

Part One:

Bibliographies and General Studies

1a—Bibliographies, Encyclopedias, Dictionaries

1. Andrews, Theodora. *Guide to the Literature of Pharmacy and the Pharmaceutical Sciences*. Littleton, CO: Libraries Unlimited, 1986. viii + 383 pp., index.

A useful reference but limited in coverage.

2. Artelt, Walter, et al., eds. *Index zur Geschichte der Medizin, Naturwissenschaft und Technik*. Erster Band. Munich: Urban and Schwarzenberg, 1953. 398 pp.

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

3. Austin, Robert B. *Early American Medical Imprints: A Guide to Works Printed in the United States 1668-1820*. Washington: U. S. Department of Health, Education and Welfare, 1961. x + 240 pp., chronological index.

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.

4. *Bibliography of the History of Medicine*. Issued annually by the National Library of Medicine since 1964 and in five-year accumulations, viz: 1964-69, 1970-74, 1975-79, 1980-84, 1985-89: National Library of Medicine, 1964-.

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

5. Blake, John B., comp. *A Short Title Catalogue of Eighteenth Century Printed Books in the National Library of Medicine*. Bethesda: National Library of Medicine, 1979. 501 pp.

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

6. Blake, John B., and Charles Roos, eds. *Medical Reference Works 1679-1966; A Selected Bibliography*. Chicago: Medical Library Association, 1967. viii + 343 pp., index.

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

7. Bouvet, Maurice. *Les travaux d'histoire locale de la pharmacie en France des origines à ce jour. Répertoire Bibliographique*. Paris: Société d'Histoire de la Pharmacie, 1957. 43 pp.

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

8. Buerki, Robert A. *Bibliography of Papers Published by the American Pharmaceutical Association's Section on Historical Pharmacy, 1904-1967*. Madison, WI: American Institute of the History of Pharmacy, n.d. 27 pp.

Updates George Griffenhagen's 1957 bibliography.

9. *Bulletin signaletique*. 522 Histoires des Sciences et des Techniques. Paris: Centre National de la Recherche Scientifique, 1947-.

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."

10. Callisen, Adolf Carl Peter. *Medicinisches Schriftsteller-Lexicon*. 33 vols. Copenhagen: Königl. Taubstummen Institut zu Schleswig, 1830-45.

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.

11. Cordasco, Francesco. *American Medical Imprints 1820-1910. A Checklist of Publications Illustrating the History and Progress of Medical Science, Medical Education, and the Healing Arts in the United States . . .* 2 vols. Totowa, NJ: Rowman and Littlefield, 1985. 1654 pp., index.

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

12. Cowen, David L. *A Bibliography of the History of Colonial and Revolutionary Medicine and Pharmacy*. Madison: American Institute of the History of Pharmacy, 1975. 16 pp.

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.

14. Dann, Georg Edmund, and Gregory J. Higby. "Bibliography of the Publications of George Urdang on his Birth Centenary." *Pharmacy in History* 24 (1982): 106-14.

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

15. Dunglison, Robley. *Medical Lexicon: A Dictionary of Medical Science*. 14th ed., rev. Philadelphia: Blanchard and Lea, 1856. 927 pp.

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

16. Durling, Richard J., comp. *A Catalogue of Sixteenth Century Books in the National Library of Medicine*. Bethesda: National Library of Medicine, 1967. xii + 698 pp., indexes.

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

17. Engelmann, W. *Bibliotheca medico-chirurgica et pharmaceutico-chemica, oder Verzeichniss . . . Bücher, welcher vom Jahre 1750 bis zur Mitte des Jahres 1837 in Deutschland erschienen sind*. 5th ed., Leipzig: 1838. index.

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

18. Erlen, Jonathon. *The History of the Health Care Sciences and Health Care 1700-1980: A Selective Annotated Bibliography*. New York: Garland, 1984. xvi + 1028 pp., index.

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.

19. Ferguson, John. *Bibliotheca Chemica, A Catalogue of the Alchemical, Chemical and Pharmaceutical Books in the Collection of the late James Young of Kelly and Durris, Esq., LL. D., F. R. S., F. R. S. E.* 2 vols. Glasgow: Maclehose, 1906. xxi + 487; 598 pp.

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

20. Folch Jou, Guillermo, and Sagrario Muñoz Calvo. *Catalogo de los documentos conservados en el Archivo de la Real Academia de Farmacia*. *Annales de la Real Academia de Farmacia*, No. 2, 1978, pp. 199-351. Madrid: Real Academia de Farmacia, 1978. index.

A catalogue describing 1,290 documents.

21. Folch Jou, Guillermo, Sagrario Muñoz Calvo, and Victoria Núñez Varela. *Catálogo de los documentos conservados en el Archivo del Departamento de Historia de la Farmacia y Legislación Farmacéutica de la Facultad de Farmacia de Madrid*. Madrid: Universidad Complutense Facultad de Farmacia, 1982. x + 356 pp., index.

Over 700 documents are listed and briefly described.

22. Garrison and Morton.

see Norman, citation #49.

23. Garrison, Fielding H. "The Medical and Scientific Periodicals of the 17th and 18th Centuries." *Bulletin of the Institute of the History of Medicine* 2 (1934): 285-343.

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

24. Geissler, Ewald, and Josef Moeller. *Real-encyclopädie der gesamten Pharmacie: Handwörterbuch für Apotheker, Ärzte und Medicinalbeamte*. 10 vols. Vienna: Urban and Schwarzenberg, 1886.

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

25. Guerra, Francisco. *American Medical Bibliography 1639-1783*. Yale University Department of the History of Science and Medicine, Publ. no. 40. New York: Lathrop C. Harper, 1962. 885 pp., illus., indexes.

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.

26. Guitard, Eugène-Humbert (ed). *Index des travaux d'histoire de la pharmacie de 1913 à 1963*. Paris: Société d'Histoire de la Pharmacie, n.d. 80 + 103 pp., illus.

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

27. Guitard, Eugène Humbert. *Manuel d'histoire de la littérature pharmaceutique . . . et Biobibliographie pharmaceutique*. Paris: Librairie Caffin (Collection Occitania), 1942. 138 pp.

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

28. Hamarneh, Sami. *Bibliography on Medicine and Pharmacy in Medieval Islam*. Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie e.V., NF 25. Stuttgart: Wissenschaftliche Verlagsgesellschaft, 1964. 204 pp., index, illus.

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.

30. Hirsch, Rudolf (ed). *A Catalogue of the Manuscripts and Archives of the Library of the College of Physicians of Philadelphia*. Philadelphia: University of Pennsylvania Press, Francis Clark Wood Institute, College of Physicians of Philadelphia, 1983. xx + 259 pp., index.

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

31. Hügel, Herbert. *Die Veröffentlichungen der (Internationalen) Gesellschaft für Geschichte der Pharmazie 1927-1952: Eine Bibliographie*. Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie, NF 7. Eutin: Internationale Gesellschaft für Geschichte der Pharmazie, 1955. 40 pp., author and subject indexes.

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.

32. Hügel, Herbert. *Die Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie 1953-1965: Eine Bibliographie*. Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie, NF 29: 1967. 75 pp., author and subject indexes.

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.

33. *Index Catalogue of the Library of the Surgeon-General's Office, United States Army*. Washington, DC: United States Government Printing Office, in four series beginning 1880, 1896, 1918, 1936,

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

available: Claudius Francis Mayer, "The index-catalogue as a tool of research in medicine and history," in *Science, Medicine and History*, E. Ashworth Underwood, ed.(Cambridge: Oxford University Press, 1953), Vol. 2, pp. 482-93.

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.

35. James, Robert. *A Medicinal Dictionary, including Physic, Surgery, Anatomy, Chymistry, and Botany, with a History of Drugs*. 3 vols. London: 1743-45. illus.

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

36. Jayawardene, S. A. (comp.). *Reference Books for the Historian of Science: A Handlist*. London: Science Museum, 1982. xiv + 229 pp., index.

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

37. Julien, Pierre. *Catalogue de la collection d'anciens ouvrages de pharmacopée français et étrangers*. Paris: Ordre national des pharmaciens, 1967. 95 pp., index, illus.

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.

38. Krivatsy, Peter (comp). *A Catalogue of Incunabula and Sixteenth Century Printed Books in the National Library of Medicine*. First Supplement. Bethesda: National Library of Medicine, 1971. v + 51 pp.

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.

39. Krivatsy, Peter (comp). *A Catalogue of Seventeenth Century Printed Books in the National Library of Medicine*. Bethesda: National Library of Medicine, 1989. 1315 pp.

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

40. Kronick, David A. "The Fielding H. Garrison List of Medical and Scientific Periodicals of the 17th and 18th centuries; Addenda et corrigenda." *Bulletin of the History of Medicine* 32 (1958): 456-74.

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

41. Ledermann, François. *Bibliographie des ouvrages suisses de pharmacopée*. Veröffentlichungen der Schweizerischen Gesellschaft für Geschichte der Pharmazie, Band 3. Zürich: Juris Druck + Verlag, 1984. 135 pp.

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

42. Lloyd, John Uri, Theodor Just, and Corinne Miller Simons. *Catalogue of the Pharmacopoeias, Dispensatories, Formularies and Allied Publications (1493-1957) in Lloyd Library*.

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

A large list geographically arranged.

43. Mann, Gunter (ed). *Internationale Bibliographie zur Geschichte der Medizin, 1875-1901*. Hildesheim: George Olms Verlag, 1970. ix + 597 pp.

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.

44. Meyer, Minnie. "The Pharmaceutical Journals of the United States." *Journal of the American Pharmaceutical Association* 22 (1933): 424-29.

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

45. Miller, Genevieve. *Bibliography of the History of Medicine of the United States and Canada, 1939-1960. With a Historical Introduction by W. B. McDaniel, 2nd*. Baltimore: The Johns Hopkins Press, 1964. xvi + 428 pp., list of journals, index.

A comprehensive bibliography, topically arranged, including pharmacy.

46. Multhaupt, Robert P. *The History of Chemical Technology: An Annotated Bibliography*. New York & London: Garland, 1984.

Includes a section on pharmaceuticals and some pharmaceutical manufacturing companies.

47. National Library of Medicine. *History of Medicine: A Guide to Sources of Information in the Reference and General Collection*.

Joy S. Richmond, comp. Bethesda: Reference Section, National Library of Medicine, 1984. iii + 29 pp., index.

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

48. Neu, John, ed. *Chemical, Medical and Pharmaceutical Books Printed Before 1800 in the Collections of the University of Wisconsin Libraries*. Madison, WI: University of Wisconsin Press, 1965. 280 pp.

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

49. Norman, Jeremy M., ed. *Morton's Medical Bibliography: An Annotated Check-List of Texts Illustrating the History of Medicine (Garrison and Morton)*. 5th ed. Brookfield, VT: The Scholar Press, 1991. 1243 pp., index of personal names and subjects.

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

50. Ordre National des Pharmaciens. *Catalogue de la collection d'anciens ouvrages de pharmacopée Français et étrangers*. Paris: 1967. 95 pp., illus. index.

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.

51. Parascandola, John, and Elizabeth Keeney. *Sources in the History of American Pharmacology*. Madison, WI: American Institute of the History of Pharmacy, 1983. 59 pp.

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.

52. *Pharmaziegeschichtliche Rundschau. Beilage zur Pharmazeutische Zeitung*. Frankfurt/M: 1949-87.

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.

53. Poggendorff, Johann Christian. *Biographisch-Literarisches Handwörterbuch zur Geschichte der Exacten Wissenschaften*. 7 vols. Leipzig: Barth, 1863-1904. [Supplements published thereafter, with variant titles, in several volumes by various publishers, and currently in segments.].

A seminal source; includes eminent scientists coming from pharmacy.

54. Quincy, John. *Lexicon Physico-Medicum or A New Physical Dictionary*. . . London: 1719. 462 pp.

Based largely on famous medical dictionary in Latin that is still much valued: Bartolomeo Castelli, *Lexicon Medicum*. . . , 1st ed. 1598, et. seq.

55. Sarton, George. *Introduction to the History of Science*. Baltimore: For Carnegie Institution of Washington by Williams & Wilkins, Co., 1927-48. 3 vols. in 5.

A monumental work of descriptive bibliography covering up to 1500.

56. Schullian, Dorothy M., and Francis E. Sommer. *A Catalogue of Incunabula and Manuscripts in the Army Medical Library*. New York: Henry Schuman, ca. 1948. xiii + 361 pp., illus. index.

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

57. Sivin, Nathan. "A Cornucopia of Reference Works for the History of Chinese Medicine." *Chinese Science* 9 (1989): 29-52.

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.

58. Sivin, Nathan. "Science and Medicine in Imperial China—The State of the Field." *Journal of Asian Studies* 47 (1988): 41-90.

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).

59. Smit, Pieter. *History of the Life Sciences: An Annotated Bibliography*. New York: Hafner, 1974. xiv + 1071 pp., index.

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

60. Sonnedecker, Glenn, and Alex Berman. *Some Bibliographic Aids for Historical Writers in Pharmacy*. Madison, WI: American Institute of the History of Pharmacy, 1958. 15 pp. mimeo.

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.

61. Sonnedecker, Glenn, and Gregory J. Higby. *Bibliography on the History of Dosage Forms*. Madison, WI: American Institute of the History of Pharmacy, n.d. (ca. 1983). 10 pp., mimeographed.

A listing of the journal literature on dosage forms.

62. Sonnedecker, Glenn, and Gregory J. Higby. *Pharmacy in the Individual States: A Selective Historical Bibliography*. Madison, WI: American Institute of the History of Pharmacy, 1984. rev. 1991. 19 pp., mimeo.

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

63. Steudel, Johannes, et al. *Index zur Geschichte der Medizin und Biologie*. Zweiter Band. Munich: Urban & Schwarzenberg, 1966. vii + 312 pp.

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.

64. Styran, Roberta, and Andrew Watson. "Books of 'Materia Medica' in Toronto Libraries: Herbals, Books of Simples and Compounds, Formularies, Pharmacopoeias, etc. 300 B.C. to 1800 A.D." *Renaissance and Reformation* 6, no. 2 (1969-70): 16-35.

80. Berman, Alex, ed. *Pharmaceutical Historiography*. Madison: American Institute of the History of Pharmacy, 1967. 145 pp.
- 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.
81. Conci, Giulio. *Pagine di storia della farmacia*. Milan: 1934. 351 pp.
- Organized topically; documented, but with no bibliography or index.
82. Cowen, David L. "Pharmacy and Civilization." *American Journal of Pharmaceutical Education* 22 (1958): 70-76.
- 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.
83. Cowen, David L. "Pharmacy and Freedom." *Pharmacy in History* 26 (1984): 70-82.
- Looks at professional pharmaceutical standards throughout history, using the concept of freedom for individual pharmacists and for the profession.
84. Cowen, David L., and William H. Helfand. *Pharmacy: An Illustrated History*. New York: Harry N. Abrams, Inc., 1990. 272 pp., illus.
- With 308 illustrations (half in color) drawn from sources ranging from archaeological artifacts to photographs of contemporary practices, including pharmacies, equipment, portraits, paintings,

119. *One Hundred Years of Pharmacy in Canada (1867-1967)*. Toronto: Canadian Academy of the History of Pharmacy, 1969. 38 pp.

