To limit the formation of the active substances of Ehrlich to the phagocytic cells of the body as Metchnikoff has done, further complicates an already complicated but otherwise satisfactory theory of immunity. There seems to be ample evidence that there are many other active factors in the protective mechanism than those afforded by phagocytosis. Phagocytes are undoubtedly important, but not all the phenomena of immunity can be expressed in terms of phagocytosis. *F. F. Wesbrook.*

PHARMACOPŒIA.* — (Greek *φαρμακοποιία*, from *φάρμακον*, medicine, remedy, and *ποιεῖν*, to make, to prepare; Latin, *pharmacopœa* or *pharmacopœia*; German, *Pharmakopöe*; French, *pharmacopée*; Spanish, *farmacopea*, etc.). A *pharmacopœia*, in the modern sense, may be defined as a work published by some recognized authority, for the purpose of securing uniformity in the kind, quality, strength, and composition of simple and compound remedies used in the practice of medicine. It may either be of a local character, or it may apply to a whole country. During the early history of pharmacopœias, the term was also often applied to works written or published by individuals, without the official sanction of governmental or professional authority. The Greek word *φαρμακοποιία* occurs in later Greek medical writings under its proper meaning, "the preparation of medicines," or "the art, or business, of preparing medicines." As the title of a book treating of this subject, however, it is probably not older than the beginning of the sixteenth century.

Ancient and Mediæval Precursors of Pharmacopœias.— While the ancient nations did not possess any works which could be fully set side by side with our modern pharmacopœias, yet the gradually accumulating mass of facts relating to the preparation and practical use of medicines resulted in the composition of numerous works which treated at least incidentally of this subject. In giving an account of the literature relating to the latter, we shall confine ourselves to those works the influence of which has, in one way or another, extended to our times.

Egypt has furnished us the oldest existing documents containing formulas and directions for the preparation of medicines. The oldest known is the *Papyrus Ebers*, dating from the year 1552 B.C. (see *Med. Rec.*, 11, pp. 247–251), which mentions a large number of simple remedies, and also contains numerous formulas of compounds, often in the form of regular pharmacopœial recipes, accompanied by signs and terms expressing weights or measures, precisely as is customary at the present day.

The *Medical Papyrus of Berlin* (see Woenig, "Die Pflanzen im alten Aegypten," Leipsic, 1886), written about 1350 B.C., contains a great number of formulas, with exact statements as to ingredients, and weights and measures. These formulas are for both internal and external remedies, including enemata. The remedies are mostly simples, plant parts, gums, resins, etc., with a few metals, liquors, and well-known liquids, including urine, bile, blood, and fæces of various animals.

In addition to these written documents, there existed also formularies sculptured in stone, one having been found upon the walls of a regular pharmaceutical laboratory or *ási-t* (see Woenig, *loc. cit.*, 372) in the temple of Edfu.

India.—An examination of the oldest Indian literature, that of the Vedas, Brahmins, and Sutras, reveals little but superstition as to both diseases and remedies. The principal medical works of the Hindoos, viz., those of Charaka and Sucruta, cannot be traced back beyond the eighth century A.D. (see *New Remedies*, 1876, 229), the foundations evidently having been derived from the Greeks. Most of these medical works are characterized, and their meaning is obscured, by the poetic or metrical style employed in them. Four or five centuries then elapse before we meet with any other notable writings of this kind. Among the later medical treatises the most important are "Ashtângahridaya," by Vâgbhata, and the "Bhâvaprakâca," by Bhâva, both of them only a few centuries old. These contain likewise many formulas interwoven in the text. Regular treatises on pharmacy, or formularies, are not numerous (to the former belongs the "Prayogâmrita" of Vaidyachintâmani, and others); but treatises on materia medica or glossaries of simples are much more common. The most extensive of these is the "Nighanturâja," by Narahari, of Cashmere, being a dictionary of products of nature, etc., with synonyms. Another smaller but useful work is the "Madanavinoda" of Madanapâla.

Greece.—The writings of Hippocrates (about 460–377 B.C.) were the first, as well as the most important, in the early history of Greek medical literature. Although none of his genuine writings is devoted exclusively to the preparation of specific medicines, numerous such directions are contained in them, and the pharmaceutical art became developed during the succeeding centuries in proportion as the rational treatment of disease, upon the foundation laid by Hippocrates, spread through the cultivated nations of Europe and Western Asia.

Of those works which are known to have exerted a permanent influence upon the formularies of later times, that of Andromachus of Creta, Nero's court physician, next requires mention, being a sort of poetic formulary. He also wrote a poem on Theriac and its preparations, which for centuries was highly influential in medical practice. About 65 A.D., Servilius Damocrates composed similar pharmacological poems, his compound of theriac, thus treated, being subsequently known as "Confectio Damocratis." In about 78 A.D., Dioscorides wrote his famous *ὑλικά* ("Materialia"), a most valuable cyclopædia of simples, which became one of the chief sources of pharmacological writers down to the Middle Ages.

The next important Grecian medical writer was Claudius Gallinus (131 to about 210 A.D.). His numerous writings exerted an influence equal to that exerted by the works of Dioscorides. Two of them treat especially "on the composition of medicines according to the places" (of application) "and according to classes." His numerous complex mixtures gave origin to the term "Galenical."

Of later writers, the more important are: Aëtius, of Amida, in Mesopotamia (sixth century A.D.), who gives numerous formulas for plasters, salves, etc.; Alexander, of Tralles, in Lydia (525–605 A.D.), and Paulus, of Ægina (seventh century A.D.), both of whom likewise quote many formulas in their writings. Passing now over several centuries, we find no author worthy of mention until we come to Nicolaus Myrepsus, of Alexandria (second half of thirteenth century A.D.), who compiled an "Antidotarium" (*δυναμερόν*), or formulary, containing not less than two thousand six hundred and fifty-six formulas, in forty-eight chapters. This work was written in Greek, but only the Latin translation has been published (first edition, Basle, 1549). It is also entitled "Antidotarium Magnum" (not to be confounded with the "Antidotarium Parvum" of Nicolaus Præpositus). In spite of its encyclopædic character, this formulary did not acquire as much reputation as the less extensive works of Mesue or of Nicolaus Præpositus.

Rome.—Previous to C. Plinius Secundus (23–79 A.D.) only the writings of M. Porcius Cato (234–149 B.C.) interwoven in agricultural treatises, need be mentioned. In the great work on "Natural History" by the former, many subjects relating to materia medica are treated. The "Compositiones Medicæ of Scribonius Largus" (first century A.D.) is the first literary production, having the nature of a formulary, of Roman origin. It contains the first correct description of the method of obtaining opium. A treatise by Rufus of Ephesus on cathartics was for a long time influential. Many other more or less important works by Romans were written in Greek.

Arabic Countries.—The Arabs were the first to develop the art of the apothecary and to establish regulations regarding the quality and price of his medicines, and specifying which of them were to be kept in stock for instant use. Their advent infused new life into the torpid condition of the medical and other sciences.

