Probably the best account in print of the introduction and impact of any single drug.


On the early history of physical concerns—in academe (the University of Wisconsin School of Pharmacy) and industry (Smith Kline and French). Despite the title, this article deals only with the 1940s and 1950s.

This book includes several chapters on important determinants of the emergence of scientific pharmacology and of the economics of the drug industry, especially in the twentieth century.


A definitive source, according to J. Hampton Hoch. The first edition was issued in 64 parts. It gives considerable attention to history and has literally hundreds of photos of specimen collection.


Review of the development of spinal anesthesia up to 1900, when the basic techniques (as well as an understanding of the risks) were established.


Describes the advances in developing local anesthetics as well as the developments in understanding physiology that clarified their mode of action.


A literature review of who discovered what in this field, mostly covering the 1950s, 1960s, and 1970s. There is no attempt to set these various discoveries in any context or tie them together in a rational way. Still, this has an extensive bibliography and the
benefit of a principal player's perspective in identifying significant discoveries in pharmacokinetics.


The central section of this book ("The Process of Change") provides many innovatively collated raw data that help explain the new emphasis given to many old drugs in the late nineteenth century.


Begins by summarizing the earliest work on the metabolism of drugs and other products in the nineteenth century. Next he addresses the evolution and problems with the term "detoxication mechanisms." Finally, there is mention of twentieth-century concerns in this field, especially about efforts to identify metabolites, and the discovery of different factors affecting metabolism of foreign compounds. A bibliography is included.

**2c—Materia Medica (Drugs) and Drug Therapy**

**General**


history of dietetics. The work is too brief, however, to cover the subject in sufficient depth, particularly for the period since 1800. The absence of footnotes and the relatively cursory bibliography also limit the value of this book for the serious scholar.


Traces major trends in therapeutics, from ancient Greece to nineteenth-century Europe.


Using modern concepts and techniques as well as historical illustrations, the history of antibiotics is put into perspective. The very lucid narrative examines both the causes of disease and the search for cures in the historical first part of the book, and the second half deals with specific antibiotics.


This study of the search for the origin of ambergris contains significant information on the medicinal uses of this substance over the ages.


A detailed study of Paracelsian science and medicine and its influence in the sixteenth and seventeenth centuries. Of most interest to historians of pharmacy are the sections dealing with the chemical medicines of the Paracelsians and the debates over their entry into the pharmacopeias.

Sets the chemically-prepared medicines of the Paracelsians within the broader framework of the Paracelsian chemical philosophy.


Still useful as a reference tool on the history of the major plant drugs of India.


The proceedings of a symposium held in San Francisco in 1967. The "Historical Survey" by Bo Holmstedt is particularly useful to historians, but many of the papers contain historical information on the therapeutic and other uses of psychoactive botanical drugs.


A discussion of the factors on which physicians based their conclusions about the safety and efficacy of drugs in the period before the development of modern pharmacology.

A detailed and well-researched study of the botanical, commercial, and medicinal use of rhubarb, with emphasis on the period since 1600. Includes an extensive bibliography.


Although a catalog of manuscripts, this volume includes a bibliography of 438 references to printed works on the history of the materia medica of Latin America and the Philippines in the colonial era.

493. Guerra, Francisco. *Bibliografia de la materia medica Mexicana*. Mexico: La Prensa Medica Mexicana, 1950. 423 pp., illus., index.

A bibliography of over 5,000 primary and secondary sources on the history of Mexican materia medica.


A brief overview of the botanical drug aloe from antiquity to the twentieth century.


Identifies and briefly discusses some of the key works on drug therapy from medieval Islam, including Moorish Spain.

A collection of eleven articles, originally published in *Lloydia* between 1967 and 1971, surveying folk remedies used against cancer over the ages. Contains extensive tables and literature citations.


Five papers, in both English and German versions, on the Aztec herbal of 1552, the European reception of American plant drugs, curare research, North American Indian materia medica, and traditional medicine in Southern Appalachia.


Twenty papers, the majority in German, on a wide variety of topics in the history of materia medica. Three papers in English address the prescribing of drugs in the mid-nineteenth century, research on curare, and the search for the active oxytocic principle of ergot.


An overview of the medicinal use of gold from antiquity up to the twentieth century, including a discussion of the efforts of Dr.
Leslie Keeley in the late nineteenth century to cure alcoholism with the double chloride of gold.


Hu Shiu-ying is a botanist trained in China and at Harvard University. She worked for more than thirty years at the Arnold Arboretum at Harvard. This reference work contains the identification of nearly 2,000 drugs used in Chinese medicine. It also supplies an English pharmaceutical name for each entry, which is quite useful.


Discusses the use of several herb preparations used against "land scurvy." Analysis of the vitamin C content of these herbs indicates that they would have been ineffective against true scurvy and supports the belief that the term "scurvy" was widely used for a variety of conditions unrelated to lack of vitamin C.


This volume contains ten papers on various topics in the history of therapeutics. Half of the papers deal with China and Japan, and the other half with Europe and the United States. The gamut of history is covered from therapeutics in ancient China and the Roman Empire to the history of antibiotics. [not seen]

503. Lloyd, John Uri. *Origin and History of All the Pharmacopeial Vegetable Drugs, Chemicals and Preparations, With

A useful reference work containing brief essays on the history of the plant drugs covered in the eighth and ninth decennial revisions of the United States Pharmacopeia. The bibliography includes 707 citations. A planned second volume on "Chemicals and Preparations" was never published.


A chronicle of the use of wine as a medicine from antiquity to the twentieth century. Includes a chronology and extensive literature references.


A brief overview (largely a chronology) of the use of chemical substances against cancer, with emphasis on the nineteenth and twentieth centuries.


A useful overview of the use (including medicinal) of coca by South American Indians. Includes a bibliography.


Discusses the use of chemical drugs by the Paracelsians, with particular emphasis on Oswald Croll's Basilica Chymia.

Using examples from the sixteenth, eighteenth, and nineteenth centuries, O'Hara-May attempts to illustrate some of the changes in the relationship between foodstuffs and drugs, largely by examining alterations in the criteria used for assessing the function and value of foods in the preservation of health.


A broad overview of Aztec medicine and nutrition (includes the interaction with Spanish medicine) that contains significant information on the Aztec materia medica. Especially useful in this regard is the appendix entitled "Empirical Evaluation of Aztec Medicinal Herbs."


This multi-authored work includes many articles on the history of individual drugs or therapeutic classes of drugs as well as articles on the history of pharmacological techniques and theories.

Contains over 1800 references from the scientific and popular literature on cocaine and coca (including medical use) from 1585 to the 1970s.


Bernard E. Read was a pharmacologist working at Peking Union Medical College in the early decades of the twentieth century. Together with his Chinese and Korean collaborators he produced many works on Chinese materia medica. This one is reprinted from the *Peking Natural History Bulletin*. Basically an encyclopedia of traditional Chinese drugs, based extensively on the *Pen ts'ao kang mu* of Li Shih-chen (1597). Each volume contains a bibliography.


Along with 2 other works (citation #512, #514), these references comprise summarized translations of chapters 8-37 and 39-51 of Li Shih-chen's (1518-1593) *Pen-ts'ao kang mu (Systematized Materia Medica)* (1596) as well as the identification of the drugs contained in those chapters. [not seen].


Along with 2 other works (citation #512, #513), these references comprise summarized translations of chapters 8-37 and 39-51 of Li Shih-chen's (1518-1593) *Pen-ts'ao kang mu (Systematized Materia Medica)* (1596) as well as the identification of the drugs contained in those chapters.

Contains fifteen papers on various aspects of coca and cocaine, three of which are specifically historical. Several other papers also contain significant historical information.


Seven papers presented at a symposium on folk medicines held in San Francisco in 1986. The time periods covered by the papers range from ancient and medieval times to the twentieth century.


This multi-volume encyclopedia is an indispensable reference tool on the history of drugs. It includes many useful references to the primary and secondary literature.


A broad overview of the botanical, toxicological, medicinal, etc. history of belladonna. Includes an extensive bibliography.

Although mainly concerned with modern scientific literature, this volume is of interest to historians because it includes a substantial general bibliography of books on herbs, bibliographies on herbs, and reports, symposia, and conferences on herbs.


A detailed account of the subject, including a bibliography and several charts and appendices covering such topics as the diseases and other conditions for which tobacco was used therapeutically and sample formulas of tobacco preparations from the materia medica literature.


Although very brief, this article is of interest because it expressed the views of one of the world's most distinguished medical historians. The author discusses general trends in the development of drug therapy from antiquity to the end of the nineteenth century.


Contains over 5,000 citations, divided into pre-1950 and 1950-1986 sections, with author and subject indexes.

Largely a catalog of the indigenous materia medica of Latin America mentioned in the writings of 24 Franciscan and Dominican missionaries. Based on extensive research in primary documents in Spanish libraries and archives.


Reports on the chemical analysis of more than 200 bezoars from 20 museum collections. Discusses the different kinds of bezoars and the size of the stones. Includes a bibliography.


Basically a therapeutic index of animal drugs used in Unani medicine, including the Unani and English names of the animal, the parts used, and the mode of administration. There is not much discussion of the history of the drugs. Includes a short bibliography.


A thorough but dry history of the famous remedies from antiquity through the eighteenth century.
Pre-1600


Based upon an examination of the Graeco-Roman literary evidence, Brunner concludes that certain properties of cannabis were known and used for medicinal purposes, but that there is no evidence that the plant was used as an intoxicant in ancient Greece and Rome.


This study uses drugs of human origin to examine the factors—pharmacological, theoretical, magical—that determined the incorporation and retention of drugs in the traditional Chinese pharmacopeia.

529. Cruz, Martin de la. The Badianus Manuscript (Codex Barberini, Latin 241), Vatican Library: An Aztec Herbal of 1552. Introduction, Translation and Annotations by Emily Walcott Emmart. Baltimore: Johns Hopkins Press, 1940. xxiv + 341 pp., illus.

A reproduction of a 1552 illustrated manuscript of an Aztec herbal in Latin, with an English translation, introduction, and annotations by Emmart. A major source of information on Aztec materia medica. Includes a bibliography and several useful indexes.

A detailed study of the production and commerce as well as the medicinal use of fermented fish products in the ancient world.


Brief survey of chemical medicine in this period, identifying the major players and the basis for their doctrines. Shows the links between chemical medicine and physics.


A large part of the book is dedicated to the Egyptian materia medica, including an eighteen-page glossary of drug substances. Documented and indexed.


Six papers of varying length and quality, three in French and three in English, on various aspects of materia medica in the sixteenth century. The topics range from the influence of Dioscorides to Indian and Chinese materia medica in the period.

An extensive study of the drug therapy, pharmaceutical literature, and dosage forms of the ancient world. Includes a bibliography.


Discusses the writings on therapeutics of such noted authors of tenth-century Islam as Rhazes, Haly Abbas, and Albucasis.


Examines the Greek, Chinese, Indian, Persian, Egyptian, and other roots of medieval Arabic drug therapy.


This volume consists of an English translation of a treatise by Avicenna on cardiac drugs as well as twelve essays by various authors on the knowledge and treatment of heart diseases.


This important dissertation deals with the silk manuscript buried in a Han tomb since 168 B.C. It was among several manuscripts excavated in 1973 near Ma-wang-tui. It contains fifty methods of treatment, including materia medica, external surgical techniques, and incantations.

A useful and substantive discussion of the medicinal plants of the Bible, although based on translations and secondary sources.


A brief discussion of some of the plant drugs mentioned in such classic works of Indian literature as Rig-Veda.


Discusses the role of herbals as well as describing specific Polish and other herbals.

542. Leake, Chauncey D. The Old Egyptian Medical Papyri. Logan Clendening Lectures on the History and Philosophy of Medicine, Second Series. Lawrence, KS: University of Kansas Press, 1952. 108 pp., appendix, bibl., index.

This small book on the Egyptian medical papyri places significant emphasis on materia medica and therapeutics. Particular attention is given to the Hearst Papyrus, and an appendix lists the formulas in this document.

543. Levey, Martin. The Medical Formulary or Aqrabadhin of Al-Kindi. Madison, WI: University of Wisconsin Press, 1966. xiii + 410 pp., illus., bibl., index.

A reproduction and translation of an important medieval Arabic manuscript, with an extensive introduction and discussion of the materia medica of the formulary by Martin Levey.

Contains the translation of three of the oldest extant treatises on drug substitution in Arabic, with notes and commentary by Levey.


General summary of the assessment of the originality of form and content of Arabic pharmacology.


A well-researched study of botanical drugs of ancient Egypt, including a bibliography and a list of Egyptian plant names quoted by Dioscorides.


A study of a twelfth-century manuscript of Henry of Winchester, in which Henry discusses his concept of medicinal degrees (the degrees of intensity of properties of medicines, such as moistness).

About 1300, Arnald of Villanova developed a system attempting to apply definite mathematical relationships to the practice of compounding medicines from individual simples or herbs. This paper discusses the efforts of several fourteenth-century Montpellier physicians to incorporate Arnald's system into existing medical doctrine.


Examines a tradition of academic discussion of theriac, moving towards a philosophical basis for academic medicine. Considers Arnald of Villanova and contains text of "Questiones de tyriaca" of William of Brescia.


An examination of the medico-philosophical discussion of theriac at Montpellier, initiated by Arnald of Villanova. The Latin text of a treatise on theriac by William of Brescia is included as an appendix.


A detailed analysis of the origins and early history of the use of opium. The author surveys over 500 articles and books (which are compiled into a bibliography) from a variety of disciplines.

Describes the paths by which earlier medical and drug knowledge was transmitted to the Arabs at Alexandria.


Discusses the important role of distillation in the preparation of chemical remedies in the sixteenth century.


Discusses the alchemical origins of the adaptation of chemical processes to the preparation of medicines, particularly in thirteenth- and fourteenth-century texts attributed to John of Rupescissa.


The definitive study of the materia medica of Dioscorides, shedding important new light on our understanding of the organizational principles behind Dioscorides' *De materia medica*. Includes an extensive bibliography. A second volume, dealing with the influence of Dioscorides on later generations, is planned.


A reprint collection of 15 papers by John Riddle, including a typescript of one previously unpublished essay, with an index to all.

A study of the description of the medicinal uses of amber in the writings of Dioscorides, Galen, Pliny, and other ancient authors, with emphasis on the linguistic problems involved.


Looks at medieval recipe literature, with an eye to the introduction of Eastern drugs. Also looks at the relation between pharmacy and trade.


Based on a study of 616 lapidary manuscripts, Riddle characterizes this body of literature in terms of its uses, background, and relation to other medical literature.


Discussion of the medical use of amber and ambergris (which were frequently confused) in medieval times, especially in an effort to rid the air of plague infestation.


A study of the Arabic translations of Dioscorides, with particular emphasis on the Leiden manuscript, which Sadek believes to be the earliest and most complete of all extant Arabic versions of Dioscorides.

A collection of twenty-one papers, three of which focus specifically on the materia medica: John Riddle, "Byzantine commentaries on Dioscorides"; Jerry Stannard, "Aspects of Byzantine materia medica"; and John Scarborough, "Early Byzantine pharmacology."


A discussion of what is known of the drug theory and use of Asclepiades, who practiced medicine in Rome in the first century B.C. Surviving records provide much more information about Asclepiades' external remedies than about those intended for internal use.


An examination of the plant drug lore in the work of Theophrastus in fourth-century Greece.


A study of the pharmaceutical theory of Hippocratic medicine within the context of Greek philosophy, examining the application of certain precepts of philosophical thinking to the understanding of the action of drugs.

A critical edition and English translation of the text of *Tan ching yao chueh*, attributed to Sun Ssu-mo (seventh century AD), a work belonging to the Chinese alchemical tradition concerned with the search for elixirs of immortality. Includes an extensive commentary by Sivin, a bibliography, and several appendices relevant to the pharmaceutical and medical aspects of the text.


A detailed account of the drug therapy for trachoma described in the ophthalmological treatise of the thirteenth-century Islamic physician Ibn al-Nafis, including a translation of 19 recipes into English.


An examination of the merger of the classical Graeco-Roman and native Germanic traditions of materia medica in medieval Germany.


A concise, useful overview of the drug lore of the Hippocratic Corpus, divided into sections on pharmacognosy, pharmacodynamics, and pharmacotherapy. Provides abundant examples of the vegetable, animal, and mineral materia medica of the Hippocratics.

Uses the *Liber de medicamentis* (written sometime between AD 395 and 410) of Marcellus of Bordeaux to examine the transition from ancient to medieval materia medica. Some aspects go back to earlier Graeco-Roman texts, and some point ahead to future doctrines.


Examines the materia medica of this significant medical writer and places pharmacologic practice within the context of the pneumatic theories of this school of philosophy.


The aim of this study is to examine some of the nonscientific grounds for the belief in an use of plants for therapeutic purposes, using the *Historia naturalis* of Pliny the Elder (AD 23-79) as a case study.


Discusses the early history of the medicinal use of squill, with extensive references to the primary literature.

Outlines theories such as the four humors, sympathy and magic, and astrology that provide a base for herbalism.


Still available in many reprint versions, this work was often cited for identification of Chinese drugs. This is largely replaced by the work of Shiu-ying Hu (1980) (citation #500).


Teigen analyzes eight herbals of the fifteenth and sixteenth centuries and provides a frequency distribution of the drugs in terms of their Galenic qualities. He also examines the use of taste in assigning qualities to drugs (e.g., bitter taste is correlated with a hot quality).


Teigen analyzes three books of recipes from the fourteenth, fifteenth, and sixteenth centuries by indexing them, identifying the simples therein, and providing a numerical summary of the frequency with which specific simples are mentioned. He identifies the most frequently used simples and demonstrates the close connection between diet and pharmacy in this period.

The theoretical basis for the mode of action of cathartics is discussed for these three scientists who diverged from traditional views without revolutionary upheaval.


In this article Paul U. Unschuld attempts to identify the drugs listed in a medical manuscript placed in a Han tomb in 168 B.C. Excavated in 1973 near Ma-wang-tui the manuscripts have become known collectively as the 'Ma-wang-tui manuscripts'. In this article the drugs mentioned are compared to drugs listed in other known works of a later period. [not seen].


A discussion of the efforts to unite theoretical and empirical knowledge of drugs during the Chin and Yüan dynasties, focusing on one particular work on materia medica compiled in the thirteenth century. The author provides useful insights into the principles of drug use in classical Chinese medicine.


A detailed study of the plants in a Chinese elixir text of the fourteenth or fifteenth century. Alchemical texts on elixir plants are relatively scarce compared to those on metals and minerals.

An examination of the policies and procedures for allocating the scarce supply of penicillin for civilian use in the United States during the Second World War.


This special issue contains six papers on the history of antibiotics and an introduction by John Fulton. One of the papers, by George Urdang, specifically discusses "The Antibiotics and Pharmacy."


A collection of 18 papers offering accounts of discoveries in psychopharmacology, in most cases written by the discoverers themselves.


A concise, readable, and useful summary of heroic therapy in America.

Discusses the history of theriac in France and its retention in the official materia medica of that country into the nineteenth century.


Berman examines the work of nineteenth-century American botanic practitioners with scientific pretensions, with attention to their efforts to influence the growth of the plant materia medica and to subject their plant medicinals to scientific verification.


Includes a discussion of the botanical drugs used by the Thomsonians and their manufacture, sale, and distribution. Also includes a bibliography.


A discussion of the unrestricted sale of opiates in pharmacies, grocery stores, or other establishments in Victorian England.


A comprehensive study of the medicinal use and abuse of opiates in nineteenth-century England.

Provides a relatively brief overview of the introduction of the sulfonamides and the impact of their discovery on chemotherapy and drug regulation.


A series of essays on the development of modern drugs by the individuals most closely connected with their initial discovery. The essays tend to be very technical and to read like scientific review articles. The editors envision the possibility of future volumes in the series.


A look at an interesting leprosarium established by the state of Massachusetts at the beginning of the twentieth century, with particular emphasis on the drug therapy utilized there.

594. Bliss, Michael. The Discovery of Insulin. Chicago: University of Chicago Press, 1982. 304 pp., illus., bibl., index.

A definitive account of the discovery of insulin, meticulously researched and eminently readable.

A discussion of the role of Brown-Séquard's work on testicular extract in stimulating widespread interest in the therapeutic potential of "internal secretions" of animal organs.


A discussion of the importance of the work of British physiologists on thyroid and adrenal extracts in advancing Brown-Séquard's organotherapy.


Although only one chapter of this detailed study of ergot deals specifically with the history of the drug, the other chapters on the chemistry, pharmacology, etc., of ergot also contain significant historical information and many useful references. This book is fairly comprehensive, but lacks footnotes, even if it does have a large bibliography.


The most useful overview to date of the history of the sulfa drugs, by one of the participants in the story. Contains a historical chart of sulfa drug structures.


A study of the "female pills" of the eighteenth and nineteenth centuries. Attention is given to the possible use of such preparations, which frequently contained iron (a presumed abortifacient), in an effort to induce abortion.

An introductory, popular text on drug discovery, with illustrations of medicine production. Although a public relations book for Upjohn, it includes a surprising number of references to the discoveries and developments of other companies.


Largely tells the story of the introduction of chlorpromazine (not as well as Swazey's book [citation #676] on the subject, but the two works are complementary).


Contains two chapters on the discovery and uses of vitamin C, including a bibliography. A comprehensive and thoroughly referenced study of its subject.


A review of the manufacture and therapeutic uses of artificially produced mineral waters in Europe from the seventeenth through the nineteenth centuries.

A supporter of homeopathy argues the case for homeopathic influence on the materia medica and therapeutic practices of nineteenth-century allopathic physicians.


A brief overview of the early drug trade, including the collection and cultivation of drugs, in the British North American colonies. Such botanicals as sassafras and ginseng were exported from the colonies to Britain.


The many forms of squill used during this period and the various discussions of squill in the pharmaceutical literature are discussed. This is part of a "Symposium on Squill," (pp. 682-750) that includes: "Squill in the ancient and medieval materia medica, with special reference to its employment for dropsy," by Jerry Stannard, "A treatise on squill (Gottwald Schuster, 1757)," by Saul Jarcho, and "The pharmacology of squill," by Chalmers L. Gemmill, as well as the article by Cowen.


Also reprinted in Pharmacy in History 29(1987):669-74. A broadside advertising products from Smith, Moore, & Co. (1784), reveals much about the drug trade in this period, as well
as the relationship between the materia medica in American and Europe.


A brief account of the effort to develop "internal antiseptics" in the late nineteenth century, forming part of the background to the development of modern chemotherapy by Paul Ehrlich at the beginning of the twentieth century.


The first volume of this set is a study of the beliefs and practices of Alabama herbalist Tommy Bass. The second volume, entitled *A Reference Guide to Medicinal Plants*, includes Bass's comments on a wide variety of herbs, and, more importantly for the historian, a useful historical commentary on each herb by the authors. Each volume contains an extensive annotated bibliography.


Focuses on some of the issues involved in establishing the daily requirements and proper therapeutic doses of vitamins, using vitamins A and D as examples.


A well-researched, highly readable account of the development of drugs and vaccines against infectious disease in the late
nineteenth and twentieth centuries. The 74 pages of notes are a valuable guide to the primary literature.

612. Erichsen-Brown, Charlotte. *Use of Plants for the Past 500 Years.* Aurora, Ontario: Breezy Creeks Press, 1979. xxii + 510 pp., illus., bibl., index.