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.

120. Raison, Arnold (ed). *A Brief History of Pharmacy in Canada*. Toronto, Canada: Canadian Pharmaceutical Association, [1969]. 113 pp.

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.

121. Stieb, Ernst W. "Some Branches of Canadian Pharmacy's Family Tree—How They Sprouted and Grew." *Canadian Pharmaceutical Journal* 115, no. 10 (1982): 374-79.

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.

122. Wilson, Eugene. "How Pharmacy Developed in the Shadow of Parliament Hill." *Canadian Pharmaceutical Journal* 115, no. 10 (1982): 369-73.

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

1c—National Studies: China

123. Bretschneider, Emile V. "Botanicon Sinicum: Botanical Investigations into the Materia Medica of the Ancient Chinese." *Journal of the North China Branch, Royal Asiatic Society* NS29, no. 1-623 (1895):

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.

124. Unschuld, Paul U. *Medicine in China: A History of Pharmaceuticals. Comparative Studies of Health Systems and Medical Care* 14. Berkeley: University of California Press, 1968.

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.

125. Unschuld, Paul U. "The Development of Medical-Pharmaceutical Thought in China." *Comparative Medicine East and West* 5, no. 2 (1977): 109-15; 5(1977):211-31.

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

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

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

233. Millman, Morton M. "Dr. Henry Vincome Arny." *New York State Pharmacist* 10 (Deca.1936): 9, 24, 38.

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)

234. Mrtek, Marsha B. "The Professional Legacy of John Attfield." *Pharmacy in History* 29 (1987): 55-59.

Describes his contributions to the field of pharmacy.

235. Remington, Joseph P. "John Attfield." *Journal of the American Pharmaceutical Association* 1 (1912): 490-93.

Brief review of Attfield's career, in memorium.

236. Smith, F. A. Upsher. "Professor John Attfield, F. R. S." *American Journal of Pharmacy* 78 (1906): 103-13.

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: Baumé, Antoine (1728-1804)

245. Davy, René. *L'apothicaire Baumé (1728-1804), les origines de la droguerie pharmaceutique et de l'industrie du sel ammoniac en France*. Cahors: A. Coueslant, 1955. 147 pp.

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.

246. Julien, Pierre. "Antoine Baumé, la vie et l'homme." *Revue d'histoire de la pharmacie* 26 (1979): 11-22.

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

247. Julien, Pierre. "Baumé . . . ce n'est pas que l'aréomètre, ni les gouttes amères . . ." *Bulletin de l'Ordre National des Pharmaciens* 177 (April 1975): 498-509.

Life and works.

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

248. Francis, Anne. *A Guinea a Box. A Biography*. London: Hale, 1968. 191 pp., illus., index.

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.

the reader must go elsewhere to discover the utility of these "middlemen."

375. Caspari, Charles Jr. *A Treatise on Pharmacy for Students and Pharmacists*. 2nd ed. Philadelphia: Lea Brothers and Co., 1901. 747 pp., index, 301 illustrations.

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.

376. Charters, W. W., A. B. Lemon, and Leon M. Monell. *Basic Material for a Pharmaceutical Curriculum*. New York: McGraw-Hill, 1927. 358 pp., index.

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.

377. Cook, E. Fullerton, and Charles H. LaWall. *Remington's Practice of Pharmacy*. Philadelphia: Lippincott, 1936. 8th edition, 2020 pp., index, illus.

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.

378. Cook, Roy Bird. *The Annals of Pharmacy in West Virginia*. Charleston, West Virginia: West Virginia Pharmaceutical Association, 1946. 84 pp.

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.

379. Cowen, David L., Louis King, and Nicholas Lordi. "Nineteenth Century Drug Therapy: Computer Analysis of the 1854 Prescription File of a Burlington [New Jersey] Pharmacy." *Journal of the Medical Society of New Jersey* 78 (1981): 758-761.

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.

380. Crellin, John K., and J. O'Mara. "A Store Mixt, Various, Universal" *Community Pharmacy Past and Present*. St. John's, Newfoundland: n.p., 1990. 50 pp.

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.

381. Delgado, Frank A., and Arthur A. Kimball. *Prescription Department Sales Analysis in Selected Drug Stores*. Domestic Commerce Series, #59. Washington, DC: U. S. Government Printing Office, 1932. 37 pp.

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.

382. Delgado, Frank A., and Arthur A. Kimball. "The Professional Pharmacy: An Analysis of Prescription Department Activities." *Journal of the American Pharmaceutical Association* 22 (1933): 671-693; 764-782; 883-901; 983-1004.

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.

383. Dowling, Harry F. *Medicines for Man: The Development, Regulation, and Use of Prescription Drugs*. New York: Alfred A. Knopf, 1971. 347 pp., index.

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

384. *The Druggist's Manual. Being a Price Current of Drugs, Medicines, Paints, Dye-Stuffs, Glass, Patent Medicines, etc.* Philadelphia: Philadelphia College of Pharmacy, 1826. 119 pp.

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.

385. Fantus, Bernard. *A Textbook on Prescription-Writing and Pharmacy* . . . Chicago: Chicago Medical Book Company, 1913, 2nd edition. 375 pp., index.

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.

386. Francke, Donald E., Clifton J. Latiolais, Gloria N. Francke, and Norman F. H. Ho. *Mirror to Hospital Pharmacy*. Washington, DC.: American Society of Hospital Pharmacists, 1964. 234 pp., index, tables.

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.

387. Freedley, Edwin T. *A Treatise on the Principal Trades and Manufactures of the United States*. Philadelphia: Edward Young, 1856.

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 manufacturers, wholesalers, and retailers of the mid-nineteenth century, especially in the Philadelphia area.

388. Gathercoal, E. N., ed. *The Prescription Ingredient Survey*. n.p.: American Pharmaceutical Association, 1933. 163 pp.

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.

389. Ginzburg, Isaiah. "A Pharmacist in Tsarist Russia: A Reminiscence, 1892-1909." *Pharmacy in History* 27 (1985): 139-159.

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.

390. Griffenhagen, George. "The Pharmacy in History." *Journal of the International College of Surgeons* 29 (1958): 789-803.

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

391. Haffner, Gerald O., and William E. Wilson. "The Medical Inventory of a Pioneer Doctor." *Indiana Magazine of History* 46 (March 1960): 37-63.

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.

392. Helfand, William H., and David L. Cowen. "Evolution of Pharmaceutical Oral Dosage Forms." *Pharmacy in History* 25 (1983): 3-18.

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.

393. Kalman, Samuel H., and John F. Schlegel. "Standards of Practice for the Profession of Pharmacy." *American Pharmacy* 19 (1979): pp. 133-146.

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.

394. Kilmer, F. B., and Charles D. Deshler. "Drug Clerks One Hundred Years Ago." *Journal of the American Pharmaceutical Association* 18 (1929): 711-722.

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.

395. Lyman, Rufus A., ed. *American Pharmacy*. Philadelphia: J. B. Lippincott, 1945.

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.

396. MacEwan, Peter. *The Art of Dispensing*. London: Chemist and Druggist, 1900. 6th edition, 473 pp., index, illustrated.

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.

397. National Association of Retail Druggists. *The Independent Druggist (Report Number One)*. n.p.: Curtis Publishing, 1945. 112 pp., tables.

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.

398. Noel, H. S., ed. *The Modern Apothecary*. Indianapolis: Eli Lilly & Company, 1941. 225 pp., illus.

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.

399. Parrish, Edward. *An Introduction to Practical Pharmacy . . .* Philadelphia: Blanchard and Lea, 1856. 525 pp., index, illus.

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.

400. Porter, Glenn, and Harold Livesay. *Merchants and Manufacturers*. Baltimore: Johns Hopkins Press, 1971. 248 pp., index, bibl.

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.

401. Shannon, Michael C. "The First National Organization for Employee-Pharmacists, 1910-1934." *Pharmacy in History* 17 (1975): 58-68.

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.

402. Smith, George Winston. *Medicines for the Union Army: The United States Army Laboratories During the Civil War*. Madison, Wisconsin: American Institute of the History of Pharmacy, 1962. 119 pp., index, illus.

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.

403. Soubeiran, E[ugene]. *Nouveau traité de pharmacie théorique et pratique*. 2nd ed. Paris: Crochard et Cie, 1840.

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.

404. Sprowls, Joseph B. "An Introduction to Dosage Forms." In *American Pharmacy*. ed. Joseph B. Sprowls, and Harold M. Beal, pp. 1-26. 6th ed. Philadelphia: J. B. Lippincott, 1966. 415 pp., index.

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.

405. Steele, I. K., ed. *Atlantic Merchant-Apothecary: Letters of Joseph Cruttenden, 1710-1717*. Toronto: University of Toronto Press, 1977. 124 pp., index.

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.

406. Strickland, W. A. "Quinine Pills Manufactured on the Missouri Frontier (1832-1862)." *Pharmacy in History* 25 (1983): 61-68.

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.

407. Wertheimer, Albert I., and Mickey Smith (eds.). *Pharmacy Practice: Social and Behavioral Aspects*. 3rd edition. Baltimore: Williams and Wilkins, 1989. 441 pp., index.

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

408. Albert, Adrien. "Relations Between Molecular Structure and Biological Activity: Stages in the Evolution of Current Concepts." *Annual Review of Pharmacology* 11 (1971): 13-36.

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

409. Autian, J., and G. Wood. "The Role of Toxicology in the Pharmacy Curriculum." *American Journal of Pharmaceutical Education* 40 (1976): 378-82.

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.

410. Bachmann, C., and Marcel H. Bickel. "History of Drug Metabolism: The First Half of the 20th Century." *Drug Metabolism Reviews* 16 (1985-86): 185-253.

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.

411. Bearman, David, and John T. Edsall (eds.). *Archival Sources for the History of Biochemistry and Molecular Biology: A Reference Guide and Report*. Boston: American Academy of Arts and Sciences; Philadelphia: American Philosophical Society, 1980. xii + 338 pp., indices, accompanying microfiche.

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.

412. Bernsmann, W. "Arzneimittelforschung und -Entwicklung in Deutschland in der zweiten Hälfte des 19. Jahrhunderts." *Pharmazeutische Industrie* 29(1967): 448-49, 525-29, 669-73, 745-48, 834-36, 963-66, 1032-35; 30(1968): 58-59, 131-32, 199, 342-44, 408-9, 471-73

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.

413. Brewer, William A. "Reminiscences of an Old Pharmacist." *Pharmaceutical Record* 4 (1884): 210-211, 232-233, 255-256, 282-283, 304-305, 326-327, 348-349, 410-411, 424-425, 442-443, 460-461, 475, 494; 5 (1885): 6-7, 23, 38, 54-55, 71-72, 89-90, 105-106, 122-123, 138, 169-170.

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.

414. Butler, T. C. "Some Historical Reflections on Drug Metabolism." *Annals of the New York Academy of Sciences* 179 (1971): 502-507.

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.

415. "Célébration du bicentenaire de la naissance de Joseph Pelletier (1788-1842), 26 November 1988." *Revue d'histoire de la pharmacie* 36 (1989): 117-242.

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).

416. Chen, K. K., ed. *The American Society for Pharmacology and Experimental Therapeutics, Incorporated: The First Sixty Years, 1908-1969*. [Bethesda, MD: American Society for Pharmacology and Experimental Therapeutics], 1969. viii + 225 pp., illus., index.

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

417. Connors, Kenneth A., ed. *Pharmaceutical Science: Its Past and Its Future*. Madison, WI: [available through the American Institute of the History of Pharmacy, 425 N. Charter St., Madison, WI 53706], Proceedings of a Centennial Symposium. The School of Pharmacy, University of Wisconsin-Madison (1883-1983), October 2-4, 1983.

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. Croke, 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.

418. Conti, A., and Marcel H. Bickel. "History of Drug Metabolism: Discoveries of the Major Pathways in the 19th Century." *Drug Metabolism Reviews* 6 (1977): 1-50.

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.

419. Cowen, David L. "The History of the Science of Pharmacy." *Pharmacy in History* 7 (1962): 17-20.

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.

420. Cowen, David L. "Materia Medica and Pharmacology." In *The Education of American Physicians: Historical Essays*. ed. Ronald L. Numbers, pp. 95-121. Berkeley: University of California Press, 1980.

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.

421. Cowen, David L. "Pharmaceutical Scientists and Pharmacokinetics." *Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie, e.V.* NF 57 (1989): 53-60.

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.

422. Debus, Allen G. *The English Paracelsians*. London: Oldbourne, 1965. 222 pp., bibl., index.

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

423. Debus, Allen G. *The Chemical Philosophy: Paracelsian Science and Medicine in the Sixteenth and Seventeenth Centuries*. 2 vols. New York: Science History Publications, 1977. 606 pp., illus., bibl., index.

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

424. Delépine, M. "Joseph Pelletier and Joseph Caventou (transl. by Ralph Oesper)." *Journal of Chemical Education* 28 (1951): 454-61.

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.

425. Earles, Melvin P. "Early Theories of the Mode of Action of Drugs and Poisons." *Annals of Science* 17 (1961): 97-110.

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.

426. Earles, Melvin P. "Pharmacy and Its Relation to Scientific Education in Nineteenth-Century Britain." *Pharmacy in History* 11 (1969): 43-49.

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

427. Earles, Melvin P. "Studies in the Development of Experimental Pharmacology in the Eighteenth and Early Nineteenth Centuries." (Ph.D. diss., University College, London, 1961.)

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.

428. Estes, J. Worth. *Dictionary of Protopharmacology: Therapeutic Practices, 1700-1850*. Canton, Mass.: Science History Publications, 1990. 215 pp., illus.

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.

429. Estes, J. Worth. *Hall Jackson and the Purple Foxglove: Medical Practice and Research in Revolutionary America 1760-1820*. Hanover, N.H.: University Press of New England, 1979. xvi + 291 pp., illus., index.

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

430. Estes, J. Worth. "Naval Medicine in the Age of Sail: The Voyage of the *New York*, 1802-1803." *Bulletin of the History of Medicine* 56 (1982): 238-53.

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.

431. Estes, J. Worth. "Quantitative Observations of Fever and Its Treatment before the Advent of Short Clinical Thermometers." *Medical History* 35 (1991): 189-216.

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.