At the end of the ninth century, Shâbûr ben Sahl wrote a sort of dispensatory under the title of "Ibdâl" (Haji Khalfa, ed. Flügel, i., 142), and about the middle of the twelfth century Abû 'l Hassan Hibet-allah ibn Talmîd composed a similar work, entitled "Krabadin" or "Grabaddin" (Arabic, *qarâbâdîn*, or *qrâbâdîn*), which was commonly followed by Arabic apothecaries. The most important of these works was that composed by the younger Mesue (Mâswîyah el-Mârdinî, died 1015 A.D.), of Maridin, on the Euphrates, and of which only the Latin translation is extant, under the title "Antidotarium, seu Grabaddin Medicaminum compositorum." This remained for a long time the chief canon of pharmacy. It contains a large number of formulas arranged in twelve chapters, each treating of a different form (for instance, Pilulæ, Cerata, etc.) under which medicines are applied or administered. Not less than four Italian translations of this work appeared previously to the year 1500, and the Latin text was often reprinted.

The writings of the most celebrated of all Arabic physicians, viz., Avicenna (Abû 'Ali Hussain ben Abdallah, Ibn Sinâ, 978–1036 A.D.), also contain many formulas which were incorporated in subsequent collections.

Other writers, whose works contributed in this direction, were Ibn Wâfid el-Lachmî (about 1050 A.D.), called Albenguefit in mediæval literature, whose work on simples has been published only in Latin translation. Serapion the younger (Ibn Serâbî, about 1070 A.D.) was the author of a similar work, but this was much more esteemed and made use of than the former.

The most important Arabic writer on materia medica is Ibn Baitâr (about 1197–1248 A.D.). His work on simples and foods, based on his own observations and on the works of Greek, Arabian, Persian, and Syrian writers, is a perfect storehouse of information, and has exerted considerable influence upon the development of therapeutics and pharmacy among his countrymen.

Persia has little of interest to present in this direction. If we except a treatise on materia medica, based upon Greek, Arabian, and Indian sources, written by Alherwi (ninth century A.D.), we meet nothing of interest until the close of the seventeenth century, when Father Ange de la Brosse, de St. Joseph, published at Paris (in 1681) the "Pharmacopœa Persica, ex idiomate Persico in Latinum conversa." That this is no translation of an original Persian work has been recognized many years ago by Dr. Hyde, who supposed it to be the work of Père Matthieu. Leclerc ("Histoire de la Médecine Arabe," Paris, 1876, ii., 481) reports that it is a translation of an Arabic work existing in manuscript in the National Library at Paris. It bears internal evidence of the intimate acquaintance of the author with European medicines, some of which were probably then unknown to Persians, while others which were known (such as opium) are omitted. In 1771 Mir Mohammad Hussain, of Khorasan, wrote a Persian pharmacopœia, and subsequently an encyclopædia of materia medica ("Makhzan el-adwiya," "Treasury of Medicines") of considerable merit.

Mediæval Europe.—Up to about the fifteenth century the apothecaries in European countries situated to the north of the Alps did not prepare many compounds themselves, owing to the difficulty of importing the numerous, often bulky, and perhaps scarce, crude materials. They were in the habit of obtaining the finished preparations from Italy, where the art of pharmacy was in a flourishing condition. Among the works written during the Middle Ages, which either served themselves as pharmacopœias or formularies or at least contributed to their compilation, may be mentioned the following: The "Antidotarium" (also called "Antidotarium parvum," to distinguish it from the "Antidotarium" of Nicolaus Myrepsus) of Nicolaus Præpositus, of Salerno (first half of the twelfth century), consisting of about one hundred and fifty alphabetically arranged formulas for compounds. This compilation, together with Mesue's "Grabaddin" (see under Arabic countries), constituted the most celebrated formulary of the Middle Ages (first edition, Venice, 1471). Other important works of this period are the following: "Compendium Aromatariorum" (1st edition, Bologna, 1488), by Saladinus Asculanus, a useful and much used work, in which much attention is devoted to the description of drugs and their mode of preservation; "Luminare Majus," by Manlius de Boscho (1st edition, Venice, 1496), a highly esteemed dispensatory. A counterpart of this is the "Luminare Minus" (Venice, 1517), of Quiricus de Augustis de Torthona. The "Antidotarium Florentinum" (1st edition, Florence, 1489; often reprinted) is the first pharmacopœia or formulary published in Europe under governmental authority.

History of Pharmacopœias. — The literature of pharmacopœias is very extensive, and an exhaustive account is beyond the limits of this work. Yet, since a reliable list or sketch of at least the more important pharmacopœias is often of great use to those who have to consult medical works published in previous years, a condensed account of them is here given, arranged by countries; among the latter being included, for the sake of completeness, most of those which possess no regular pharmacopœia of their own, but use some other work either from choice or by command.

Note.—In quoting editions of the less important pharmacopœias, only the date of the first one is usually given. A plus sign (+) behind the date indicates that several editions followed. In some cases the date of several or of all editions is given. The word "pharmacopœia" is usually abbreviated to save space.

Argentine Republic.—This country possesses no pharmacopœia, although commissions have long been maintained, at least nominally, for preparing one. The "Farmacopea del Pais," although a mere fiction, has been legally recognized, and the French, Spanish, and Italian authorities are variously followed.

Austria-Hungary.—In 1729, the Vienna Pharmaceutical Society published a dispensatory under the title of "Dispensatorium Pharmaceuticum Austriaco-Viennense," which was repeatedly revised and reprinted. In 1739 appeared the "Dispensatorium Medico-Pharmaceuticum Pragense," which also saw several editions. An official pharmacopœia prepared by order of Government by Stoerck, Jacquin, and Well, was published in 1774 under the title "Ph. Austriaco-Provincialis." This was several times revised, and also translated into German as well as into Dutch, the Netherlands at that time forming a part of the Austrian empire. After the loss of the Dutch provinces a fresh start was made, and the first pharmacopœia proper appeared in 1812, under the simple title, "Pharmacopœia Austriaca." The subsequent editions appeared in—1814 (ii.), 1820 (iii.), 1834 (iv.; this being full of misprints was republished in 1836); 1855 (v.); 1869 (vi.).

A supplement to the Austrian Pharmacopœia was published in 1879, and a new edition (Editio VII.) went into effect on the 1st of January, 1890. The Austrian Pharmacopœia is rather small, comprising only five hundred and seventy-eight titles. Its text is in Latin. From the year 1795 a special military pharmacopœia was maintained, its last revision dating from 1872.

Up to 1871 the Austrian Pharmacopœia was valid for the whole empire, but in that year a separate volume was supplied for Hungary, and this was republished in 1888 under the title "Magyar Gyogyszerkonvy; Masodik Kiadas." This work comprises five hundred and sixteen articles, and possesses both Hungarian and Latin texts on opposite pages.

The first Croatian pharmacopœia was published in 1888, under the title "Hrvatsko-Slavonska Farmakopœa," being practically a duplicate of the Hungarian in Slavonic and Latin texts.