Basically a collection of quotations on selected North American plants from the works of various writers spanning several centuries (largely post-1600). The main value of the book is in alerting the reader as to what a particular writer on botanicals had to say about a plant and in the bibliography.


Uses the introduction of foxglove into therapeutics as a case study of medical practice in the eighteenth century. Interweaves the story of Jackson's medical practice in eighteenth-century America with that of the introduction of foxglove into medicine in England and the United States.


An analysis of the drugs used by one physician in an eighteenth-century hospital. Includes a glossary of the treatments prescribed and charts and tables providing quantitative information about treatment.

Estes uses the 1701 work of Jones to evaluate the various strengths of opium preparations. An excellent example of a different approach to the history of therapeutics.


Although dated, the historical chapters (one on penicillin and one on antibiotics in general) in these volumes are still extremely useful. The volumes are in themselves primary source documents as well.


This work is a compendium, following a systematic botanical organization, listing sources, history, methods of preparation, and clinical indications for each entry. Bibliographic references are minimalist. This classic book is still a valuable reference work on the history of the plant drugs of Britain and India.


Discusses the introduction of nitroglycerin and amyl nitrite for the treatment of angina pectoris in the nineteenth century. Fye points out that while the homeopaths were responsible for
introducing nitroglycerin as a remedy, it was an allopathic physician who first suggested its use for the treatment of angina.


This paper provides a good overview of many rationales for drug usage in the seventeenth and eighteenth centuries. Discusses the use of plant drugs, derived from both British and American Indian traditions, in colonial Massachusetts.


A potpourri of miscellaneous information on the many facets of mercury's history, including its use in therapy.


A brief review of the most important items in the drug armamentarium of the American Revolutionary forces.


A lengthy discussion of the early history of cinchona, correcting some of the erroneous beliefs concerning the origin of the word "quina" (from which quinine derives) and the introduction of cinchona into Europe.

An overview of the therapeutic use of strychnine in the nineteenth century, with particular emphasis on the role that it played in the "dosimetric" therapeutics introduced by the Belgian physician Adolphe Burggraeve.


An overview of the therapeutic use of opium and of opium addiction in the nineteenth century, focusing on the United States.


A discussion of the rise and fall of calomel in American therapeutics.


A discussion of the use of ergot in medicine, with emphasis on John Stearns and the American use of ergot in the nineteenth century.

Discusses the extensive use of arsenic (e.g., in the form of Fowler's Solution) in nineteenth-century therapeutics.


A detailed look at the therapeutic uses of tartar emetic in the nineteenth century, with some attention to its use as a poison for criminal purposes.

629. Hare, Ronald. The Birth of Penicillin and the Disarming of Microbes. London: George Allen and Unwin, 1970. 236 pp., illus., bibl., index.

A readable and useful general account of the story of penicillin written by a colleague of Alexander Fleming. Includes a description of Hare's experiments attempting to recreate Fleming's discovery to better understand how it came about.


Drawing upon information that had become available in the previous decade, Hare offers his view of the probable reasons for Fleming's failure to prove the therapeutic value of penicillin.


An examination of the use of iron in therapy, especially in tonics, focusing largely on the eighteenth through the twentieth centuries. Consideration is given to iron's place in mass culture as a symbol of health and vitality.

Records the results (largely in tabular form) of a botanical comparison of the U. S. P. of 1820 with that of 1960. Brief historical statements are provided for some twenty selected drugs.

633. Hobby, Gladys L. *Penicillin: Meeting the Challenge*. New Haven, CT: Yale University Press, 1985. xxii + 319 pp., illus., bibl., index.

The penicillin saga as told by a participant in the process. Parts 2 and 3, dealing with the mass production and later history of penicillin, are the most valuable portions of the book as they cover ground that has been less well tread by historians.


Discusses the history of the use of cod liver oil and of sunlight in the treatment of rickets and the relationship of these therapeutic measures to the understanding of the vitamin concept in the early twentieth century.


An encyclopedic, technical reference work on the history of drug research (largely nineteenth and twentieth centuries), organized by classes of drugs. It includes a chronology of drug research and thousands of references to the primary literature.

Publication of and brief commentary on a list of drugs from the Hudson's Bay Company post at Fort Albany, compiled by one of the company's surgeons in 1730.


An "insider's" account of the development of lithium therapy, based on significant research in the primary literature. The extensive references provide a useful bibliography on the subject.


A study of the rise and fall of Almroth Wright's vaccine therapy in the first quarter of the twentieth century.


A personal narrative by Nobel Laureate Kendall focusing on his research on cortisone and other cortical hormones.


An account of the discovery of cortisone and its introduction into therapeutics. Includes a bibliography.

A journalistic but thorough account of the discovery, use, and tragedy of thalidomide by the Insight team of the *Sunday Times* of London.


A discussion of the large-scale production of penicillin in Britain during World War II, contrasting the British and American approaches and results.


An examination of the early production and use of diphtheria antitoxin in the United States, with special emphasis on Philadelphia. Discusses the transfer of production from public to commercial laboratories.


The word "modern" in the title of this work is misleading, as the book covers the subject from antiquity to the present. Its encyclopedic scope and 2,550 footnotes give it significant value as a reference work. Unfortunately, the book tries to cover too much of medical history in general and consequently fails to provide a focused, balanced account of the history of drug use. The work includes an appendix listing the materia medica of the 1789 London Pharmacopeia.

Situates the discovery of the anticoagulant heparin in 1916 by McLean in the milieu of experimental research conducted in the laboratory of his mentor Howell and evaluates the contributions of both men to the discovery.


The authors provide brief case studies of some 28 drug discoveries of the post-World War II era, and then attempt a quantitative analysis of various factors involved in the discovery (e.g., type of research institution, country of origin, whether the discovery was "orderly" or "serendipitous," etc.). An interesting and significant effort in spite of the difficulties of classifying complex discoveries into neat categories.


Examines the effort to get thalidomide approved for use in the United States, with emphasis on the key role played by Dr. Frances Kelsey of the Food and Drug Administration in preventing the drug from reaching the American market.


A significant proportion of this book is devoted to the history of curare, including its use in medicine. Contains numerous references to the primary literature.

An excellent analysis of an early example of the brand name versus generic drug and the drug substitution controversies.


An excellent case study of the marketing of aspirin in the United States in the early twentieth century. Sets the story within the context of the contemporary dominance of the synthetic pharmaceuticals industry by German dye and drug firms and the concern within the American medical profession over patenting and trademarking drugs.


Brief descriptions, including some historical information (mostly post-1600), of 92 major medicinal plants. Includes a useful bibliography of over 600 references and a table of medicinal plants that are no longer "official" in the United States but do still find some use in medicine.


Because Chinese medicine is so closely linked to culture, the authors describe the general position of medicine in Chinese society, the influence of philosophical and religious doctrines on the medicine, and the effects of the transition from a traditional society to Marxist Socialism. With discussion following.

A brief discussion of the history of LSD in American psychiatry and the problems that the drug posed for the psychiatric profession.


A cheaply-printed but useful discussion of English botanical folk remedies used to treat various conditions.


Based on surviving records from Fort Laramie, the authors analyze the drug therapy used to treat illnesses there in the nineteenth century. Includes a standard list of medical supplies for a military post of Fort Laramie's size.


This brief book uses the history of interferon as a case study to examine policy issues raised by the biotechnology revolution.


A collection of ten papers ranging in scope from antibiosis in the nineteenth century to the development of concern over the
misuse of antibiotics. Several of the papers are by historians and
the rest are by scientists who were personally involved in the
antibiotic history that they discuss.

on Medicines in Society. edited by Albert I. Wertheimer, and
Patricia J. Bush, pp. 3-35. Hamilton, IL: Drug Intelligence

A general but comprehensive overview of drug use from ancient
to modern times. Provides historical context for other essays in
this book.

Chemotherapy.” Journal of the History of Medicine and Allied

A discussion of the theoretical principles behind Ehrlich's
concept of chemotherapy, including an account of the
development of Salvarsan.

Livingstone, 1965. vii + 356 pp., illus., index.

A useful reference work for information on the development of
immunological agents against various infectious diseases.

661. Porter, Roy, ed. The Medical History of Waters and Spas. Medical
History, Supplement Number 10. London: Wellcome Institute
for the History of Medicine, 1990. xii + 150 pp., illus., index.

Although the ten papers in this volume focus more on the
bathing aspects of spas than on the consumption of spa waters,
some attention is given to the latter subject. Of particular
interest to historians of pharmacy is Noel Coley's paper on the
chemical analysis of mineral waters.

A brief but clear and informative discussion of the use of calomel in nineteenth-century therapeutics and its relationship to the rise of medical sects in the United States.


A relatively brief but perceptive essay by a distinguished medical historian on the fundamental changes in traditional therapeutics that occurred over the course of the nineteenth century.


 Discusses the extraction of Epsom Salts from the spa waters and their chemical analysis by Grew, who became involved in a controversy over his attempt to patent the production and sale of Epsom Salts.


Provides biographical information on Sertürner and a brief discussion of the isolation of morphine and its consequences. Includes a substantial bibliography in addition to the footnotes.

666. Simon, William J. “A Luso-African Formulary of the Late Eighteenth Century: Some Notes on Angolan Contributions to

A study of a late-eighteenth-century inventory of a shipment of Angolan materia medica prepared by a Portuguese naturalist, Simon provides an English translation of the inventory (which describes the medicinal virtues of the drugs) and discusses and attempts to identify the drugs.


Discusses the use of quinine in the treatment of fevers, with emphasis on the development of large-dose therapy for the effective treatment of malarial fevers in the United States in the nineteenth century.


Although the focus of this informative article is the pharmacological treatment of eye diseases, the subject is set within the broader context of the influence of Paracelsian chemical remedies on seventeenth-century Islamic therapeutics.


This book is as much a social analysis as a history of the minor tranquilizers. It provides a useful entry into the subject and includes a 25-page bibliography.

An overview of the development of modern medicines, largely focused on the nineteenth and twentieth centuries, which includes a substantial bibliography. Sneader writes clearly and succinctly, but the extensive use of technical terminology and structural formulas may make the book difficult going for the chemically uninitiated.

Spink, Wesley W. *Infectious Diseases: Prevention and Treatment in the Nineteenth and Twentieth Centuries*. Minneapolis: University of Minnesota Press, 1978. xx + 577 pp., illus., bibl., index.

Useful mainly as a reference work on the prevention and treatment of infectious diseases in modern times. Dowling's *Fighting Infection* covers largely the same ground in a more readable and synthetic fashion. Spink's 60-page bibliography adds considerably to the value of this book.


This volume, which developed out of a 1968 symposium, contains 11 papers on a variety of themes. Several of the papers are specifically historical in content, but almost all contain some historical information.


Examines the discovery of the antisyphilitic therapeutic value of the organic arsenical drug Mapharsen and places it within the context of collaborative research between university scientists and the pharmaceutical industry.

Examines the collaborative arrangement of the University of Toronto and Eli Lilly and Company in the development and production of insulin after its initial discovery.


A discussion of the efforts to synthesize penicillin in Britain and the United States during World War II. The paper also provides useful information on the wartime organization of research on penicillin and on the history of the understanding of the chemistry of penicillin.


A detailed study of the discovery of chlorpromazine and its introduction into therapeutics.


A useful and readable introduction to the subject. Includes a list of supposed aphrodisiacs and a bibliography.

A popular and undocumented history (largely post-1600) that is more suited to the lay reader than to the historian. The bibliography of some 180 references, however, is of value even to the serious scholar.


Vogel includes a substantial chapter on therapeutic practices. Perhaps the most useful parts of the book for the historian of materia medica are the bibliography and the lengthy appendix discussing some 170 American Indian drugs that were at one time or another included in the Pharmacopoeia of the *United States of America* or the *National Formulary*.


The aims of this study are to develop a theory to describe the drug discovery process, to demonstrate the contributions of medical practice to that process, and to provide a history of the development of the beta blockers and calcium antagonists in the 1960s and 1970s. Includes an extensive bibliography.


Discusses the development of the therapeutic use of crude penicillin from Fleming's discovery to its eventual demise when the partially purified product became more widely available in the early 1940s.
Materia Medica and Drug Therapy


An examination of the discovery of streptomycin in the laboratory of Selman Waksman, with particular emphasis on the role played by his graduate student, Albert Schatz.


Based on surviving case records of the Royal Infirmary in Sheffield, England, the authors document the clinical use of crude penicillin in the external treatment of eye disorders as early as 1930 by C. G. Paine and A. B. Nutt.


An excellent study of the introduction of Salvarsan into American medical practice, examining use of an reaction to the drug by physicians. Problems encountered in administering the drug are also considered.


Drawing upon hospital records and other manuscript materials as well as the published literature, Warner provides an excellent analysis of therapeutic practice and its relationship to medical theory in nineteenth-century America. Emphasis is placed on the cities of Boston, Cincinnati, and New Orleans as case studies.

Using the medicinal use of alcohol in Britain as a case study, Warner examines the relationship between theory and practice in therapeutics.


A very readable account of the development of drugs, largely from about 1800 up to recent times. The notes provide some access to the primary and secondary literature.


A review of the therapeutic use of digitalis from before Withering to the present, with emphasis on the nineteenth and twentieth centuries.


The sequel to The Toadstool Millionaires, and an equally valuable study. Although the work examines health quackery broadly, patent medicines receive the major attention.

690. Young, James Harvey. American Self-Dosage Medicines: An Historical Perspective. Logan Clendening Lectures on the
History and Philosophy of Medicine, New Series, Number 1. Lawrence, KS: Coronado Press, 1974. xiv + 75 pp.

Although Young covered the subject in more detail in his two earlier books, there is some new material in this work, most notably the author's appraisal of the proprietary medicine situation in the 1970s.

2d—Laws and Regulations


A well-documented account of Wiley's life and work on behalf of pure food, and to a much lesser extent, pure drugs.


A short, undocumented introduction to the complex factors that went into the creation of the act.


This short article is well documented to contemporary literature.


A provocative, if flawed, look at the 1906 Act. The author argues that market conditions forced manufacturers to support
passage of the landmark act. The author's knowledge of pharmacy issues is slight.


Part III includes a study of municipal ordinances pertaining to pharmacy in the late Middle Ages.


In this undocumented piece, the author ties together the history of the pursuit of drug quality and that of the American Pharmaceutical Association. A good, quick summary.


A history of legislation in France governing the quality of drugs from its eighteenth-century origins through a decree of 1926, with special reference to the role of the French Codex.


A survey of the laws regulating manufactured, pre-packaged medicinals in the Federal Republic of Germany.


Compilations of the portions pertaining to pharmacy of the 1865 law (the first health law passed in the then-new kingdom of Italy), and of the laws pertaining to pharmacy of various pre-unification Italian jurisdictions. [not seen].


Rather than having secured the apothecaries' right to prescribe, the Rose Case of 1704 is credited with having confirmed the status quo: the apothecaries had long been prescribing. Moreover, the decision did not prevent the apothecaries from charging for medical advice: they had been doing so and continued to do so.


The laws in the only four states to regulate pharmacy statewide before the Civil War—Louisiana, South Carolina, Georgia, and Alabama—are described.

A Virginia statute of 1736 that regulated the apothecary as well as the physician; the slave laws of Virginia, South Carolina, and Georgia that prohibited the imparting of pharmaceutical knowledge or skills to or by non-whites; and the South Carolina statute of 1751 that prohibited the employment of non-whites by physicians, apothecaries, and druggists are described. The complete text of the Virginia 1736 statute and a partial text of the South Carolina 1751 statute are given.


The impact of liberal political and economic thought and outlook on the regulation of medicine and pharmacy is described.


The history of pharmaceutical legislation in Louisiana from 1808 (when the first pharmacy law was passed in an American jurisdiction) until 1852, after which there was no enforcement until a modern law was enacted, is recounted.


The regulation of "secret remedies," i.e., those not in the *Codex* and whose formula had not been published, from the Ancien Regime until 1926, and their relation to the Pharmacopoeia.

The laws governing the sale of drugs by general merchants are given state by state and are also presented in tabular fashion. There are also lists of patent and proprietary medicines named in the laws.


A historical review of the regulations affecting pharmacy in Belgium, including a tabular presentation of the regulations in various Belgian cities from 1229 to 1785. [not seen].


A sympathetic account of Senator Estes Kefauver's campaign to investigate the drug industry and secure the 1962 amendments to the 1938 Food, Drug, and Cosmetic Act.

A survey of the ordinances relating to pharmacy in the late Middle Ages in the Kingdom of the Two Sicilies and in various municipalities in northern Italy and France and their interrelations.


The study describes fifteen Arzneitaxen—official price lists—in ten German-speaking cities between 1350 and 1500.


The Edicts promulgated by the Holy Roman Emperor Friedrich II between 1231 and 1240 regulating medicine included the first legal separation of pharmacy from medicine and established features in the regulation of pharmacy found on the continent. This detailed historical study is followed by transcripts of the original Latin and translations into German and facsimiles of pertinent documents.

Largely a very detailed history of the background of each of the major pharmaceutical statutes in Great Britain from 1852 on.


A study of the inadequacies of the 1906 law is followed by a detailed account of a five-year struggle that led to the passage of the Food and Cosmetic Act of 1938, with particular emphasis on the political and administrative complications that were involved.


A survey of early state pure food and drug laws and a history of the federal 1906 and 1938 Acts, the 1962 amendments, and subsequent developments, with many illustrations.


An account of the background of the Biologics Control Act of 1902 with special reference to the work of the federal Hygienic Laboratory. A copy of the Act is appended.

Examines questions of regulation and quality of food and drugs during early quest for regulation. Includes numerous descriptions of poorly regulated products.


A survey of the historical writing on pharmaceutical legislation in Spain.


A chronological listing and description of the various regulations pertaining to pharmacy in Spain in the first half of the nineteenth century.


Includes histories of the Harrison Narcotic Act, of state and local legislation for the control of narcotics, and of federal enforcement of the Harrison Act.

The history of the medical legislation in Canada that sought to control pharmacy and pharmacists from 1750 until pharmacy laws were passed in Quebec in 1870 and Ontario in 1871 is presented.


A rapid survey of the control of medicines from ancient times on is followed by a history of the control of medicine in Great Britain with special attention to the British Pharmacopoeia, the Therapeutic Substances Act of 1925, the impact of the thalidomide episode, and the Medicines Act of 1968.


A survey of Canadian legislation from 1874 on. [not seen]


A discussion and presentation in tabular form of the ownership arrangements, educational requirements, registration and licensing requirements, restrictions or lack of restrictions on the number of pharmacies and their location, and who may open a pharmacy, in 56 countries.


A brief historical sketch is followed by portions of selected documents from 1249 to 1945.

The legislative history of the various pre-unification states is followed by an account of the national laws governing pharmacy. [not seen].


A study and evaluation of the impact of the official status given to the USP and NF under the 1906 Pure Food and Drugs Act.


A kaleidoscopic overview of attempts to control the administration of drugs from classical, Arabic, and early modern times. [not seen].


The inadequacies of the 1875 Act and the provision of the 1884 Act are described and the latter's similarities to and differences from the British and New York State legislation are pointed out.

Laws and Regulations


A comprehensive study of the economic, political, and social aspects of the adulteration of drugs is followed by an account of the legislation that sought to control the problem.


The background of the "first food and drug legislation" in Canada is described and its similarity to British rather than United States precedents is pointed out.


A discussion of the relationship of the Edicts of Friedrich II to the medical (and pharmaceutical) ordinances of the German cities in the later Middle Ages and Renaissance that contends that the ordinances derived from the practical social requirements of the cities and not from the Edicts.

A chronological presentation and description of each regulation in Spain pertaining to industrially produced and proprietary medicines from 1788 to the 1940s.

A distinguished economic historian views the history of drug regulation in the United States within the context of the growth and development of the pharmaceutical manufacturing industry. Both the historical work and the economic analysis are impressive.

A detailed study of the municipal ordinances pertaining to pharmacy in the cities of medieval and Renaissance Spain.

Includes a chapter on pre-1962 regulations, and examines the changing mechanisms of regulation.

A symposium with a section on the FDA and drugs.

The effect of the British Pharmacopoeia and of the British Pharmaceutical Codex on drug quality, on the report of the Ministry of Health Committee on Control of Certain Therapeutic Substances and the Therapeutic Substances Act of 1925 that resulted from the report, and on the Medicines Bill of 1968 under consideration at the time.


A study of food and drug regulation on state and urban levels.


Papers presented at a symposium: drug manufacturing in America, appraising drug safety and efficacy, doctors and drugs, proper limits of self-medication, pharmacists and public health, and what new medicines we may expect.


A detailed account of the conditions that led to the passage of the Food and Drugs Act of 1906 and that includes the struggles of the various consumer groups and special interest groups, the roles of the leadership, the political problems involved. A historiographical survey of the literature and on the Act makes up a final chapter.

An account of the problems involved in the enforcement of the 1906 law up to the passage of the 1938 law.


An entertaining look at the 1938 Act, comparing aspects of its passage to those of the 1906 Act. Fully documented.


A history of government as guarantor, guardian, and generator of food and drug supplies. Emphasis is on American examples.


Examines the social history of drug regulation in America in terms of "change, complexity, competition, crusading, compromise, catastrophe," with documentation.

2e—Professional Pharmaceutical Literature

Classics


The book of the Canon on the materia medica.


A very popular review of the entire field of pharmaceutical chemistry, it also describes pharmaceutical apparatus and procedures.


A very popular work that illustrates the growing rapport between chemistry and pharmacy.


This dispensatory became the first to be recognized as an official pharmacopoeia when the city of Nuremberg gave it such recognition in 1546.


A very popular work that strongly defended Paracelsus; included an essay on the doctrine of signatures and a list of drugs and the methods for preparing them.
754. Cruz, Martin de la. *The Badianus Manuscript (Codex Barberini, Latin 241), Vatican Library: An Aztec Herbal of 1552. Introduction, Translation and Annotations by Emily Walcott Emmart*. Baltimore: 1940. xxiv + 341 pp., illus.

A facsimile reproduction and an English translation from the Latin translation by Badianus of a manuscript on American materia media by an Aztec.


The first of the many editions of Dioscorides put out by Mattioli. It offered marginal annotations, and synonyms in Greek, Arabic, German, and French.

756. Dioscorides. *De materia medica*.


Many editions and translations of Dioscorides were issued in the Renaissance; this was the first of Ruel's influential translations into Latin. [not seen]

758. Frampton, John. *Joyfull Newes out of the Newe Founde Worlde wherein is Described the Rare and Singular Vertues of Diverse

An English version of the first treatise on American drugs, from the Seville, 1574 edition of Nicholas Monardes, Primera y Segunda y Tercera Partes de la Historia Medicinal de las Cosas que se Traen de Nuestras Indias Occidentales . . . [not seen].
Monardes offered this first illustration of *Nicotiana tabacum*, which
he praised as a medicine, in *Joyfull News Out of the Newe Founde Worlde* (1577).

The pharmaceutical texts are: *De antidotis*, vol. 15, 1-209; *Die glauconem de medendi methodo*, vol. 11, 1-146; *De compositione medicamentorum secundum locos libri X*, vol. 12, 378-1007; vol. 13, 1-361; *De compositione medicamentorum per genera libri VII*, vol. 13, 362-1058; and *De simplicium medicamentorum facultate libri XI*, vol. 11, 379-892. These have not been translated into a modern language.