432. Estes, J. Worth. "The Shakers and Their Proprietary Medicines." *Bulletin of the History of Medicine* 65 (1991): 162-84.

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.

433. Estes, J. Worth, and Laverne Kuhnke. "French Observations of Disease and Drug Use in Late Eighteenth-Century Cairo." *Journal of the History of Medicine and Allied Sciences* 39 (1984): 121-52.

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.

434. Estes, J. Worth, and Paul Dudley White. "William Withering and the Purple Foxglove." *Scientific American* 212, no. No. 6, June (1965): 110-19.

Presents data Withering used in making his conclusions.

435. Farber, Eduard. *The Evolution of Chemistry: A History of Its Ideas, Methods, and Materials*. New York: Ronald Press, 1952. 349 pp., index.

Good general history.

436. Friedrich, C., and H. J. Seidlein. "Die Bedeutung der Entdeckung des Morphins für die Entwicklung der Pharmazeutischen Wissenschaft." *Pharmazie* 39 (1984): 340-45.

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

437. Fruton, Joseph S. *Molecules and Life: Historical Essays on the Interplay of Chemistry and Biology*. New York: Wiley-Interscience, 1972. x + 579 pp., bibl., index.

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

438. Goodman, Louis, and Alfred Gilman. *The Pharmacological Basis of Therapeutics*. New York: Macmillan, 1941; 2nd ed., 1955; 3rd ed., 1965; 4th ed., 1970; 5th ed., 1975; 6th ed. 1980; 7th ed. 1985; 8th ed., 1990.

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.

439. Helfand, William H., and David L. Cowen. "Evolution of Pharmaceutical Oral Dosage Forms." *Pharmacy in History* 25 (1983): 3-18.

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.

440. Hickel, Erika. *Arzneimittel-Standardisierung im 19. Jahrhundert in den Pharmakopoen Deutschlands, Frankreichs, Grossbritanniens, und der Vereinigten Staaten von Amerika*. Stuttgart: Wissenschaftliche Verlagsgesellschaft, 1973. vii + 293 pp., index.

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

441. Hoch, J. Hampton. "Bibliographic Materials in English Relating to the History of Pharmacognosy." *American Journal of Pharmaceutical Education* 23 (1959): 154-60.

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.

463. Rosenberg, Charles E. "Martin Arrowsmith: The Scientist as Hero."
In No Other Gods: On Science and American Social Thought.
Charles E. Rosenberg, pp. 123-31. Baltimore: Johns Hopkins
University Press, 1976.

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.

464. Rosenberg, Charles E. "The Therapeutic Revolution: Medicine,
Meaning, and Social Change in Nineteenth-Century America."
Perspectives in Biology and Medicine 20 (1977): 485-506.

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

465. Schneider, Wolfgang. *Geschichte der Pharmazeutischen Chemie.*
Weinheim/Bergstr.: Verlag Chemie, 1972. 376 pp., illus., index.

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

466. Schneider, Wolfgang. "A Bibliographical Review of the History of
Pharmaceutical Chemistry." *American Journal of
Pharmaceutical Education* 23 (1959): 161-72.

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.

468. Shryock, Richard Harrison. *American Medical Research: Past and Present*. New York: Commonwealth Fund, 1947. Repr. Salem, NH: Ayer, 1980. xv + 350 pp., index.

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.

469. Smith, Dale C. "Quinine and Fever: The Development of the Effective Dosage." *Journal of the History of Medicine and Allied Sciences* 31 (1976): 343-67.

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.

471. Stieb, Ernst W., with the collaboration of Glenn Sonnedecker. *Drug Adulteration: Detection and Control in Nineteenth-Century Britain*. Madison: University of Wisconsin Press, 1966. 335 pp., illus., index.

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

472. Swann, John P. *Academic Scientists and the Pharmaceutical Industry: Cooperative Research in Twentieth-Century America*. Baltimore: Johns Hopkins University Press, 1988. xiv + 249 pp.

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.

473. Swazey, Judith P. *Chlorpromazine in Psychiatry: A Study of Therapeutic Innovation*. Cambridge: MIT Press, 1974. xvi + 340 pp., illus.

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

474. Swintosky, Joseph V. "Personal Adventures in Biopharmaceutical Research During the 1953-1984 Years." *Drug Intelligence and Clinical Pharmacy* 19 (1985): 265-76.

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.

475. Talalay, Paul, ed. *Drugs in Our Society*. Baltimore: Johns Hopkins Press, 1964.

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.

476. Tschirch, Alexander. *Handbuch der Pharmakognosie*. 3 vols. in 6. Leipzig: C. H. Tauchnitz, 1909-1925. 2d ed., 1 vol. in 3. Leipzig: B. Tauchnitz, 1930-1933. illus., bibl., index,

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.

477. Vandam, Leroy D. "On the Origins of Intrathecal Anesthesia." *International Anesthesiology Clinics* 27 (1989): 2-7.

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

478. Vandam, Leroy D. "Some Aspects of the History of Local Anesthesia." In *Handbook of Experimental Pharmacology*. ed. G. R. Strichartz, pp. 1-19. Berlin: Springer-Verlag, 1987.

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

479. Wagner, John G. "History of Pharmacokinetics." *Pharmacology and Therapeutics* 12 (1981): 537-62.

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.

480. Warner, John Harley. *The Therapeutic Perspective: Medical Practice, Knowledge, and Identity in America, 1820-1885*. Cambridge: Harvard University Press, 1986. x + 367 pp., illus.

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.

481. Young, L. "The Metabolism of Foreign Compounds—History and Development." In *Drug Metabolism, from Microbe to Man: A Symposium in Honour of Richard Tecwyn Williams*. ed. D. V. Parke, and R. L. Smith, pp. 1-11. London: Taylor and Francis, 1977.

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

482. Ackerknecht, Erwin H. *Therapeutics from the Primitives to the 20th Century*. New York: Hafner Press, 1973. x + 194 pp., bibl., index.

A translation of the author's *Therapie von den Primitiven bis zum 20. Jahrhundert* (1970). A useful and well-written overview of the history of therapeutics, with an appendix on the

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.

483. Ackerknecht, Erwin H. "Aspects of the History of Therapeutics." *Bulletin of the History of Medicine* 36 (1962): 389-419.

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

484. Cowen, David L., and A. B. Segelman eds. *Antibiotics in Historical Perspective*. Rahway, NJ: Merck, 1981. 225 + 17 pp., illus., bibl.

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.

485. Dannenfeldt, Karl H. "Ambergris: The Search for Its Origin." *Isis* 73 (1982): 382-97.

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

486. Debus, Allen G. *The Chemical Philosophy: Paracelsian Science and Medicine in the Sixteenth and Seventeenth Centuries*. 2 vols. New York: Science History Publications, 1977. 606 pp., illus., bibl., index.

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.

487. Debus, Allen G. "Chemistry, Pharmacy and Cosmology: A Renaissance Union." *Pharmacy in History* 20 (1978): 127-37.

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

488. Dymock, William, C. J. H. Warden, and David Hooper. *Pharmacographia Indica: A History of the Principal Drugs of Vegetable Origin, Met with in British India*. 3 vols. + Index and Appendix volume. London: Kegan Paul, Trench, Trübner and Company, 1890-1893.

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

489. Efron, Daniel H., Bo Holmstedt, and Nathan S. Kline. *Ethnopharmacologic Search for Psychoactive Drugs*. Second Printing. New York: Raven Press, 1979. xviii + 468 pp.

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.

490. Estes, J. Worth. "Making Therapeutic Decisions with Protopharmacologic Evidence." *Transactions and Studies of the College of Physicians of Philadelphia* NS 1 (1979): 116-37.

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.

491. Foust, Clifford M. *Rhubarb: The Wondrous Drug*. Princeton, NJ: Princeton University Press, 1992. xxi + 371 pp., illus.

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.

492. Guerra, Francisco. *Historia de la Materia Medica Hispano-Americana y Filipina en la Epoca Colonial: Inventario Critico y Bibliografico de Manuscritos*. Madrid: Afrodasio Aguado, 1973. 218 pp., illus., index.

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.

494. Haller, John S., Jr. "A Drug for All Seasons. Medical and Pharmacological History of Aloe." *Bulletin of the New York Academy of Medicine* 66 (1990): 647-59.

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

495. Hamarneh, Sami. "Sources and Development of Arabic Medical Therapy and Pharmacology." *Sudhoffs Archiv* 54 (1970): 30-48.

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

496. Hartwell, Jonathan L. *Plants Used Against Cancer*. Lawrence, MA: Quarterman Publications, 1982. vii + 710 pp.

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.

497. Hein, Wolfgang-Hagen, ed. *Botanical Drugs of the Americas in the Old and New Worlds: Invitational Symposium at the Washington-Congress 1983. Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie e. V.*, vol. 53. Stuttgart: Wissenschaftliche Verlagsgesellschaft, 1984. 131 pp., illus.

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.

498. Hickel, Erika, and Gerald Schröder (eds.). *Neue Beiträge zur Arzneimittelgeschichte. Festschrift für Wolfgang Schneider zum 70. Geburtstag. Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie e. V.*, vol. 51. Stuttgart: Wissenschaftliche Verlagsgesellschaft, 1982.

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.

499. Higby, Gregory J. "Gold in Medicine: A Review of Its Use in the West Before 1900." *Gold Bulletin* 15 (1982): 130-40.

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.

500. Hu, Shiu-ying. *An Enumeration of Chinese Materia Medica*. Hong Kong: The Chinese University Press, 1980. vii + 287 pp., index.

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.

501. Hughes, R. Elwyn. "The Rise and Fall of the 'Antiscorbutics': Some Notes on the Traditional Cures for 'Land Scurvy'." *Medical History* 34 (1990): 52-64.

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.

502. Kawakita, Yosio, Shizu Sakai, and Yasuo Otsuka (eds.). *History of Therapy (Proceedings of the 10th International Symposium on the Comparative History of Medicine—East and West)*. Tokyo: EuroAmerica, Inc., 1990. xviii + 288 pp., illus.

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 Pharmacopoeial Vegetable Drugs, Chemicals and Preparations, With*

Bibliography. Volume 1, Vegetable Drugs. Cincinnati: Caxton Press, 1921.

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.

504. Lucia, Salvatore P. *A History of Wine as Therapy*. Philadelphia: J. B. Lippincott, 1963. 234 pp., illus., index.

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

505. MacGregor, Alasdair B. "The Search for a Chemical Cure for Cancer." *Medical History* 10 (1966): 374-85.

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

506. Martin, Richard T. "The Role of Coca in History, Religion, and Medicine of South American Indians." *Economic Botany* 24 (1970): 422-38.

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

507. Multhauf, Robert. "Medical Chemistry and "the Paracelsians"." *Bulletin of the History of Medicine* 28 (1954): 101-26.

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

508. O'Hara-May, Jane. "Foods or Medicines? A Study in the Relationship Between Foodstuffs and Materia Medica from the Sixteenth to the Nineteenth Century." *Transactions of the British Society for the History of Pharmacy* 1 (1971): 62-97.

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.

509. Ortiz de Montello, Bernard R. *Aztec Medicine, Health, and Nutrition*. New Brunswick, NJ: Rutgers University Press, 1990. xvi + 308 pp., illus., bibl.

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."

510. Parnham, M. J., and J. Bruinvels (eds.). *Discoveries in Pharmacology*. 3 vols. Amsterdam: Elsevier, 1983-1986. xii + 507 pp. (vol. 1), xviii + 708 pp., (vol. 2), xviii + 404 pp., illus., bibl., index.

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.

511. Phillips, Joel L. *A Cocaine Bibliography: Nonannotated*. DHEW Publications, Number ADM 75-203, Research Issues Series, Number 8. Rockville, MD: National Institute on Drug Abuse, 1975. v + 131 pp.

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

512. Read, Bernard E. [Li Yu-t'ien, and Yu Ching-mei]. *Chinese Materia Medica*. 6 vols. Peking: Peking Natural History Bulletin, 1931-41.

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.

513. Read, Bernard E. [and Liu Ju-ch'iang]. *Chinese Medicinal Plants from the Pen Ts'ao Kang Mu . . .* Peiping: Peking Natural History Bulletin, 1936.

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].

514. Read, Bernard E., and C. Pak. *A Compendium of Minerals and Stones Used in Chinese Medicine from the Pen Ts'ao Kang Mu*. 2nd ed. Peiping: Peking Natural History Bulletin, 1936. 98 pp.

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.

515. Rivier, L., ed. "Coca and Cocaine 1981." *Journal of Ethnopharmacology, Special Issue 3* (1981): 105-379.

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

516. Scarborough, John, ed. *Folklore and Folk Medicines*. Madison, WI: American Institute of the History of Pharmacy, 1987. v + 122 pp.

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.

517. Schneider, Wolfgang. *Lexicon zur Arzneimittelgeschichte: Sachwörterbuch zur Geschichte der pharmazeutischen Botanik, Chemie, Mineralogie, Pharmakologie, Zoologie*. 7 vols., illus. Frankfurt: Govi-Verlag, 1968-1975.

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.

518. Schwamm, Brigitte. *Atropa Belladonna: Eine antike Heilpflanze in modernen Arzneischatz. Historische Betrachtung aus botanischer, chemischer, toxikologischer, pharmakologischer und medizinischer Sicht unter besonderer Berücksichtigung des synthetischen Atropins*. Quellen und Studien zur Geschichte der Pharmazie, vol. 49. Stuttgart: Deutscher Apotheker Verlag, 1988. xviii + 416 pp., illus., bibl.

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

519. Simon, James E., Alena F. Chadwick, and Lyle E. Craker. *Herbs, An Indexed Bibliography, 1971-1980: The Scientific Literature on Selected Herbs, and Aromatic and Medicinal Plants of the Temperate Zone*. Hamden, CT: Archon Books, 1984. xviii + 770 pp.

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.

520. Stewart, Grace G. "A History of the Medicinal Use of Tobacco 1492-1860." *Medical History* 11 (1967): 228-68.

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.

521. Temkin, Owsei. "Historical Aspects of Drug Therapy." In *Drugs in Our Society*. ed. Paul Talalay, pp. 3-16. Baltimore: Johns Hopkins Press, 1964. 311 pp., index.

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.

522. Turner, Carlton E., Beverly S. Urbanek, G. Michael Wall, and Coy W. Walker. *Cocaine: An Annotated Bibliography*. 2 vols. Jackson: University Press of Mississippi, 1988.

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

523. Valverde, José Luis, and José A. Pérez Romero. *Drogas Americanas en fuentes de escritores Franciscanos y Dominicanos*. Estudios de la Cátedra de Historia de la Farmacia y Legislación Farmacéutica de la Universidad de Granada, España, no. 8. Granada: Catedra de Historia de la Farmacia y Legislación Farmacéutica de la Universidad de Granada, 1988.