Belgium.—Previous to 1823, there existed the Pharmacopœia Belgica of 1659, and various pharmacopœias representing the different cities, as those of Brussels (1639+),

*This article is practically a reprint of those contributed by Dr. Charles Rice to the preceding edition of this work and to the Supplement (Vol. IX.); the records, I might add, have been brought up to date, and a few changes have been made in the interest of economy of space.—*Henry H. Rusby.*

Gand (1652+), Leyden (1638+), Liège (1741), Lille (1640+), Antwerp (1661, 1665, 1812), as well as the Austrian Pharmacopœia which was official from 1774 to 1805, when it was superseded by the Pharmacopœia Batava. Owing to changed political conditions these cannot be considered to be Belgian national works in the present sense. Such a one, however, appeared in 1823, republished in 1854 as the "Pharmacopœia Belgica Nova," of which a "second," and the latest, edition appeared in 1885. This work closely resembles the French Pharmacopœia, though without its conspicuously numerous blunders. The text is in Latin and French, the former being specified as the official.

Bolivia has no pharmacopœia. The French is that mostly used, though in the western portion the Spanish is common. Through the works of Cernowicz, the Portuguese Pharmacopœia has considerable influence in the eastern provinces.

Brazil also is without a pharmacopœia, though many attempts to compile one have been made. The Spanish, Portuguese, and French works are largely used, and the work of Cernowicz is highly influential.

British Empire.—Up to the year 1864, England, Scotland, and Ireland possessed each its own pharmacopœia. That for England was first published in 1618, under the title "Ph. Londinensis," by the London College of Physicians. It was several times reprinted with slight alterations, until 1650, when its second revision was published. The succeeding revisions appeared in 1677 (iii.); 1721 (iv.; in this edition vegetable drugs were for the first time defined as to origin); 1746 (v.; in this edition a great advance was made; many of the old complicated formulas were curtailed and shorn of useless material); 1788 (vi.); 1809 (vii.); 1824 (viii.); 1836 (ix.); and 1851 (x.). Besides the official editions, the text was incorporated into many other works, such as commentaries or dispensatories, either written for it alone or for all the British Pharmacopœias together. It was also translated into various other languages, even into Hindustani (Calcutta, 1824).

The first pharmacopœia for Scotland was published by the Edinburgh College of Physicians in 1699, under the title "Pharmacopœia Collegii Regii Medicorum Edinburgensis." The subsequent editions or re-issues were very numerous.

The first pharmacopœia for Ireland appeared at Dublin in 1807, under the title "Pharmacopœia Collegii Medicorum Regis et Reginæ in Hibernia." Previously, however, a specimen pharmacopœia had been prepared and circulated already in 1794, and again in 1805. The Dublin Pharmacopœia was revised in 1826 and 1850.

In 1864 appeared the first "British Pharmacopœia" under the medical act of 1858. Many inconsistencies occurred in that work, chiefly due to the difficulty encountered in reconciling the differences between the three countries. In 1867 a new edition was produced by the general medical council, and to this a supplement, containing thirty-four additions, was published in 1874. In 1885 a new edition was produced by Professors Attfield, Redwood, and Bentley, under the direction of the Medical Council. Although showing a great advance over its predecessor, this work was far from satisfactory, owing to the fact chiefly that the editors were not empowered to avail themselves of the assistance and experience of other experts. Some of the principal errors were corrected in a subsequent supplement. In 1886 Attfield was appointed "reporter on the British Pharmacopœia to the Medical Council," his duty being to submit to the Medical Council annually a synopsis of current publications bearing upon the contents of the British Pharmacopœia, and making suggestions for its future improvement. The third reprint of the British Pharmacopœia appeared in 1888, and a supplement thereto in 1890, containing forty-four new articles. In the preparation of this supplement the pharmaceutical profession of Great Britain was graciously invited to suggest desirable additions or improvements, but not yet to assist in the actual work of revision. The fourth and last edition of this work was published in 1898, and is by far more satisfactory than any of its predecessors. It shows not only a much broader relation with other modern pharmacopœias, but its editors have evidently profited greatly by the suggestions emanating from the British medical and pharmaceutical professions. The metric and English equivalents of weights and measures stand side by side in the text as well as do the Fahrenheit and Centigrade equivalents of temperature. The nomenclature of the titles is excellent, the name of the special article preceding that of its class, as "Cardamomi Semina." In this practice it is at an agreement with the United States, but not with the German Pharmacopœia. In the botanical nomenclature of its definitions, no principles, properly speaking, are followed, current custom in Great Britain, even when erroneous, being taken as the guide and facts and principles being twisted when necessary to constitute a defence. The descriptions are sufficiently full, and are given in simple and judicious, yet not unscientific style. The tendency in this, as in other modern pharmacopœias, is toward the elimination of antiquated and worthless articles, as well as those of complex composition.

The usefulness of the British Pharmacopœia is restricted by a wholly selfish, unscientific, and unprofessional refusal to permit the quotation of any portion of its text, even for purposes of comment or criticism.

One of the dependencies of Great Britain, viz., *India*, has a pharmacopœia of its own. In 1842, Dr. W. B. O'Shaughnessy issued, by order of Government (under the authority of the East India Company), "The Bengal Dispensatory" (Calcutta), as a precursor to "The Bengal Pharmacopœia and General Conspectus of Medicinal Plants" which he published at Calcutta in 1844. In 1868 a "Pharmacopœia of India" was published at the same place by Dr. Ed. J. Waring, under authority of the Secretary of State for India. This is now in force, alongside of the new British Pharmacopœia. The main object of issuing a separate pharmacopœia for India was officially to encourage and authorize the employment of East Indian drugs, among which are many possessing very valuable properties. A most useful companion to this work is the "Supplement to the Pharmacopœia of India," by Moodeen Sheriff, published by order of the Government of Madras, in 1869. This work contains synonyms of the pharmacopœial articles in fourteen languages. A revision of the pharmacopœia of India is in contemplation.

In 1887 the British Pharmaceutical conference produced the "Unofficial Formulary," containing thirty-seven articles, to which nine were added by a supplement published in 1889. The abbreviation of the title of this work is "U. F. B. P. C."

Central American States.—These states have no pharmacopœias, and there is the greatest want of uniformity in the authorities followed, the Mexican Pharmacopœia not wielding the influence which would naturally be expected of it.

Chile.—In 1886 appeared the "Farmacopea Chilena," prepared by Dr. Adolfo Murillo, and published in Leipsic. Its text is Spanish, and it bears much resemblance to the French Pharmacopœia, though containing far fewer errors.

China.—This country has, of course, no official pharmacopœia, though there are numerous works of an unofficial character treating of such subjects, the best known and most extensive being "Pen tsao kung mu," of Lis-hi-chin, published about 1560 A.D. While containing much of value, its basis is of course largely superstitious.

Denmark.—In 1658 the "Dispensatorium Hafniense" was published at Copenhagen, and this was several times reprinted. The first official pharmacopœia appeared in 1772, the second in 1805, and the third in 1830. The last mentioned was, however, counted as the first work, the others not being regarded subsequently as deserving of the name. Hence the next edition, published in 1868, was designated as "Editio Secunda." Supplements to it appeared in 1874, 1876, and 1886. On August 1st, 1893,

a new edition went into effect. The text of the work is in Danish, the titles are in Latin. Much similarity exists between the Danish, Norwegian, and Swedish pharmacopœias, which is the result of deliberate design, as these countries are closely allied in customs, traditions, and language. A separate military pharmacopœia is in existence.