Considered to be the first book to present pharmacognosy—the identification and description of crude drugs—in a systematic way.


The first edition appeared in 1778 and was a most popular textbook in pharmacy in Germany for seventy-five years. [not seen].


The best chemistry textbook of the period. Written by a pharmacist, it was essentially a work in pharmaceutical chemistry. [not seen].

Perhaps the most widely used textbook for a century, the bulk of the treatise concerned the preparation of chemical remedies, although an interest in pure chemistry is pronounced.


A widely translated and published general treatise on drugs and medicines.[not seen].


A widely translated and published list, with synonyms, descriptions, locations, literary references, virtues, etymology, and so forth. There is a list of seeds "recently brought over from the American islands." [not seen].


A pharmaceutical handbook by a pharmacist; the "Greater Luminary" was recognized as authoritative in several European cities. [not seen].

767. Monardes.

See Frampton (citation #758).


The first published work on the materia medica of the East Indies. [not seen].
Historical Studies


Analyses of 32 important first- to sixteenth-century herbals in the Library of the New York Botanical Garden. Bibliographic notes are particularly significant.


This edition of Arber's germinal study of herbals is followed by important appendices: (1) a chronological list of herbals with brief bibliographic information; (2) an extensive bibliography and (3) an index to it; (4) annotations by W. T. Stearn; (5) two essays by Arber, one on the coloring of sixteenth-century herbals (1940) and the other entitled "From Medieval Herbalism to the Birth of Modern Botany" (1944).


With more than 150 illustrations, many in full color, this book conveys the artistry of the herbals. The illustrations are well documented and the book contains a short bibliography and index.


A description of the European dispensatory and pharmacopoeial literature used in North American and of the veterinary, popular,
and professional works of this genre published in North America between 1720 and 1820.


An account of British dispensatories and pharmacopoeias published outside of Great Britain (1677-1871), with a checklist and selected library holdings indicated. Maps, tables, and illustrations of selected title pages are appended.


A description of the two works attributed to Culpeper published in Boston: *The English Physician* (1708) and the *Pharmacopoeia Londinensis* (1720), the latter the first full-sized medical book published in North America.


An historical account of the *New Dispensatory* and the *Edinburgh New Dispensatory* (1753-1847), with a check list.


A history of the Edinburgh Pharmacopoeia, 1699-1847, with a check list.

The controversies that arose and were resolved in the merger are discussed and a sanguine appraisal of the consequences presented.


In the first part, an intensive survey of pharmaceutical literature of the Middle Ages and of the sixteenth century, precedes a study of the contents and structure of the "official" pharmacopoeias, particularly the Florentine Receptario and the Dispensatorium of Valerius Cordus. Special attention is given to the handling of simples and composites, the methods of compounding, indications for use, and legal arrangements. The second part discusses the impact of the introduction of the binomial system of plant classification upon pharmacy and the meaning of the term "pharmacopoeia" historically.


A discussion of Arabic pharmaceutical literature mainly concerned with Ibn al-Attar's Minhâj al-Dukkân wa Dustûr al-ʾyân (Handbook for the Apothecary Shop). Composed in 1259 or 1260, this popular handbook (printed as late as 1932) included recipes, weights, synonyms, the acquiring and storing of drugs, the examination and testing of drugs, and the duties, social responsibilities, moral conduct, and shop practices of the pharmacist.

A study of the various Albucasis manuscripts. Included is a reconstructed Arabic text of excerpts from the 25th treatise and an English translation of it.


A study of the background of the National Formulary (with special reference to the work of Charles Rice), the reasons for its coming into existence, and its significant impact on the practice of pharmacy.


Very brief introduction to the study of the Arabic influence on European medicine. With a translation of the preface of the *Nuovo Receptario* (Florence, 1498).


A comparison of the two incunabula editions, dated 10 January and 21 January 1498 (but actually 1499) of the Florentine *Nuova Receptario*.

A survey of herbals and formularies with special emphasis on those of Great Britain.


An analytical, critical, and thorough bibliography of works, mainly in English and German, pertaining to ancient Near Eastern, Greek, and Hellenistic pharmacy.


An analytical historical survey of pharmaceutical literature arranged on the basis of forms, viz., corpus, canon, tractate, herbal, technical, domestic medicine, and such special forms as literature on substitutions and on inter- and intraprofessional relations.


A collection of essays on Paracelsus with particular regard to the pharmaceutical aspects of Paracelsianism. [not seen].

Descriptions, bibliographic details, and annotations of 209 herbals, starting with the Dioscorides Codex and ending with an 1895 publication. [not seen].


A detailed study of the NF and the impact on it of the official status it received, of the progress of pharmaceutical science and technology, of the industrialization of drug making, and of the status of the USP.


The text as well as the illustrations in herbals were meant to convey important medical information. The arrangement of plants within the herbals and their content is considered.


The introduction presents the background of the London Pharmacopoeia in detail and compares the two issues of the Pharmacopoeia. The first issue, of 7 May 1618, is presented in facsimile.


This seminal study covers European pharmacopoeial publications from the Florentine Receptario to modern times, pointing out the historical context in which they appeared.

A critical historiographical study [in English] of an Aztec manuscript (known as the Badianus Manuscript) and its subsequent translations, commentaries, and printings, followed by a review of the pharmaceutical techniques and forms noted in the manuscript, and by an evaluation of the relation of this Libellus to other texts of Nahautl medicine.


Bio-bibliographic accounts of 24 Franciscans and Dominicans (two of whom are from this century, the others from the sixteenth through the eighteenth centuries) whose writings are original sources of information on drugs encountered in the New World. These accounts are followed by a compilation and consolidation of the descriptions and comments on 441 Spanish-American drugs found in their writings. A cross-index and a list of synonyms (mainly of Indian names) are provided.

2f—Professional and Social Aspects

Professional and Social Aspects

A study of the formative years of pharmacy in Iowa, including discussion of legislation, organization, and education.


A succinct review of the conditions and events leading to the founding of the American Pharmaceutical Association in 1851.


Comprehensive account of the growth of pharmacy in Arizona, covering all aspects of professional development and including details of the program and business of each annual meeting of the Arizona Pharmaceutical Association.


Review of the evolution of hospital pharmacy in the United States from its emergence at the turn of the twentieth century through its maturation in the 1930s and into the 1970s. Emphasis is placed on the importance of hospital pharmacy for the elevation of professional standards above commercialism.


This analysis of professional trends in nineteenth-century France examines the tensions between the scientific investigators at the head of the profession and the more mundane preoccupations of retail pharmacists, stressing the growing estrangement between the two. It also covers the impact of the Paris clinical school on
French scientific pharmacy. Finally, the article discusses the debate over recognition of military pharmacy, which physicians opposed.


Survey of some of the major trends affecting the development of institutional pharmacy in America, including the hospital environment, the roles of the hospital, and the influence of the American Association of Hospital Pharmacists.


Thorough coverage of the first decade of the Society, divided into six sections: the formative period (the background of hospital pharmacy in the 1920s and 1930s); founding and growth; establishment of standards; the Society's Bulletin; education and training; and evaluation and interpretation. Appendices record the Society's officers, committees, programs, and constitution. Immediately preceding this work (pp. 249-75) are a number of short articles by various authors discussing the history of hospital pharmacy in distinct settings such as the Army, the Navy, and the Veterans Administration.


A letter between two prominent medical practitioners is translated and analyzed for insight into physician-apothecary relations in sixteenth-century France. The letter portrays apothecaries as taking the practice of medicine into their own
hands, dispensing inferior and corrupt remedies, and abusing physicians.


A careful treatment of the professional life and social status of the apothecary in seventeenth- and eighteenth-century England, which integrates the pharmacist's work with that of other health professionals.


Booklet outlining the activities of the Society since its founding in 1931; includes lists of members and officers.


A well-done state history with some specific information about practice and education.


The reevaluation of the famous conflict between doctors and druggists in early eighteenth-century London argues the Rose case confirmed rather than altered the status quo with respect to apothecaries practicing physic and did not prevent apothecaries from charging for medical advice. In the process, a detailed account of the circumstances of the case is provided.

Short but substantive account of the first 350 years of the Worshipful Society, which also provides a good overview of the professional growth of English pharmacy generally during this period.


Concise survey of pharmacy in colonial America, concentrating on the overlap of drug dispensing among apothecaries, physicians, druggists, and merchants, and discussing the emergence of recognition of the necessity of an independent and specialized pharmaceutical profession.


Discussion of the influence of the 1906 Food and Drugs Act and the 1914 Harrison Narcotic Act on the professional status of pharmacy, emphasizing the importance of the new trust placed in the pharmacist for enforcement of the laws and protection of public health.


This article discusses the pharmaceutical (and medical) duties of apothecaries working at a major London hospital, demonstrating the complexity, sometimes confusion, of British pharmacy in the mid-nineteenth century.

Useful article for insight into the duties of early hospital pharmacists and their relations with physicians.


Although restricted to a single English town, this article provides an informative perspective on the status and activities of pharmacists in the mid-1800s and the profession's concern to elevate standards of training and practice in a period when its best and brightest members were moving into general medical practice and abandoning drug compounding and dispensing.


Condensed account of English pharmacy's professionalization, integrated with discussion of pamphlets, prints, artifacts, and other items illustrative of the professionalization process, maintained in the collections of the Wellcome Historical Medical Museum.


A thorough exploration of the depiction of pharmacies and pharmaceutical themes on postcards, and discussion of what the cards tell us about pharmacy in different periods, and how the profession and the public viewed each other.

Discussion of pharmacy in the military in World War II and after, concentrating on the struggle to establish pharmacy practice on the same professional plane as in civilian life.


This treatment of the events leading to the opening of London's first free out-patient clinic includes discussion of apothecaries' encroachment on the privileges of physicians, the strained relations between the two sides, and the battle which resulted in the Dispensary.


Outline of the growth of pharmaceutical activities in Scotland from the late Middle Ages into the nineteenth century. The article includes discussion of developments in training, literature, regulation, and relations with surgeons.


Interesting discussion of the conditions of apprenticeship, and the relations of master and apprentice, in the 1600s; based on court records of disputes between the two sides.

Compact survey of the development of the pharmaceutical profession in California, with particular attention to literature and organizations.


Account of the 1852 founding of the American Pharmaceutical Association and the organizational evolution of the Association to the present.


Review of the political activities of pharmacists at local, state, and national levels in the nineteenth and twentieth centuries; includes a list of pharmacists who served in Congress and cartoons depicting political leaders as pharmacists.


Concise coverage of the growth of professional organizations from medieval guilds to the present, concentrating on America, where the rise of professional societies from the local to the national level is detailed (retail, manufacturing, and proprietary associations, even unions, are included).

Short history of drugstores, literature, education, and organization of pharmacy practice in Oregon.


Discussion of the role of Paracelsian chemical remedies in the professionalization of pharmacy, the necessity of mastering new chemical methods encouraging higher educational and professional standards.


Coverage of organization, standards of practice, ethics, and literature of Islamic pharmacy in the period of the 800s to the 1200s; concentrates on the content and significance of the thirteenth century text *Minaj al-Dukkan*.


Short but helpful overview of the separation of pharmacy into a distinct profession in the ninth-century Middle East.


A reinterpretation of the early professionalization of American pharmacy. Developments in professional organization, education, and legislation are evaluated in the light of evolving
views of pharmacists themselves on what constituted professionalism.


This chapter reviews the small number of articles that have been written about women in American pharmacy. Full citations are provided. Areas for future research are suggested.


A detailed analysis of the origins and consequences of this important piece of legislation regulating the practice of apothecaries throughout England and Wales. The article challenges older interpretations of the Act as a professional triumph for apothecaries, suggesting that in fact it was detrimental to their professional status.


General outline of the development of ethical codes relating to the practice of pharmacy, from antiquity to the twentieth century. Much of the discussion is given to the ethics of the medical profession as a model for pharmacy.


A review of the evolution of the duties of pharmacists attached to the Public Health Service, this article emphasizes the
twentieth century and offers interesting details on the variety of
demands made upon pharmaceutical appointees.

832. Kredel, F. E., and J. Hampton Hoch. “Early Relation of Pharmacy
and Medicine in the United States.” Journal of the American

Overview of the beginnings of the separation of pharmacy from
medical practice during the 1700s, with emphasis given to the
influence of John Morgan.

833. Lawall, Charles H. “Pharmaceutical Ethics.” Journal of the

Historical review of codes of ethics formulated to govern the
practice of pharmacy from the sixteenth to the twentieth century.
Codes are quoted at length, and include those of the Philadelphia
College of Pharmacy and the American Pharmaceutical
Association.

Pharmacists Association, 1980. 163 pp., illus.

A model treatment of the history of the pharmacy profession in a
particular state. Coverage includes state and local associations,
pharmaceutical education, women and minorities in pharmacy,
and pharmacists' contributions to public service.

835. Marland, Hilary. “The Medical Activities of Mid-Nineteenth-
Century Chemists and Druggists, with Special Reference to
Wakefield and Huddersfield.” Medical History 31 (1987): 415-
39.

Study of English chemists and druggists as a medically
ambiguous group—part professional, part fringe practitioners;
richly detailed account of their circumstances and activities,
relations with physicians and apothecaries, and patronage by the public.


A booklet that examines the activities of the three trade groups from which English pharmacy would evolve as a separate profession (with the founding of The Worshipful Society of Apothecaries, in 1617).


A booklet presenting short biographies of a number of pharmacists who made important or interesting contributions (everything from matches to Worcestershire sauce) to society outside their profession.


Full account of apothecaries to the English crown from the early 1200s to the present, including interesting information on the services expected in addition to the dispensing of medicines.


Study of professional development of English pharmacy, from the thirteenth to the eighteenth century, tracing "the line of descent" of chemists and druggists at the local level of a major provincial city.

Straightforward account of the first 30 years of the American Society of Hospital Pharmacists, concentrating on economic aspects of the organization's development.


Detailed account of the contributions of the state association to the professionalization of pharmacy in Washington with unusually thorough attention to the social context of pharmacy's development. [not seen].


Survey of the transformation of the English apothecary from grocer to general practitioner, providing information on the training and work of apothecaries outside London, and the influence of social and economic forces.


Account of the role of the pharmacist in the U. S. Army from the Revolution through the Vietnam conflict. Coverage focuses on the expansion of the military pharmacist's duties, particularly in the twentieth century.

An introduction and six articles, each by a different author, discussing the history of the several sections of American pharmacy's chief professional organization. The sections included are the Scientific Section, the Women's Section, Pharmaceutical Economics, Practical Pharmacy, Education and Legislation, and Historical Pharmacy.


Coverage of pharmacy's growth from the post-Civil War period to the mid-twentieth century, including education and literature, and emphasizing the influence of John Maisch and William Proctor.


This outline of the history of Britain's Pharmaceutical Society focuses on the influence of the Society on the fledgling American Pharmaceutical Association and subsequent interactions between the two organizations. The growth of each is interpreted in light of the political context of its home country.


Outline of the emergence of a profession of pharmacy between the late 1700s and the 1860s with discussion of organization, education, literature, and regulation.

A good survey of the first century's developments in all areas of professional pharmacy in Virginia.


Detailed investigation of the first two centuries of London's Worshipful Society; based on extensive research in the Society's archives, it clarifies the changing role and professional status of the English apothecary during this period. Extensive notes by Underwood flesh out the main text by Wall and Cameron.


A survey to complement the histories of London apothecaries, providing information on the guild associations of apothecaries in a number of British cities from the late Middle Ages through the eighteenth century.


Informative summary of the activities of pepperers and spicers in late medieval London, describing contributions both to their guild and to London civic life.


Review of the professional transition from hospital apothecaries (going back as far as twelfth-century monastic infirmaries) to modern hospital pharmacists. Particular attention is given to
three hospitals—St. Thomas's, St. Bartholomew's, and Bethlehem.


General discussion of the evolving role of the pharmacist at the Pennsylvania Hospital, from its founding into the mid-nineteenth century. Attention is given to the pharmacist's duties, and relations with the medical staff.

### 2g—Economic and Business Aspects


A broad overview of developments of pharmacy from the time of the Sumarians. Contains company histories, superb illustrations, and a list of works in French.


This is still a useful work for identifying products of commerce between China and the Malay Peninsula.

A useful collection of papers originally presented in seminars at UCLA and Northwestern that exhibit diverse perspectives. Several of the papers have an historical orientation.


Assesses a central point of contention in the Kefauver Hearings: the nature and importance of industry-based pharmaceutical research, and the costs and benefits of compulsory patent licensing.


The essential guide to the economics of the pharmaceutical industry. Much more than a bibliographic source, this paper provides incisive critiques of economic models and delineates a framework for further research.


Based on the author's dissertation, this article argued that research by pharmaceutical companies was aimed at differentiating a product, rather than toward discovery of fundamentally new entities.

Many of the twelve papers presented at this conference relate to the development of institutions to assure the safety, purity, and eventually, efficacy, of drugs in Britain, France, and the U.S. Participants included distinguished scholars from varied backgrounds.


Contains data on the industry in Great Britain in the early 1960s. Presents position of pharmaceutical manufacturers.


This article traces technological progress in the pharmaceutical industry and investigates the relationship between the profit motive and the public interest.


Joseph Cruttenden shipped drugs to apothecaries and other merchants in New England and the Barbados. These letters provide insights into the nature and size of the transatlantic trade.


Davis looks at the problem of external costs associated with the chemical industry. Chapter 7 deals with the drug industry, and contains a detailed, global, history of the thalidomide incident.

A lucid extensive critical review of the literature on the economics of the U.S. pharmaceutical manufacturing, by proponents of laissez faire.


Provides a brief general introduction to the economic and business history of the American pharmaceutical industry.


This small book on colonial pharmacy concentrates on practice in the broad sense, including therapeutics. The author includes inventories of shops, which provide insights into practice. Although a few dated secondary sources are relied on heavily, the author also used several manuscript sources largely untouched by other historians.


The authors found that firms earned below normal returns on investments in R&D in the first half of the 1970s but normal to above normal returns after 1975.

Several papers in this conference dealt with the interplay between research, competition, and the public weal. Others evaluated pharmaceutical advertising.


An entertaining tale of how a crook and imposter gained control of an old line drug distributor, McKesson & Robbins, and made it grow.


A scholarly investigation of the motivation behind earliest research laboratories. The study concentrates on H. K. Mulford, Smith Kline and French, and Parke Davis and Company.


The author compares responses in the three countries towards: sponsorship of research, government quality regulation, and, attitude toward cartelization.

Liebenau compares drug company attitudes toward sponsored research and company laboratories, in Britain, German, and the United States during the 1890s.


An important collection of six essays that covers the industries in England, the U.S., Switzerland, and France. Of uniform high quality, but the paper on the French industry by Robson focuses most clearly on economic and business issues.


A lively entrepreneurial history of a dozen American firms, with brief accounts of a half-dozen German and Swiss firms.


The classic presentation of the argument that drug companies exercise monopoly power to the detriment of the public interest. More recent assessments of the industry have been rather more positive.


This study assembled much useful data on the industry for the period 1960-1980.


Traces European roots of early American medical practice. The chapter by Christianson contains information on colonial apothecary shops and wholesale druggists.


Expands the traditional view of ancient drug trade to extend beyond only Rome or Alexandria, and to various levels of society. Links societal levels with the style of drug trade.


Okun related the story of the first battle for pure food and drug laws which took place in state legislatures prior to 1890.


Although journalistic, this book provides fascinating insights into entrepreneurial decisions in the pharmaceutical industry following the discovery of sulfadiazine and penicillin. The main focus is on Lederle, and interconnections between the Kefauver Hearings, the tetracycline antitrust cases, and a case against thieves of proprietary information.

Written in the form of an exposé, Pekkanen related events leading up to the Drug Abuse Control Amendments of 1965. This book takes a dim view of the morality of the pharmaceutical companies.


This collection of nine essays includes: "The Early History of the Import of Drugs in Britain" by R. S. Roberts, and "Some Eighteenth-Century Trading Accounts" by G. M. Watson.


Part III contains descriptions, with brief histories, of the pharmaceutical industries in seventeen countries. Government regulations and health insurance schemes are detailed.


This article compares levels of drug use both within and between countries during the 1960s and relates usage to demand factors. Part of an issue devoted to pharmaceuticals in this Marxian-oriented journal.


A leading exponent of health insurance teamed up with a distinguished pharmacist to provide a comprehensive picture of the market for medicines ca.1930. Budget studies provide a view of the demand side, while the business aspects of pharmacy and pharmaceutical manufacturing are explored.


A marvelous book conveying the sense of wonder about objects from foreign lands during an important period in Chinese history, the Tang dynasty (618-906). It contains the identification and descriptions of many aromatics and rare drugs as well as a useful bibliography of international commerce of this period.


Schwartzman argues that the pharmaceutical industry is dynamically competitive; that profits are not excessive when adjusted for correct depreciation of R&D, and of risk; and that promotional expenditures aid rather than hinder competition.

Provides detailed abstracts for approximately 150 of the 576 citations. Emphasis is on works written in English between 1960 and 1974.


The authors were the staff director and the chairman of the Task Force on Prescription Drugs of the Department of Health, Education, and Welfare, in the Johnson Administration. The book supports the positions of Senators Kefauver and Nelson and criticizes the pharmaceutical industry and the medical establishment.


Traces the evolution of pharmacies into pharmaceutical manufacturers in the United States and also in Germany and France. Emphasis is on scientific and technological developments.


While primarily a social history, this book provides fascinating insights into the marketing and cost structure of a successful patent medicine.


A winner of the Pulitzer Prize, this is the best general introduction to the social and economic history of medicine in
the United States. It places the role of pharmacy in a broader perspective.


Between the two World Wars several distinguished academics disregarded the taboo against providing counsel to pharmaceutical manufacturers. Extensive case studies carefully document their contributions.


A history of drug regulation in the United States presented and evaluated in relation to such factors as medical practice, the introduction of new drugs, the impact on the pharmaceutical industry, and governmental policy making.


The role of the purveyors of drugs in England is placed within a broader historical context. The book provides detailed coverage of the thirteenth through eighteenth centuries, with relatively summary treatment of more recent events.


This is a good source of data on the industry for the period from 1950-1982. It presents an overview of the structure and
performance of the U.S. pharmaceutical industry along with brief characterizations of the industry in the U.K., West Germany, and Japan.


Kefauver Committee hearings aimed at determining degree of monopoly power in the U. S. pharmaceutical industry.


Nelson Committee hearings: emphasis was on costs and benefits of patents, and brand names, and the possibility of mandatory licensing.


Based largely on evidence submitted to the Kefauver committee, analyzes the structure and performance of the industry in the period ending in 1960.

Wiggins investigates the process by which pharmaceutical firms made decisions regarding the funding of R & D. He argues that in the late 1960s that process changed from being science driven to being dominated by expected profitability.


Analyses the events, debates, and processes, that led to passage of the Pure Food and Drugs Act. The treatment of the conflict between the manufacturers of ethical and proprietary drugs is of interest. Food and drug businesses are given the main attention.


The culmination of years of study, this is the definitive history of the struggle for passage of the act. Pharmaceutical issues play a surprisingly small role in the story.