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.

524. Van Tassel, R. "Bezoars." *Janus* 60 (1973): 241-59.

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.

525. Vohora, S. B., and S. Y. Khan. *Animal Origin Drugs Used in Unani Medicine*. New Delhi: Vikas Publishing House, 1979. iv + 137 pp., illus., bibl.

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.

526. Watson, Gilbert. *Theriac and Mithridatium: A Study in Therapeutics*. London: Wellcome Historical Medical Library, 1966. x + 165 pp., illus.

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

Pre-1600

527. Brunner, Theodore F. "Marijuana in Ancient Greece and Rome? The Literary Evidence." *Bulletin of the History of Medicine* 47 (1973): 344-55.

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.

528. Cooper, William C., and Nathan Sivin. "Man as Medicine: Pharmacological and Ritual Aspects of Traditional Therapy Using Drugs Derived from the Human Body." In *Chinese Science: Explorations of Ancient Tradition*. ed. Shigeru Nakayama, and Nathan Sivin, pp. 203-272. M. I. T. East Asian Science Series, 2. Cambridge: MIT Press, 1973.

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.

530. Curtis, Robert I. *Garum and Salsamenta: Production and Commerce in Materia Medica*. *Studies in Ancient Medicine*, vol. 3. Leiden: E. J. Brill, 1991. xv + 226 pp., illus., bibl., index.

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

531. Debus, Allen G. "The Chemical Philosophers: Chemical Medicine from Paracelsus to Van Helmont." *History of Science* 12 (1974): 235-59.

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.

532. Estes, J. Worth. *The Medical Skills of Ancient Egypt*. Canton, MA: Science History Publications, 1989. xii + 196 pp., illus.

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

533. Florin, Marcel, ed. *Materia Medica in the XVIIth Century. Proceedings of a Symposium of the International Academy of the History of Medicine Held at the University of Basel, 7th September 1964*. *Analecta Medico-Historica*, I. Oxford: Pergamon Press, 1966. v + 80 pp., illus.

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.

534. Goltz, Dietlinde. *Studien zur altorientalischen und griechischen Heilkunde: Therapie, Arzneibereitung, Rezeptstruktur*. *Sudhoffs Archiv*, Supplement Number 16. Wiesbaden: Franz Steiner, 1974. xiv + 352 pp., bibl.

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

535. Hamarneh, Sami. "Development of Arabic Medical Therapy in the Tenth Century." *Journal of the History of Medicine and Allied Sciences* 27 (1972): 65-79.

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

536. Hamarneh, Sami. "Origins of Arabic Drug and Diet Therapy." *Physis* 11 (1969): 267-86.

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

537. Hameed, Hakeem Abdul, ed. *Avicenna's Tract on Cardiac Drugs and Essays on Arab Cardiotherapy*. Karachi: Hamdard Foundation Press, 1983. 216 pp., illus., bibl.

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.

538. Harper, Donald J. "The *Wu Shih Erh Ping Fang*: Translation and Prolegomena." (Ph.D. dissertation, University of California, Berkeley, 1982.)

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.

539. Harrison, R. K. "Healing Herbs of the Bible." *Janus* 50 (1961): 9-54.

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

540. Karnick, C. R. "Notes on Some Ancient Indian Medicinal Drug Plants with Special Reference to 'Soma'—The Rejuvenator and Promoter of Longevity." *Clio Medica* 5 (1970): 261-68.

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

541. Kuznicka, Barbara. "The Earliest Printed Herbals and Evolution of Pharmacy." *Organon* 16/17 (1980/81): 255-61.

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.

544. Levey, Martin. *Substitute Drugs in Early Arabic Medicine with Special Reference to the Texts of Masarjawaih, Al-Razi, and Pythagoras*. Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie e. V., Bd. 37. Stuttgart: Wissenschaftliche Verlagsgesellschaft, 1971. 102 pp.

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

545. Levey, Martin. "Some Facets of Mediaeval Arabic Pharmacology." *Transactions and Studies of the College of Physicians of Philadelphia* Ser. 4. 30 (1962-63): 157-62.

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

546. Manniche, Lise. *An Ancient Egyptian Herbal*. London: British Museum Publications, 1989. 176 pp., illus.

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

547. McVaugh, Michael. "An Early Discussion of Medicinal Degrees at Montpellier by Henry of Winchester." *Bulletin of the History of Medicine* 49 (1975): 57-71.

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).

548. McVaugh, Michael. "Quantified Medical Theory and Practice at Fourteenth-Century Montpellier." *Bulletin of the History of Medicine* 43 (1969): 397-413.

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.

549. McVaugh, Michael. "Theriac at Montpellier 1285-1325." *Sudhoffs Archiv* 56 (1972): 113-44.

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.

550. McVaugh, Michael. "Theriac at Montpellier 1285-1325 (with an Edition of the 'Questiones de Tyriaca' of William of Brescia)." *Sudhoffs Archiv* 56 (1972): 113-44.

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.

551. Merlin, Mark David. *On the Trail of the Ancient Opium Poppy*. Rutherford, NJ: Associated University Presses, Inc., 1984. 324 pp., illus.

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.

552. Meyerhof, M. "The Background and Origins of Arabian Pharmacology." *Ciba Symposia* 6, no. 5-6 (1944): 1847-67.

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

553. Multhauf, Robert. "The Significance of Distillation in Renaissance Medical Chemistry." *Bulletin of the History of Medicine* 30 (1956): 329-46.

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

554. Multhauf, Robert P. "John of Rupescissa and the Origin of Medical Chemistry." *Isis* 45 (1954): 359-67.

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.

555. Riddle, John M. *Dioscorides on Pharmacy and Medicine. History of Science Series*, no. 3. Austin: University of Texas Press, 1985. xxviii + 298 pp., illus., bibl.

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.

556. Riddle, John M. *Quid pro quo: Studies in the History of Drugs. Variorum Collected Studies Series*, CS367. Brookfield, VT: Ashgate Publishing Co., 1992. 330 pp., index.

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

557. Riddle, John M. "Amber in Ancient Pharmacy: The Transmission of Information About a Single Drug, a Case Study." *Pharmacy in History* 15 (1973): 3-17.

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.

558. Riddle, John M. "The Introduction and Use of Eastern Drugs in the Early Middle Ages." *Sudhoffs Archiv* 49 (1965): 185-98.

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

559. Riddle, John M. "Lithotherapy in the Middle Ages." *Pharmacy in History* 12 (1970): 39-50.

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.

560. Riddle, John M. "Pomum Ambrae: Amber and Ambergris in Plague Remedies." *Sudhoffs Archiv* 48 (1964): 111-22.

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.

561. Sadek, M. M. *The Arabic Materia Medica of Dioscorides*. Quebec: Les Éditions du Sphinx, 1983. x + 229 pp., illus., bibl.

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.

562. Scarborough, John, ed. *Symposium on Byzantine Medicine*. Dumbarton Oaks Papers Number 38. Washington, DC: Dumbarton Oaks Research Library and Collection, 1985. xvi + 282 pp., illus.

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."

563. Scarborough, John. "The Drug Lore of Asclepiades of Bithynia." *Pharmacy in History* 17 (1975): 43-57.

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.

564. Scarborough, John. "Theophrastus on Herbals and Herbal Remedies." *Journal of the History of Biology* 11 (1978): 353-85.

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

565. Scarborough, John. "Theoretical Assumptions in Hippocratic Pharmacology." In *Formes de Pensée dans la Collection Hippocratique*. ed. François Lasserre, and Philippe Mudry, pp. 307-325. Université de Lausanne Publications de la Faculté des Lettres, Number 26. Geneva: Libraire Droz, 1983.

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.

566. Sivin, Nathan. *Chinese Alchemy: Preliminary Studies*. Cambridge: Harvard University Press, 1968. xxiv + 339 pp., illus.

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.

567. Smith, Emilie Savage. "Drug Therapy in Trachoma and Its Sequelae as Presented by Ibn al-Nafis." *Pharmacy in History* 14 (1972): 95-110.

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.

568. Stannard, Jerry. "Greco-Roman Materia Medica in Medieval Germany." *Bulletin of the History of Medicine* 46 (1972): 455-68.

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

569. Stannard, Jerry. "Hippocratic Pharmacology." *Bulletin of the History of Medicine* 35 (1961): 497-518.

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.

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.

613. Estes, J. Worth. *Hall Jackson and the Purple Foxglove: Medical Practice and Research in Revolutionary America 1760-1820*. Hanover, N.H.: University Press of New England, 1979. xvi + 291 pp., illus., index.

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.

614. Estes, J. Worth. "Drug Use at the Infirmary: The Example of Dr. Andrew Duncan, Sr." In *Hospital Life in Enlightenment Scotland: Care and Teaching at the Royal Infirmary of Edinburgh*. Guenter B. Risse, pp. 351-84. Cambridge: Cambridge University Press, 1986.

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.

introducing nitroglycerin as a remedy, it was an allopathic physician who first suggested its use for the treatment of angina.

619. Gifford, George E., Jr. "Botanic Remedies in Colonial Massachusetts, 1620-1820." In *Medicine in Colonial Massachusetts, 1620-1820*. ed. Philip Cash, Eric H. Christianson, and J. Worth Estes, pp. 263-88. Boston: Colonial Society of Massachusetts, 1980.

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.

620. Goldwater, Leonard J. *Mercury: A History of Quicksilver*. Baltimore: York Press, 1972. xi + 318 pp., illus.

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

621. Griffenhagen, George. "Medicines in the American Revolution." In *American Pharmacy in the Colonial and Revolutionary Periods: A Bicentennial Symposium*. ed. George A. Bender, and John Parascandola, pp. 27-36. Madison, WI: American Institute of the History of Pharmacy, 1977.

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

622. Haggis, A. W. "Fundamental Errors in the Early History of Cinchona." *Bulletin of the History of Medicine* 10 (1941): 417-59, 568-92.

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.

and Sundrie Hearbes, Trees, Oyles, Plantes, and Stones . . . Englished by J. Frampton. London: William Norton, 1577. 109 ff.; Facsimile, Amsterdam: Theatrum Orbis Terarum; New York, De Capo, 1970.

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

823. Griffenhagen, George, and William Felter. *The Oregon Trail of Pharmacy*. Madison, WI: American Institute of the History of Pharmacy, 1952. 54 pp., illus., append., index.

Short history of drugstores, literature, education, and organization of pharmacy practice in Oregon.

824. Hall, Marie. "Apothecaries and Chemists in the Seventeenth Century." *Pharmaceutical Journal* 199 (1967): 433-36.

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.

825. Hamarneh, Sami. "The Climax of Medieval Arabic Professional Pharmacy." *Bulletin of the History of Medicine* 42 (1968): 450-61.

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*.

826. Hamarneh, Sami. "The Rise of Professional Pharmacy in Islam." *Medical History* 6 (1962): 59-66.

Short but helpful overview of the separation of pharmacy into a distinct profession in the ninth-century Middle East.

827. Higby, Gregory J. "Professionalism and the Nineteenth-Century American Pharmacist." *Pharmacy in History* 28 (1986): 115-24.

A reinterpretation of the early professionalization of American pharmacy. Developments in professional organization, education, and legislation are evaluated in the light of evolving

873. Liebenau, Jonathan. "Industrial R and D in Pharmaceutical Firms in the Early Twentieth Century." *Business History* 26 (November 1984): 329-46.

Liebenau compares drug company attitudes toward sponsored research and company laboratories, in Britain, Germany, and the United States during the 1890s.

874. Liebenau, Jonathan, Gregory J. Higby, and Elaine C. Stroud (eds.). *Pill Peddlers: Essays on the History of Pharmaceutical Industry*. Madison, WI: American Institute of the History of Pharmacy, 1990. vii + 133 pp. illus.

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.

875. Mahoney, Tom. *The Merchants of Life: An Account of the American Pharmaceutical Industry*. New York: Harper & Row, 1959. x + 278 pp., index.

A lively entrepreneurial history of a dozen American firms, with brief accounts of a half-dozen German and Swiss firms.

876. Meadsday, Walter S. "The Pharmaceutical Industry." In *The Structure of American Industry*. ed. Walter Adams, pp. 250-84. 5th ed. New York: Macmillan, 1977.

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.

877. National Research Council. *The Competitive Status of the U.S. Pharmaceutical Industry: The Influences of Technology in*

Determining International Industrial Competitive Advantage. Washington: National Academy Press, 1983. x + 102 pp., index.

This study assembled much useful data on the industry for the period 1960-1980.

878. Numbers, Ronald L., ed. *Medicine in the New World: New Spain, New France and New England.* Knoxville: University of Tennessee Press, 1987. 175 pp., illus. bibl.

Traces European roots of early American medical practice. The chapter by Christianson contains information on colonial apothecary shops and wholesale druggists.

879. Nutton, Vivian. "The Drug Trade in Antiquity." *Journal of the Royal Society of Medicine* 78 (1985): 138-45.

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.

880. Okun, Mitchell. *Fair Play in the Marketplace: The First Battle for Pure Food and Drugs.* DeKalb, IL: Northern Illinois Press, 1986. xvi + 345 pp., bibl. index.

Okun related the story of the first battle for pure food and drug laws which took place in state legislatures prior to 1890.

881. Pearson, Michael. *The Million Dollar Bugs.* New York: G. P. Putnam's Sons, 1969. 291 pp., index.

Although journalistic, this book provides fascinating insights into entrepreneurial decisions in the pharmaceutical industry following the discovery of sulfa drugs 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.

882. Pekkanen, John. *The American Connection: Profiteering and Politicking in the "Ethical" Drug Industry*. Chicago: Follett, 1973. 348 pp., index.

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.

883. Poynter, F. N. L., ed. *The Evolution of Pharmacy in Britain*. London: Pitman Medical Publishing Co., 1965. 240 pp., index.

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.

884. Pradhan, Suresh B. *International Pharmaceutical Marketing*. Westport, CT: Quorum Books, 1983. xxiii + 281 pp., bibl., index.

Part III contains descriptions, with brief histories, of the pharmaceutical industries in seventeen countries. Government regulations and health insurance schemes are detailed.

885. Rabin, David L., and Patricia J. Bush. "The Use of Medicines: Historical Trends and International Comparisons." *International Journal of Health Services* 4 (January 1974): 61-87.

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.

886. Rorem, C. Rufus, and Robert P. Fischelis. *The Costs of Medicines: The Manufacture and Distribution of Drugs and Medicines in*

the United States and the Services of Pharmacy in Medical Care. Publications of the Committee on the Costs of Medical Care, no. 14. Chicago: University of Chicago Press, 1932. xi + 250 pp.

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.

887. Schafer, Edward H. *The Golden Peaches of Samarkand. A Study of Tang Exotics*. Berkeley: University of California Press, 1963. 399 pp., bibl., index.