Ecuador.—The statements made concerning Bolivia apply also to Ecuador.

France.—In 1353 King John, "the good," commanded the apothecaries to follow the "Antidotarium" of Nicolaus Præpositus. Strict regulations regarding the practice of pharmacy were made in 1536, and frequently afterward. As early as 1546 a "Ph. Lugdunensis" was published at Lyons, which was several times reprinted. A French "Paraphrase sur la Pharmacopée" was issued by Briçon Bauderon, of Mascon, in 1588+. In 1590 the Paris Faculty of Medicine was directed to prepare a dispensatory; but, as nothing was done, Parliament, in 1597, ordered twelve members of the faculty, designated by name, to prepare the work. The order was, however, not obeyed. Several French cities early possessed pharmacopœias of their own, thus: Burdigal ("Ph. Burdigalensis," 1643); Strasburg (Ph. Argentoratensis," 1725+); Toulouse ("Codex Medicamentarius, seu Ph. Tolosana," 1648, 1695); Valenciennes ("Ph. Valentianensis," 1651). A new "Pharmacopée de Lyon" was also published by Vitet in 1788. The last-named work, to a slight extent, answered the purpose of a revised edition of the last Paris Pharmacopœia in some localities. In 1637 the "Ph. Parisina" appeared as a precursor to the first official Paris Pharmacopœia, which was issued in 1639 under the title "Codex Medicamentarius, seu Ph. Parisiensis, in lucem edita a Ph. Harduino." Revisions of this appeared in 1645, 1732, 1748, 1758. No further revision appeared then until, after an interval of sixty years, a national pharmacopœia was issued in 1818, under the title: "Codex Medicamentarius, seu Ph. Gallica," the text being in Latin. In the second and following editions the French language was chosen for the text, only the synonyms of the titles being given in Latin. These editions appeared in 1837 (ii.), 1839 (iii.), 1866 (iv.), and 1884 (v.). The last revision was a very unsatisfactory one, as the revisers did not seem to have paid attention either to the other new pharmacopœias (United States and German) which had appeared a short time previously, or to the copious literature relating to pharmacopœial improvements. Immediately after the work had been issued very numerous errors were discovered in it, so that the Government was compelled to make a fresh issue, in which one hundred and thirty-two alterations were incorporated; and a special pamphlet entitled "Erratum," was shortly afterward sent out, in which eighty-three additional changes were directed to be made. But this list of errata is not only itself not free from errors, but is far from being complete. In connection with the French Pharmacopœia should be mentioned the well-known work of Dervault, "L'Officine," constituting an exhaustive commentary and supplement to the pharmacopœia. In some foreign countries, which do not possess a pharmacopœia of their own, this work is frequently followed as the principal authority, being used either in the original French or in Spanish translation.

Germany.—The first official formulary published in Germany was that of Valerius Cordus, published after his death by the city of Nuremberg in 1546, under the title "Pharmacorum omnium quæ quidem in usa sunt conficiendorum ratio; vulgo vocant Dispensatorium pharmacopolarum" (see *Am. Drug.*, 1887, 21). The work contains formulas of Galenical preparations, taken chiefly from ancient writings, with few simples. Some of the titles continue to the present day, though in some cases the composition has utterly ceased to correspond therewith. The work was often reprinted at home and abroad. There is a Paris edition of 1548, three of Lyons (1552, 1559, 1599), two of Venice (1556, 1563), etc. In the Nuremberg edition of 1592, great advances were made, several American drugs (sassafras, sarsaparila, and tobacco) being introduced, chemicals first appearing (alum, borax, saltpetre, etc.), as well as some artificial salts from ashes of plants and other substances. Extracts and distilled waters were also added. Equally important changes occurred in the next edition (1598), white arsenic, corrosive sublimate, calomel, and oil of vitriol being among the additions. The next edition (1612) was little changed. The fifth and last edition appeared in 1666, and showed great changes, many for the worse, some for the better, such as the introduction of cinchona, jalap, balsams of Peru and Tolu, tinctures and many new chemical salts, under the then prevailing alchemistic nomenclature. This edition contained nearly all classes of preparations of which we still make use, organic proximate principles being of course unknown. It certainly formed the basis upon which subsequent European pharmacopœias were constructed.

In 1538 the physicians of Augsburg prepared a sort of pharmacopœia under the title, "Conclusiones et Propositiones Universam Medicinam Complectentes," containing formulas which were afterward generally followed. Augsburg was at that time the chief *entrepôt* of the German trade with Italy and the Levant; hence many of the imported medicines came by way of Augsburg. In 1564 the first edition of the "Ph. Augustana" was published, which was often revised, and Cologne followed the example in 1565, by the publication of a "Dispensatorium," which was replaced by a "Ph. Coloniensis" in 1627.

The disunited condition of the countries inhabited by the German nation up to within recent times has been the means of bringing into the world a large number of independent pharmacopœias, for separate cities or principalities, of which a list follows here: Stralsund ("Actuarium Ph. Stralsundensis," 1645); Quedlinburg ("Quedlinburgensis Officina Pharmaceutica," 1665); Brandenburg ("Dispensatorium Brandenburgicum," 1698, forming the starting-point of the later Prussian pharmacopœias); Hanover ("Ph. Hanoverana," 1706; last edition, 1861); Hamburg ("Dispensatorium Hamburgense," 1716; "Codex Hamburgensis," 1835, 1845); Ratisbon ("Disp. Pharm. Ratisbonense," 1727); Munster ("Disp. Monasteriense," 1739); Würtemberg ("Ph. Wirtembergica," 1741; last edition, 1847); the Palatinate ("Disp. Med.-Pharm.," 1764); Brunswick (Disp. Pharm. Brunsvicense," 1777); Würzburg ("Pharm. Herbipolitana," 1778; last edition, 1796); Westphalia ("Disp. Westphalicum," being identical with Piderit's "Pharmacia Rationalis" [see under Saxony], 1779); Fulda ("Disp. Fuldense," 1787); Bremen ("Pharm. in usum . . . Bremensis," 1792); Schaumburg-Lippe ("Disp. Lippiacum," 1792); Oldenburg ("Ph. Oldenburgensis," 1801); Hessen ("Disp. Electorale Hassiacum," 1806; "Pharm. Hassiæ," 1827, 1860); Erfurt ("Neue Pharmakopoe" . . . von Trommsdorff, 1808, was introduced by order of the French in place of the "Prussian Ph."); Saxony (in 1806, Piderit's "Pharmacia Racionalis," Cassel, 1779–81 was prescribed as Ph. In 1820 appeared "Ph. Saxonica," the last edition in 1837); Bavaria ("Ph. Bavarica," 1822, last edition in 1859); Schleswig-Holstein ("Ph. Slesvico-Holsatica," 1831); Baden ("Ph. Badensis," 1841).

Many of these were revised and republished a number of times.

The most important of all former German pharmacopœias has undoubtedly been the Prussian. This had its beginning in the "Brandenburg Dispensatory" of 1698, the last revision of which, or the sixth edition, appeared in 1781. In 1799, the first "Ph. Borussica," was published. The next editions came out in 1801 (ii.), 1813 (iii.), 1827 (iv.), 1829 (v.), 1846 (vi.; this is considered to have been the best pharmacopœia of its time); 1862 (vii.). Four editions of a separate Military Pharmacopœia were also published, the last one in 1868.