The definitive history of patent medicines in the United States from colonial times to the beginning of the twentieth century. Informative and enjoyable reading. Includes a bibliographic essay.
2h—Education


Covers period form first required two-year term Phm. B. degree program to graduation of first four-year B.Sc.Phm. class. Continuation of Stieb, Coulas, and Ferguson paper for 1867-1927 (citation #992).


A primary source with cumulative indices for the periods 1937-49, 1950-56, 1957-66 and then every 10 years. Prior to the founding of the journal, the Proceedings of the American Conference of Pharmaceutical Faculties (1900-1925) and its successor, the American Association of Colleges of Pharmacy (1925 on) provide a wealth of detail about the state of pharmaceutical education of the period.


An interesting, well-documented account.


There are sections on pharmaceutical education: pp. 15-23, 71-77, 93-99, 143-44, 164-74, 204-12.
Education


An interesting, well-documented account of the Louisville School of Pharmacy for Women (1884-ca. 1895).


The offshoot of the *Pharmaceutical Survey* of 1946-49, this work represents a detailed look at American pharmaceutical education of the time. Chapter 2, "A half-century of progress," surveys the period 1900-50, while other historical references appear from time to time throughout. Although it supports the recommendation of the *Survey* for a six-year program, it is somewhat more pragmatic in suggesting that a five-year program might be necessary as an intermediary step.


Well-documented study of the important Pharmaceutical Survey of 1946-49, which helped shape American pharmaceutical education and practice in the twentieth century.


A good, documented basis for a more comprehensive study.

Sequel to Wrobel's *The First Hundred Years... 1870-1970* (1972). [not seen].


This excellent school history is a model in form and content. Organized chronologically by the tenures of major deans, the book contains a good balance of detail and discussion.


Fiftieth anniversary edition. A fine example of how institutional histories should be written.


Series of papers from an invitational symposium on the subject sponsored by the American Institute of the History of Pharmacy at the 1975 meeting of the American Pharmaceutical Association in San Francisco.


Contains a general and historical discussion of the place of liberal education in American pharmacy.

The Philadelphia College of Pharmacy, founded in 1821, was the first permanent English-speaking association and school of pharmacy in the world.


The first comprehensive survey of pharmaceutical education in the USA. Devoted mostly to the curriculum by subject areas as it existed and was projected in the 1920s.


Capsule histories of the 75 schools of pharmacy then accredited by the American Council on Pharmaceutical Education, with portraits of deans. Undocumented.


Covers period 1870-1900, from time of founding of the New Jersey Pharmaceutical Association. Well documented.

Most of this short article is taken up by a directory of 243 women pharmacists before 1900. The author's approach is that of a social historian.


Table of 64 American schools of pharmacy (1870-1900), showing date of establishment and name changes. The author discusses the difficulty in agreeing on which schools should be included on the list.


A special report commissioned by the Section of Teachers of Pharmacy Administration of the American Association of College of Pharmacy on the development of the field in USA. Well-documented with some useful tables and appendices.


A quick overview with a short bibliography.

Covers period from 1908 on. Written by then dean of College of Pharmacy, Dalhousie University; the College succeeded the Maritime College of Pharmacy, an association school (1911-1961).


A documented account of the efforts of the Pharmaceutical Society of Great Britain in relation to the school it established in 1841.


Succinct, yet thorough, documented account.

930. Eckles, Robert B. Purdue Pharmacy, The First Century. West Lafayette, IN: Purdue University, 1979. x + 106 pp., illus.

Published in anticipation of the centennial in 1984 of the Purdue University School of Pharmacy and Pharmacal Sciences, this book covers the period 1884 to 1979. Highlights the evolution of the School in terms of faculty, particularly the deans, the undergraduate program, and graduate studies and research. Undocumented text, but select bibliography of sources.

Undocumented. Pages 93-110 are mainly about the University of Wisconsin School of Pharmacy as a whole; 142-213, biographical sketches and portraits of alumni.


The crux of this comprehensive survey of American pharmacy was the role that education would play in improving pharmacy practice. Among the recommendations is the suggestion that the American Association of Colleges of Pharmacy and American Council on Pharmaceutical Education proceed to the establishment of a six-year doctor of pharmacy program.


Also three decennial supplements, edited by John E. Kramer, for 1921-31, 1931-41, and 1941-51 (see Kramer citation #949). More a reference book than a connected history. Largely a chronological approach with detours here and there to look at the development of pharmacy, the evolution of the U. S. Pharmacopoeia, etc. Biographical sketches interspersed about founders, staff, editors of the American Journal of Pharmacy, and alumni. Heavily illustrated. See also Osol [citation #967] for update to 1971.


Good, documented overview from the 1940s to the 1970s. [not seen].

Undocumented, chronological approach, 1850-99.


Covers period from about 1895 to 1971; topical approach.


Some of the author's personal experiences and philosophies as editor (1961-74) of the *American Journal of Pharmaceutical Education*.


Chronological approach; no documentation.


This brief overview contains several excellent photographs of early women educators in pharmacy.


Primarily historical treatment of subject but tied to contemporary situation.


General references only.


Essentially a study of how materia medica became fragmented over the nineteenth century, with at least 15 courses eventually arising from the discipline by the end of the century, including pharmacy, botany, toxicology, pharmacognosy, physiology, bacteriology, and pharmacology.

Insightful account from the perspective of the dean, 1953-73. Short list of references.


Written on the occasion of the centennial of the Ontario College of Pharmacy. Hughes was the last dean (1952-53) when the school became the Faculty of Pharmacy of the University of Toronto in 1953. [not seen].


Deals with various diplomas and degrees in the USA during the nineteenth century.


A brief but interesting account about an institution of equally brief existence (1887-1890).


An articulate plea for schools of pharmacy to be more adventuresome in planning for the future in their roles vis-à-vis practice.

949. Kramer, John E., ed. *First Decennial Supplement to the "First Century of the Philadelphia College of Pharmacy," 1921-1931; Second Decennial Supplement . . . 1931-1941; Third Decennial
Supplement . . . 1941-1951. Philadelphia: Philadelphia College of Pharmacy and Science., 1934; 1942; 1952. 189 pp., illus.; 144 pp., illus.; 156 pp., illus.

Continuation of original publication edited by Joseph W. England (citation #933). See also Osol (citation #967) for update to 1971.


Comprehensive, documented survey from 1821 to 1906 by key periods of developments. Portraits.


Fairly detailed account for period 1939-51. Not referenced but quotations tied to Board minutes.


A discussion not so much of the research itself as where the research was coming from; little research was actually being done at this time. This addresses APHA's query system as a means of stimulating research in the nineteenth century and mentions several of the leaders in research by the late nineteenth century. Finally, the article discusses the disappointment with productivity from pharmacy schools and how this might be alleviated. Undocumented.

The writer's personal account of his period as editor of the *American Journal of Pharmaceutical Education* on the occasion of its 50th anniversary.


Prescott (1832-1905) headed the first university-based school of pharmacy (Michigan, starting in 1869), thus marking a major turning point in the progress of pharmaceutical education in the USA.


A brief history of the Association of Faculties of Pharmacy of Canada and the Association of Deans of Pharmacy of Canada. Undocumented.


Explores the early (1944-51) influence of the Canadian Conference of Pharmaceutical Faculties, predecessor to the present Association of Faculties of Pharmacy of Canada.


Covers the period from 1842 to about 1950.

Covers period 1905-46, when the present Faculty of Pharmaceutical Sciences, University of British Columbia began. Documented.


Hartmann offered laboratory courses in the preparation of chemical medicines at Marburg until 1621, and the laboratory notebook presented here gives a detailed view of the techniques and goals of chemical medicine in the seventeenth century.


Written to mark the Bicentennial of the United States of America. A masterful, interpretive, brief history of pharmaceutical education in the USA. Meticulously documented.


Well-documented look at the important Pharmaceutical Survey of 1946-49, which helped shape pharmacy education and practice in the USA in the second half of the twentieth century.

962. Mrtek, Robert G., and Charles D. King. *One Hundred and Twenty-Five Years of Pharmaceutical Education, The University of*
Illinois at Chicago. Chicago, IL: University of Illinois at Chicago College of Pharmacy, [1984]. 32 pp., illus.

Imaginatively written and produced brief history. [not seen].


A chronological approach by chapter.


A small section is historical. "Liberal Education and American Pharmacy" (pp. 20-35), and "The Pharmacy Curriculum: The Four-Year Program" (p. 36-48).


Essentially a chronological approach.


An interesting study of the various activities of pharmacist-physician Stewart, including his short stint (1844-1846) as first professor of pharmacy in USA at University of Maryland.

967. Osol, Arthur, Charles E. Welch Jr., and John E. Kramer (eds.). A Sesquicentennial of Service, 1821-1971, of the Philadelphia
College of Pharmacy and Science. Philadelphia: Philadelphia College of Pharmacy and Science, 1971. x + 208 + v pp., illus., index.

Updates the earlier volumes edited by Joseph W. England, for 1821-1921, and three decennial supplements edited by John E. Kramer, for 1921-51. The present work concentrates on the period 1951-71, primarily from the point of teaching, research, public service, and publications. An interesting chronology of some of the more important events for the period 1821-1971. Appendices cover officials, faculty, awards, and so forth. Unfortunately, it is undocumented.


A well-documented study beginning with the European foundations.


Brief history of the chief organization since 1944 of Canadian schools of pharmacy, known since 1969 as the Association of Faculties of Pharmacy of Canada. Also some discussion of various earlier activities from 1907 on.


Capsule histories of pharmaceutical education in provinces of Canada as well as concerning the Canadian Conference of Pharmaceutical Faculties and the Pharmacy Examining Board of Canada. Undocumented. [not seen].

Covers period from founding in 1947.


History of the Pittsburgh College of Pharmacy, 1878-1958.


A general overview of the degrees offered and required at various times in USA, finishing with some detail regarding the Pharm.D. vs. the B.Sc.

976. Rowe, Tom D., and Nancy J. (eds.) Moncrief. *Centennial Celebration Proceedings. College of Pharmacy, The University*

Proceedings of a symposium, "Pharmacy in the Twenty-First Century." Wide-ranging subject, with only one strictly historical paper, by Robert A. Thom, "History and Highlights of the Founding of the College of Pharmacy" (pp. 9-19).


Pharmaceutical education in Germany.


A comprehensive history; never published.


A good account of the forerunner (1870-1884) of the American Conference of Pharmaceutical Faculties (1900-1925) and the American Association of Colleges of Pharmacy (1925- ).

A well-documented look at the development of pharmaceutical education in the United States. Also discussion concerning education in the chapters on France, Germany, and Britain.


The small amount of experimental work in pharmacy done in pharmacy schools in the nineteenth century was done with little academic support. The author examines the origins of experimental work associated with schools of pharmacy, although not done within the schools.


Well-documented account centers around the remarkable founding editor (1937-55) of the American Journal of Pharmaceutical Education, Rufus Lyman, on the occasion of the 50th anniversary of the publication.


Written from the author's perspective as an acknowledged expert on the history of pharmaceutical education in the USA. Some interesting contrasts and parallels.

A good, well-documented study. Examines the lag in introducing science into pharmacy education, and the role of physicians. After tracing the growth of some basic sciences in pharmacy schools, especially chemistry, it assesses the contributions of the University of Michigan and the University of Wisconsin as leaders in the movement to put pharmacy education on a scientific foundation.


A comprehensive, well-documented account.


A comprehensive, well-documented account of an interesting development.


A good overview prepared for the journal's sesquicentennial in 1971 of American pharmaceutical education.


A short, balanced look at the difficulties faced by women pharmacy students in the 1800s. Comparisons are made with other American professions and with pharmacy abroad.
989. Stieb, Ernst W. “A Century of Formal Education in Ontario.”

Written from the perspective of the deans of the school for the period 1882 to 1983.


Shuttleworth was the first dean (1882-1892) of the school established by the Ontario College of Pharmacy; since 1953, the Faculty of Pharmacy of the University of Toronto.

991. Stieb, Ernst W. “Pharmaceutical Education in Ontario, Prelude and Beginnings.”

Examines the first decade of the school of the Ontario College of Pharmacy, established in 1882, as well as ad hoc arrangements made from 1867 onward.

992. Stieb, Ernst W., Gail Coulas, and Joyce A. Ferguson. “Women in Ontario Pharmacy.”

Covers the period from the first record of women in early pharmacy organizations (1867) and in the first school (1883) to the beginning of a required degree program.

A well-documented study of cooperative biomedical research between universities and industry in the USA from the 1920s to the 1980s.


A wide-ranging series, topically arranged, covering American schools, mostly for the 25-year period 1887-1912. Although there are a number of illustrations of schools of pharmacy from around the world scattered through the account, the international theme is not reflected in the text. Many portraits and other illustrations.


Robert A. Walsh is the author of the major portion (pp. 5-59) of this issue, under the title: "The Massachusetts College of Pharmacy, 1823-1973." The rest constitutes letters of congratulations, reminiscences, and brief commentaries by various officials, faculty, and representatives of alumni and students. Walsh and Fedo emphasize (p. 5) that the work represents only "an informal and highly selective history; there has yet been no official history of the College."


Deals with the educational role of various American organizations of pharmacy in nineteenth-century USA.

Covers period from Dioscorides's *De Materia medica* (1st century AD) to Joseph Remington's *The Practice of Pharmacy* (1885).


A major force in American pharmaceutical education. This is a broad biographical sketch, intent less on detail than sketching influences and contributions.


Well-documented study, mainly of the period 1821-1908.


An interesting study of the conditions in pharmacy leading up to the establishment of the College in 1859.


Undocumented and unindexed.

Partly chronological, partly topical approach. Much biographical information.

1003. Winkelmann, John P. *History of the St. Louis College of Pharmacy*. [St. Louis: John P. Winkelmann], 1964. iv + 175 pp., illus.

After a few introductory pages, arranged chronologically, 1865-1964, followed by brief biographical sketches of the founders, deans, and "Prominent Personalities of the Past." Mostly undocumented.

1004. Wrobel, Sylvia. *The First Hundred Years of the University of Kentucky College of Pharmacy, 1870-1970*. Lexington, KY: College of Pharmacy, University of Kentucky, 1972. 207 pp., illus.

Chronological approach. Bonow-Bardell, *Into the Second Century* (citation # 913) continues the history of this school up to 1985.


Wide-ranging but succinct survey from the twelfth century to the present, with some useful tables and comparisons with members of the European Economic Community; bibliography.

Although mainly a chronological history of the Iowa Pharmacists Association, education is one of the other facets well covered.

2i—Manufacturing (not including company histories)


A concise history of the chemical industry but with little on pharmaceuticals. Most of the emphasis is on the period 1939-89.


An overview of changes in the industry from the late eighteenth to the mid-twentieth centuries.


A good, contemporary overview of the history and state of the soda fountain industry in the United States in the beginning of the twentieth century. Discusses the history of soda water, the development of the modern fountain, the responsibilities of manufacturers, the utensils and supplies used, and the soda fountain as a business builder in American drug stores.


Initiation of research as a recognized function in the synthetic coal tar dye industry as seen principally through Bayer. Beer looks at the gradual shift from employing scientists strictly for
routine control work to their use in new product development. In the late 1880s and early 1890s, the success of this venture led to a more independent research portion of the firm, but the nature of the work remained applied until World War I, with little if any consideration of theoretical principles.


A survey of post-Kefauver views about the drug industry by economists, with respect to competitiveness within the industry, the economics of R & D, the impact of advertising, and regulation and performance by the drug industry.


Includes discussion of the history of quality control in the drug industry.


With respect to literature (specifically, price lists and catalogues) from the pharmaceutical industry, this is best used as a supplement to the fine collection in the Edward Kremers Reference Files, University of Wisconsin School of Pharmacy, Madison, WI (as this book mentions briefly toward the end).

This well-illustrated but undocumented article chronicles the British industry.


A short history of the origins of drug milling in the United States with special emphasis on the mill of Charles V. Hagner of Philadelphia. Last page of the article lists some of the other major drug millers of the nineteenth and early twentieth centuries. With six illustrations of various kinds of drug mills.


A Master's thesis consisting of two parts: the evolution of the tablet machine from 1843 to 1914 with a line drawing or photograph and short description of each machine (about sixty machines described) together with a description of the process of manufacturing tablets, and an annotated bibliography on tablets from 1844 to 1926. Author and subject indexes. Good source for the history of tablet making.

1017. Forbes, R. J. *A Short History of the Art of Distillation: From the Beginnings to the Death of Cellier Blumenthal*. 1948; rpt., Leiden: E. J. Brill, 1970. 405 pp., illus., bibl., index.

An extremely valuable source on techniques, equipment, and theories behind distillation of therapeutic and other products from antiquity to the early modern period. Its coverage includes
and the Middle East, and the 200-plus woodcuts, drawings, and photos are immensely helpful.

A comparison of research output as suggested by publications among firms in the U. S., Europe, and Japan. Concludes that fundamental research increased during this period, and dominance of U. S.-based firms decreased.


Discussion of methods and economics that were relevant to the pharmaceutical industry.


The first half of the article describes the dosage forms introduced in the nineteenth century, such as cachets and gelatin capsules, and the enteric coating of medicines. The second half deals with the development of a variety of timed-release dosage forms in the twentieth century, bringing the history of oral dosage forms up to the 1980s.


The period 1870-1905 sees the development of a pharmaceutical industry in Germany characterized by the priority of pharmacology, experimentation, and studies of basic chemical structure. There are links between biochemistry and pharmacy,
academic institutions, and industry as shown in the text and accompanying tables.


Actually, a history of the early industry in Philadelphia in the late nineteenth and early twentieth centuries. He includes discussion of how some of these Philadelphia firms adopted science, and how they used this knowledge. Though virtually no attention is given to companies—well-established companies—outside of Philadelphia, this contributes to our understanding of the beginnings of the drug industry in this country.


Author looks at three pharmaceutical firms—two in Philadelphia and one in New York—to compare how each used science. One company used science rhetorically, principally to sell products. The two others used it more for quality control and modest product expansion.


Not a history but a very good description of the process of tablet making (by hand and machine) in the mid-twentieth century, of tablet-making machines, and the coating and coloring of tablets together with some representative formulas. Forty nice illustrations of primarily British tablet machines, coating pans, mixers, compact presses, drying ovens, and other equipment.


Includes a detailed study of scientific management methods at one of the major drug companies in America, a unique contribution to the literature.


Focuses on Bayer to explore the slow institutionalization of research in the (therapeutically significant) synthetic dye industry, how research was organized, and the actual contribution of the industrial research program to the success of Bayer. Complements Beer's article (citation #1010) quite well.


Examines several indicators of the growth of research in the drug industry, including laboratories, personnel, attention to fundamental research, publications, and collaborative work and recognition by academic scientists.

Identifies three revolutionary developments in the evolution of drug manufacturing: isolation of alkaloids, the rise of dye manufacture, and the development of sulfonamides. [not seen].


Also reprinted in *Pill Peddlers*, ed. Jonathan Liebenau, Gregory J. Higby, Elaine C. Stroud (citation #1024). Describes transition from dispensing chemists shop to the emerging business of large-scale pharmaceutical trading.


Articles on the evolution of the pharmaceutical industry in a dozen countries in Europe, South America, and North America.


A very good history of bottled carbonated beverages in the United States from 1807 to 1957. Major sections on the evolution of American soft drinks, the early years of the soda fountain, and the commercial and mechanical development of the carbonated beverage industry in the United States in the nineteenth and twentieth centuries. Very useful chronology of the industry from 1807 to 1957 and lists of well-known bottling companies during the 1920s as well as alphabetical lists of major
brands and manufacturers in 1957. Photos interspersed throughout the text of early and contemporary bottling equipment, labeling machines, syrup-making equipment, carbonators, filters, fillers, bottle washing equipment, bottle caps and stoppers, and soda fountains. Good source of information for an important part of drugstore history.


An excellent historical overview of the history of distillation and distilling apparatus from ancient times to the twentieth century with greater emphasis on the pre-eighteenth century period. 65 excellent illustrations, many quite rare, of distilling apparatus.


Economic analysis of French industry, focussing on the 1960s but with some historical background. Business aspects of the drug market, and regulation.


Begins by discussing the roots of pharmaceutical manufacturing in European pharmacies of the eighteenth and nineteenth centuries, and compares the American experience in the same era. Looks at changes in post bellum America, especially the impact of the Industrial Revolution. Finally, examines the rise of the American pharmaceutical industry vis-à-vis changes in practical therapeutics from the late nineteenth to the mid-twentieth centuries.

Manufacturing


The first part of this article presents a history of pills and tablets and their coatings from antiquity through the nineteenth century. The second part deals with the methods and equipment for coating pills and tablets. Black-and-white photographs of three pill coating devices, and very useful footnotes with citations to United States, British, and French patents for pill coating apparatus.


A useful, annotated bibliography on production, distribution, pricing, inventory, and other data relevant to the economic history of pharmaceutical manufacturing.


Traces resistance to a facilitation of collaborative and contractual research between some of the major American pharmaceutical manufacturers and biomedical scientists in American universities between the two World Wars, and the impact of this union in terms of practical therapeutics, support of academics, and the scientific image of companies.


An interesting perspective by a pharmaceutics researcher working in a firm (Smith Kline and French) at the leading edge of this field, during the 1950s.

Useful on techniques and other pertinent information relevant to drug manufacturing. Has a good discussion of the synthetic dye industry.


Traces the differences and similarities, from the seventeenth to the twentieth centuries, in the evolution of pharmaceutical manufacturing from retail pharmacy in Germany, France, England, and the United States. Presents many examples of particular establishments in each country to illustrate his points.


Title of volume 3 is *Wirtschaftsgeschichte der Chemische-Pharmazeutischen Industrie*. Volume one covers to 1834, volume 2 to 1870, and volume 3 to 1914. A valuable work on the economic history of the German pharmaceutical industry.


The first chapter is on the history of compressed tablets, followed by chapters on triturating, mixing, granulating, coloring, formulas, and a formulary. Emphasis is on American equipment and techniques. 23 illustrations of mixers, mills,
sieves, dryers, punches and dies, and tablet machines. Good contemporary source.


A first-hand account of what it was like to be a researcher for a major drug manufacturer. This includes information on Merck's experience with antibiotic production.

### 2j—Equipment and Museology

1045. Andersen, Dannesboe. *Gammelt Dansk Apoteksinventar*. Copenhagen: Ejnar Munksgaard, 1944. 415 pp., illus., bibl., index.

A heavily illustrated catalog of objects and furnishings from Danish pharmacies organized by object category. Large sections on drug containers and mortars are included, with over 200 black-and-white photographs. No English text, this book is recommended for its illustrations.


A very good history of the museum and its collections together with an interesting description of their collections management and current activities, including publications. 4 illustrations. Useful notes and references.

A guide to 4,385 American patent or proprietary medicine bottles of the nineteenth century together with about 600 line drawings of bottles. Entries are organized alphabetically by product name and include information about the product's use, the proprietor's name and address, and the name and year of the publication in which the earliest found advertisement for that product appeared. Physical descriptions are also given when known. No index or bibliography.


Papers by six knowledgeable pharmacists on the collecting of pharmaceutical stamps, artifacts, ephemera, and books. John Crellin writes on glass pharmacy containers, Michael R. Harris on American pharmaceutical artifacts. Harris's paper has a very useful bibliography on the conservation of antique objects in general and by different materials, such as ceramics and glass, metals, leather, paper, and wood. Reprinted with amendments.