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.

888. Schwartzman, David. *Innovation in the Pharmaceutical Industry*. Baltimore: Johns Hopkins University Press, 1976. xvi + 399 pp., index.

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.

889. Sevigny, David C. *Ethical Pharmaceutical Industry and Some of its Economic Aspects: An Annotated Bibliography*. Addiction Research Foundation, Bibliographic Series, edited by R. J. Hall, vol. 13. Toronto: Addiction Research Foundation, 1977. iv + 521 pp., index.

Provides detailed abstracts for approximately 150 of the 576 citations. Emphasis is on works written in English between 1960 and 1974.

890. Silverman, Milton, and Philip R. Lee. *Pills, Profits, and Politics*. Berkeley: University of California Press, 1974. xviii + 403 pp., index.

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.

891. Sonnedecker, Glenn. "The Rise of Drug Manufacture in America." *Emory University Quarterly* 21 (1965): 73-87.

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.

892. Stage, Sarah. *Female Complaints: Lydia Pinkham and the Business of Women's Medicine*. New York: Norton, 1979. 304 pp., illus., bibl., index.

While primarily a social history, this book provides fascinating insights into the marketing and cost structure of a successful patent medicine.

893. Starr, Paul. *The Social Transformation of American Medicine*. New York: Basic Books, 1982. xi + 514 pp., index.

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.

894. Swann, John P. *Academic Scientists and the Pharmaceutical Industry: Cooperative Research in Twentieth-Century America*. Baltimore: Johns Hopkins University Press, 1988. xi + 249 pp., illus., index.

Between the two World Wars several distinguished academics disregarded the taboo against providing counsel to pharmaceutical manufacturers. Extensive case studies carefully document their contributions.

895. Temin, Peter. *Taking Your Medicine: Drug Regulation in the United States*. Cambridge: Harvard University Press, 1980. xi + 274 pp., bibl., index.

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.

896. Trease, George Edward. *Pharmacy in History*. London: Ballière, Tindall and Cox, 1964. vii + 264 pp., illus., index.

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.

897. United States Department of Commerce, International Trade Administration. *A Competitive Assessment of the U.S. Pharmaceutical Industry*. Washington: G.P.O., 1984. xii + 113 pp., bibl.

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.

898. United States Senate, Committee on the Judiciary, Subcommittee on Antitrust and Monopoly. *Hearings on Administered Prices, 86th Congress, First Session, Parts 14-26*. Washington: G. P. O., 1960-61.

Kefauver Committee hearings aimed at determining degree of monopoly power in the U. S. pharmaceutical industry.

899. United States Senate, Select Committee on Small Business, Subcommittee on Monopoly. *Hearings on Present Status of Competition in the Pharmaceutical Industry, 90th Congress, First and Second Sessions, Parts 1-21*. Washington: G. P. O., 1967-71.

Nelson Committee hearings: emphasis was on costs and benefits of patents, and brand names, and the possibility of mandatory licensing.

900. Walker, Hugh D. *Market Power and Price Levels in the Ethical Drug Industry*. Bloomington: Indiana University Press, 1971. xiii + 246 pp., bibl., index.

Based largely on evidence submitted to the Kefauver committee, analyzes the structure and performance of the industry in the period ending in 1960.

901. Wiggins, Steven N. "The Pharmaceutical Research and Development Decision Process." In *Drugs and Health: Economic Issues and Policy Objectives*. ed. Robert B. Helms, pp. 55-83. Washington: American Enterprise Institute for Public Policy Research, 1981.

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.

902. Wood, Donna J. *Strategic Uses of Public Policy: Business and Government in the Progressive Era*. Pitman Series in Business and Public Policy. Marshfield, MA: Pitman Publishing, 1986. xiii + 258 pp., bibl., index.

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.

903. Young, James Harvey. *Pure Food: Securing the Federal Food and Drugs Act of 1906*. Princeton: Princeton University Press, 1989. xiii + 312 pp., illus., index, bibliographic essay.

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.

904. Young, James Harvey. *The Toadstool Millionaires: A Social History of Patent Medicines in America Before Federal Regulation*. Princeton, NJ: Princeton University Press, 1961. xii + 282 pp., illus.

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

905. Adam, Linda, and Ernst W. Stieb. "Women in Ontario Pharmacy, 1927-1952." *On Continuing Practice* 17, no. 3 (1990): 23-26.

Covers period from 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).

906. *American Journal of Pharmaceutical Education* .

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.

907. Autio, D. E. "Development of Radiopharmacy Education in America—A Brief Survey." *Pharmacy in History* 18 (1976): 13-16.

An interesting, well-documented account.

908. Bardell, Eunice Bonow. *Wisconsin Show Globe: The Wisconsin Pharmaceutical Association, 1880-1980*. Madison, WI: Wisconsin Pharmaceutical Association, 1983. 294 pp., illus., index.

There are sections on pharmaceutical education: pp. 15-23, 71-77, 93-99, 143-44, 164-74, 204-12.

909. Bardell, Eunice Bonow. "America's Only School of Pharmacy for Women." *Pharmacy in History* 26 (1984): 127-33.

An interesting, well-documented account of the Louisville School of Pharmacy for Women (1884-ca. 1895).

910. Blauch, Lloyd E., and George L. Webster. *The Pharmaceutical Curriculum*. Washington, D.C.: American Council on Education, [1952]. xvi + 257 pp.

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.

911. Blockstein, William L. "The Continuing Influence of the Survey During the 1960s, 70s, and Early 80s—A Personal Look." *Pharmacy in History* 30 (1988): 142-50.

Well-documented study of the important Pharmaceutical Survey of 1946-49, which helped shape American pharmaceutical education and practice in the twentieth century.

912. Bonow, Eunice R. "The History of Professional Pharmaceutical Fraternities for Women." *American Journal of Pharmaceutical Education* 18 (1954): 409-12.

A good, documented basis for a more comprehensive study.

913. Bonow-Bardell, Eunice. *Into the Second Century of the College of Pharmacy at the University of Kentucky, 1970-1985*. Lexington, Kentucky: University of Kentucky, 1992.

Sequel to Wrobel's *The First Hundred Years . . . 1870-1970* (1972). [not seen].

914. Bowers, Roy A., and David L. Cowen. *The Rutgers University College of Pharmacy: A Centennial History*. New Brunswick, New Jersey: Rutgers University Press, 1991. 175 pp., illus.

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.

915. Bowers, Roy A., and David L. Cowen. *The Rho Chi Society: The Development of the Honor Society of American Pharmacy*. Fourth ed. Columbus, Ohio: The Rho Chi Society, 1972. xxvi + 57 pp., illus., index.

Fiftieth anniversary edition. A fine example of how institutional histories should be written.

916. Brodie, Donald C., Roger A. Benson, Donald E. Francke, Harvey A. K. Whitney, and Christopher A. Rodowskas. "Clinical Pharmacy in Historical Perspective." *Drug Intelligence and Clinical Pharmacy* 10 (1976): 505-27.

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.

917. Bunnell, Kevin P. *Liberal Education and American Pharmacy*. New York: Institute of Higher Education, Teachers College, Columbia University, [1958?]. 43 pp. of typescript.

Contains a general and historical discussion of the place of liberal education in American pharmacy.

918. "Catalogue of Books Belonging to the Library of the Philadelphia College of Pharmacy." *American Journal of Pharmacy* 31 (1859): 291-98.

The Philadelphia College of Pharmacy, founded in 1821, was the first permanent English-speaking association and school of pharmacy in the world.

919. Charters, W. W., A. B. Lemon, and Leon M. Monell. *Basic Material for a Pharmaceutical Curriculum*. New York: McGraw-Hill, 1927. 358 pp. + index.

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.

920. Cocolas, George H. "From West to East and Beyond." *American Journal of Pharmaceutical Education* 50 (1986): 290-91.

A short summary of the author's experiences as editor (1980 on) of the *American Journal of Pharmaceutical Education*, on the occasion of its 50th anniversary.

921. "Colleges of Pharmacy." *Journal of the American Pharmaceutical Association, Practical Pharmacy Edition* 17 (1956): 646-58.

Capsule histories of the 75 schools of pharmacy then accredited by the American Council on Pharmaceutical Education, with portraits of deans. Undocumented.

922. Cowen, David L. "Notes on Pharmaceutical Training in New Jersey before 1900." *American Journal of Pharmaceutical Education* 12 (1948): 302-14.

Covers period 1870-1900, from time of founding of the New Jersey Pharmaceutical Association. Well documented.

923. Culp, Robert W. "The Education, Career Opportunities and Status of American Women Pharmacists to 1900, Including a Directory." *Transactions and Studies of the College of Physicians of Philadelphia* 41 (1974): 211-27.

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.

924. Culp, Robert W. "A Multiplicity of American Pharmacy Schools from 1870 to 1900, Including a Directory." *Transactions and Studies of the College of Physicians of Philadelphia* 40, July (1972): 64-72.

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.

925. DeSalvo, Robert J., Robert W. Hammel, Joseph D. McEvilla, and Robert V. Evanson. *A History of the Discipline of Pharmacy Administration*. Kansas City, Missouri: Marion Laboratories, Inc., 1985. vii + 179 pp.

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.

926. Diaz, Luis Torres. "Pharmaceutical Education in Puerto Rico, 1512-1957." *Journal of the American Pharmaceutical Association, Practical Pharmacy Edition* 18 (1957): 598-600. illus.

A quick overview with a short bibliography.

927. Duff, J. Gordon. "A Brief History of Pharmaceutical Education in the Maritimes." *Canadian Pharmaceutical Journal* 98 (1965): 6-8, 24.

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).

928. Earles, Melvin P. "Pharmacy and its Relation to Scientific Education in Nineteenth-Century Britain." *Pharmacy in History* 11 (1969): 43-49.

A documented account of the efforts of the Pharmaceutical Society of Great Britain in relation to the school it established in 1841.

929. Earles, Melvin P. "The Pharmacy Schools of the Nineteenth Century." In *The Evolution of Pharmacy in Britain*. ed. F. N. L. Poynter, pp. 79-95. London: Pitman Medical Publishing Co., 1965.

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.

931. "Education." *The Badger Pharmacist* (1900): 93-213.

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.

932. Elliott, Edward C. *The General Report of the Pharmaceutical Survey, 1946-49*. Washington, D.C.: American Council on Education, 1950. xix + 240 + i pp.

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.

933. England, Joseph W., ed. *The First Century of the Philadelphia College of Pharmacy, 1821-1921*. Philadelphia: Philadelphia College of Pharmacy and Science, 1922. 728 pp., illus., index.

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.

934. Francke, Gloria N. "Evolution of Clinical Pharmacy." In *Perspectives in Clinical Pharmacy*. pp. 26-36. Hamilton, IL: Drug Intelligence Press, 1972.

Good, documented overview from the 1940s to the 1970s. [not seen].

935. Freking, Harold C. "Gleanings from the Early History of the Cincinnati College of Pharmacy." *American Journal of Pharmaceutical Education* 12 (1948): 412-24.

Undocumented, chronological approach, 1850-99.

936. Gramling, L. G. "Pharmaceutical Education in Florida." In *A History of Pharmacy in Florida*. ed. L. G. Gramling, pp. 134-76. Gainesville, Florida: Ewing Printing, Inc., 1973.

Covers period from about 1895 to 1971; topical approach.

937. Granberg, C. Boyd. "Twenty-Five to Fifty." *American Journal of Pharmaceutical Education* 50 (1986): 286-87.

Some of the author's personal experiences and philosophies as editor (1961-74) of the *American Journal of Pharmaceutical Education*.

938. Harris, Robin S. *A History of Higher Education in Canada, 1663-1960*. Toronto: University of Toronto Press, 1976. xxiv + 715 pp., bibl., index.

Contains material relating to pharmaceutical education on pages 117, 176-78, 214, 291-92, 409-10, 477, 483, 486, 487, 539, 616-19, 676-77. Integrates sections and references concerning pharmaceutical education from about 1860-1960, within the context of higher education generally and professional education specifically. One in a series of publications, *Studies in the History of Higher Education in Canada*, sponsored by the Association of Universities and Colleges of Canada, with support from the Carnegie Corporation.

939. Harrod, D. C., and E. J. Shellard. *Pharmacy at Chelsea, 1919-1979*. London: Chelsea College of Science and Technology, 1979. vi + 36 pp., illus.

Chronological approach; no documentation.

940. Henderson, Metta Lou, and Tammy Lynn Keeney. "Women in Pharmacy Education: The Pioneers." *American Pharmacy* NS28, no. 5 (1988): 24-27.

This brief overview contains several excellent photographs of early women educators in pharmacy.

941. Henderson, Metta Lou, and Tammy Lynn Kenney. "Women Pharmacy Faculty: Changing the Face of Pharmacy Education." *American Pharmacy* NS 28, no. 5 (1988): 18-22.

Primarily historical treatment of subject but tied to contemporary situation.

942. Hoch, J. Hampton. "Pharmaceutical Education at the Medical College, Charleston." In *The History of Pharmacy in South Carolina*. J. Hampton Hoch, pp. 49-60. Charleston, South Carolina: Nelson's Printing Co., 1951.

General references only.

943. Hoch, J. Hampton. "A Survey of the Development of Materia Medica in American Schools and Colleges of Pharmacy from 1821 to 1900." *American Journal of Pharmaceutical Education* 12 (1948): 148-61.

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.

944. Hughes, F. Norman. "The Faculty of Pharmacy—A Retrospective Look." *On Continuing Practice* 7, no. 3 (1980): 3-8.

Insightful account from the perspective of the dean, 1953-73. Short list of references.

945. Hughes, F. Norman. "One Hundred Years of Pharmaceutical Education in Ontario, 1871-1971." *Bulletin of the Ontario College of Pharmacy* 20 (1971): 92-99.

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].

946. Hynson, Henry P. "Historical Notes on Degrees in Pharmacy." *Druggists Circular* 51 (1907): 79-81.

Deals with various diplomas and degrees in the USA during the nineteenth century.

947. Keiner, B. "Cornell—A Short-Lived School of Pharmacy." *Pharmacy in History* 14 (1973): 147-48.

A brief but interesting account about an institution of equally brief existence (1887-1890).

948. Knapp, David A. "Experiments in Pharmaceutical Education." *American Journal of Pharmaceutical Education* 30 (1966): 736-45.

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.

950. Kremers, Edward. "The Teaching of Pharmacy During the Past Fifty Years." *Druggists Circular* 51 (1907): 61-79.

Comprehensive, documented survey from 1821 to 1906 by key periods of developments. Portraits.

951. Little, Ernest. "A History of the American Foundation for Pharmaceutical Education." *American Journal of Pharmaceutical Education* 15 (1951): 367-88.

Fairly detailed account for period 1939-51. Not referenced but quotations tied to Board minutes.