The problem of a united pharmacopœia for all German states had often been agitated, but in vain. In 1861 Dr. Walz proposed the publication of a German Pharmacopœia by private enterprise, which was to be recommended for adoption, or at least as a pattern, to the different German States. The work appeared in 1865, under the

title "Pharmacopœa Germaniæ." Among the compilers were two Austrians, as it was at the time believed that the work might be accepted by all German-speaking peoples. But the war of 1866 rendered the project, as originally conceived, nugatory. A second edition was published in 1867, in which the Austrian members were omitted. Yet even this failed of recognition. It was only after the establishment of the German empire that the desired object was attained. In 1872 was issued the first "Ph. Germanica," superseding all the separate pharmacopœia at that time in force in German countries. Some amendments to this were published in 1873. When the time for a new revision arrived the Government invited all medical and pharmaceutical bodies and prominent individuals in both professions to submit proposals regarding the new revision. Contributions were received from a large number of sources, and these were printed by Government in a large folio volume of six hundred and ninety-one pages. The Committee of Revision, consisting of thirty-three members, under the presidency of Dr. Struck, held only a few personal meetings, but the work of the commission was much facilitated by the fact that the Government from time to time issued printed circulars among the members. The final draft of the work having been first printed in German (fol.), the work appeared in its official Latin garb in 1882, and went into force on January 1st, 1883. An official German translation was likewise published; and an English translation, by C. L. Lochman, appeared at New York in 1884.

A standing committee, appointed by the German Pharmaceutical Association, almost immediately undertook a critical revision of this work, and in 1887 a permanent pharmacopœia commission was created by the Government. In 1896 the third edition appeared under the title, "Arzneibuch für das Deutsche Reich. Dritte Ausgabe. Pharmacopœia Germanica. Editio III." The Latin language was abandoned and the text made wholly German, with the exception of the titles of the articles. In the work of its revision the pharmacopœia committee of the German Pharmaceutical Association was of the greatest value.

The example set by the United States (1886 to 1888) and Great Britain (1887), in preparing national formularies of unofficial preparations was followed by the pharmacists of Germany in 1891, when the German Pharmaceutical Association published a similar work under the rather awkward title: "Arzneimittel welche in dem Arzneibuch für das Deutsche Reich (Dritte Ausgabe; Pharmacopœia Germanica, Editio III.) nicht enthalten sind" (= "Remedies which are not contained in the Arzneibuch," etc.). This contains eight hundred and eleven articles.

The fourth and last edition of the German Pharmacopœia was published in 1900. It exhibits the degree of progress which might reasonably be expected at the close of a decade so noted for research and criticism as that between 1890 and 1900. An unfortunate departure, however, is that of the uniform omission of the authorities of botanical names. In those cases in which there is but one such authorship, hence but one interpretation of the name, the omission is not serious; but there are some instances in which actual doubt as to what plant is intended may exist. Another unfortunate custom is that of placing the class name of a drug in advance of its individual name, in the title, as "Flores Malvæ" instead of "Malvæ Flores."

The influence of the German Pharmacopœia extends far beyond the geographical limits of the German empire. Outside of the United States Pharmacopœia there is probably no other, even not excepting the British, which is so frequently drawn upon by prescribers in this country.

Greece.—The first Greek Pharmacopœia was published in Athens under King Otto I., in 1837, under the title, "Ελληνική φαρμακοποία . . . παρὰ Ιωάννου Βούρου, Ξανερίου Λανδερέρου, Ιωσὴφ Σαρτορίου," etc. ("Greek Pharmacopœia . . . by Johannes Bouros, Xaverios Landerer, Joseph Sartorius," etc.). It was based on the French, Bavarian, and various other German pharmacopœias existing at that time. The text is in Latin and modern Greek, side by side. Synonyms are given in Italian, French, English, German, and Turkish, wherever possible, but among them are many mistakes. In 1868 Professor Landerer had the work reprinted, with a supplement (παράρτημα) of the newer preparations, an etymological glossary, and a table of antidotes. This reprint was officially recognized by Government. In general it must be said that the work is very far behind the time.

Hayti has no pharmacopœia of its own. The French Codex is mostly followed.

Hawaiian Islands.—The United States Pharmacopœia is generally followed.

Hungary.—See Austria.

Italy.—Italy was the first country in Europe in which an official pharmacopœia was published. This was the "Antidotarium Florentinum," first published at Florence in 1498. Other similar works appeared at Mantua ("Antidotarium Mantuanum," Venice, 1559); Bergamo ("Ph. Bergomensis." 1580); Venice ("Ph. Veneta." 1617; "Codice pharmaceutico," 1790); Messina ("Ph. Messanensis." 1629); Naples ("Antidotarium Neapolitanum," 1649); Turin ("Ph. Turinensis," 1736); Sardinia ("Ph. Sardoa," 1773; the last edition, "Farmacopea per gli Stati Sardi," of 1853 is still in force); Bologna ("Antidotarium Coll. Med. Bolonienses," 1783); Genoa ("Formulario farm.," 1791); Ferrara ("Farm. Ferrarese," by Campana, 1799, etc.); Parma ("Ph. Parmensis," 1823; another edition of this appeared in 1839 for Piacenza, Parma, and Modena together). The Church States, Tuscany, Lucca, and many other Italian provinces follow a dispensatory published by Orosi, under the title "Farmacologia teorica e practica ovvero Farmacopea Italiana." Lombardy and Venice use the Austrian Pharmacopœia; Naples uses, besides other works, the "Ricettario farm. Napolitano," 1859. Throughout Italy a new work by Ruata, entitled "Farmacopea Nazionale e Generale, Materia Medica e Terapia" (Verona and Padova, 1883) is now frequently employed.

Although a commission for the publication of a national pharmacopœia was appointed years previously, the draft, under the presidency of Professor Canizzaro, was not reported until 1884, and the work was not published until 1892. Meanwhile, different portions of the country used such works as were prescribed by their local authorities, the army using the Sardinian Pharmacopœia of 1853. The present work is entitled, "Farmacopea ufficiale del Regno d'Italia" (8vo, Roma). This work was one of the first to introduce statements regarding the percentages of active constituents of drugs such as belladonna, jaborandi, and colchicum; yet methods of assay are not prescribed, so that the utility of the procedure is questionable.