Useful guide to primarily British and European medical instruments. Descriptions of pharmacy-related objects can be found in the chapters on medicine receptacles, infant and invalid feeding utensils, articles of medical association, and toilet articles. Heavily illustrated with large black-and-white and color photographs. Limited, unannotated bibliography.


An illustrated catalog of over 750 nineteenth- and early twentieth-century tins sold primarily in pharmacies. The tins are organized according to the following categories: cosmetics,
cough drop tins, dental hygiene, foot care, hair products, laxative tins, medical/curative tins, prophylactic tins, samplers, shaving products, shoe care, sundries, and talcum tins. Within each category the objects are arranged alphabetically by name of product. For each tin there is a photograph, 30 in color; a very brief description that includes size, shape, and composition; and a price. No historical information about the products or their manufacturers. No index and no bibliography. [not seen].


A very valuable in-depth study of the history of pharmacies and their artifacts in one geographical area, Washington state, from the late 1850 to about 1920. Separate smaller sections on pharmacy labels, prescription forms, advertising trade cards, dose glasses, redware pots, and bottle producers and manufacturers. A comprehensive listing, together with histories, of all known drugstores and druggists in Washington state in alphabetical order by city or town. A large section on embossed glass medicine bottles, with a drawing of each bottle, and a history of the drugstore, medicine manufacturer, or wholesale drug firm that used each particular bottle. A chronological listing of Washington's oldest drugstores, a list of research sources, and an index to the embossed bottles.


A catalog and guide to over 500 medicine bottles known as Balsams (containing resin gathered from the Balsam trees of South and Central America). Physical descriptions of the objects arranged in alphabetical order by product name, historical and biographical information when known, many photographs of objects and illustration of advertising, a glossary, bibliography, and index.

A good overview of the history of the use of colored glass for pharmaceutical containers, primarily in the United States from the late eighteenth century to the 1920s but also mentions its use in Britain, France, Germany, and Denmark. Information gathered mostly from trade catalogs, patent documents, and journal literature. 8 color illustrations. Useful notes and references.


The best history to date of glass labels on pharmaceutical glassware in Britain and the United States from their introduction in the mid-nineteenth century until the 1920s. Much useful patent information, good notes and references, and 4 illustrations.


A detailed technical description of mostly nineteenth-century precision balances and their use in pharmacy. Forty-five line drawings of balances or their parts. Meant as a guide to practicing pharmacist or students, but now of historical interest.


An in-depth description and history of a very large, ornate Italian prince's medical chest from the mid-sixteenth century. It has 126 drug containers, many with original labels and some with contents. An appendix includes a list of 95 labels that are legible in whole or in part. Four photographs.

A survey history of the use of glass containers for pharmaceuticals and cosmetics beginning with the ancient Egyptians but concentrating primarily on Germany and German-speaking lands from the Middle Ages to the twentieth century. Physical descriptions and small photographs (half of them in color) of 118 glass containers. Footnotes and bibliography, but no index.


A very good descriptive catalog, with extensive footnotes to the literature and a good bibliography, of about 500 English and Dutch ceramic objects from the Wellcome Collection of about 2,500 pieces of medical and pharmaceutical ceramics from many countries (now housed in the Science Museum in London). Descriptions primarily of drug jars, but also good sections on pharmacy tiles, mortars, invalid feeding cups and bottles, posset pots, spoons and measures, bed pans, eye baths, and inhalers. Black-and-white photographs of most of the objects.


Discussion of how the commercially-produced home medicine chests of the eighteenth and nineteenth centuries in Britain and the United States mirrored the orthodox medical practices of those times. Good notes and references.

Short, but still very informative article on the history of British pharmaceutical tiles, commonly called "pill tiles," used to roll pills and to prepare boluses. Contains a list and physical descriptions of pill-making equipment in the Wellcome Collections, now at the Science Museum in London.


An excellent history of the development and use of bell-metal mortars in England based on the Wellcome Collections now at the Science Museum in London. Very helpful charts and photographs of different mortar shapes and decorations as well as makers' marks. Physical descriptions of about 200 mortars and good reference notes. One of a very few substantive monographs on mortars.


A heavily illustrated catalogue (all black-and-white photographs) of the Wellcome Collection of about 1,200 pieces of British pharmaceutical glassware arranged by type of container. Nice introductory essay placing glass containers within the context of the changing nature of pharmacy window displays and pharmacy interiors. 119 helpful notes and references, and index.

An important study of eighteenth- and nineteenth-century English scales and weights in the Wellcome Collections at the Science Museum in London. Good notes and references, 10 plates with black-and-white photographs of objects together with physical descriptions, and an appendix on hand scales.


An article based on the study of nearly 700 British medicine vials and bottles, mostly green glass and pre-1850, in the Wellcome Collections, now at the Science Museum in London. These artifacts highlighted the growth in popularity of the multidose mixture at the expense of small-volume preparations. Useful chart of some of the major bottle shapes. Good notes and reference sources. Posology is the science of dosage.


These cards contain numerous images of pharmacy exteriors and interiors, equipment used, and products sold.


A catalog of 80 nested cup weights in the Edward Clark Streeter Collection of Weights and Measures at the Medical Historical Library of Yale University. Complete physical description and black-and-white photograph of every object. No specific mention of pharmaceutical or medical applications. Brief bibliography. Most useful when used in conjunction with the works of Kisch and Houben.

A bibliography of medical, dental, optical, and pharmaceutical company trade literature from 1700 to 1939. The most comprehensive catalog of medical trade catalogs available. Although not as strong for pharmaceutical trade literature as for medical and dental, most major manufacturers of pharmaceutical equipment from the late nineteenth and the first half of the twentieth centuries are represented.


A scholarly, yet popular, survey of Delft faience with no separate discussion of drug jars but important and informative mentions of them interspersed throughout the text. Very useful information about Delft potteries and ceramic marks. A general index as well as separate indices on museums, potteries, personal names, and marks.


A catalog of 234 embossed American sarsaparilla bottles. Sarsaparilla was a popular nineteenth-century medicine, often advertised as a "blood purifier." The catalog is organized alphabetically with complete physical descriptions of the objects but no dates or histories. Small sections on dose glasses, pot lids, and label only bottles. Reference guide to the different kinds of bottle mouths (p. 11) and index. Line drawings for most bottles.

A brief history and description of the crude drug collection of about 22,000 specimens that form the core of the Materia Medica Museum in the Faculty of Pharmaceutical and Biological Sciences at the René Descartes University in Paris. Photographs of some of the display cases with thematic exhibits.


An alphabetical listing by product name of about 1500 patent medicines from the 1870s to the 1920s with date of advertising and advertised uses. Additional historical information for some products and manufacturers as well as small line drawings for a few. A glossary and bibliography (without complete references). No physical descriptions of the products and no index. [not seen].
Pill coating in the late nineteenth century was done by both hand models (shown suspended from this ceiling in this illustration), and by power-driven coating machines.

An eclectic and superficial look, based on Drake's own collection, at the kinds of pharmaceutical objects that can be collected. There are descriptions of English delftware drug jars and pill tiles, mortars, coins, medicine spoons, medicine chests, medicine vials, ancient Egyptian and Roman specimens, and literature on quack practitioners. With 15 black-and-white illustrations.


The most definitive work to date in English on the history of drug jars. The chapters are organized according to country, beginning with the Near Eastern origins of the drug jar, but concentrating primarily on the history of the major production centers in Europe from the sixteenth to the eighteenth centuries, and ending with a description of the pharmaceutical ceramic wares from China. A 59-page glossary of the more important terms used in apothecary jar inscriptions is an invaluable guide to the mostly Latin drug names of the period and an important reference tool for researchers and keepers of collections. Excellent notes and bibliography organized by country. Eight full-page color illustrations and 96 black-and-white photographs. Translated into German (1980) and French (1984), and published in larger formats with some changes and additions.


A useful guide for identifying and documenting early weighing devices. Describes the four basic types of mechanical scales (equal arm balances, unequal arm balances, spring balances, and
pendulum balances) and how to differentiate between them. Mentions pharmaceutical and medical applications. With 27 black-and-white object photographs.


A brief history of the pharmacy museum in Cracow, which houses the largest collection of pharmaceutical artifacts in Poland, and a floor-by-floor tour of the collections and period rooms on display in their new quarters, a restored fifteenth-century house. Photographs of three period rooms. A slightly more detailed article describing the collections, together with two photographs, was published earlier by Miroslawa Pabis-Braunstein: "Museum of Pharmacy at the Medical Academy of Cracow," *Pharmacy in History* 30 (1988): 39-42. Both articles have references to publications on the history of pharmacy and pharmaceutical artifacts in Poland (some in English).


An excellent reference book and authoritative guide to about 4,000 patent medicine bottles. Numerous line drawings and color photographs; thorough physical descriptions; company history, marketing, and product advertising as background and context for nearly every product; very good user's guide and indices; and, an excellent, annotated bibliography. Chapter headings organized by commonly used product names or companies embossed within the glass and within each chapter, the bottles are listed alphabetically according to the actual name of the product or company. Highly recommended for museum workers, cultural historians, and collectors.


Two large-format books, heavily illustrated with large color and black-and-white photographs of pharmaceutical ceramic ware from different regions in France. Physical descriptions and curatorial locations for each illustrated object (about 100 in each book). Running narrative throughout the texts discussing the history and evolution of drug jars and the variations in design and manufacture. No notes, select bibliographies, no English text. [not seen].


A very broad and wide-ranging history of the enema as a therapeutic measure and of the development of enema apparatus from ancient times to the twentieth century in the Old World and the New World. Useful notes and 22 illustrations. The last part of the article describes the historical development of therapeutic procedures and instruments related to the enema such as colonic irrigations, rectal anesthesia, the speculum, and the endoscope.


Reprinted from a series appearing in 1956 in the *Journal of the American Pharmaceutical Association, Practical Pharmacy Edition*, with monographs on the mortar and pestle, pharmaceutical balances, pharmaceutical weights, suppository molds, pill tiles and spatulas, pill machines, filtration equipment, drug percolators, the drug mill, lozenges, capsules, and tablets. Each short monograph includes a number of small black-and-white illustrations of some of the equipment and a very useful selected bibliography of difficult to find primary and secondary sources describing the use and history of that equipment.
Updated in 1975. A broad-ranging overview and indispensable guide to the different kinds of pharmaceutical equipment.


Summarizes the proprietary medicine company histories prepared by Holcombe (see entry no. 1156) and expands upon the product descriptions, especially their compositions and uses. Many of the 135 entries, listed alphabetically by company name, cite additional reference sources to those in Holcombe. *Scott's Catalogue* descriptions of the tax stamps are listed in each entry. Appendix material includes an index of the proprietary medicines mentioned throughout the text and check list of facsimile labels of U.S. private die proprietary medicine stamps prepared by Henry Holcombe.


A short history of the medical spoon from the time of the ancient Egyptians to the debates over the standard pharmacopeial teaspoon in the mid-twentieth century. Useful references and six illustrations showing different kinds of medicine spoons.


A short survey history of medicine chests from ancient times to the twentieth century with emphasis on military and naval chests. Second part of the article contains listing of the titles of US medicine chest manuals from 1792 to 1839. 10 illustrations. [not seen].

A suppository is an easily fusible medicated mass that is introduced into an orifice of the body. A suppository mold is a piece of equipment that shapes that mass into form. This monograph is still the best general history of the suppository mold, illustrated with photographs of objects in the medical collections at the Smithsonian Institution's National Museum of American History. Useful notes and references to the early literature.


Plasters, usually paste-like medicated substances spread directly on the skin or spread on materials such as muslin or linen and then adhered to the skin, have been used since ancient times. This article summarizes this history both chronologically and by types of plasters: Diachylon, leather, linen, Court, adhesive, porous, machine-made, and Burgandy pitch. There is also a section on plaster manufacturers and black-and-white photographs of plaster machines and spreaders.


A short, informative article on the history of poison bottles and safety closures, primarily in the United States and Britain in the nineteenth century. Nine illustrations.

Author summarizes previous hypotheses about the origins of the show globe, including that of Urdang, and argues that the show globe as a generally recognized symbol of pharmacy by the public did not appear in pharmacies until the second half of the eighteenth century and that its appearance was intimately associated with the development of vessels known as "show carboys" in England. Five illustrations.


A good overview of the signs and symbols that have been used on signboards to identify pharmacies throughout the world from the fifteenth century until the present. A French translation follows the English text. Illustrations of 28 signs used by pharmacies worldwide.


An informative overview of the early history of pharmaceutical trade literature in the United States, followed by a check list of pharmaceutical catalogs dating from 1760 to 1890. Trade catalogs are important sources of information for identifying and dating pharmaceutical equipment as well as for determining the period of use, the manufacturer, and distributor.


An updated bibliography of sources, primarily in English, to accompany Griffenhagen's selected bibliographies after each equipment group described in *The Tools of the Apothecary* (citation #1079). List of sources divided topically as in the original publication but with new sections added on drug jars and containers, show globes, medicine spoons, miscellaneous
equipment, and general references that provide information about more than one pharmaceutical artifact. Can be used alone as a bibliographic guide but more useful in tandem with *Tools*, especially for those just starting to learn about pharmaceutical equipment.


Updated and revised edition of the 1981 museum guide by Hamarneh and Stieb (citation #1095), but without the bibliographic guide. Museums and historical collections in the United States are described in alphabetical order by state (including the District of Columbia and Puerto Rico) and by city. These are followed by descriptions of Canadian museums in alphabetical order by province and city. An annotated list of 11 markers dedicated by the American Institute of the History of Pharmacy at historical sites from 1963 through 1983 also included.


Primarily a guide to the rich pharmaceutical object collections in Switzerland, with a particular focus on the collections at the University of Basel. Physical and historical descriptions are organized according to object categories with extensive, albeit now dated, references. Fifty-three clear black-and-white photographs of individual objects and object collections. No English text.

Musings on the history of museums interspersed with personal reminiscences. Most useful are the chapters on the history of pharmacy museums and the Naito Museum of Pharmaceutical Pharmacy and Industry in Japan, which have some nice illustrations and descriptions of Japanese pharmaceutical equipment.


The most comprehensive description to date of the early history of the national collections related to the history of the health sciences at the Smithsonian Institution from their beginnings in the Section of Materia Medica in 1881 through 1964. Good descriptions of the collections, the collectors, and their changing institutional setting. Extensive bibliography and 24 photographs. A later article by S. Hamarneh (*Pharmacy in History* 21(1979):163-76) summarizes some of this material, focuses more on the pharmacy and public health collections, and brings the story up to 1979. For the most recent description of the national collections, see Audrey B. Davis, "The history of the health sciences at the National Museum of American History," *Caduceus* 4 (1988):58-71. [not seen].


Description of glass seals excavated from sites in old Cairo, Egypt, which were affixed to vessels containing crude drugs and which usually carried the names of the officials who ordered their manufacture or use, and the names of the drugs in the containers. These are some of the earliest known seals of this kind. The article provides some historical context and information about their manufacture. More detailed physical, historical, and pharmacological descriptions are given of the 13
most commonly used vegetable drugs mentioned on the seals. Four illustrations and extensive references.


Although the listing of pharmacy museums has been superseded by a later edition of this work [Pharmacy Museums and Historical Collections in the United States and Canada, by George Griffenhagen and Ernst W. Stieb. AIHP, 1988, citation #1090], the partly annotated bibliographic note (pp. 128-44) is useful for topics in museology, the history of pharmacy, its tools, and related arts and antiques. Earlier edition by Hamarneh in 1972.


An overview of the development of drug jars in German presented through the physical and historical descriptions of about 70 containers and organized by geographic regions. Full-page black-and-white or color illustrations of the object on the right-hand side of the page accompanied by about a half-page description on the left together with notes. Introductory section contains table with 30 maker's marks. No English text.


A catalog describing and illustrating each of the 73 items in the drug jar collection in the Museum of the History of Science at the University of Oxford. Entries are grouped chronologically
under geographical headings (Italy, the Low Countries, France, England, and Spain). Good introductory sections setting the containers in their pharmaceutical and ceramic context. Short select bibliography and index.


A comprehensive work on North German bronze mortars from about the fourteenth to the seventeenth centuries. Much information on the making of mortars, together with line drawings. Very good descriptions of the different styles of mortars and what various parts of the mortar are called. Several short chapters on the pestle, including one on fake pestles. 153 black-and-white photographs of mortars and pestles with extended physical descriptions. Extensive bibliography and index.


Fourth in a series of monographs by G. Houben on weights and scales which include: European Coin-weights for English Coins (1978), Muntgewichten voor Munten van de Nederlanden (1981), and The Weighing of Money (1982). This work on the richly ornamented nested weights used by pharmacists primarily from the sixteenth to the nineteenth centuries is an excellent reference guide. It contains the most thoroughly documented information to date about the manufacture and use of these weights—materials used, design and decoration, maker's marks, standards and denominations, as well as a section on counterfeits and a useful glossary of terms in English, French, German, and Dutch. Nearly 200 black-and-white photographs. [not seen].

To date, still the best and most comprehensive study of the history of hypodermic medication and syringes. Excellent references and 15 illustrations. A shorter, condensed version of this article entitled "The Origins of Hypodermic Medication" was published later in *Scientific American* 224 (1971): 96-102.


A large, beautifully illustrated book about old European pharmacies with nearly 500 black-and-white as well as color (many full-page) photos of pharmacy interiors and exteriors, together with pharmaceutical dispensing equipment and shelfware. No English text but a French translation from the German appeared in 1976 (entry #1211).


Still the best single source history of tablet making, primarily in the United States. A comprehensive, historical discussion of the methods of tablet manufacture and the various resulting products, such as compressed tablets, tablet triturates, and
hypodermic tablets. Particular emphasis on the equipment used in tablet making, with numerous illustrations. The last section devoted to the tabulation of results of product analyses of numerous tablets on the market around 1913.


A detailed description and history of the first homeopathic drugstore in Riga, Latvia, which opened in 1833 and has been in continual use since then, providing medicines and services for the whole Baltic region as well as vast areas in Russia. The article describes the staff, pharmacy routine, and equipment, and give a glimpse into the history of homeopathy in the Baltic region. Photographs of the pharmacy exterior, machines for ointments and liquid preparations, and storage of bulk supplies for liquid medications.


A good introduction to an overview of the history of scales and weights, with a separate section on pharmaceutical weights (pp. 140-45). Very useful charts of mastersigns and symbols, tables of weights, good bibliography and indices, and about 100 black-and-white photographs.


A history of elixirs, essences, and tinctures primarily in Germany from the sixteenth to the twentieth centuries. Information and formulas gathered from German pharmacopeias. Results from modern chemical analyses of some of the formulas. An extensive bibliography (pp. 291-303), subject, and name indices.

One of a very few articles documenting the history of pharmaceutical laboratory utensils. Describes the design, production, and use of glass graduates as measuring devices in the United States. Study based primarily on information in trade literature and patent documents. Thirteen black-and-white photographs of glass graduates in the author's personal collection. Good reference source.


An interesting travel guide to historic places, architectural landmarks, museums and libraries, and other places of health-related interest, including those related to pharmacy. Provides broader medical context to the pharmacy museum guidebooks. Includes bibliographical references and index.

1109. Matthews, Leslie G. *Antiques of the Pharmacy.* London: G. Bell & Sons, 1971. 120 pp., illus., index.

A brief overview of British pharmaceutical equipment from about the seventeenth to the twentieth century organized primarily according to the materials from which the objects were made, e.g., ceramics, metals, glass, wood, and paper. Separate chapters on medicine chests and proprietary medicines. Select bibliography and about 90 black-and-white photographs.

A description of 110 pill tiles bearing the arms of the Worshipful Society of Apothecaries of London and exhibited by freemen of that Society. These armorial pill tiles dating from the seventeenth to the nineteenth centuries and primarily used for display seem to be a purely English product. They are grouped according to their style of decoration. Eighteen illustrations. [not seen].


A compendium of about 60 Victorian era medicine bottles embossed with the word "CURE" or variations thereof to be found in Great Britain. Physical description for each item, histories for many, about a dozen black-and-white photographs, no index.


Short but informative article describing the histories and current status of pharmacy history museums in the former West and East Germanies. Ten illustrations.


An archaeological guide to artifacts of Colonial America organized alphabetically into sections by artifact type. Two sections devoted exclusively to early American pharmaceutical artifacts: pharmaceutical glass bottles (pp. 72-76) and drug pots, jars, and pill tiles (pp. 203-210). Each section has a few illustrations and short bibliographies. Artifact index.

A compilation from English language newspapers and magazines printed before 1865 of names of bottled products and their uses—mainly, but not exclusively, medicinal products. Product names and advertising excerpts are listed chronologically from 1708 through 1864. Sketches of some of the products. A chapter on the history of glass making in the United States organized by state. An index by product type. Helpful for dating early medicine bottles.


Chapter titled "Open Wide," is devoted to medical spoons. Not as much historical material as in the Griffenhagen article on medical spoons but many more illustrations (56) and more patent information.


Very useful guide for museum workers, collectors, and those interested in a broader and more in-depth description of the objects associated with the practice of pharmacy and the drugstore trade in the nineteenth and twentieth centuries. Major sections on: glass and ceramic containers, including patent medicines; pharmacy equipment, such as, pill makers and rug mills; home health care products, like medicine chests, and quack devices; fixtures, including tins and soda fountain items; and, labels and prescriptions. Appendix contains lists of pharmaceutical companies, bottle markings, drug jar inscriptions, diseases and symptoms, dosage forms, therapeutic classifications, a bibliography, and index. Very heavily illustrated throughout with black-and-white images, primarily from trade catalogs and photographs. Much information about
different styles, shapes, and models of objects as well as dates
when objects appeared in the trade literature, patent information,
approximate sizes, and construction material.

1980. 543 pp., illus.

A large, comprehensive guide to about 3,000 bitters bottles.
Complete physical description for each item as well as historical
and label data and references, when known. Heavily illustrated
with line drawings and 8 pages of color photographs,
geographical index, and rarity index. Many auction houses and
major glass dealers use "Ring numbers" as references. An 116-

1118. Rocchietta, Sergio. *Antichi vasi di farmacia italiani*. Milan:
L'Ariete, 1986. 171 pp., illus.

A large format, beautifully illustrated reference guide to Italian
pharmaceutical containers. Organized by region, then by city
and holder, such as a museum, library, pharmacy, or private
collector. Short bibliography after each section. Hundreds of
illustrations, many in color. Physical descriptions for illustrated
drug jars, including the names of the holders. Good index.

*The Big Beautiful Book of Baby Bottles*. Willoughby, OH: Will-
O-Graf Publications, 1984. 196 pp., illus.

A good catalog of American nursing bottles, which were an
important part of the drugstore trade. Introductory materials
include a bibliography, a classification system consisting of 16
categories and a very useful guide to nomenclature, and a list of
the numerous trade catalogs used for reference. The body of the
text consists of 678 individual bottle entries in alphabetical order
giving very detailed physical descriptions, advertising and patent
information, when available, and illustrations for many.

Beautiful color plates document 600 years of pharmacy. Art works, pharmaceutical title pages, photographs of pharmaceutical glassware, and other artifacts show many facets of pharmacy through history.