952. Lynn, E. V. "A Century of Research in Pharmaceutical Chemistry in Schools of Pharmacy in the United States." *American Journal of Pharmaceutical Education* 17 (1953): 183-93.

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.

953. Malone, Marvin H. "The Journal, 1975-1979: A Former Editor's Perspective." *American Journal of Pharmaceutical Education* 50 (1986): 287-89.

The writer's personal account of his period as editor of the *American Journal of Pharmaceutical Education* on the occasion of its 50th anniversary.

954. Manasse, Henry R. Jr. "Innovation, Confrontation, and Perseverance: Albert B. Prescott's Legacy to Pharmaceutical Education in America." *Pharmacy in History* 15 (1973): 22-28.

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.

955. Manners, Steven. "AFPC and ADPC: Upholding Standards of Pharmacy Education." *Canadian Pharmaceutical Journal* 120 (1987): 388-90.

A brief history of the Association of Faculties of Pharmacy of Canada and the Association of Deans of Pharmacy of Canada. Undocumented.

956. Matthews, A. Whitney. "The Initial Impact." *Canadian Pharmaceutical Journal* 117 (1984): 578, 582-83.

Explores the early (1944-51) influence of the Canadian Conference of Pharmaceutical Faculties, predecessor to the present Association of Faculties of Pharmacy of Canada.

957. Matthews, Leslie G. "The Pharmacist—His Education, Training, and Public Service." In *History of Pharmacy in Britain*. Leslie G. Matthews, pp. 157-207. London: E. & S. Livingstone Ltd., 1962.

Covers the period from 1842 to about 1950.

958. Moir, J. Glen. "Pharmaceutical Education in B. C.: The Struggle for a College of Pharmacy." *Canadian Pharmaceutical Journal* 90 (1957): 780, 798, and 800.

Covers period 1905-46, when the present Faculty of Pharmaceutical Sciences, University of British Columbia began. Documented.

959. Moran, Bruce T. *Chemical Pharmacy Enters the University: Johannes Hartmann and the Didactic Care of Chymia in the Early Seventeenth Century*. Madison, WI: American Institute of the History of Pharmacy, 1991.

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.

960. Mrtek, Robert G. "Pharmaceutical Education in These United States—An Interpretive Historical Essay of the Twentieth Century." *American Journal of Pharmaceutical Education* 40 (1976): 339-65.

Written to mark the Bicentennial of the United States of America. A masterful, interpretive, brief history of pharmaceutical education in the USA. Meticulously documented.

961. Mrtek, Robert G. "The Pharmaceutical Survey Revisited." *Pharmacy in History* 30 (1988): 129-41.

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].

963. Netz, Charles V. *History of the University of Minnesota College of Pharmacy, 1892-1970*. Minneapolis, MN: University of Minnesota College of Pharmacy, [1971]. xiv + 259 pp., illus.

A chronological approach by chapter.

964. Newcomer, James, Kevin P. Bunnell, and Earl J. McGrath. *Liberal Education and Pharmacy*. New York: Institute of Higher Education, Teachers College, Columbia University, 1960. x + 125 pp.

A small section is historical. "Liberal Education and American Pharmacy" (pp. 20-35), and "The Pharmacy Curriculum: The Four-Year Program" (p. 36-48).

965. Noble, Alice. *The School of Pharmacy of the University of North Carolina: A History*. Chapel Hill: University of North Carolina Press, 1961. viii + 237 pp., illus., index.

Essentially a chronological approach.

966. Osborne, George E. "David Stewart, M.D., First American Professor of Pharmacy [1813-1899]." *American Journal of Pharmaceutical Education* 23 (1959): 219-230.

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.

968. Parascandola, John, and John P. Swann. "Development of Pharmacology in American Schools of Pharmacy." *Pharmacy in History* 25 (1983): 95-115.

A well-documented study beginning with the European foundations.

969. Paterson, G. R. "The Canadian Conference of Pharmaceutical Faculties." *American Journal of Pharmaceutical Education* 22 (1958): 201-209.

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.

970. Paterson, G. R. "Pharmaceutical Education—1867-1967: Educators Win Tough Battles for Pharmacy." *Drug Merchandising* 48, no. 7 (1967): 21-22, 26-27, 43.

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].

971. Picchioni, Albert L., and George A. Bender. *A History of the College of Pharmacy at the University of Arizona*. Tucson: University of Arizona College of Pharmacy, 1985.

Covers period from founding in 1947.

972. Redman, Kenneth. *History of the South Dakota State University, College of Pharmacy, 1975-1982: A Chronology*. Brookings, SD: K. Redman, 1983. xi + 94 pp.

A chronological update of Clark Eidsmoe book, *History of Pharmacy at South Dakota State University, 1887-1974* for the centennial of South Dakota State University.

973. Reif, Edward Clarence, and Thelma Reif. *A Contribution to Western Pennsylvania Pharmacy*. Pittsburgh: University of Pittsburgh Press, 1959. 396 pp., illus.

History of the Pittsburgh College of Pharmacy, 1878-1958.

974. Riedel, Bernard E. "The UBC Faculty of Pharmaceutical Science: The Last 17 Years." *Canadian Pharmaceutical Journal* 117 (1984): 529-33.

Told from the perspective of the dean of the faculty, 1967-1985.

975. Rodowskas, Christopher A. "A Matter of Degrees." *Drug Intelligence and Clinical Pharmacy* 16 (1982): 607-612.

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*

of Michigan, 1876-1976. Ann Arbor: College of Pharmacy, the University of Michigan, 1977. viii + 119 pp.

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).

977. Schmitz, Rudolf. *Die deutschen pharmazeutisch-chemischen Hochschulinstitute; Ihre Entstehung und Entwicklung in Vergangenheit und Gegenwart*. Ingelheim am Rhein: C. H. Bohringer Sohn, 1969. 371 pp., illus., index.

Pharmaceutical education in Germany.

978. Sonnedecker, Glenn. "American Pharmaceutical Education before 1900." 752 pp. : Ph.D. dissertation, University of Wisconsin, 1952.

A comprehensive history; never published.

979. Sonnedecker, Glenn. "The Conference of Schools of Pharmacy—A Period of Frustration." *American Journal of Pharmaceutical Education* 18 (1954): 389-401.

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-).

980. Sonnedecker, Glenn, ed. "The Development of Education and Appendix 4: Schools of Pharmacy in the United States." In *Kremers and Urdang's History of Pharmacy*. ed. Glenn Sonnedecker, pp. 226-54 and 383-86. 4th ed. Philadelphia: J. Lippincott, 1976; repr. 1986, by American Institute of the History of Pharmacy.

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.

981. Sonnedecker, Glenn. "Experimental Work Associated with American Pharmaceutical Education in the 19th Century." In *Medizingeschichte in unserer Zeit. Festgabe für Edith Heischkel-Artelt und Walter Artelt zum 65. Geburtstag*, eds. Hans-Heinz Eulner, et al., pp. 384-92. Stuttgart, 1971.

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.

982. Sonnedecker, Glenn. "The Founding." *American Journal of Pharmaceutical Education* 50 (1986): 491-95.

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.

983. Sonnedecker, Glenn. "Pharmaceutical Education, 1867 and 1967." In *One Hundred Years of Pharmacy in Canada, 1867-1967*. pp. 1-10. Toronto: Canadian Academy of the History of Pharmacy, 1969.

Written from the author's perspective as an acknowledged expert on the history of pharmaceutical education in the USA. Some interesting contrasts and parallels.

984. Sonnedecker, Glenn. "Science in American Pharmaceutical Education of the 19th Century." *American Journal of Pharmaceutical Education* 15 (1951): 185-217.

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.

985. Sonnedecker, Glenn. "The Scientific Background of Chemistry Teachers in Representative Pharmacy Schools of the United States during the 19th Century." *Chymia* 4 (1953): 171-200.

A comprehensive, well-documented account.

986. Sonnedecker, Glenn. "The Section on Education and Legislation of the American Pharmaceutical Association." *American Journal of Pharmaceutical Education* 17 (1953): 362-83.

A comprehensive, well-documented account of an interesting development.

987. Sonnedecker, Glenn. "Teaching Pharmacy in 19th-Century America—Some Aims and Issues." *American Journal of Pharmaceutical Education* 35 (1971): 379-90.

A good overview prepared for the journal's sesquicentennial in 1971 of American pharmaceutical education.

988. Sonnedecker, Glenn. "Women as Pharmacy Students in 19th-Century America." *Veröffentlichungen der Internationalen Gesellschaft für Geschichte der Pharmazie e.V.* 40 (1973): 135-41.

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." *Canadian Pharmaceutical Journal* 116 (1983): 104-107.

Written from the perspective of the deans of the school for the period 1882 to 1983.

990. Stieb, Ernst W. "Edward Buckingham Shuttleworth, 1841-1934." *Pharmacy in History* 12 (1970): 91-116.

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." *Pharmacy in History* 16 (1974): 64-71.

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." *Pharmacy in History* 28 (1986): 125-34. Reprinted in Marianne Ainley, ed. *Despite the Odds: Essays on Canadian Women and Science*. Montreal, Canada: Véhicule Press, 1990. pp. 121-33, 403-406.

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.

993. Swann, John P. *Academic Scientists and the Pharmaceutical Industry: Cooperative Research in Twentieth-Century America*. Baltimore: Johns Hopkins University Press, 1988. xiv + 249 pp.

A well-documented study of cooperative biomedical research between universities and industry in the USA from the 1920s to the 1980s.

994. Taylor, H. L. "Schools and Colleges of Pharmacy." *Pharmaceutical Era* 45 (1912): 177-81, 261-64, 333-36, 389-92, 459-61, 520-24, 575-78, 641-44, 707, 731-32, 767-71.

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.

995. The Massachusetts College of Pharmacy. *The Massachusetts College of Pharmacy, 1823-1973, An Informal History*. ed. David A. Fedo, Boston, Massachusetts: The Massachusetts College of Pharmacy, 1973. Special issue of its *Bulletin* 62(No. 5, Fall 1973): 1-83 + ofc and ifc.

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."

996. Urdang, George. "College of Pharmacy Association." *American Journal of Pharmaceutical Education* 8 (1944):333-39.

Deals with the educational role of various American organizations of pharmacy in nineteenth-century USA.

997. Urdang, George. "The Development of the Pharmaceutical Textbook, A Synopsis." *American Journal of Pharmaceutical Education* 8 (1944): 328-33.

Covers period from Dioscorides's *De Materia medica* (1st century AD) to Joseph Remington's *The Practice of Pharmacy*(1885).

998. Urdang, George. "Edward Kremers (1865-1941): Reformer of American Pharmaceutical Education." *American Journal of Pharmaceutical Education* 11 (1947): 631-58.

A major force in American pharmaceutical education. This is a broad biographical sketch, intent less on detail than sketching influences and contributions.

999. Urdang, George. "The Part of Doctors of Medicine in [U.S.A.] Pharmaceutical Education." *American Journal of Pharmaceutical Education* 14 (1950): 546-56.

Well-documented study, mainly of the period 1821-1908.

1000. Weinstein, Marvin, Marsha B. Mrtek, and Robert G. Mrtek. "Factors Leading to the Formation of the Chicago College of Pharmacy." *Pharmacy in History* 14 (1972): 3-17.

An interesting study of the conditions in pharmacy leading up to the establishment of the College in 1859.

1001. Wilson, Robert Cummings. "Pharmaceutical Education." In *Drugs and Pharmacy in the Life of Georgia, 1733-1959*. Robert Cummings Wilson, pp. 267-78. Atlanta, Georgia: Foote & Davies, 1959.

Undocumented and unindexed.

1002. Wimmer, Curt P. *The College of Pharmacy of the City of New York . . . A History*. [New York: Columbia University], 1929. viii + pp. 7-347, illus.

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.

1005. Zalai, K. "Pharmaceutical Education in Central Europe, A Historical Review." *Pharmacy in History* 28 (1986): 138-45.

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.

1006. Zopf, Louis C. "Pharmaceutical Education." In *Iowa Pharmacy—A Century of Service. A Chronology of the Iowa Pharmacists Association 1880-1980*. pp. 227-56. Des Moines, Iowa: Iowa Pharmacists Association, 1980.

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)

1007. Aftalion, Fred. *History of the International Chemical Industry*. transl. Otto Theodor Benfy: 1991. xxiv + 411 pp., illus., index.

A concise history of the chemical industry but with little on pharmaceuticals. Most of the emphasis is on the period 1939-89.

1008. Alcer, G. "Zur Entwicklung der Pharmaceutischen Industrie in Berlin." *Pharmazie* 42 (1987): 774-80.

An overview of changes in the industry from the late eighteenth to the mid-twentieth centuries.

1009. Becker, Louis A. "The Soda Fountain Industry." *Pharmaceutical Era* 46 (1913): 63-66;124-27;185-88;243-46;303-305

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.

1010. Beer, John J. "Coal Tar Dye Manufacture and the Origins of the Modern Industrial Research Laboratory." *Isis* 49 (1958): 123-31.

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.

1011. Comanor, W. S. "The Political Economy of the Pharmaceutical Industry." *Journal of Economic Literature* 24 (September 1986): 1178-1217.

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.

1012. Cowen, David L. "The Role of the Pharmaceutical Industry." In *Safeguarding the Public: Historical Aspects of Medicinal Drug Control*. ed. John B. Blake, pp. 72-82. Baltimore: Johns Hopkins Press, 1970.

Includes discussion of the history of quality control in the drug industry.

1013. Davis, A. B., and M. S. Dreyfuss. *The Finest Instruments Ever Made: A Bibliography of Medical, Dental, Optical, and Pharmaceutical Company Trade Literature; 1700-1939*. Arlington, MA: Medical History Publishing Associates I, 1986. vii, 448 p., illus., index.

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).

1014. Duckworth, Allan. "Rise of the Pharmaceutical Industry." *Chemist and Druggist* 100, no. (Special Centenary Number) (1959): 127-139.

This well-illustrated but undocumented article chronicles the British industry.

1015. England, Joseph W. "Pioneer Drug Milling in the United States." *American Journal of Pharmacy* 103 (1931): 389-98.

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.

1016. Foote, Perry A. "Tablets. I. The Evolution of the Tablet Machine, II. A Bibliography on Tablets." *Bulletin of the University of Wisconsin* Serial No. 1566, General Series No. 1340 (1928): 164 pp.

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.

1018. Guay, Y. "Internationalization of Industrial Research: The Pharmaceutical Industry, 1965-1979." *Scientometrics* 13 (1988): 189-213.

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.

1019. Haber, Ludwig Fritz. *The Chemical Industry During the Nineteenth Century: A Study of the Economic Aspect of Applied Chemistry in Europe and North America*. Oxford: Clarendon Press, 1958. 292 pp., bibl., index.