Japan.—In 1880 a commission of twenty-one members, several of them Europeans in the service of the Japanese Government, under the presidency of Mr. Hosoakwa, undertook the work of preparing a pharmacopœia, which was published in August, 1886, as an octavo volume of nearly four hundred pages, the text in Japanese, under the title, "On yaku zuki Nippon yaku kiyoku ho." It consisted of an introduction, preface, and body, the latter comprising four hundred and seventy-five titles, followed by general directions for keeping certain drugs and preparations, lists of reagents and volumetric solutions, lists of articles always to be kept on hand, list of separanda, maximum doses, tables of specific gravity and of elements, a Japanese and Latin index, list of errata, table of doses for adults and children, then another list of errata. The official text was in Japanese, the scientific chemical, botanical, and zoological terms in Latin, in Roman characters, with Japanese transliteration. In the treatment of the subject, the United States, British, and German Pharmacopœias were mostly followed, but the text showed also independent and careful work on the part of the compilers. The sign ▽, placed under an unusual quantity of a powerful remedy, is to be used by prescribers for the same purpose as the exclamation

point in European practice, viz., as an evidence that the prescriber intentionally ordered a large dose. The second edition of this work appeared in 1891, under the title "Pharmacopœia Japonica. Editio Altera. Tokyo, Anno xxiv. Meiji (1891)." It is wholly in Latin. It resembles its predecessor in general appearance and construction, but in the nomenclature of chemical substances, the last German and Austrian pharmacopœias have been followed as guides.

Liberia.—The United States and British pharmacopœias are usually followed.

Mexico.—The Pharmaceutical Society of Mexico, in 1874, published a pharmacopœia which was officially recognized by Government. It was one of the best pharmacopœias of its time. In 1884 a second edition was issued by the same society, the text of which was already completed at the close of 1881. Its title is "Nueva Farmacopea Mexicana de la Sociedad Farmacéutica de Mexico." It presents among other special features a very copious materia medica, paying particular attention to native products. The text is in Spanish in two columns. In general the work rather corresponds to what we would call a dispensatory, as it treats also of the medical properties and uses of the several drugs and preparations, and covers a good deal more ground than is usual for a pharmacopœia. It is a very carefully prepared and meritorious work.

Netherlands.—The frequent political changes in the Low Countries were not without influence upon the existence or validity of its pharmacopœias. Among the earlier works of this kind which may be mentioned here are the following, in cities now belonging to the Netherlands: Amsterdam ("Ph. Amstelodamensis," 1636; last edition, 1792, see below); The Hague ("Ph. Hagana," 1652; last edition, 1756); Utrecht ("Ph. Ultrajectana," 1656; last edition, 1749); Louvain ("Ph. Lovardensis," 1687; last, 1745); Haarlem ("Ph. Harlemensis," 1693; last, 1741); Dort ("Ph. Dordracena," 1708; last, 1766); Rotterdam ("Ph. Roterodamensis," 1709; last, 1835); Alcmar ("Ph. Alcmariensis," 1723); Groningen ("Ph. Groningana," 1724, '30). At one time the Netherlands belonged to Austria, hence the "Ph. Austriaco-Provincialis" was made official and a Dutch translation of this was published in 1781. After the establishment of the Batavian republic (1795–1806) a commission was appointed to draft a pharmacopœia. This was completed and published in 1805 under the title "Ph. Batava," and was a work of great merit, being by far the best of its time. This work has been extended and commented upon by Niemann (1811, second edition, 1824) in an excellent manner. In 1851 appeared the first "Ph. Neerlandica," the text being both in Latin and in Dutch. It had much resemblance to the French Codex. A revised edition, both in Latin and in Dutch, appeared in 1871, the Latin version being, as in the first edition, the official text. It contained six hundred and fifty-five titles. In 1884 a Government commission was appointed for revising this work, and a new edition appeared in 1889 under the title, "Nederlandsche Pharmacopee. Derde Utgave (= third edition), 's Gravenhage, 1889." Excepting the titles of the articles, the text is entirely in Dutch. A Latin edition soon appeared under the title "Pharmacopœia Neerlandica. Editio tertia. Hagæ Comitis, 1889." It was specially decreed, however, that the Dutch edition was to be considered the official one.

In 1891 the Rotterdam branch of the Netherlands Pharmaceutical Society (Nederlandsche Maatschappij ter Bevordering der Pharmacie) followed the lead of other countries, by issuing an unofficial formulary under the title: "Supplementum op de derde Utgave der Nederlandsche Pharmacopee . . . 's Gravenhage, 1891." It contains five hundred and seventy-three articles.

Norway did not possess a pharmacopœia of its own until 1854, the Swedish Pharmacopœia being used in the country up to that time. The "Ph. Norwegica" was revised in 1870, and this second edition was reprinted with additions in 1879. It contains some five hundred and ten titles. The text is in Latin. It much resembles the Swedish and Danish pharmacopœias, but the influence of the German Pharmacopœia is clearly perceptible.

Paraguay.—The French, Spanish, and occasionally other pharmacopœias are usually consulted.

Peru.—The French, Spanish, United States, and British pharmacopœias are usually drawn upon.

Poland.—See *Russia*.

Portugal.—In 1704, Cætano de Santo Antonio published a "Pharmacopea Lusitana Galénica" at Coimbra. This was republished at Lisbon (as "Ph. Lusitana," or, "Ph. Ulissiponense") in 1716, and twice reprinted. In 1785 appeared de Poiva's "Farmacopea Lisbonense." The first official pharmacopœia was published by Dr. Tavares in 1794, under the title "Farmacopeia Geral para o Reino e Dominios de Portugal." In 1825 this was supplanted by the "Ph. Lusitana," and this was followed in 1838 by the "Codigo Pharmaceutico Lusitano" (revised 1858). Finally a new "Pharmacopêa Portugueza" was issued in 1876. This is a very good work, prepared with care and judgment. The text is in Portuguese, except the synonyms of titles, which are in Latin. It has been shorn of the obsolete rubbish of the therapeutics of former times.

Roumania issued a pharmacopœia in 1861, under the title "Pharmacopœa Romana." A second edition, revised, appeared in 1874. The text throughout is in Roumanian, without Latin synonyms. It bears some resemblance to the Austrian Pharmacopœia, but has some distinctive features of its own.

Russia.—Up to the year 1866 Russia had no official national pharmacopœia, except one for the army which was first issued in 1765. In 1779 a revised and much improved edition of the latter appeared, under the title "Ph. Castrensis Rossica." This was followed in 1789 by a special pharmacopœia for the navy ("Ph. Navalis," last revised in 1869). Both of these were superseded in 1808 by the "Ph. Castrensis Ruthenica," edited by Wylie, of Moscow. This was several times revised, last in 1866. A civil pharmacopœia appeared as early as 1778 at St. Petersburg (reprinted in 1782), under the title of "Ph. Rossica," and a second edition in 1798 (reprinted 1803); but these were not officially recognized, the pharmacists being compelled to consult almost every prominent European pharmacopœia when putting up prescriptions. That which was most followed, generally, was the "Ph. Borussica." In 1866 the first official civil pharmacopœia was issued. This was followed by new editions in 1871, 1880, and 1891. The title is "Rossiiskaya Pharmakopeya," edited by the Medical Council in the Department of the Interior, by order of his Imperial Majesty, etc. Great care was bestowed upon the two last editions, the best features of the German Pharmacopœia being incorporated into it. The text is in Russian, the main titles and synonyms, however, and the names of the ingredients entering into the preparation being in Latin. A special pharmacopœia for the use of the imperial court was published in 1874. Hence there are four Russian pharmacopœias in existence—the military, the naval, the civil, and the court pharmacopœia. The military work is in some respects a sort of dispensatory, as it goes more into details.