The pomander often is a very ornate and highly decorative receptacle for scented or fragrant substances, which have been used as both medicaments and perfumes. This article briefly presents the definition, function, and origin of the pomander as well as its historical background, medical uses, and decorative function as jewelry. Few pomanders are preserved in museums or private collections. This study is based in part on a private collection of 150 objects. Seven illustrations and a bibliographic note.


Describes pharmacies and their contents in Belgium and Holland, from the thirteenth to the nineteenth century. Focus is on drug containers. Text in French and Dutch.


An illustrated, descriptive guide to 554 sarsaparilla bottles. Well-documented chronologies and company histories. Numerous line drawings of products and excerpts from the advertising literature. Useful bibliography and index.

A partial, annotated bibliography of mostly English secondary sources on the history of the various kinds of dosage forms. Sources arranged topically with larger sections on ampuls and injections, enemas and clysters, pills and tablets, capsules, sprays and inhalants, and suppositories. Useful bibliographic guide to dosage forms and drug delivery systems.


A beautifully designed and illustrated, large-format catalog of the T. G. H. Drake Collection of Pediatric History at the Academy of Medicine in Toronto, Canada. The collection consists of about 3000 artifacts, 1500 rare books, 1000 prints, 1000 coins and medals, and about 1000 album pages of child welfare stamps. The catalog is organized thematically with hundred of all-color photographs of objects and graphics together with physical descriptions. Numerous pharmacy-related objects such as infant feeders, pap boats, medicine spoons and bottles, drug jars and ointment pots, mortars, and medicine chests. Appendices include a listing of the museum catalog numbers for all the illustrated objects, an extensive bibliography, and an index.


A brief history and description of the collections related to the history of contraception from ancient Egyptian times to the present, which are located in the entry hall of Ortho Pharmaceutical (Canada) Ltd. near Toronto, Canada. Items in the collection include vaginal sponges, cervical caps, diaphragms, intrauterine devices, condoms, crude drugs, and
pharmaceuticals. 3 illustrations. Not listed in the Griffenhagen and Stieb guide to pharmacy museums.


Cachous are small but very strong tablets or pills that can be chewed or dissolved slowly in the mouth. Their main appeal has been to tobacco smokers and chewers. Excellent description of the different kinds of cachou containers, especially embossed boxes, and of the advertising associated with the selling of cachou products. Appended is a catalog with complete physical descriptions of 27 known embossed cachou boxes from Austria, France, Great Britain, and the United States. 17 illustrations. Good references.


Second in a series of monographs describing the collections at the Museum of the Royal Pharmaceutical Society of Great Britain. The 153 black-and-white photographs reproduced in this catalog are grouped into the following chapters: the Society's house, portraits, Jacob Bell Memorial scholars, Benevolent Fund, pharmacy education and schools of pharmacy, conferences and meetings, pharmacy premises, social setting, and pharmacy raw materials and production. Illustrations index and photographer index.

An excellent comprehensive survey of the development of anesthesia apparatus from the time of the first public demonstration of ether anesthesia in 1846 to 1940. Based on the Charles King Collection of the Association of Anaesthetists of Great Britain and Ireland at the Royal College of Surgeons of England in London. Over 230 illustrations and detailed descriptions of each piece of equipment with contemporary references and biographical information about its inventor. Includes sections on the development of apparatus for ether, chloroform, nitrous oxide, and mixed vapor anesthesia and analgesia.


The book is divided into 3 parts. The first is a brief biography of Henry Wellcome and of the pharmaceutical firm of Burroughs Wellcome & Co., which he helped to establish in 1880. The second part deals with the large collections he amassed, including nearly a half million medical artifacts. Since he was particularly interested in old pharmacies, pharmaceutical objects are well represented in those collections. The third part deals with The Wellcome Trust, the largest medical research charity in Britain. About 30 illustrations and an index.


A short history of the origins of apothecary show globes, beginning with several earlier hypotheses that the author discounts, and then states his own: namely, that the show globe had its origins about 1550 in the shops of the "preparers of chemical medicines" in London, called the "chymists," and was later adopted by the apothecaries.

A very heavily illustrated (black-and-white photographs of over 1,000 objects) catalog of the Squibb European Pharmacy Collection, which is now part of the medical collections at the Smithsonian Institution's National Museum of American History. Detailed description of nearly 1,200 pre-nineteenth century European, primarily German, pharmaceutical artifacts, especially of glass, ceramic, and wooden containers, mortars and pestles, balances, utensils, and fixtures. Pharmacy books, documents, paintings, and graphic illustrations are also important parts of this collection and catalog.


A very good guide and historical introduction to the very rich pharmaceutical heritage of Hungary. The introduction contains a nice summary of the history of pharmacy and pharmacies in Hungary as well as a brief description of national policies regarding historic preservation. The rest of the monograph describes in great detail the individual pharmacy museums and functioning pharmacies under protection, starting with those in Budapest and then proceeding by county and city through the rest of Hungary. Six color and 20 black-and-white plates, bibliography, and index of place names. Supplements an earlier work by Livia Nekam, *Old Hungarian Pharmacies* (Budapest: Corvina Press, 1968), 65 pp. Nekam's monograph includes many more illustrations—40 in color and 15 black-and-white plates—but not as much detailed information about each pharmacy. [not seen].

Bitters was the name given to preparations of medicinal herbs, roots, or barks with a high alcohol content. This book provides a brief history of bitters and a guide to the physical description of the containers. The bulk of the work is a checklist of 379 known marked bitters bottles, with detailed physical descriptions for each, and line drawings for most. Separate listing by shape, and index. Supplement to Bitters Bottles published in 1968. Same format and organization as original book with 141 additional bottles described.


Whitall, Tatum & Co. was one of the major U.S. manufacturers of pharmaceutical glassware from the mid-nineteenth to the mid-twentieth century. This 1880 illustrated catalog features flint glassware, blue ware, perfume and cologne bottles, show bottles and globes, green glassware, stoppers, and druggists' sundries. A short history of the company and its products can be found in the historical introduction at the end of the catalog. The bibliography lists general books on glass, and glassmaking in the South Jersey area, and specific books on bottles. A short list of public collections of commercial glassware follows. A very useful reference and pictorial guide to pharmaceutical artifacts at the turn of the twentieth century.

1136. Wilson, Bill, and Betty Wilson. **19th Century Medicine in Glass.** Amador City, CA: 19th Century Hobby and Publishing Co., 1971. 157 pp., illus., bibl., index.

A heavily illustrated collector's guide to nineteenth century American patent or proprietary medicines. Useful introductory materials on bottle molds, including patent information. Photographs and histories for over 800 products. Physical descriptions not very detailed. Short bibliography and index.

A catalogue and physical description of about 400 Delft drug jars in the collections of the Medical Pharmaceutical Museum of Amsterdam. 92 illustrations with captions in Dutch, English, French, and German. Brief descriptions of the designs and marks on the containers also in four languages. A chapter on marks and one on fakes.

1138. Wittop Koning, Dirk A. *Nederlandse vijsels*. Deventer, The Netherlands: Davo, 1953. 114 pp., illus., bibl., index.

A good descriptive catalog of Dutch and Belgian mortars, primarily from the sixteenth to the eighteenth centuries, organized by maker or mortar founder. Very useful chronological lists of Dutch and Belgian mortar founders and illustrations of signed work by almost every Dutch maker. Good descriptions of various decorative motifs and inscriptions, bibliography, index, and English summary. [not seen].

1139. Wittop Koning, Dirk A. *Bronzemörser*. Frankfurt am Main: Govi-Verlag, 1975. 66 pp., illus.

An illustrated catalog of primarily European bronze mortars from the fifteenth to the eighteenth centuries, though there are illustrations of a twelfth-century Persian mortar and a twentieth-century Dutch mortar. Twenty-seven full-page illustrations of mortars (mostly black and white) on the right side of the page with descriptive text on the left. The introduction includes a short history of the mortar as well as a discussion of manufacturing techniques and design.

Primary focus on British medical chests. Covers much of the same ground as Crellin's article on medicine chests but also discusses homeopathic medical chests and includes 5 large photographs.


A detailed history of weights and measures in Europe, especially Britain and France. Nearly 100 pages of notes with numerous references, including those to other important works by Zupko on this topic, and an index. No separate section or mention of pharmaceutical weights, but Appendix 2 (The Quantity Measures of Pre-metric Europe) and Appendix 3 (The Weights of Pre-metric Europe) provide information about medical and pharmaceutical applications.


Good descriptions of the weights and measures used by medieval apothecaries, alchemists, and physicians. Principal units divided into two categories: inexact and exact. 3 illustrations. Very good select bibliography of the most important metrological sources for medieval European pharmaceutical weights and measures.

2k—Patent Medicines and Quackery

Articles on quack cures and nostrums reprinted from JAMA. Many labels from products are reproduced.


Entertaining social history of American patent medicine advertising. Heavily illustrated.


A series of exposés from the *New York Post*.


A comparison of the promotion, sale, and use of proprietary medicines in Britain and the Netherlands.


An examination of the therapeutic claims, ingredients, and pharmacological properties of nineteenth-century American patent medicines by a pharmacologist-historian.


This well-illustrated piece looks in brief at some of the supposed rationales for some popular American nostrums.

The history of medical quackery, including details on the careers of well-known charlatans, and containing 68 illustrations of prints, paintings, etc. The analysis of quackery focusses on early modern Europe.


The popularity of old English patent medicines in eighteenth-century America is evident in the advertising and imitation of these products when the supplies were cut short.


Quackery in Western civilization seems to have peaked in the eighteenth century, as shown here. Taking an interdisciplinary approach, the author examines the reasons for its development during this period.


A useful compilation of 137 brief histories of firms that used United States private die proprietary medicine tax stamps in the
nineteenth century to help defray the costs of the Civil War. Information for the histories of these firms and their products was gathered from such diverse sources as city directories, medical almanacs, biographies, and newspaper advertisements. The histories are arranged alphabetically by name of firm; include numerous photographs of tax stamps, products, advertisements, and portraits; and are preceded by an informative foreword by George Griffenhagen. Appendices include a bibliography, an index of persons and firms, an index of products, and an index by the philatelic Scott number. An important reference source for the history of proprietary medicines in the United States.


Articles that appeared in philatelic magazines collected by George Griffenhagen.


The main focus is the sixteenth through the eighteenth centuries.


Both lively and scholarly, this is the story of the marketing of patent medicines in the United States in the nineteenth century.
Part Three:  Pharmacy in the Arts

3a—Architecture and Interior Design


Includes plans, sections, photos. In German. Sebastian Apotheke in Munster, Germany. [not seen].


Pharmacy in Belgium, p. 50. [not seen].


Dispensaries, France. Includes photos. [not seen].


Describes the design of pharmacies and drug jars in Spain from the thirteenth to the eighteenth centuries. Many illustrations.

Illustrations of pharmacies from around the world, including some floor plans, photographs, and engravings. Text gives context for the illustrations.


Group illustrations that appeared in pharmacy calendars, etc., by their subjects. These include pharmacy interiors, portraits, caricatures, and so forth.


Text in English, German, French. Includes plans, photos. Creation of a dwelling in the roof space and first floor of a sixteenth-century house with ground floor pharmacy. [not seen].


Text in German, English (p.3). Pharmacy with flat above. Chemists shop in Switzerland. [not seen].


Includes plans, photos, axonometric views. [not seen].

Includes plans, sketches, photos. In German. Engel Apotheke in Aschaffenburg, Germany. [not seen].


Text in German. Alterations include a new ground-floor facade. Apotheke Schneider, Kirchheim, Germany. [not seen].


Text in German. English summary (p.11). Includes plans, sketches, photos. [not seen].


Describes pharmacies and their contents in Belgium and Holland, from the thirteenth to the nineteenth century. Focus is on drug containers. Text in French and Dutch.


Includes photos, plans, sections, sketches. Text in German. [not seen].


Text in French. Pharmacy in Lille. [not seen].

   Includes photo, plans, sections. Text in English, Italian—chemist's shop, France, Boves. [not seen].


   Copperplate title page for "Lexicon galeno-chymico-pharmaceuticum universale" by Elsevier, eighteenth century.


   Includes sketches, photos. Text in English, Italian, French. [not seen].


   Includes photos, plans. Text in German. Pharmacy in Austria. [not seen].

3b—Painting, Sculpture, Graphic Arts, and Photography

Essentially a text on the history of pharmacy in the area surrounding Liége. The 219 illustrations include paintings, ceramics, antiques, medals, and caricatures, several in full color.


Brief descriptions, sources, and small reproductions of 3171 images of medical and related subject. Includes 35 images of pharmacies and 17 of pharmacists (there is some duplication), indexes of personal names, institutions, photographers, and subjects, as well as a chronological list and a thorough bibliography.


This work includes 48 color plates, which reveal much about late medieval life. Plate 41, showing the sale of theriac, is an exquisite depiction of southern European pharmacy c. 1400. The book's text is primarily about the history of art.


A catalogue of prints and drawings in the caricature collection at the Royal Pharmaceutical Society of Great Britain, listing 171 objects, with a title index and biographical notes. Containing 58 illustrations, 8 in color.

Discusses films such as W. C. Fields' "It's the Old Army Game," (1926), his "The Pharmacist" (1933), "It's a Wonderful Life" (1946), etc. Four illustrations are included.


Antique ceramics, mortars, glassware, and other objects used in French pharmacies, with chapters devoted to geographical regions and the antiques indigenous to them.


Contains 40 illustrations of significant events in the history of pharmacy by Robert A. Thom, commissioned by Parke-Davis & Co. for a series, "A History of Pharmacy in Pictures." Each of the paintings is reproduced in color, with commentary by George A. Bender.


Chapters cover antiques, glassware, ephemera, philately, etc.


With more than 150 illustrations, many in full color, this book conveys the artistry of the herbals. The illustrations are well documented and the book contains a short bibliography and index.

The history of pharmacy in the Netherlands with illustrations in black and white and color of pharmacy interiors, facades, equipment, and antiques.


Catalogue of an exhibition on the history of American pharmacy, describing 160 objects, with illustrations of 54 of them. The cover reproduces a number of trade cards advertising proprietary medicines.


Includes 488 illustrations. The catalogue is organized by product use, and includes sections on pharmacy jars, tiles, mortars, nursing and hygiene, inhalers, eye baths, spitoons, chamber pots, urinals, bidets, phrenological heads, etc.


Color illustrations from pharmacy text or manuscripts in France. Not limited to French works. Covers the ancient through modern period.

There are 36 pages of text and 46 of a useful dictionary listing French translations for abbreviations which appear on drug jars. With 14 black-and-white plates.


Describes Delftware, mortars, numismatics, ceramics, containers, nostrums, caricatures, etc. With 15 illustrations inserted into the text.


Contains 11 reproductions of prints on quackery and other subjects, both social and political. The issue of the journal in which this article appeared contains two others on medical caricature, Wolfgang Born, "The Nature and History of Medical Caricature," and Curt Proskauer, "The Dentist in Caricature."


A review of ceramics from the twelfth to nineteenth centuries, with 96 illustrations and a glossary of terms used in apothecary jar inscriptions.


A study of photographic representation of medicine and related health professions in Great Britain and the United States since the 1840s. Includes several photographs in pharmaceutical
settings at Bellevue Hospital, New York; St. Bartholomew's Hospital, London, and so forth.


On Smithsonian exhibition of prints from the collection of William H. Helfand, including reproductions of ten of the objects on exhibit.


Contains 125 black-and-white reproductions of German paintings, prints, portraits, antiques, pharmacies, medals, etc., each with a descriptive text.

1195. Hein, Wolfgang-Hagen. Die Pharmazie in der Karikatur/Pharmacy in Caricature. Frankfurt am Main: Govi-Verlag, 1964. 222 pp., illus., index.

With 210 black-and-white illustrations and text in both English and German, subjects covered include both political and social caricature with examples from German, French, British, and American sources. There is an index of artists and an index of sources.


One of a series of monographs, each devoted to a specific pharmaceutical antique or other object of interest to collectors.

A listing of the illustrations, including paintings, prints, ceramics, antiques, etc., which have been published in the German and Dutch pharmaceutical-historical calendars as well as the publication *Zur Geschichte der Pharmazie* and its predecessor. Contains 32 illustrations, 4 in color.


Catalog of an exhibition of 120 prints, drawings, and pharmaceutical ephemera held in Toronto, with 16 black-and-white illustrations.


Describes 125 political prints published in the United States prior to 1871, with black-and-white illustrations of each. A chronological index is included.


Catalog of an exhibition of 60 posters for pharmaceutical products, pharmacies, and public health issues, with black-and-white illustrations for each.

Posters, "porcelain cards," trade cards, post cards, and other media advertising the professional activities of pharmacists, physicians, etc. With 35 black-and-white illustrations. [not seen].


A review of posters designed for public health issues, with a checklist of 115 items. Includes 35 illustrations, of which 8 are in color.


Reproduces 8 posters advertising proprietary products in color and includes a checklist of 69 European and American posters.


Illustrations of pharmacy in postcards, trade cards, caricatures, playing cards, games, song sheets, and other popular media; with 18 black-and-white illustrations.


Illustrations of pharmacy and pharmacists in popular prints, largely French, with 10 black-and-white illustrations.

A study of the differences between American and European nineteenth century posters, with four black-and-white reproductions.


A collection of 151 Italian political caricatures on medical and pharmaceutical themes, including a brief text in English, French, and Italian, and reproductions of each of the prints along with explanatory captions.


A comprehensive survey of medical caricature, with many descriptions of pharmaceutical subjects.


With 43 illustrations of pharmaceutical antiques, caricatures, and advertising trade cards.


Thirteen papers dealing with the patron saints of pharmacy, with illustrations of statues, miniatures, paintings, and ephemera on which their effigy appears.

First published as *Schöne alte Apotheke* (Munich: Verlag George D. W. Calway, 1975). Contains 458 illustrations, in black and white and color, of pharmacy interiors. Reproduces sculptures, containers, equipment, and other pharmaceutical antiques. [not seen].


Catalogue of an exhibition of prints, drawings, and photographs from the Ars Medica Collection. Includes several pharmaceutical subjects.


The pioneering study of ephemera, based on the changing uses of type and letterforms in English and American printing. With 713 illustrations, many in color, and containing a number of labels and other examples of pharmaceutical interest.


Reproduces 104 miniatures, 18 in color, showing medical and pharmaceutical scenes. Includes extensive review of medicines, pharmaceutical practices, etc., as illustrated in miniatures from European and American collections.

1215. Masino, Cristoforo, Angelo Schwarz, and Guiseppe Ostino. *Piemonte e Valle d'Aosta*. Per una storia della farmacia e del

Well illustrated with antiques, paintings, statues, portraits, etc., from this region of Italy. For other regions, see citation #1229.

1216. Matthews, Leslie G. Antiques of the Pharmacy. London: G. Bell & Sons, 1971. 120 pp., illus., index.

Contains 89 illustrations. The text contains chapters on pottery, metals, glass, wooden objects, medicine chests, materia medica cabinets, prints, proprietary medicines, stamps and advertisements.


Includes reproductions of the covers of 5 songs in the Wellcome Library collection, Morison's Pills, The Quack Doctor, Medicine Jack, Doctor Compes Mentis, and The Quack's Song.


Uses illustrations of objects in the collection of the Swiss Pharmaziehistorisches Museum, grouped by historical period, to trace the development of drugs through artifacts. There is a reprinted black-and-white edition (Totowa, NJ: Barnes & Noble Books, 1986) that includes references and an index.


An entire issue devoted to pharmaceutical advertising with articles on art and pharmacy, French pharmaceutical advertising since the fifteenth century, methods and trends in pharmaceutical advertising, books, albums, reviews, and
packaging of pharmaceutical firms, etc. With many original advertisements included.


The interiors and antiques of pharmacies in Hungary, with 15 black-and-white illustrations and 40 in color.


A portfolio of American medical and pharmaceutical practices from the eighteenth century, containing over 400 black-and-white and sepia prints, photographs, and documents.


With contributions by Lydia Mez. A collection of illustrations of the antiques and other holdings at the Swiss Pharmazie-historische Museum in Basel. Chapters are devoted to mortars, medals, weights, statues, glassware, clysters, and other antiques.


Copiously illustrated, in sepia, with photographs of Italian pharmacies, their interiors, antiques, drug jars, etc. Paintings in which pharmacies appear are included.

Contains chapters on pharmacy in the Middle Ages up to the eighteenth century, distillation, pharmacopoeias, etc., with 83 black-and-white illustrations.


Primarily devoted to those antiques which relate to narcotic and other psychoactive drugs, reproducing postcards, advertisements, paperback book covers, and packages.


A catalogue of pharmacy antiques, with sections on glassware, labels, equipment, pill tiles, scales and weights, advertisements, etc. An appendix lists museums, American pharmaceutical firms, etc.


A thorough review of the collecting, conservation, display, organization, sources, and values of ephemera. Contains 750 illustrations, 300 in color, largely from the collection of the author, including numerous examples of pharmaceutical ephemera.

A thorough study of Italian drug jars, organized by their place of origin, with present locations noted for each of the jars reproduced.


Vol. 2: Ruggiero Romano, Angelo Schwarz, *Venezia e Veneto,* 1981, 96 pp., with 175 illustrations in color and black and white.

In this series published by Schiapparelli, the Italian pharmaceutical manufacturing firm, each volume is well illustrated with antiques, paintings, statues, portraits, etc., from individual regions of Italy.


Reproduces 12 social caricatures on Jenner's smallpox vaccine, Perkin's Metallic Tractors, Morison's Pills, etc.


Contains more than 75 illustrations, in color and black and white, or miniatures, portraits, caricatures, etc.

An illustrated history of drugs in the movies, describing films in which narcotics and psychoactive drugs play a role, such as the 1936 films "Marihuana," and "Reefer Madness," etc. Contains illustrations of posters, stills, on drug-related films.


Includes a section on pharmacists as well as one on clysters. Among the 331 black-and-white illustrations are several of pharmacists and their clients.


A review of "vernacular expression in New Deal medicine and photography," with 80 photographs from the Farm Security Administration. Advertisement for pharmaceuticals and other pharmaceutical images are included.


Contains reproductions of 12 social caricatures on quacks, medicine, and pharmacy by British and French artists.

A study of medical and pharmaceutical advertising in France from the charlatans of medieval times to contemporary journal advertisements. Many of the 116 illustrations of posters, labels, signs, etc., 85 of which are in color, are rare and unfamiliar.


Catalogue of an exhibition at the Wellcome Historical Medical Museum, with sections on Alchemy and Pharmacy, Herbals, Pharmacology, Chemotherapy, Vessels for Pharmaceutical Preparations, Mortars and Pestles, etc. Contains 11 illustrations.


A historical study of the evolution of myths concerning the Dance of Death in art. Contains 92 illustrations, several of which show Death in a pharmaceutical setting.


Primarily devoted to social caricature and containing about 130 illustrations.

Color reproductions of illustrations of paintings, ceramics, statues, prints, and other works of art originally published by the author in an annual pharmaceutical-historical calendar.


Reproduces prints, paintings, antiques, etc. from Dutch pharmacies. Includes 66 illustrations in color and black-and-white.


A series of monographs, each devoted to a specific pharmaceutical antique or other object of interest to collectors.


Contains black-and-white illustrations of a variety of Dutch images: prints, posters, caricatures, bookplates, labels, portraits, imagerie populaire, etc.