Discussion of methods and economics that were relevant to the pharmaceutical industry.

1020. Helfand, William H., and David L. Cowen. "Evolution of Pharmaceutical Oral Dosage Forms." *Pharmacy in History* 25 (1983): 3-18.

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.

1021. Hickel, Erika. "Die industrielle Arzneimittelforschung am Ende des 19. Jahrhunderts und die Durchsetzung einer reduktionistischen Biologie." In *Materialistische Wissenschaftsgeschichte*. pp. 132-54. Argument-Sonderband AS 54. Berlin: Argument-Verlag, 1981.

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.

1022. Liebenau, Jonathan. *Medical Science and Medical Industry: The Formation of the American Pharmaceutical Industry*. Baltimore: Johns Hopkins University Press, 1987. ix + 207 pp., bibl., index.

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.

1023. Liebenau, Jonathan. "Scientific Ambitions: The Pharmaceutical Industry, 1900-1920." *Pharmacy in History* 27 (1985): 3-11.

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.

1024. Liebenau, Jonathan, Gregory J. Higby, and Elaine C. Stroud, eds. *Pill Peddlers: Essays on the History of Pharmaceutical Industry*. Madison, WI: American Institute of the History of Pharmacy, 1990. vii + 133 pp. illus.

Seven papers presented at a symposium: "The rise of the English drugs industry," "The American Society for Pharmacology and Experimental Therapeutics' ban on industrial pharmacologists," "A brief history of the pharmaceutical industry in Basel," "Universities, industry, and the rise of biomedical collaboration in America," "The early history of the Wellcome Research Laboratories," "The French pharmaceutical industry, 1919-39," "The twentieth-century British pharmaceutical industry in international context."

1025. Little, Arthur, and K. A. Mitchell. *Tablet Making*. Liverpool: The Northern Publishing Co., Ltd., 1949. 121 pp., illus.

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.

1026. Madison, James H. *Eli Lilly: A Life, 1885-1977*. Indianapolis: Indiana Historical Society, 1989. 342 pp., notes, illus., index.

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

1027. Meyer-Thurow, George. "The Industrialization of Invention: A Case Study from the German Chemical Industry." *Isis* 73 (1982): 363-81.

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.

1028. Parascandola, John. "Industrial Research Comes of Age: The American Pharmaceutical Industry, 1920-40." *Pharmacy in History* 27 (1985): 12-21.

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.

1029. Paterson, G. R. "Relationships Between Synthetic Dyes and Drug Entities." *Bulletin Canadien d'Histoire de la Medicne* 1, no. 2 (1984): 1-23.

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].

1030. Porter, Roy, and D. Porter. "The Rise of the English Drugs Industry: The Role of Thomas Corbyn." *Medical History* 33 (1989): 277-95.

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.

1031. Puerto Sarmiento, F. Javier, ed. *Farmacia e industrialización: Libro homenaje al Doctor Guillermo Folch Jou*. Madrid: Sociedad Española de Historia de la Farmacia, 1985. 246 pp.

Articles on the evolution of the pharmaceutical industry in a dozen countries in Europe, South America, and North America.

1032. Riley, John J. *A History of the American Soft Drink Industry*. Washington, DC: American Bottlers of Carbonated Beverages, 1958; repr. Arno Press Inca.: New York, 1972. xii + 302 pp., illus., index.

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.

1033. Schreiner, Oswald. *History of the Art of Distillation and of Distilling Apparatus*. Milwaukee, WI: Pharmaceutical Review Publishing Co., 1901. 59 pp., illus.

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.

1034. Sigvard, Jacqueline. *L'industrie du médicament*. Paris: Calman-Lévy, 1975. 333 pp., index.

Economic analysis of French industry, focussing on the 1960s but with some historical background. Business aspects of the drug market, and regulation.

1035. Sonnedecker, Glenn. "The Rise of Drug Manufacture in America." *Emory University Quarterly* 21 (1965): 73-87.

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.

1036. Sonnedecker, Glenn, and George Griffenhagen. "A History of Sugar Coated Pills and Tablets." *Journal of the American*

1040. Taylor, Frank Sherwood. *A History of Industrial Chemistry*. New York: Abelard-Schuman, 1957. 467 pp., illus., index.

Useful on techniques and other pertinent information relevant to drug manufacturing. Has a good discussion of the synthetic dye industry.

1041. Urdang, George. "Retail Pharmacy as the Nucleus of the Pharmaceutical Industry." *Bulletin of the History of Medicine* Supp. No. 3 (1944): 325-46.

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.

1042. Vershofen, Wilhelm. *Die Anfänge der Chemische-Pharmazeutischen Industrie: Eine Wirtschaftshistorische Studie*. 3 vols. Berlin: Deutscher Betriebswirte-Verlag, 1949 (vol. 1); Aulendorf im Württ.: Editio Cantor, 1952 (vol. 2); Aulendorf im Württ.: Editio Cantor, 1958 (vol. 3). 151 pp., (vol. 1), 120 pp., (vol. 2), 155 pp. (vol. 3). index.

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.

1043. Wood, Joseph Remington. *Tablet Manufacture, Its History, Pharmacy and Practice*. Philadelphia: Lippincott, 1906. 224 pp., illus.

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.

1044. Woodruff, H. Boyd. "A Soil Microbiologist's Odyssey." *Annual Review of Microbiology* 35 (1981): 1-28.

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.

1046. Arnold-Forster, Kate. "The Museum of the Royal Pharmaceutical Society of Great Britain." *Pharmacy in History* 33 (1991): 11-18.

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.

1047. Baldwin, Joseph K. *A Collector's Guide to Patent and Proprietary Medicine Bottles of the Nineteenth Century*. Nashville: Thomas Nelson, Inc., 1973. 540 pp., illus.

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].

1051. Bethman, David. *The Pioneer Drug Store: A History of Washington State Drug Stores and Their Artifacts*. Ferndale, WA: David Bethman, 1991. 910 pp., illus.

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.

1052. Blasi, Betty. *A Bit About Balsams: A Chapter in the History of Nineteenth Century Medicine*. Louisville, Kentucky: Farley-Goepper Printing Co., 1974. 175 pp., illus., index.

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.

1053. Bogard, Mary. "Colored Glass in Pharmacy." *Pharmacy in History* 26 (1984): 20-27.

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.

1054. Bogard, Mary O. "The Celebrated Glass Label." *Pharmacy in History* 28 (1986): 34-40.

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.

1055. Brandel, I. W., and Edward Kremers. "The Balance." *Pharmaceutical Review* 23 (1905): 351-354; 384-88; 24 (1906): 49-60, 75-83, 105-11, 151-54, 166-74.

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.

1056. Burnett, John. "The Guistiniani Medicine Chest." *Medical History* 26 (1982): 325-33.

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.

1057. Conradi, Helmut Peter. *Apothekengläser im Wandel der Zeit*. Würzburg: Jal-Verlag, 1973. 199 pp., illus.

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.

1058. Crellin, John K. *Medical Ceramics: A Catalogue of the English and Dutch Collections in the Museum of the Wellcome Institute of the History of Medicine*. London: Wellcome Institute of the History of Medicine, 1969.

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.

1059. Crellin, John K. "Domestic Medicine Chests: Microcosms of 18th and 19th Century Medical Practice." *Pharmacy in History* 21 (1979): 122-31.

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.

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.

1064. Crellin, John K., and J. R. Scott. "Fluid Medicines, Prescription Reform and Posology 1700-1900." *Medical History* 14 (1970): 132-53.

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.

1065. Crellin, John K., and William Helfand. "Picture Postcards—A Resource for the Social History of Pharmacy." *Pharmacy in History* 25 (1983): 116-30.

These cards contain numerous images of pharmacy exteriors and interiors, equipment used, and products sold.

1066. Danforth, Ellen Zak. *Nesting Weights, Einsatzgewichte, and Piles a Godets*. Hamden, Connecticut: Archon Books. Published as *Transactions* of the Connecticut Academy of Arts and Sciences, vol. 50, March 1988, pp. 1-117, 1988. 115 pp., illus.

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.

1067. Davis, Audrey B., and Mark S. Dreyfuss. *The Finest Instruments Ever Made: A Bibliography of Medical, Dental, Optical, and Pharmaceutical Company Trade Literature; 1700-1939*. Arlington, MA: Medical History Publishing Associates I, 1986. vii, 448 p., illus., index.

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.

1068. De Jonge, C. H. *Delft Ceramics*. New York: Praeger Publishers, Inc., 1969. 168 pp., illus., bibl., index.

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.

1069. DeGrafft, John. *American Sarsaparilla Bottles*. East Greenville, PA: John Degrafft, 1980. 158 pp., illus., index.

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.

1070. Delaveau, Pierre, et al. "The Museum of Materia Medica of Paris." *Pharmacy in History* 26 (1984): 143-45.

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.

1071. Devner, Kay. *Patent Medicine Picture*. Tombstone, AZ: The Tombstone Epitaph, 1968. 106 pp., illus.

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.

pendulum balances) and how to differentiate between them. Mentions pharmaceutical and medical applications. With 27 black-and-white object photographs.

1075. Ekiert, Leszek, and Anna Stabrawa. "New Exposition in the Museum of Pharmacy at the Medical Academy of Cracow." *Pharmacy in History* 34 (1992): 166-69.

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).

1076. Fike, Richard E. *The Bottle Book: A Comprehensive Guide to Historic, Embossed Medicine Bottles*. Salt Lake City: Peregrine Smith Books, 1987. 293 pp., illus.

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.

1077. Fourest, Henri-Pierre, and Pierre-Nicolas Sainte-Fare-Garnot. *Les Pots de Pharmacie*. 2 vols. Paris: Les Éditions Roger Dacosta,

1981-82. Vol. 1 *Paris et l'Île-de-France* (229 pp., illus.). Vol. 2. *Rouen et la Normandie la Picardie et la Bretagne* (230 pp., illus.).

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].

1078. Friedenwald, Julius, and Samuel Morrison. "The History of the Enema with Some Notes on Related Procedures." *Bulletin of the History of Medicine* 8 (1940): 68-114; 239-76.

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.

1079. Griffenhagen, George. *Tools of the Apothecary*. Washington, DC: American Pharmaceutical Association, 1957. 30 pp., illus.

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.

1083. Griffenhagen, George. "A History and Evolution of the Suppository Mold." *American Journal of Pharmacy* 125 (1953): 135-42.

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.

1084. Griffenhagen, George. "The Lost Art of Plaster Spreading." *American Professional Pharmacist* 23 (1957): 139-43.

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.

1085. Griffenhagen, George. "Poison Bottles and Safety Closures." *Journal of the American Pharmaceutical Association* NS1 (1961): 563-66.

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.

1086. Griffenhagen, George. "The Show Globe—A Symbol of Pharmacy." *Journal of the American Pharmaceutical Association, Practical Pharmacy Edition* 19 (1958): 233-35.

most commonly used vegetable drugs mentioned on the seals.
Four illustrations and extensive references.

1095. Hamarneh, Sami, and Ernst W. Stieb. *Pharmacy Museums and Historical Collections on Public View in the United States and Canada*. Madison, WI: American Institute of the History of Pharmacy in cooperation with the National Museum of American History, Smithsonian Institution, Washington, D.C., 1981. 144 pp., illus., bibl.

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.

1096. Hein, Wolfgang-Hagen, and Dirk A. Wittop Koning. *Deutsche Apotheken-Fayencen*. Frankfurt am Main: Govi-Verlag, 1977. 160 pp., illus.

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.

1097. Hill, C. R., and R. E. A. Drey. *Drug Jars*. University of Oxford, Museum of the History of Science, catalogue 3. Oxford: Seacourt Press Ltd., 1980. vi + 41 pp., illus., bibl., index.

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.

1098. Hömberg, Wolfgang. *Der Norddeutsche Bronzemörser im Zeitalter von Gotik und Renaissance*. Quellen und Studien zur Geschichte der Pharmazie, vol. 23. Stuttgart: Deutscher Apotheker Verlag, 1983. 366 pp., illus.

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.

1099. Houben, Gerard M. M. *2000 Years of Nested Cup-Weights*. Zwolle, the Netherlands: G. M. M. Houben, 1984. 81 pp., illus.

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].

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.

1104. Kirsis, Janis. "The Homeopathic Drugstore of Riga." *Pharmacy in History* 33 (1991): 76-79.

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.

1105. Kisch, Bruno. *Scales and Weights: A Historical Outline*. New Haven: Yale University Press, 1965. xxi + 297 pp., illus.

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.

1106. Krüger, Mechthild. *Zur Geschichte der Elixiere, Essenzen und Tinkturen*. Veröffentlichung aus dem Pharmaziegeschichtlichen Seminar der Technischen Hochschule Braunschweig. Bd. 10. Braunschweig, Germany: 1968. 323 pp., bibl., index

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.

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].

1111. McEwen, Alan. *Collecting "Quack Cures."* Southampton, Great Britain: Southern Collectors Publications, 1977. 67 pp., illus.

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.

1112. Müller-Jahncke, Wolf-Dieter. "Sammeln und Bewahren: Pharmaziehistorische Museen in der Bundesrepublik Deutschland und der Deutschen Demokratischen Republik." *Pharmazie in unserer Zeit* 19 (1990): 56-60.

Short but informative article describing the histories and current status of pharmacy history museums in the former West and East Germanies. Ten illustrations.

1113. Noël Hume, Ivor. *A Guide to Artifacts of Colonial America.* New York: Alfred A. Knopf, 1970. xviii + 323 pp., + vi, illus., index.

An archeological 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.

1114. Putnam, P. A. *Bottled Before 1865*. Los Angeles: Rapid Blue Print Co., 1968. 100 pp., illus.

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.

1115. Rainwater, Dorothy T., and Donna H. Felger. *American Spoons: Souvenir and Historical*. Camden, N.J.: T. Nelson, 1968. 416 pp., illus.

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.

1116. Richardson, Lillian C., and Charles G. Richardson. *The Pill Rollers: Apothecary Antiques and Drug Store Collectibles*. 2nd ed. Harrisonburg, VA: Old Fort Press, 1992. iii + 177 pp., illus.

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.

1117. Ring, Carlyn. *For Bitters Only*. Boston: The Nimrod Press Inc., 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-page *Up-Date and Price Guide* published by C. Ring in 1984.

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.

1119. Rouse-Ostrander, Diane. *A Guide to American Nursing Bottles: 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.

pharmaceuticals. 3 illustrations. Not listed in the Griffenhagen and Stieb guide to pharmacy museums.

1127. Swanson Jr., Ben Z., and William H. Helfand. "Cachous: Their Containers and Promotion." *Pharmacy in History* 33 (1991): 42-52.

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.