A separate pharmacopœia was published for Poland, in Warsaw, in 1817, under the title, "Ph. Regni Poloniæ," but this does not seem to have long remained in force. On the other hand, Finland published a pharmacopœia of its own ("Ph. Fennica") in 1819 (at Abo). Later editions of this appeared at Helsingfors in 1850 (ii.), 1863 (iii.), and 1885 (iv.). The text of this is in Latin. It is closely allied to the several Scandinavian pharmacopœias, and in certain features still more closely to the last German Pharmacopœia. In extent, it is one of the smallest, comprising only about four hundred articles.

Spain.—Previous to the appearance of a national work, local pharmacopœias had been in existence in the following cities: Salamanca ("Ph. Salamanca," by J. Bravo, 1588); Barcelona ("Ph. Catalana," 1686); Almeria ("Ph. Almeriana," 1724); Saragossa and Valencia ("Officina Medicamentorum," 1601, 1698, 1739); Madrid ("Ph. Ma-

tritensis," 1729+). In 1521 was published at Madrid the "Examen Apothecariorum," composed in 1497 by Pedro Benedicto Mateo, which has been found by Mallaina to be a veritable pharmacopœia. The first national pharmacopœia ("Ph. Hispana") appeared in 1794. This and the next three editions, viz., of 1798, 1803, and 1817, were written in Latin. The fifth (1865) and sixth editions (1884) are in Spanish with Latin synonyms of the titles. The "Farmacopea Oficial Española" appears to have made the least progress of any. Even the last edition, here and there, betrays an adherence to unscientific, empirical, or obsolete remedies and methods. Besides, it bears internal evidence of the influence of the new French Codex. In the number of articles, of which it contains nearly one thousand seven hundred, it is only exceeded by the last-mentioned work.

Attempts have been made to prepare a separate pharmacopœia for *Cuba*, but no tangible results have been reached thus far.

Sweden.—A. "Ph. Holmiensis" was published at Stockholm in 1686. The first work, bearing the title "Ph. Suecica," appeared in 1705, but without special authority. The first official pharmacopœia appeared in 1775, and the succeeding editions in 1779 (ii.); 1784 (iii.); 1790 (iv.); 1817 (v.); in this edition the chemical portion was edited by Berzelius, and the botanical and zoological by Swartz; it was the most advanced and perfect pharmacopœia of its time); 1845 (vi.), and 1869 (vii., with supplement of 1879). The last edition has been several times reprinted with amendments. It has much resemblance to the Danish and Norwegian (see under Denmark). The text is in Latin, and the number of titles is six hundred and seventy-seven.

Switzerland.—A "Ph. Helveticorum" was published at Geneva in 1677. In 1684 there appeared in the same city an edition of Charas' "Pharmacopœa Regia Galenica et Chymica," which was followed as authority for a long time. The Basle Medical Society, in 1771, published a "Ph. Helvetica" (containing an introduction by A. de Haller). A "Ph. Genevensis" appeared in 1780, and was reprinted several times afterward. In 1852 an elaborate draft of a pharmacopœia for the Canton of Berne was published at Berne under the title "Pharmacopœæ Bernensis Tentamen." This may be regarded as the precursor of the "Ph. Helvetica," published in 1865 at Schaffhausen, by the Swiss Pharmaceutical Society. The latter work has been recognized by law in most of the cantons, but not in all. A second edition appeared in 1872, and a large supplement in 1876.

The text of this pharmacopœia is in Latin, and has much in common with the German Pharmacopœia. A new work, "Pharmacopœia Helvetica, Editio III.," was issued in 1893.

The Canton of Tessin has a pharmacopœia of its own, published in 1848. Geneva uses the French Codex.

Turkey.—The Imperial Medical School at Constantinople has directed the use of the French Codex. Other foreign pharmacopœias, however, are also in use.

Uruguay.—The French and Spanish pharmacopœias are chiefly in use.

Venezuela.—The French and Spanish pharmacopœias are mostly in use. Long since, the medical faculty at Caracas took initiatory steps to prepare a national pharmacopœia, without result so far.

Charles Rice.
Revised by *Henry H. Rusby.*

PHARMACOPŒIA, UNITED STATES.—HISTORY.—The first pharmacopœia in the United States was published at Philadelphia, for the use of the Military Hospital of the United States army, located at Lititz, Lancaster County, Pa., in 1778, under the title, "Pharmacopœia simpliciorum et efficaciorum in usum nosocomii militaris ad exercitum fœderatarum Americæ civitatum pertinentis; hodiernæ nostræ inopiæ rerumque angustiis, feroci hostium sævitiæ, belloque crudeli ex inopinato patriæ nostræ illato debitis, maxime accommodata" ("Pharmacopœia of the more simple and efficacious [preparations] for the use of the Military Hospital of the Army of the United States of America; specially adapted to our present poverty and distress, due to the ferocious cruelty of the enemy and to the bloody war unexpectedly brought upon our fatherland"). Only one copy of this edition is known to exist, which is in the surgeon-general's office at Washington. Of a second edition, there appears to be likewise only one copy known (see *Am. Jour. Pharm.*, 1884, 483). This was issued in 1781. Upon the title page appears the name of Dr. William Brown, as author. It is entirely in Latin, in thirty-two pages. It contains eighty-four internal and sixteen external remedies. Previous to the year 1820, various European pharmacopœias, chiefly those of London, Edinburgh, and Dublin, were used in the United States, though the want of a national pharmacopœia was, to some extent, filled by Coxe's "American Dispensatory" (first edition, Philadelphia, 1806+), and Thacher's "American New Dispensatory" (first edition, Boston, 1810+). In 1808 the "Pharmacopœia of the Massachusetts Medical Society" was published at Boston, and in 1816 the "Pharmacopœia of the New York Hospital" at New York. The first impetus to a national pharmacopœia was given in 1817, by Dr. Lyman Spaulding, in a plan laid before the Medical Society of the County of New York. (For details of the history of the "Pharmacopœia of the United States of America," consult the latter work, sixth edition, New York, 1882, pp. v.–xiii.). The first convention for the formation of a national pharmacopœia assembled at Washington on January 1st, 1820, at which time the several drafts previously prepared by the several district conventions were consolidated and revised. The finished work was published at Boston, on December 15th, 1820, both in Latin and in English. A second edition appeared in 1828. Before adjourning, the convention provided for a future revision of the work, by arranging for the call of a convention in 1830. Owing to a misunderstanding, however, two separate conventions were held in this year, one meeting at New York, and the other at Washington, and two separate pharmacopœias resulted from this, one being published at New York in 1830, the other at Philadelphia in 1831. Fortunately, the bodies who had met at New York subsequently abandoned the plan of continuing a separate revision in the future, and in 1840 the third general convention assembled again at Washington. The Committee of Revision appointed at this convention was authorized to request the co-operation of the colleges of pharmacy, and this resulted in the contribution of much valuable material. The new revision was published in 1842, the text being for the first time only in English, the Latin being restricted to the titles and synonyms. At the next convention, in 1850, the incorporated colleges of pharmacy were for the first time invited to participate in the deliberations. Previous to this, only incorporated medical societies had been invited to send delegates. The fourth edition of the work appeared in 1851, and a second edition of this in 1855. The next two conventions met at the appointed time, in 1860 and 1870, and the fifth and sixth editions of the pharmacopœia were issued in 1863 and 1873, respectively. Several years before the next succeeding convention (in 1880), a very lively interest was awakened in the proposed new revision of the work, and several plans were advanced, looking toward a radical change in the manner of revising and controlling the revision of the pharmacopœia. A large amount of preliminary work was also bestowed, principally on the part of the American Pharmaceutical Association, upon the plan and contents of the next edition. The convention which assembled at Washington, in 1880, was the most representative of any that had so far been held, and after a general plan of revision had been adopted, a Committee of Revision and Publication was appointed, consisting of twenty-five members, residing in various parts of the United States. This committee has made a detailed report of its proceedings in the preface to its work, which appeared toward the end of 1882 (see "United States Pharmacopœia," 1882, pp. xxvii.–xxxiii.). The title page designates this as