Describes 188 political prints published in Holland prior to 1933, with illustrations for each. A brief text is printed in Dutch and English; captions for each of the prints give further details.
Painting, Sculpture, Graphic Arts, and Photography


A comprehensive encyclopedic compilation of information on the history of pharmacy in Holland, reproducing documents, portraits, paintings, etc., with 249 illustrations in color and black and white and a thorough bibliography. [not seen].


The clyster in the history of medicine, art, and literature, with 186 black-and-white illustrations of paintings, caricatures, etc., in which this instrument appears.


3c—Creative Literature


A review of some of John Uri Lloyd's fiction and indications of the connections to details of his own life and career.

Survey of selected works of fiction with drug-related themes.


This book, modeled after Urdang's *Der Apotheker im Spiegel der Literatur*, examines the portrayal of pharmacy in Danish literature. (In Danish, with an index and short bibliography.).


The fiction of Ann Petry reflects her concern with maintaining personal (and professional) integrity in times of historical, moral, or social upheaval.


English-language short stories dealing with mind-altering drugs. Bibliography with abstracts.


Classic study linking pharmacy and literature, with index to literature and authors cited. Old German type makes the reading slow going.

Covers the representation of the pharmacist in well-known literature (mostly from the sixteenth century on), as well as music and other literary art forms.

**3d—Music**


Dittersdorf’s "Der Apotheker und der Doktor" opened in Vienna in 1786. This article reviews the opera, Dittersdorf’s biography, and the place of this opera in pharmaceutical literature, with documentation.
<table>
<thead>
<tr>
<th>Author Name</th>
<th>Entry Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ackerknecht, Erwin H.</td>
<td>482, 483</td>
</tr>
<tr>
<td>Adam, Linda</td>
<td>905</td>
</tr>
<tr>
<td>Adams, David P.</td>
<td>582</td>
</tr>
<tr>
<td>Adams, Walter</td>
<td>876</td>
</tr>
<tr>
<td>Adlung, Alfred</td>
<td>137</td>
</tr>
<tr>
<td>Advenier, Charles</td>
<td>1236</td>
</tr>
<tr>
<td>Aftalion, Fred</td>
<td>1007</td>
</tr>
<tr>
<td>Albert, Adrien</td>
<td>408</td>
</tr>
<tr>
<td>Alcer, G.</td>
<td>1008</td>
</tr>
<tr>
<td>Alderson, Wroe</td>
<td>365</td>
</tr>
<tr>
<td>Ali, Mohammad</td>
<td>103</td>
</tr>
<tr>
<td>Allen, D. G.</td>
<td>688</td>
</tr>
<tr>
<td>Andersen, Dannesboe</td>
<td>1045</td>
</tr>
<tr>
<td>Anderson, Frank J.</td>
<td>769</td>
</tr>
<tr>
<td>Anderson, Lee</td>
<td>795</td>
</tr>
<tr>
<td>Anderson, Oscar Edward, Jr.</td>
<td>691, 692</td>
</tr>
<tr>
<td>André-Pontier, L.</td>
<td>128</td>
</tr>
<tr>
<td>Andrews, Theodora</td>
<td>1</td>
</tr>
<tr>
<td>Angenot, Jean-François</td>
<td>1175</td>
</tr>
<tr>
<td>Antoine J. Ballard (1802-1876),</td>
<td>239</td>
</tr>
<tr>
<td>Apple, Rima D.</td>
<td>828, 1176</td>
</tr>
<tr>
<td>Appleby, John H.</td>
<td>154</td>
</tr>
<tr>
<td>Arano, L. C.</td>
<td>1177</td>
</tr>
<tr>
<td>Araujo, Carlos da Silva</td>
<td>112, 113</td>
</tr>
<tr>
<td>Arber, Agnes R.</td>
<td>770</td>
</tr>
<tr>
<td>Archambault, George</td>
<td>831</td>
</tr>
<tr>
<td>Armstrong, James W.</td>
<td>211</td>
</tr>
<tr>
<td>Arnold-Forster, Kate</td>
<td>1046, 1128, 1178</td>
</tr>
<tr>
<td>Arbelt, Walter</td>
<td>2</td>
</tr>
<tr>
<td>Austin, Robert B.</td>
<td>3</td>
</tr>
<tr>
<td>Autian, J.</td>
<td>409</td>
</tr>
<tr>
<td>Autio, D. E.</td>
<td>907</td>
</tr>
<tr>
<td>Avicenna (Ibn Sina)</td>
<td>749</td>
</tr>
<tr>
<td>Awad, Henry A.</td>
<td>1094</td>
</tr>
<tr>
<td>Ayd, Frank J.</td>
<td>584</td>
</tr>
<tr>
<td>Bachmann, C.</td>
<td>410</td>
</tr>
<tr>
<td>Bailey, Thomas A.</td>
<td>693</td>
</tr>
<tr>
<td>Baldwin, Joseph K.</td>
<td>1047</td>
</tr>
<tr>
<td>Ballard, Charles W.</td>
<td>796</td>
</tr>
<tr>
<td>Bardell, Eunice Bonow</td>
<td>908, 909, 1179, 1248</td>
</tr>
<tr>
<td>Barkan, Ilyse D.</td>
<td>694</td>
</tr>
<tr>
<td>Bartels, Karl H.</td>
<td>695</td>
</tr>
<tr>
<td>Baudet, Jean</td>
<td>1180</td>
</tr>
<tr>
<td>Baumé, Antoine</td>
<td>750</td>
</tr>
<tr>
<td>Bäumler, Ernst</td>
<td>261</td>
</tr>
<tr>
<td>Bautista, Teresa</td>
<td>69</td>
</tr>
<tr>
<td>Beal, Harold M.</td>
<td>403</td>
</tr>
<tr>
<td>Beal, J. H.</td>
<td>696</td>
</tr>
<tr>
<td>Bearman, David</td>
<td>411</td>
</tr>
<tr>
<td>Becker, Louis A.</td>
<td>1009</td>
</tr>
<tr>
<td>Beer, John J.</td>
<td>1010</td>
</tr>
<tr>
<td>Beguin, Jean</td>
<td>751</td>
</tr>
<tr>
<td>Bell, Jacob</td>
<td>114</td>
</tr>
<tr>
<td>Bell, W. J.</td>
<td>243</td>
</tr>
<tr>
<td>Bender, George A.</td>
<td>160, 337, 621, 797, 971, 1048, 1181, 1182</td>
</tr>
<tr>
<td>Bennion, Elisabeth</td>
<td>1049</td>
</tr>
<tr>
<td>Benson, Roger A.</td>
<td>916</td>
</tr>
<tr>
<td>Berendes, Julius</td>
<td>77, 78</td>
</tr>
<tr>
<td>Bergevin, Al</td>
<td>1050</td>
</tr>
<tr>
<td>Berman, Alex</td>
<td>60, 79, 80, 255, 356, 585, 586, 587, 588, 697, 798, 799, 800, 801</td>
</tr>
<tr>
<td>Bernsmann, W.</td>
<td>412, 698</td>
</tr>
<tr>
<td>Berridge, Virginia</td>
<td>367, 589, 590</td>
</tr>
<tr>
<td>Bethman, David</td>
<td>1051</td>
</tr>
<tr>
<td>Bett, W. R.</td>
<td>331</td>
</tr>
<tr>
<td>Bickel, Marcel H.</td>
<td>410, 418, 591</td>
</tr>
<tr>
<td>Bindra, Jasjit S.</td>
<td>592</td>
</tr>
<tr>
<td>Björkman, Edwin</td>
<td>360</td>
</tr>
<tr>
<td>Blackwell, Barry</td>
<td>584</td>
</tr>
<tr>
<td>Blais, Gerard D., Jr.</td>
<td>593</td>
</tr>
</tbody>
</table>
Blake, John B., 5, 6, 697, 699, 731, 741, 744, 862, 1012
Blasi, Betty, 1052
Blauch, Lloyd E., 910
Bliss, Michael, 242, 594
Blockstein, William L., 215, 911
Blunt, Wilfred., 771, 1183
Bobst, Elmer Holmes, 250
Bogard, Mary O., 1053, 1054
Bonnemain, Henri, 169, 231, 854
Bono, James, 802
Bonow, Eunice R., 912
Bouvet, Maurice, 7, 129
Bové, Frank J., 169, 597, 854
Bovet, Daniel, 598
Bowers, Roy A., 914, 915
Boxer, C. R., 315, 320
Boylan, James C., 372
Bradley, Theodore J., 273
Brandel, I. W., 1055
Bretschneider, Emile V., 123
Brewer, William A., 413
Brockbank, William, 368
Brodie, Donald C., 916
Bromell, John R., 369
Brown, Michael S., 192
Brown, P. S., 599
Brown, T. R., 708
Brown, William, 370
Brunvells (eds.), J., 462, 510
Brunner, Theodore F., 527
Bruppacher-Cellier, Marianne, 252
Buerki, Robert A., 8, 371, 372
Bunnell, Kevin P., 917, 964
Bürgin, Alfred, 186
Burkholder, D. F., 358
Burkill, I. H., 855
Burlingham, Robert, 600
Burnby, Juanita G. L., 803
Burnett, John, 1056
Burt, Joseph B., 299
Bush, Patricia J., 657, 822, 885
Butler, T. C., 414
Bynum, William F., 688, 804
Caldwell, Anne E., 601
Callisen, Adolf Carl Peter, 10
Cameron, H. Charles, 849
Campbell, Leslie Caine, 805
Carl S. N. Hallberg, 1856-1910, 272
Carlisle, Robert D. B., 212
Carlson, D. G., 102
Carpenter, Kenneth J., 602
Carroll, Edward J., 373, 374
Carson, Gerald, 1144
Cash, Philip, 619
Caspari, Charles, Jr., 375
Cassar, Paul, 149
Cavers, David B., 699
Chadwick, Alena F., 519
Chapman-Huston, Desmond, 180
Charters, W. W., 376, 919
Chen, K. K., 416
Chien, Robert L., 856
Christianson, Eric H., 619
Cignoli, Francisco, 105
Cocolas, George H., 920
Colapinto, Leonardo, 700
Colebrook, L., 258
Coley, Noel G., 603
Comanor, W. S., 857, 858, 859, 1011
Combes, Reg, 152
Conci, Giulio, 81
Connors, Kenneth A., 417
Conradi, Helmut Peter, 1057
Conroy, Mary Schaeffer, 155
Conti, A., 418
Cook, E. Fullerton, 377
Cook, Harold, 701, 806
Cook, James, 1145
Cook, Roy Bird, 294, 378
Cooper, Michael, 861
Cooper, Norman, 115
Cooper, William C., 528
Copeman, W. S. C., 807
Cordasco, Francesco, 11
Cordus, Valerius, 752
Coulas, Gail, 992
Coulter, Harris L., 604
Cowen, David L., 12, 82, 84, 161, 379, 391, 419, 420, 421, 439, 484, 605, 606, 607, 702, 703, 704, 705, 772, 773, 774, 775, 776, 808, 809, 862, 914, 915, 922, 1012, 1020, 1206
Craker, Lyle E., 519
Cray, William C., 198
Crellin, John K., 380, 608, 609, 810, 811, 812, 813, 814, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1186
Cripps, Ernest C., 180, 232
Croll, Oswald, 753
Crunnenden, Joseph, 863
Cruz, Martin de la, 529, 754
Culp, Robert W., 923, 924
Curtis, Robert I., 530
Danforth, Ellen Zak, 1066
Dann, Georg Edmund, 14, 138, 256, 283, 605
Dannenfeldt, Karl H., 485
Davenport-Hines, R. P. T., 187
Davis, Audrey B., 610, 1013, 1067
Davis, Lee Niedringhaus, 864
Davy, René, 245
De Jonge, C. H., 1068
Debus, Allen G., 85, 86, 87, 130, 422, 423, 486, 487, 531, 578
DeGraff, John, 1069
Delaveau, Pierre, 1070
Delépine, M., 424
Delgado, Frank A., 381, 382
DeSalvo, Robert J., 925
Deshler, Charles D., 393
Devner, Kay, 1071
Diaz, Luis Torres, 926
Diehl, Digby, 1249
Dilleman, Georges, 132, 324, 706, 1187
Dioscorides, 755, 756, 757
Dorveaux, Paul, 1188
Dowling, Harry F., 383, 611
Doyle, Paul A., 88
Drake, T. G. H., 1072, 1189, 1190
Drey, R. E. A., 1073, 1097, 1191
Dreyfuss, Mark S., 1013, 1067
Duckworth, Allan, 1014
Duff, J. Gordon, 927
Dukes, M. N. G., 1146
Dulieu, Louis, 131
Dunglison, Robley, 15
Durling, Richard J., 16
Dymock, William, 488
Eaches, Albert R., 1074
Earles, Melvin P., 89, 425, 426, 427, 928, 929
Eckhardt, Shohreh B., 646
Eckles, Robert B., 930
Edsall, John T., 411
Edwards, Griffith, 590
Edwards, Tudor, 1158
Efron, Daniel H., 489
Egan, John W., 865
Einbeck, Arthur, 815
Eisner, D. A., 688
Ekier, Leszek, 1075
Elferink, Jan G. R., 150
El-Gammal, Samir Yahia, 127
Elliott, Edward C., 932
Ellis, Frank, 816
Engel, Leonard, 213
Engelmann, W., 17
England, Joseph W., 1015
England, Joseph W., ed., 933
Erichsen-Brown, Charlotte, 612
Erlen, Jonathon, 18
Erni, Paul, 184
Estes, J. Worth, 428, 429, 430, 431, 432, 433, 434, 490, 532, 613, 614, 615, 619, 1147, 1148
Eulner, Hans-Heinz, 981
Evanston, Robert V., 925
Fabre, R., 132
Fantus, Bernard, 384
Farber, Eduard, 435
Fedo, David A., 995
Feehan, H. V., 106
Fehlmann, Hans-Rudolf, 101, 159
Feldmann, Edward G., 777
Felger, Donna H., 1115
Felger, Harvey Wickes, 281
Felger, William, 823
Fechtl, Fritz, 216
Ferguson, John, 19
Ferguson, Joyce A., 992
Ferguson, Thomas, 817
Figurovskii, N. A., 313
Fike, Richard E., 1076
Fischbaum, Marvin, 866
Fischelis, Robert P., 707, 886
Flanagan, Sabina, 276
Florey, H. W., et al., 616
Florey, K., 170
Florkin, Marcel, 533
Flückiger, Friedrich A., 617
Folch Jou, Guillermo, 20, 21, 156
Foote, Perry A., 1016
Forbes, R. J., 1017
Forbes, Thomas, 818
Foster, Thomas, 831
Fourrest, Henri-Pierre, 1077
Fourneau, Jean-Pierre, 268
Foust, Clifford M., 491
Fox, Daniel M., 1192
Frampton, John, 758
Francesco, Grete de, 1149
Francis, Anne, 248
Francis, John W., 310
Francke, Donald E., 385, 801, 916
Francke, Gloria N., 385, 934
Freedley, Edwin T., 386
Freking, Harold C., 935
French, R. K., 145
Friedenwald, Julius, 1078
Friederich, C., 436
Friedrich, Christoph, 1255
Frothingham, Alice Wilson, 1159
Fruin, Joseph S., 437
Fye, W. Bruce, 618
Galambos, Louis, 192
Galen, 759
Gallagher, Teresa C., 828
Ganinger, Kurt, 90, 110, 219
García Hernández, Manuel, 126
Garcia Serrano, Rafael, 70
Garrison, Fielding H., 23
Gathercoal, E. N., 387
Gaude, Werner, 91
Geissler, Ewald, 24
Geoffroy, Etienne-François, 760
Gibson, Melvin R., 249
Gicklhorn, Renée, 148
Gifford, George E., 619
Gill, Harold B., Jr., 867
Gillispie, Charles C., 255, 291
Gillispie, Charles Coulston, 220
Gilman, Alfred, 438
Ginzburg, Isaiah, 388
Gohlman, William E., 237
Goldstein, Avram, 285
Goldstein, Joseph L., 192
Goldwater, Leonard J., 620
Goltz, Dietlinde, 534, 778
Goodman, Louis S., 438
Goris, Albert, 293
Götz, Wolfgang, 349
Grabowski, Henry, 868
Gramling, L. G., 936
Granberg, C. Boyd, 215, 937
Grapes, Z. T., 708
de Gravelain, Frederique, 1157
Grier, James, 92
Griffenhagen, George, 163, 389, 621, 819, 820, 821, 822, 823, 1036, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1150
Griffith, Ivor, 327
Grover, Kathryn, 631
Guay, Y., 1018
Guerra, Francisco, 25, 316, 492, 493
Guislain, André, 111, 709
Guitard, Eugène Humbert, 26, 27
Gwei-Djen, Lu, 652
Haber, Ludwig Fritz, 1019
Habermann, Ernst R., 253
Haffner, Gerald O., 390
Häßliger, Josef Anton, 221, 1091
Hagen, Karl G., 761
Haggis, A. W., 622
Haines, Gregory, 107, 108
Hale, Hobart Amory, 362
Hall, Courtney Robert, 311
Hall, Marie, 824
Haller, John S., Jr., 494, 623, 624, 625, 626, 627, 628
Hamarneh, Sami, 28, 104, 495, 535, 536, 779, 780, 825, 826, 1092, 1093, 1094, 1095, 1193
Hare, Ronald, 629, 630
Harper, Donald J., 538
Harré, R., 274
Harrington, R. K., 539
Harrod, D. C., 939
Helfand, William H., 84, 391, 439, 809, 814, 1020, 1027, 1061, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207
Helms, Robert B., 901
Henderson, Metta Lou, 940, 941
Hershenson, Benjamin R., 632
Hickel, Erika, 139, 440, 498, 1021
Higenbotham, Harlow N., 865
Hill, C. R., 1097
Hirsch, Rudolf, 30
Ho, Norman F. H., 385
Hobby, Gladys L., 633
Hoch, J. Hampton, 441, 832, 942, 943
Holcombe, Henry W., 1152
Holländer, Eugen, 1208
Holloway, S. W. F., 714, 829
Holmsdottir, Bo, 442, 489
Hörmberg, Wolfgang, 1098
Hooper, David, 488
Houben, Gerard M. M., 1099
Howard-Jones, Norman, 1100
Hu, Shiu-ying, 500
Hügel, Herbert, 31, 32
Hughes, F. Norman, 944, 945
Hughes, R. Elwyn, 501
Hutton, D. A., 1062
Hynson, Henry P., 946
Ince, Aaron J., 634
Issekutz, Béla, 635
Jack, D. B., 172
Jackson, Charles O., 715
Jackson, W. A., 1101, 1209
James, Robert, 35
Janssen, Wallace F., 716
Jacobsen, Saul, 636
Jasensky, Ronald, 460
Jayawardene, S. A., 36
Jeanjean, Jean-Félix, 240
Johnson, F. Neil, 637
Julien, Pierre, 37, 241, 246, 247, 266, 1210
Just, Theodor, 42
Kahn, Ely Jacques, Jr., 190
Kallinich, Günter, 1102, 1211
Kalman, Samuel H., 392
Karnick, C. R., 540
Karp, Diane R., 1212
Kaufman, K. L., 830
Kawakita, Yosio, 502
Keating, Peter, 638
Keats, Charles, 870
Kebler, Lyman F., 312, 717, 1103
Keeney, Elizabeth, 51
Keeney, Tammy Lynn, 940, 941
Keiner, B., 948
<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kendall, Edward C.</td>
<td>639</td>
</tr>
<tr>
<td>Kerner, Dieter</td>
<td>322</td>
</tr>
<tr>
<td>Kersaint, G.</td>
<td>267</td>
</tr>
<tr>
<td>Keys, Thomas E.</td>
<td>443</td>
</tr>
<tr>
<td>Khan, S. Y.</td>
<td>525</td>
</tr>
<tr>
<td>Kilmer, F. B.</td>
<td>393</td>
</tr>
<tr>
<td>Kimball, Arthur A.</td>
<td>381, 382</td>
</tr>
<tr>
<td>King, Charles D.</td>
<td>962</td>
</tr>
<tr>
<td>King, Louis</td>
<td>379</td>
</tr>
<tr>
<td>King, Nydia</td>
<td>164</td>
</tr>
<tr>
<td>Kinsey, Raymond</td>
<td>831</td>
</tr>
<tr>
<td>Kirsis, Janis</td>
<td>1104</td>
</tr>
<tr>
<td>Kisch, Bruno</td>
<td>1105</td>
</tr>
<tr>
<td>Kline, Nathan S.</td>
<td>489</td>
</tr>
<tr>
<td>Klinkenberg, Norbert</td>
<td>640</td>
</tr>
<tr>
<td>Knapp, David A.</td>
<td>948</td>
</tr>
<tr>
<td>Knightley, Phillip</td>
<td>641</td>
</tr>
<tr>
<td>Koch-Weser, Jan</td>
<td>444</td>
</tr>
<tr>
<td>Kogan, Herman</td>
<td>177</td>
</tr>
<tr>
<td>Kohler, Robert E.</td>
<td>445</td>
</tr>
<tr>
<td>Kondratas, Ramunas A.</td>
<td>718</td>
</tr>
<tr>
<td>Kraemer, Henry</td>
<td>446</td>
</tr>
<tr>
<td>Kramer, John E.</td>
<td>949, 967</td>
</tr>
<tr>
<td>Kredel, F. E.</td>
<td>832</td>
</tr>
<tr>
<td>Kremers, Edward</td>
<td>244, 265, 950, 1055</td>
</tr>
<tr>
<td>Krivatsy, Peter</td>
<td>38, 39</td>
</tr>
<tr>
<td>Krömeke, Franz</td>
<td>341</td>
</tr>
<tr>
<td>Kronick, David A.</td>
<td>40</td>
</tr>
<tr>
<td>Krüger, Mechthild</td>
<td>1106</td>
</tr>
<tr>
<td>Kuhnke, Laverne</td>
<td>433</td>
</tr>
<tr>
<td>Kuschinsky, Gustav</td>
<td>447</td>
</tr>
<tr>
<td>Kuznicka, Barbara</td>
<td>541</td>
</tr>
<tr>
<td>Laar, J.</td>
<td>173</td>
</tr>
<tr>
<td>Lakey, Roland T.</td>
<td>347</td>
</tr>
<tr>
<td>Lamb, Ruth deForest</td>
<td>719</td>
</tr>
<tr>
<td>Lasagna, Louis</td>
<td>739</td>
</tr>
<tr>
<td>Lasserre, François</td>
<td>564</td>
</tr>
<tr>
<td>Latilouis, Clifton J.</td>
<td>385</td>
</tr>
<tr>
<td>Laurent, Jean</td>
<td>133</td>
</tr>
<tr>
<td>LaWall, Charles H.</td>
<td>165, 238, 254, 377, 833</td>
</tr>
<tr>
<td>Lawrence, C.</td>
<td>688</td>
</tr>
<tr>
<td>Lawrence, Christopher</td>
<td>1192</td>
</tr>
<tr>
<td>Leake, Chauncey D.</td>
<td>289, 448, 449, 542</td>
</tr>
<tr>
<td>Ledermann, François</td>
<td>41, 1210</td>
</tr>
<tr>
<td>Lednicer, Daniel</td>
<td>592</td>
</tr>
<tr>
<td>Lee, Philip R.</td>
<td>890</td>
</tr>
<tr>
<td>LeFebvre, Nicaise</td>
<td>762</td>
</tr>
<tr>
<td>Leicester, Henry M.</td>
<td>450</td>
</tr>
<tr>
<td>Lémery, Nicolas</td>
<td>763, 764, 765</td>
</tr>
<tr>
<td>Lemon, A. B.</td>
<td>376, 919</td>
</tr>
<tr>
<td>Lesch, John</td>
<td>451</td>
</tr>
<tr>
<td>Levey, Martin</td>
<td>543, 544, 545, 782</td>
</tr>
<tr>
<td>Levy, Bernard</td>
<td>1107</td>
</tr>
<tr>
<td>Lewis, Edward R. Jr.</td>
<td>834</td>
</tr>
<tr>
<td>Lewis, John</td>
<td>1213</td>
</tr>
<tr>
<td>Li, Yu-t’ien</td>
<td>512, 513</td>
</tr>
<tr>
<td>Liebenau, Jonathan</td>
<td>642, 643, 871, 872, 873, 1022, 1023, 1024</td>
</tr>
<tr>
<td>Liljestrand, G.</td>
<td>442</td>
</tr>
<tr>
<td>Lim, Beda</td>
<td>581</td>
</tr>
<tr>
<td>Liot, Andre</td>
<td>134</td>
</tr>
<tr>
<td>Lipan, Visile I.</td>
<td>153</td>
</tr>
<tr>
<td>Lipp, Martin R.</td>
<td>1108</td>
</tr>
<tr>
<td>Little, Arthur</td>
<td>1025</td>
</tr>
<tr>
<td>Little, Ernest</td>
<td>951</td>
</tr>
<tr>
<td>Livesay, Harold</td>
<td>399</td>
</tr>
<tr>
<td>Lloyd, Alistair</td>
<td>109</td>
</tr>
<tr>
<td>Lloyd, John Uri</td>
<td>42, 348, 503</td>
</tr>
<tr>
<td>Lonie, I. M.</td>
<td>145</td>
</tr>
<tr>
<td>Lord, R. A.</td>
<td>343</td>
</tr>
<tr>
<td>Lordi, Nicholas</td>
<td>379</td>
</tr>
<tr>
<td>Lucia, Salvatore P.</td>
<td>504</td>
</tr>
<tr>
<td>Lutz, Alfons</td>
<td>783</td>
</tr>
<tr>
<td>Lyman, Rufus A.</td>
<td>394</td>
</tr>
<tr>
<td>Lynn, E. V.</td>
<td>452, 952</td>
</tr>
<tr>
<td>MacEwan, Peter</td>
<td>395</td>
</tr>
<tr>
<td>MacFarlane, Gwyn</td>
<td>262</td>
</tr>
<tr>
<td>MacGillivray, Helen</td>
<td>257</td>
</tr>
<tr>
<td>MacGregor, Alasdair B.</td>
<td>505</td>
</tr>
<tr>
<td>MacKinney, Loren</td>
<td>1214</td>
</tr>
<tr>
<td>Madison, James H.</td>
<td>292, 1026</td>
</tr>
<tr>
<td>Mahoney, Tom</td>
<td>174, 875</td>
</tr>
<tr>
<td>Malone, Marvin H.</td>
<td>953</td>
</tr>
<tr>
<td>Manasse, Henry R. Jr.</td>
<td>954</td>
</tr>
<tr>
<td>Mannlis, Joannes Jacobus de</td>
<td>766</td>
</tr>
<tr>
<td>Mann, Gunter (ed.)</td>
<td>43</td>
</tr>
<tr>
<td>Mann, Ronald D.</td>
<td>644</td>
</tr>
<tr>
<td>Manners, Steven</td>
<td>955</td>
</tr>
<tr>
<td>Manniche, Lise</td>
<td>546</td>
</tr>
<tr>
<td>Marchetti, Marcello</td>
<td>700</td>
</tr>
</tbody>
</table>
Marcum, James A., 645
Marion, John Francis, 209
Marland, Hilary, 835
Marquet, Louis, 241
Marshall, E. K., 229
Martí-Ibañez, Félix, 740
Martin, Richard T., 506
Martínez-Fortun y Foyo, Susana, 126
Martiny, M., 1187
Martius, E. Wilhelm, 305
Masino, Cristoforo, 1215
Martin, Richard T., 506
Martinez-Fortun y Foyo, Susana, 126
Maxwell, Robert A., 646
McCormick, G. E., 288
McDougall, D., 118
McEvilla, Joseph D., 925
McEwen, Alan, 1111
McFadyen, Richard E., 647
McGrath, Earl J., 964
McIntyre, A. R., 648
McKearin, Helen, 260
McNamara, Brooks, 1153
McTavish, Jan R., 649, 650
McVaugh, Michael, 547, 548, 549, 550
Meadsday, Walter S., 876
Mepham, J., 274
Merlin, Mark David, 551
Meserole, W. H., 365
Meyer, A. C., 195
Meyer, A. C., 195
Meyer, Minnie, 44
Meyerhof, M., 552
Meyer-Thurow, George, 1027
Mez-Mangold, Lydia, 1218
Miller, Genevieve, 45
Miller, Nory, 1164
Millman, Morton M., 233
Mines, Samuel, 203
Mitchell, K. A., 1025
Moeller, Josef, 24, 65
Moeller, R., 357
Moir, J. Glen, 958
Möller, Rudolf, 271
Monardes, 767
Moncrieff, Nancy J., 976
Monell, Leon M., 376, 919
Montañía, Ma. Teresa, 69
Moran, Bruce T., 959
Mornand Pierre, 1219
Morrison, Samuel, 1078
Morsingh, Francis, 581
Morton, Julia F., 651
Mrtek, Marsha B., 234, 1000
Mrtek, Robert G., 960, 961, 962, 1000
Mudry, Philippe, 564
Müller-Jahncke, Wolf-Dieter, 1112
Multhauf, Robert P., 46, 507, 553, 554
Muñoz Calvo, Sagrario, 20, 21, 720, 721
Musto, David F., 722
Nakayama, Shigeru, 528
Needham, Joseph, 94, 652
Neill, John R., 653
Nékám, Livia, 1220
Nelson, Gary L., 175
Netz, Charles V., 963
Neu, John, 48
Newcomer, James, 964
Niemeyer, Gloria, 801
Nitardy, F. W., 1132
Noble, Alice, 965
Noel, H. S., 397
Noël Hume, Ivor, 1113
Nordenskiöld, A. E., 338
Norman, Jeremy M., 49
Novotny, Ann, 1221
Numbers, Ronald L., 420, 878
Núñez Varela, Victoria, 21
Nuttin, Vivian, 688, 879
Oddis, Joseph, 840
O'Hara-May, Jane, 508
Okazaki, Kanzo, 147
Okun, Mitchell, 880
Olmsted, J. M. D., 301
Olonetzky, Beny, 1222
O'Mara, J., 380
Orr, Jack, 841
Orta, García da, 768
Ortiz de Montello, Bernard R., 509
<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osborne, George E.,</td>
<td>593, 966</td>
</tr>
<tr>
<td>Oool, Arthur</td>
<td>967</td>
</tr>
<tr>
<td>Ostino, Guiseppe,</td>
<td>1215</td>
</tr>
<tr>
<td>Otsuka, Yasuo</td>
<td>502</td>
</tr>
<tr>
<td>Pagel, Walter</td>
<td>275, 323</td>
</tr>
<tr>
<td>Pak, C.,</td>
<td>514</td>
</tr>
<tr>
<td>Pulliser, Susan M.,</td>
<td>654</td>
</tr>
<tr>
<td>Palmer, R.</td>
<td>144, 145</td>
</tr>
<tr>
<td>Palmieri, Anthony III</td>
<td>655</td>
</tr>
<tr>
<td>Panem, Sandra</td>
<td>656</td>
</tr>
<tr>
<td>Parascandola, John,</td>
<td>51, 160, 230, 454, 455, 456, 457,</td>
</tr>
<tr>
<td></td>
<td>458, 459, 460, 461, 462, 657, 659,</td>
</tr>
<tr>
<td></td>
<td>658, 968, 1028, 1048, 1182</td>
</tr>
<tr>
<td>Parish, H. J.</td>
<td>660</td>
</tr>
<tr>
<td>Parke, D. V.</td>
<td>481</td>
</tr>
<tr>
<td>Parham, M. J.</td>
<td>462, 510</td>
</tr>
<tr>
<td>Parrish, Dillwyn</td>
<td>304</td>
</tr>
<tr>
<td>Parrish, Edward</td>
<td>398</td>
</tr>
<tr>
<td>Paterson, G. R.</td>
<td>723, 969, 970, 1029</td>
</tr>
<tr>
<td>Pearson, Michael</td>
<td>881</td>
</tr>
<tr>
<td>Peck, F. H.</td>
<td>210</td>
</tr>
<tr>
<td>Pedrazzini, Carlo</td>
<td>1223</td>
</tr>
<tr>
<td>Pekkanen, John</td>
<td>882</td>
</tr>
<tr>
<td>Pelner, Louis</td>
<td>321</td>
</tr>
<tr>
<td>Penn, R. G.</td>
<td>724</td>
</tr>
<tr>
<td>Pérez Romero, José A.</td>
<td>523, 794</td>
</tr>
<tr>
<td>Perez, Valentín Islas</td>
<td>151</td>
</tr>
<tr>
<td>Peters, Hermann</td>
<td>1224</td>
</tr>
<tr>
<td>Peumery, Jean-Jacques</td>
<td>287</td>
</tr>
<tr>
<td>Phillippe, A.,</td>
<td>135</td>
</tr>
<tr>
<td>Phillips, Joel L.</td>
<td>511</td>
</tr>
<tr>
<td>Phillips, Max</td>
<td>328</td>
</tr>
<tr>
<td>Philpott, Jane</td>
<td>609</td>
</tr>
<tr>
<td>Picchioni, Albert L.,</td>
<td>971</td>
</tr>
<tr>
<td>Plachinger, Thomas</td>
<td>1236</td>
</tr>
<tr>
<td>Plampe, Gottfried</td>
<td>182</td>
</tr>
<tr>
<td>Poggendorff, Johann Christian</td>
<td>53</td>
</tr>
<tr>
<td>Poirier, S.</td>
<td>1251</td>
</tr>
<tr>
<td>Porter, D.</td>
<td>1030</td>
</tr>
<tr>
<td>Porter, Glenn</td>
<td>399</td>
</tr>
<tr>
<td>Porter, Roy</td>
<td>661, 1030</td>
</tr>
<tr>
<td>Poulet, J.</td>
<td>1187</td>
</tr>
<tr>
<td>Power, Jed</td>
<td>1225</td>
</tr>
<tr>
<td>Poynter, F. N. L.</td>
<td>652, 784, 883, 929</td>
</tr>
<tr>
<td>Pradhan, Suresh B.</td>
<td>884</td>
</tr>
<tr>
<td>Pratt, Edmund</td>
<td>204</td>
</tr>
<tr>
<td>Pratt, William D.,</td>
<td>178</td>
</tr>
<tr>
<td>Prevet, François</td>
<td>136</td>
</tr>
<tr>
<td>Puerto Sarmiento, F. Javier</td>
<td>736, 1031</td>
</tr>
<tr>
<td>Pugsley, L. I.</td>
<td>725</td>
</tr>
<tr>
<td>Putnam, P. A.,</td>
<td>1114</td>
</tr>
<tr>
<td>Qadry, J. S.,</td>
<td>103</td>
</tr>
<tr>
<td>Quance, Elizabeth J.</td>
<td>734</td>
</tr>
<tr>
<td>Quincy, John</td>
<td>54</td>
</tr>
<tr>
<td>Rabin, David L.</td>
<td>885</td>
</tr>
<tr>
<td>Rainwater, Dorothy T.</td>
<td>1115</td>
</tr>
<tr>
<td>Raison, Arnold</td>
<td>120</td>
</tr>
<tr>
<td>Raphael, Sandra.</td>
<td>771, 1183</td>
</tr>
<tr>
<td>Raubenheimer, Otto</td>
<td>270, 352</td>
</tr>
<tr>
<td>Read, Bernard E.</td>
<td>512, 513, 514</td>
</tr>
<tr>
<td>Redman, Kenneth</td>
<td>972</td>
</tr>
<tr>
<td>Redwood, Theophilus</td>
<td>114</td>
</tr>
<tr>
<td>Reif, Edward Clarence</td>
<td>973</td>
</tr>
<tr>
<td>Reif, Thelma</td>
<td>973</td>
</tr>
<tr>
<td>Remington, Joseph P.</td>
<td>235</td>
</tr>
<tr>
<td>Richardson, Charles G.</td>
<td>1116, 1226</td>
</tr>
<tr>
<td>Richardson, Lillian C.</td>
<td>1116, 1226</td>
</tr>
<tr>
<td>Rickards, Maurice</td>
<td>1227</td>
</tr>
<tr>
<td>Riddle, John M.</td>
<td>555, 556, 557, 558, 559, 560</td>
</tr>
<tr>
<td>Riedel, Bernard E.</td>
<td>974</td>
</tr>
<tr>
<td>Riley, John J.</td>
<td>1032</td>
</tr>
<tr>
<td>Ring, Carlyln</td>
<td>1117</td>
</tr>
<tr>
<td>Risse, Guenter B.</td>
<td>614, 662</td>
</tr>
<tr>
<td>Rivier, L.</td>
<td>515</td>
</tr>
<tr>
<td>Roberts, R. S.</td>
<td>842</td>
</tr>
<tr>
<td>Rocchietta, Sergio</td>
<td>1118, 1207, 1228</td>
</tr>
<tr>
<td>Rodowskas, Christopher A.</td>
<td>916, 975</td>
</tr>
<tr>
<td>Roeske, Wojciech</td>
<td>95, 298</td>
</tr>
<tr>
<td>Roldán y Guerrero, Rafael</td>
<td>225</td>
</tr>
<tr>
<td>Romaine, Lawrence B.</td>
<td>1088</td>
</tr>
<tr>
<td>Roos, Charles</td>
<td>6</td>
</tr>
<tr>
<td>Rorem, C. Rufus</td>
<td>886</td>
</tr>
<tr>
<td>Rosenberg, Charles E.</td>
<td>463, 464, 663</td>
</tr>
<tr>
<td>Roth, George B.</td>
<td>363</td>
</tr>
<tr>
<td>Röthlisberger, Paul</td>
<td>330</td>
</tr>
<tr>
<td>Rouse-Ostrander, Diane</td>
<td>1119</td>
</tr>
<tr>
<td>Rowe, Tom D.</td>
<td>976</td>
</tr>
<tr>
<td>Rubiola, Carlo</td>
<td>146</td>
</tr>
<tr>
<td>Ruiz, Juan Francisco Sanchez</td>
<td>151</td>
</tr>
<tr>
<td>Sadek, M. M.</td>
<td>561</td>
</tr>
</tbody>
</table>
Sainte-Fare-Garnot, Pierre-Nicolas, 1077
Sakai, Shizu, 502
Sakula, Alex, 664
Sappert, Kurt, 713, 726
Sarton, George, 55
Scarborough, John, 96, 516, 562, 563, 564, 565, 785
Schäfer, Edward H., 887
Schecheter, Paul, 444
Schelenz, Hermann, 97
Schlegel, John F., 392
Schmidt, C. F., 335
Schmitt, Charles, 802
Schmitz, Rudolf, 342, 665, 786, 977, 1120, 1121
Schneider, Wolfgang, 465, 466, 517, 787
Schreiner, Oswald, 1033
Schröder, Gerald, 498
Schulian, Dorothy M., 56
Schultheis, Heinz, 182
Schütze, Sabine Knoll, 278
Schwamm, Brigitte, 518
Schwartzman, David, 888
Schwarz, Angelo, 1215, 1229
Schwarz, Holm-Dietmar, 222, 223
Sciortino, T., 727
Scott, J. R., 1063, 1064, 1065
Scoville, Wilbur L., 303
Segelman, A. B., 484
Segers, E. G., 1122, 1168
Seidlein, H. J., 436
Seigle, H. J., 436
Sevigny, David C., 889
Shannon, Michael C., 400
Shannon, Sam, 843
Sheehan, John C., 467
Sheppard, E. J., 539
Shigematsu, Nakayama, 581
Shimko, Phyllis, 1123
Short, Agnes Lothian, 1230
Shryock, Richard Harrison, 98, 468
Sivard, Jacqueline, 1034
Silverberg, Robert, 1252
Silverman, Milton, 890
Simon, James E., 519
Simon, William J., 666
Simons, Corinne Miller, 42, 295
Sir William Henry Perkin, 325
Sivin, Nathan, 57, 58, 291, 528, 566, 581
Slinn, Judy, 187
Slocum, Robert B., 226
Smit, Peter, 59
Smith, Carter, 1221
Smith, Dale C., 469, 667
Smith, Emilie Savage, 567, 668
Smith, F. A. Upsher, 236
Smith, George Winston, 401
Smith, Mickey C., 407, 669
Smith, R. L., 481
Smola, Gertrud, 788
Sneader, Walter, 670
Snelders, H. A. M., 282
Soldi, A., 728
Sommer, Francis E., 56
Sonnedecker, Glenn, 60, 61, 62, 99, 166, 309, 354, 729, 780, 789, 891, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 1035, 1036, 1124
Soubeiran, Eugène, 402
Soupé, Serge, 1151
Sournia, J. C., 307, 1187
Southern, Walter, 1037
Spalding, James Alfred, 344
Spaulding, Mary, 1125
Spink, Wesley W., 671
Sprouls, Joseph B., 403
Srivastava, G. P., 142
Stabrawa, Anna, 1075
Stafski, Heinz, 1231
Stage, Sarah, 892
Stannard, Jerry, 306, 568, 569, 570, 571, 572, 573, 574, 790
Starks, Michael, 1232
Starr, Isaac, 336
Starr, Paul, 893
Stechl, Peter, 318, 470
Steele, I. K. (ed.), 404
Steinbart, Hiltrud, 1233
Steinegger, E., 353
Index