1128. Tallis, Nigel, and Kate Arnold-Forster. *Pharmacy History: A Pictorial Record*. London: The Pharmaceutical Press, 1991. 92 pp., illus.

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.

1129. Thomas, K. Bryn. *The Development of Anaesthetic Apparatus: A History Based on the Charles King Collection of the Association of Anaesthetists of Great Britain and Ireland*. Oxford, Great Britain: Blackwell Scientific Publications, 1975. x + 268 pp., illus., 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.

1130. Turner, Helen. *Henry Wellcome: The Man, His Collection, and His Legacy*. London: The Wellcome Trust and Heinemann Educational Books, Ltd., 1980. 96 pp., illus.

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.

1131. Urdang, George. "New Light on the Origin of Show Globes." *Journal of the American Pharmaceutical Association, Practical Pharmacy Edition* 10 (1949): 604-06, 640.

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.

1132. Urdang, George, and F. W. Nitardy. *The Squibb Ancient Pharmacy*. New York, NY: E. R. Squibb and Sons, 1940. 190 pp., illus.

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.

1133. Vida, Maria. *Pharmacy Museums of Hungary*. Budapest: Hungarian Society for the History of Medicine and Semmelweis Institute, 1984. 48 pp., illus.

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 Nékam, *Old Hungarian Pharmacies* (Budapest: Cornvina Press, 1968), 65 pp. Nékam'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].

1134. Watson, Richard. *Bitters Bottles*. New York: Thomas Nelson and Sons, 1965. 304 pp., illus.

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.

1135. Whitall, Tatum & Co. *Whitall, Tatum & Co., 1880*. Facsimile Reproduction of Original Catalog by the American Historical Catalog Collection. Princeton, NJ: The Pyne Press, 1971. 80 pp., illus.

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.

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.

1153. McNamara, Brooks. *Step Right Up*. New York: Doubleday, 1976. 233 pp., illus.

Articles that appeared in philatelic magazines collected by George Griffenhagen.

1154. Thompson, C. J. S. *The Quacks of Old London*. Worcester: The Trinity Press, 1929.

The main focus is the sixteenth through the eighteenth centuries.

1155. Young, James Harvey. *The Toadstool Millionaires: A Social History of Patent Medicines in America Before Federal Regulation*. Princeton, NJ: Princeton University Press, 1961. xii + 282 pp., illus.

Both lively and scholarly, this is the story of the marketing of patent medicines in the United States in the nineteenth century.

1171. Vitta, Maurizio. "La farmacia di Richie." *Arca* no. 46 (1991 Feb.): 36-41.
- Includes photo, plans, sections. Text in English, Italian—chemist's shop, France, Boves. [not seen].
1172. Wittop Koning, Dirk A., and Wolfgang-Hagen Hein. "Die Allegorische Apotheke des Kornelis Elzevier." *Beiträge zur Geschichte der Pharmazie* 40 (1988): 39-40.
- Copperplate title page for "Lexicon galeno-chymico-pharmaceuticum universale" by Elsevier, eighteenth century.
1173. "The Zentral Apotheke in Karlsruhe." *Domus*, no. 594 (1979 May): 50-51.
- Includes sketches, photos. Text in English, Italian, French. [not seen].
1174. Zwiattler, Gerhardt. "Umbau einer alten Apotheke [Refurbishment of old pharmacy]." *Bauforum* 21, no. 130 (1988): 47.
- Includes photos, plans. Text in German. Pharmacy in Austria. [not seen].

3b—Painting, Sculpture, Graphic Arts, and Photography

1175. Angenot, Jean-François. *La Pharmacie et l'art de Guerir au Pays de Liège des Origines a nos Jours*. Liège: Eugène Wahle Editeur, 1983. 230 pp., illus.

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.

1189. Drake, T. G. H. "Antiques of Interest to the Apothecary." *Journal of the History of Medicine and Allied Sciences* 1960 (15): 31-44.

Describes Delftware, mortars, numismatics, ceramics, containers, nostrums, caricatures, etc. With 15 illustrations inserted into the text.

1190. Drake, T. G. H. "English Caricatures of Medical Interest, circa 1800." *Ciba Symposia* 6, no. 8 (1944): 1925-1932.

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."

1191. Drey, R. E. A. *Apothecary Jars: Pharmaceutical Pottery and Porcelain in Europe and the East 1150-1850*. London: Faber and Faber, 1978. 249 pp., illus.

A review of ceramics from the twelfth to nineteenth centuries, with 96 illustrations and a glossary of terms used in apothecary jar inscriptions.

1192. Fox, Daniel M., and Christopher Lawrence. *Photographing Medicine: Images and Power in Britain and America since 1840*. Westport, Conn.: Greenwood Press, 1988. 356 pp., illus., index.

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

farmacista in Italia, ed. Angelo Schwarz, vol 1. Turin: Edizioni Skema v.d., 1980. 96 pp., illus.

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.

1217. Matthews, Leslie G. "Pharmacy in Song." *The Pharmaceutical Journal* 21 December, vol. 179 (1957): 480-81.

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.

1218. Mez-Mangold, Lydia. *A History of Drugs*. Basel: F. Hoffmann-La Roche & Co., Ltd., 1971. 175 pp., illus., bibl., index.

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.

1219. Mornand, Pierre, ed. "La Publicité Pharmaceutique." *Le Courrier Graphique* Paris, No. 15 (1938): 1-96.

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.

1220. Nékám, Livia. *Old Hungarian Pharmacies*. Budapest: Corvina Press, 1968. 65+ pp., illus.

The interiors and antiques of pharmacies in Hungary, with 15 black-and-white illustrations and 40 in color.

1221. Novotny, Ann, and Carter Smith. *Images of Healing*. New York: Macmillan Publishing Co., 1980. 144 pp., illus., bibl., index.

A portfolio of American medical and pharmaceutical practices from the eighteenth century, containing over 400 black-and-white and sepia prints, photographs, and documents.

1222. Olonetzky, Beny. *Die Sammlung*. Stuttgart: Georg Thieme Verlag, 1980. 123 + 115 + 127 pp., illus.

With contributions by Lydia Mez. A collection of illustrations of the antiques and other holdings at the Swiss Pharmaziehistorische Museum in Basel. Chapters are devoted to mortars, medals, weights, statues, glassware, clysters, and other antiques.

1223. Pedrazzini, Carlo. *La Farmacia Storica ed Artistica Italiana*. Milan: Edizioni Vittoria, 1934. 592 pp., illus.

Copiously illustrated, in sepia, with photographs of Italian pharmacies, their interiors, antiques, drug jars, etc. Paintings in which pharmacies appear are included.

1224. Peters, Hermann. *Pictorial History of Ancient Pharmacy*. 3rd ed. Chicago: G. P. Engelhard & Co., 1902. 210 pp., illus.

Contains chapters on pharmacy in the Middle Ages up to the eighteenth century, distillation, pharmacopoeias, etc., with 83 black-and-white illustrations.

1225. Power, Jed. *Drug Antiques: A Photographic Look at Old and Unusual Drug Artifacts and Rarities. With Current Values and an Introduction*. Peabody, Mass.: Cape Ann Antiques, 1986. 201 pp., illus.

Primarily devoted to those antiques which relate to narcotic and other psychoactive drugs, reproducing postcards, advertisements, paperback book covers, and packages.

1226. Richardson, Lillian C., and Charles G. Richardson. *The Pill Rollers: Apothecary Antiques and Drug Store Collectibles*. 1st ed. Fort Washington, Maryland: Old Fort Press, 1979. 170 pp., illus.

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.

1227. Rickards, Maurice. *Collecting Printed Ephemera*. NY: Abbeville Press, 1988. 224 pp., illus.

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.

1228. Rocchietta, Sergio. *Antichi Vasi di Farmacia Italiani*. Milan: L'Ariete Edizioni, 1986. 171 pp., illus.

A thorough study of Italian drug jars, organized by their place of origin, with present locations noted for each of the jars reproduced.

1229. Schwarz, Angelo, ed.. *Per una storia della farmacia e del farmacista in Italia*. Bologna: Edizione Skema v.d., 1980-, illus.

Vol. 1: Cristoforo Masino, Angelo Schwarz, and Guiseppe Ostino, *Farmacie e Farmacisti in Piemonte e Valle d'Aosta*, 1980, 96 pp., with 137 illustrations in color and black and white. Vol. 2: Ruggiero Romano, Angelo Schwarz, *Venezia e Veneto*, 1981, 96 pp., with 175 illustrations in color and black and white. [not seen] Vol. 3: Cesare de Seta, Gianluigi Degli Esposti, and Cristoforo Masino, *Sicilia*, 1983, 95 pp., with 146 illustrations in color and black and white. Vol. 4: Ezio Raimondi, Luigi Guicciardi, and Cristoforo Masino, *Emilia-Romagna*, 1986, 135 pp. [not seen] Vol. 5: Cristoforo Masino, Pasquale Villani, Paolo Frascani, Andrea Russo, *Napolie Campania*, 1988, 95 pp. Vol. 6: Carlo Cipolla, Andrea Russo, Dante Zanetti, *Milano e Lombardia*, 1992, 111 pp.

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.

1230. Short, Agnes Lothian. "Englische pharmazeutische Karikaturen." *Zur Geschichte der Pharmazie* 1 (1961): 1-4.

Reproduces 12 social caricatures on Jenner's smallpox vaccine, Perkin's Metallic Tractors, Morison's Pills, etc.

1231. Stafski, Heinz. *Aus alten Apotheken*. Munich: Prestel Verlag, 1958. 48 + pages, illus.

Contains more than 75 illustrations, in color and black and white, or miniatures, portraits, caricatures, etc.

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.

1237. Underwood, E. Ashworth, ed. *The History of Pharmacy*. Oxford: Oxford University Press, 1951. 61 pp., illus.

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.

1238. Warthin, Aldred Scott. *The Physician of the Dance of Death*. New York: Paul B. Hoeber, Inc., 1931. 142 pp., illus., index.

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.

1239. Weber, A. *Tableau de la caricature médicale depuis les origines jusqu'à nos jours*. Paris: Editions Hippocrate, 1936. 143 pp., illus.

Primarily devoted to social caricature and containing about 130 illustrations.

1240. Wittoop Koning, Dirk A. *Art and Pharmacy*. Deventer, Holland: The Ysel Press [vol. 6 published by Twist Productions, Haarle, Holland], v.d.; Vol. 1, 1957 [12 pp. + 42 plates with descriptions]; Vol. 2, 1958 [9 pp. + 42 plates with descriptions]; Vol. 3, 1964 [95 pp., incl. 42 plates with descriptions]; Vol. 4, 1976 [108 pp., incl. 42 plates with descriptions]; Vol. 5, 1980 [100 pp., incl. 42 plates with descriptions]; Vol. 6, 1986 [100 pp., incl. 42 plates with descriptions].

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.

1241. Wittop Koning, Dirk A. *De oude apotheek*. Bussum, Holland: C. A. J. Van Dishoeck, 1966. 112 pp., illus.

Reproduces prints, paintings, antiques, etc. from Dutch pharmacies. Includes 66 illustrations in color and black-and-white.

1242. Wittop Koning, Dirk A. *Pharmazeutische Münzen und Medaillen*. Monographien zur Pharmazeutischen Kulturgeschichte, ed. Wolfgang-Hagen Hein and Dirk A. Wittop Koning, Band 2. Frankfurt am Main: Govi-Verlag, 1972. 48 pp., illus.

A series of monographs, each devoted to a specific pharmaceutical antique or other object of interest to collectors.

1243. Wittop Koning, Dirk A. *De Farmacie in tekening en prent [The Pharmacy in Drawings and Prints]*. Amsterdam: Buijten & Schipperheijn/Repro-Holland, 1976. n.p., 81 illus.

Contains black-and-white illustrations of a variety of Dutch images: prints, posters, caricatures, bookplates, labels, portraits, imagerie populaire, etc.

1244. Wittop Koning, Dirk A. *Geneeskunde en farmacie in de Nederlandse politieke prent 1632-1932*. Haarlem, Netherlands: Merck Sharp and Dohme, B.V., 1979. 159 pp., illus.

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.

1245. Wittop Koning, Dirk A. *Compendium voor de geschiedenis van de pharmacie van Nederland [Compendium of Dutch History of Pharmacy]*. 's-Gravenhage: Koninklijke Nederlandse Maatschappij ter Bevordering der Pharmazie, 1986. 314 pp., illus.

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].

1246. Zglinicki, Friedrich von. *Kallipygos und Askulap: das Klistier in der Geschichte der Medizin, Kunst und Literatur*. Baden-Baden: Verlag für angewandte Wissenschaften, 1972. 296 pp., illus.

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.

1247. Zigrosser, Carl. *Medicine and the Artist*. 3rd ed. New York: Dover Publications, Inc., 1970. 177 pp., illus.

Prints from the Ars Medica collection at the Philadelphia Museum of Art, with 137 black-and-white illustrations. A later version of earlier catalogs published by the Museum in 1955 and 1959.

3c—Creative Literature

1248. Bardell, Eunice Bonow. "The Novels of the American Pharmacist, John Uri Lloyd." *Pharmacy in History* 29 (1987): 177-80.

A review of some of John Uri Lloyd's fiction and indications of the connections to details of his own life and career.

1249. Diehl, Digby. *Drug Themes in Fiction*. DHEW Publ. No. (ADM)75-191. Washington, D.C.: National Institute on Drug Abuse, Research Issues, 10, 1974. 40 pp.

Survey of selected works of fiction with drug-related themes.

1250. Hansen, Poul. *Apoteket og Farmaceuten i dansk Litteratur*. Copenhagen: 1947. 93 pp., illus.

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.).

1251. Poirer, S. "Ann Petry: From Pharmacist to Novelist." *Pharmacy in History* 28 (1986): 26-33.

The fiction of Ann Petry reflects her concern with maintaining personal (and professional) integrity in times of historical, moral, or social upheaval.

1252. Silverberg, Robert. *Drug Themes in Science Fiction*. National Institute on Drug Abuse, Research Issues, 9. Washington, D.C.: DHEW Publ. No. (ADM)75-191, 1974. 55 pp.

English-language short stories dealing with mind-altering drugs. Bibliography with abstracts.

1253. Urdang, George. *Der Apotheker als Subjekt und Objekt der Literatur*. Berlin: J. Springer, 1926. 181 pp., illus., index.

Classic study linking pharmacy and literature, with index to literature and authors cited. Old German type makes the reading slow going.

1254. Urdang, George. *Der Apotheker in Spiegel der Literatur*. Berlin: J. Springer, 1921. 157 pp., bibl.

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

1255. Friedrich, Christoph. "'Der Apotheker und der Doktor' Zum 200. Jubiläum der Uraufführung einer Oper." *Beiträge zur Geschichte der Pharmazie* 39 (1986): 285-89.

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.

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