the "Sixth Decennial Revision"; consequently, this was the *seventh* edition of the work. In this revision radical changes were made, the intention being to render the work as independent of commentaries as was possible. The arrangement was alphabetical throughout, all crude drugs and chemicals being defined and accompanied by descriptions or by tests of identity and purity. Actual weights and measures were replaced by a system of parts by weight, except in the case of fluid extracts. Many obsolete articles were dropped, and many new ones admitted, the total number of accepted titles being nine hundred and ninety-seven. The general verdict of all competent critics, both at home and abroad, was that this was one of the best pharmacopœias ever issued, and that it did not suffer by comparison with works that appeared later.

It having been long felt that the pharmacopœia contains a considerable number of preparations which are not frequently prescribed, and are retained only in order that, if called for, their uniform composition may be insured, the American Pharmaceutical Association undertook the compilation of a "National Formulary of Unofficial Preparations," primarily designed to establish uniform formulas for any compound used in legitimate pharmacy or prescribed by physicians, and for which there is no recognized official standard. It was believed that this formulary might eventually be made the repository of all such pharmacopœial articles as are no longer deemed of sufficient importance to be included in the official list. This work was published in 1888, under the above title, and has proved very useful. In May, 1890, the Decennial Convention for Revising the Pharmacopœia met at Washington, and resulted in the election of a committee of revision, consisting of twenty-six members, located in different sections of the country, and gave instructions for the "Seventh Decennial Revision, or the "Eighth Edition," which was published by the committee itself, and went into effect on January 1st, 1894. The most important features introduced into this work were the substitution of the metric system of weights and measures for "parts by weight"; the reference of the standardizing of preparations by chemical assay, and of such assay processes to the discretion of the committee, the committee subsequently deciding upon the adoption of such standards for only a few drugs and preparations; volumetric methods were made to replace, as far as possible, gravimetric methods; articles protected by proprietary rights were excluded; important changes in chemical nomenclature and notation were adopted, though radical measures were rejected; in botanical nomenclature the Rochester code was adopted as authoritative; ninety articles were dropped and eighty-eight were added; the word *official* was adopted to replace "officinal." This work was received universally as representing the most advanced, yet sufficiently conservative standard among pharmacopœias, and the advances in it have so far commended themselves to the medical and pharmaceutical professions during the decade since its appearance, that further progress in the same directions has been generally urged, particularly in that of an extension of the list of assayed drugs and preparations. It may be safely said that the Pharmacopœia of 1890 has done more than any of its predecessors for general pharmaceutical education, and to only a lesser degree for medical education. At the present time (January 1st, 1903), the work of the Eighth Decennial Revision is nearly completed. Soon after the meeting of the convention of 1900, death removed the beloved and highly talented chairman of the revision committee, Dr. Charles Rice, and Prof. Joseph P. Remington was elected as his successor. The interest in this revision, throughout the country, has been general and hearty, and the committee has worked with the greatest enthusiasm. Of the many important changes in the pending publication some are fairly radical. The work of revision and that of publication have been assigned to distinct bodies; the former to a committee of twenty-five members, as before, the latter to a board of trustees, a regular incorporation having been effected for this purpose. Among the special features of this revision the following are worthy of note: Whenever possible, articles are to be standardized on the basis of chemical assay; physiological standards may also be represented in the requirements for antitoxin, notwithstanding the instructions of the convention to the contrary, the committee having decided that the importance of the subject demands even so dangerous a precedent as this; although the descriptions of crude drugs are to retain, so far as is consistent with clearness and accuracy, the simple language of the preceding edition, yet simple descriptive terms are to be introduced, wherever necessary, to facilitate the detection of elements of adulteration entering into powdered drugs; a wonderful advance over the instructions of 1880, which forbade the introduction of any characters which could not be seen with a lens magnifying "about ten diameters"; doses are to be specified, and, finally, the revolutionary principle has been accepted that proprietary rights of limited duration in a meritorious drug, provided that the conditions render it amenable to standardization and resulting control, do not constitute an objection to its recognition by the Pharmacopœia, and a sub-committee has been appointed to determine what proprietary articles can properly be admitted under this rule.

Authority of the Pharmacopœia.—The authority of a pharmacopœia may be legal or professional, and may be established either before the existence of the work, by the legal or professional appointment of its compilers, or thereafter, through its adoption by a government or by a representative professional body. In either case it occupies a special office, and all matters pertaining to it are therefore denominated *official*, or, according to older usage, "officinal." Thus we have official and unofficial drugs, medicines, reagents, and other substances, as well as official titles, synonyms, definitions, descriptions, tests, formulas, processes, doses, etc. The professional authority of the Pharmacopœia is not compulsory, except as a violation of such of its provisions as have professional sanction involves professional disrepute. Its legal authority, established by statutes, with penalty attached, is of course so. In this way the United States Pharmacopœia has been made the legal authority in many States, as well as wherever the jurisdiction of the national Government extends.

Objects and Scope of the Pharmacopœia.—In the definition given under *Pharmacopœia*, it is stated that the standards named apply to the "medicines used in the practice of medicine"; not merely to those whose merits justly entitle them to such use. The object of the book is to provide a means of assuring the user of a drug or medicine that he shall receive that for which he calls. The right of each individual to such assurance, regardless of whether his selection of the article is well advised, is obvious, and constitutes the chief basis of procedure in the preparation of the book. The selection of the articles to be made official is thus based upon the fact of their common use. Since very many worthless or very inferior articles are in common use by physicians as well as among the laity, the recognition of such in the Pharmacopœia is thus called for. On the other hand, many valuable drugs are brought forward without ever attracting much attention or coming into general use, so that the mere fact that the compilers of a pharmacopœia believe a new drug to possess merit does not justify them in recognizing it. Such a drug must first establish at least a probability of coming into general use before it shall receive recognition. From the above, it follows that "the recognition of a drug by the Pharmacopœia is not evidence, *prima facie*, that it possesses merit, nor the absence of such recognition that it does not." It also follows that the Pharmacopœia is not to be regarded as a guide to the practitioner in the selection of his remedies, but rather as an index to the general conditions of practice in such respect and as an authority for testing the genuineness of the articles treated by it. A knowledge of the merits of the articles, and an ability to make a judicious selection, are supposed to be gained from a