Steudel, Johannes, 63
Stevenson, Lloyd G., 730
Stewart, Francis, 199
Stewart, Grace G., 520
Stieb, Ernst W., 121, 471, 731, 732, 733, 734, 905, 989, 990, 991, 992, 1089, 1090, 1095, 1126
Stoeckle, John D., 1234
Strichartz, G. R., 478
Strickland, W. A., 405
Stroud, Elaine C., 874, 1024
Strube, Irene, 346
Stuart, G. A., 575
Stürzbecher, Manfred, 735
Suñé Arbussa, José María, 736
Swain, Tony, 672
Swan, Harold T., 683
Swanson Ben Z., Jr., 1127
Swarbrick, James, 372
Swazey, Judith P., 473, 676
Taberner, P. V., 677
Tait, H. P., 1235
Talalay, Paul, 475, 521, 747
Tallis, Nigel, 1128, 1178
Tan, Sian Nio, 143
Tartaglia, Hrvoje, 168
Taylor, Frank O., 201, 202
Taylor, Frank Sherwood, 1040
Taylor, H. L., 994
Taylor, Norman, 678
Teigen, Philip M., 576, 577
Telle, Joachim, 141
Temin, Peter, 737, 895
Temkin, Owsei, 521, 578
Thomas, K. Bryn, 1129
Thomas, P. H., 333
Thomas, Ulrike, 269
Thompson, C. J. S., 1154
Thoms, Hermann, 65
Tom, J., 300
Troup, George Edward, 117, 896
Troup, G., 307
Tschirch, Alexander, 221, 476
Turner, Carlton E., 522
Turner, Helen, 1130
Tweedale, Geoffrey, 181
Tyler, V. E., 296
Tyler, V. M., 296
Ulmer, Bruno, 1236
Underwood, E. Ashworth, 849, 1237
Unschuld, Paul U., 124, 125, 579
Unschuld, Ulrike, 580
Urbanek, Beverly S., 522
Urdang, George, 66, 137, 167, 284, 286, 339, 791, 792, 844, 845, 846, 847, 996, 997, 998, 999, 1041, 1131, 1132, 1253, 1254
Vagelos, P. Roy, 192
Valverde, José Luis, 67, 68, 69, 70, 71, 523, 736, 738, 793, 794
Van Tassel, R., 524
Vandam, Leroy D., 477, 478
Vaughan, G. N., 106
Verg, Erik, 182
Vernia, Pedro, 158
Vernon, John, 868
Vershofen, Wilhelm, 1042
Vester, Helmut, 72
Vida, Maria, 1133
Vidal, Del Carmen, 71
Vié, Claude, 314
Vitta, Maurizio, 1172
Vliet, Elmer B., 179
Vogel, Morris J., 663
Vogel, Virgil J., 679
Vohora, S. B., 525
Vos, Rein, 680
Wagner, John G., 479
Wainwright, Milton, 681, 682, 683
Walker, Coy W., 522
Walker, Hugh D., 900
Wall, Cecil, 849
Wall, G. Michael, 522
Wankmüller, Armin, 73, 74
Ward, Patricia Spain, 684
Wardell, William M., 739
Warden, C. J. H., 488
Waring, Edward John, 75
Warner, John Harley, 480, 685, 686
Warthin, Aldred Scott, 1238
Washburn, Robert Collyer, 326
Watson, Andrew, 64
Watson, Gilbert, 526
Watson, Richard, 1134
Wear, A., 145
Weatherall, M., 687
Weber, A., 1239
Webster, George L., 910
Weinstein, Marvin, 1000
Welch, Henry, 740
Welch, Charles E., Jr., 967
Welch, Penny, 1125
Wertheimer, Albert I., 407, 657, 822
Weston, J. Fred, 865
White, Allen, 841
White, George Abbott, 1234
White, Paul Dudley, 434
Whitney, Harvey A. K., 916
Whitten, David O., 866
Whittet, T. Douglas, 741, 850, 851, 852
Wiggins, Steven N., 901
Wiley, Harvey W., 361
Wilkinson, Lisa, 251
Williams, Trevor I., 263
Williams, William H., 853
Wilson, Betty, 1136
Wilson, Bill, 1136
Wilson, Eugene, 122
Wilson, Robert Cummings, 1001
Wilson, William E., 390
Wimmer, Curt P., 351, 1002
Winkelmann, John P., 1003
Wittop Koning, Dirk A., 76, 1096, 1122, 1137, 1138, 1139, 1161, 1168, 1173, 1197, 1240, 1241, 1242, 1243, 1244, 1245
Wolfe, H. George, 334, 355
Wolfe, Margaret Ripley, 742
Wood, Donna J., 902
Wood, G., 409
Wood, Joseph Remington, 1043
Woodruff, H. Boyd, 1044
Woodward, Grace Steele, 317
Wootton, A. C., 100

Wray, Susan, 688
Wrobel, Sylvia, 1004
Yoke, Ho Peng, 581
Young, Anne Mortimer, 1140
Young, Hugh, 297
Young, James Harvey, 689, 690, 718, 729, 743, 744, 745, 746, 747, 748, 903, 904, 1150, 1155
Young, L., 481
Youngken, Heber W., 227
Yu, Ching-mei, 512
Zaharans, V. I., 313
Zalai, K., 1005
Zaunick, Rudolf, 319
Zekert, Otto, 110, 228, 340
Zglinicki, Friedrich von, 1246
Zigrosser, Carl, 1247
Zopf, Louis C., 1006
Zupko, Ronald Edward, 1141, 1142
Zwettler, Gerhardt, 1174