

PHARMACOPŒIAL VEGETABLE DRUGS.

(254a), barberry is authoritatively recognized. The natives of India use an extract made from various species growing in Northern India, this extract being sold in the bazaars under the name Rusot, and used not only in affections of the eye, but as a tonic and febrifuge. The qualities of both the official drug and its foreign relatives are similar and were introduced by the common people.

BUCHU

The Hottentots of the Cape of Good Hope used the leaves of the Buchu plant (*Barosma betulina*) as a domestic remedy, and from them the colonists of the Cape of Good Hope derived their information concerning it. Reece (540) and Company, London, 1821, first imported it and introduced it to pharmacy and to the medical profession, where, as well as in private formulæ and domestic practice, it has ever since enjoyed more or less notoriety. Perhaps no "patent" American medicine has ever enjoyed greater notoriety than, about 1860, did the decoction of the leaves under the term "Helmbold's Buchu," which, a weak alcoholic decoction, commanded one dollar for a six-ounce vial, and sold in car-load lots. During the crusade of this preparation the medical profession of America, probably inspired by the press comments, prescribed buchu very freely. It is still in demand and is still favored as a constituent of remedies recommended to the laity.

CALAMUS

The use of Calamus, *Acorus calamus*, in the domestic medication of India, is recorded from the very earliest times. It is sold commonly in the bazaars, and Ainslie (7) in his *Materia Medica of Hindoostan*, 1813, states that in consequence of its great value in the bowel complaints of children, a severe penalty was placed on the refusal of any druggist to open his door in the night to sell calamus, when demanded. The antiquity of its use is shown from the fact that it was one of the constituents of the ointment Moses was commanded to make for use in the Tabernacle, (Ex. xxx), while the prophet Ezekiel says of the commerce of Tyre, "Bright iron, cassia, and calamus were in thy market." Theophrastus (633) mentions calamus, and Celsus (136), nearly two thousand years ago, refers to it as a drug from India. In the sixteenth century Amatus Lusitanus (16a) reports it as imported into Venice, and in 1692 Rheede (547) figures it as an Indian plant under the name *Vacha*, the same name being still applied to it on the Malabar Coast. From its tropical home calamus has spread until it is now found in all temperate climates suitable for its growth, the market supply coming mainly from Southern Russia, through Germany. The therapeutic use of calamus in pharmacy and licensed medicine is, as with other like substances, a gift of empiricism founded in the far distant past.

CALENDULA

Marigold, *Calendula officinalis*, has been known, practically, from the beginning of documentary records in scientific or medicinal lines.

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A native of Eastern Asia, it is found under various names, from Japan to India, from the Orient to North America, where European colonists carried it, according to Josselyn (345), before 1670. In early days of English mediæval medication it was employed in decoctions for fevers, and as a hot drink, to promote perspiration. The juice was also employed empirically for sore eyes, and as an application to warts. Its popular use, as heired from a time lost to history, led to its final utilization by the medical profession, and to its position in the mediæval herbals, as also in many pharmacopœias and treatises on European medicines and medication.

JATEORHIZA CALUMBA*

Persons familiar with our common yellow parilla, *Menispermum canadense*, have a good idea of the plant that yields the calumba root of commerce. Indeed, a casual observer would take an illustration of one for the other, so closely do they resemble each other in shape of leaf, stem, and general floral appearance. One author, Roxburgh (559) (*Flora Ind.*, Vol. 3, p. 807) has placed the plant in the genus *menispermum*. The genus *jateorhiza* as now constituted consists of three species, all natives of tropical Africa. It belongs to the natural order *menispermaceæ*. The plant which produces the colombo root of commerce is a herbaceous vine climbing over trees in the forests of eastern tropical Africa in the territory of Mozambique and Quilimani. The leaves are alternate, petiolate, cordate, and palmately lobed. As previously stated, they look very much like the leaves of our common yellow parilla. The flowers are dioecious and borne in pendulous axillary panicles. The female flowers have six sepals, six petals, six abortive stamens, and three pistils. The male flowers have the same floral envelopes and six perfect stamens. The anthers, as in yellow parilla, are four-celled, a structure comparatively rare save in this natural order. The plants that produce the root of commerce vary much in the shape of the leaves and in the amount of hispidity in the stem, and were formerly considered as belonging to two species, *Jateorhiza calumba* and *Jateorhiza palmata*, but later botanists have united them under the former name.

Calumba (also *columbo*) root has long been in use under the name "kalumb" among the African tribes of Mozambique, who employed it as a remedy for dysentery and other diseases (Berry) (63). Undoubtedly the drug was brought by them to the immediate knowledge of the Portuguese when they obtained possession of that country in 1508. Through the influence of their traders, knowledge of the drug was slowly diffused among the Europeans during the sixteenth and seventeenth centuries.

*Derived from the Greek words *iater*, physician, and *rhiza*, root, evidently in allusion to its healing virtues. Most German and a few English authorities (e. g. Flueckiger, the German pharmacopœia of 1890, the U. S. pharmacopœia of 1880, and others) spell the name "jateorrhiza," with the two r's, notwithstanding the fact that Miers, the author of the name spelled it with a single r. In this he is followed by most authorities (except the Germans), including the *Index Kewensis*, and the U. S. pharmacopœia of 1890. Marmé (*Pharmacognosie*, 1886), suggests that the name *jatorrhiza*, should be used instead of *jateorhiza*, and so also does Koehler (*Medicinal-pflanzen*, 140).

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The first definite information regarding calumba root, however, dates from the year 1671, when Franciscus Redi, 1626-1697, (538), born at Arezzo and physician to the Duke of Toscana, describing it under the name *calumba*, made its medicinal virtues conspicuous.

In 1695 the celebrated Leeuwenhoek (376), in his work "Arcana Naturae," recorded some chemical experiments that he had made with this root, which he calls *radix indica*, *rays columba*. He also introduced illustrations of crystals observed in the study of this drug. Contemporaneously with this physicist, J. C. Semmedus (592) (probably in 1689 or shortly before) mentions *calumba* in his writings as occurring among drugs originating from India. This author's work has become more prominent in a later edition (1722).

Valmont-Bomare (656c) in the 1764 edition of his dictionary describes "calumbe" as the root of an unknown tree brought to us from India. He adds that in Bengal this root is considered a specific in cases of colics, indigestion, and against the effects of "mort-du-chien," which is the old French name for colchicum.

Not, however, until in close succession the treatises on calumba root by Gaubius (257a), 1771, Cartheuser (129), 1773, and Percival (499), 1773, appeared, was there much general distribution of knowledge concerning this drug. In this connection it is perhaps of interest to note that in a previous translation (dated 1755) of Cartheuser's *Materia Medica* calumba root is not to be found.

Through Percival's recommendation especially the drug rapidly gained entrance into European *materia medicas*, and since about 1776 we find a record of it in many of the pharmacopœias of European countries. However, the geographical and botanical origin of calumba root as yet remained a mystery. The Portuguese, as already stated, having had a monopoly of the trade in this article, seemed to have been careful not to disclose the origin of the drug and made it a custom to carry it to India and then to export it to Europe from Indian instead of African ports. Hence, for a long time the general impression prevailed that the plant was a native of India and that the capital of Ceylon (Colombo) gave the drug its name.

From about 1770, however, the suspicion that calumba root was of African origin had been gaining ground. In this year Philibert Commerçon, a French physician, collected a specimen of a certain plant which was growing in the garden of M. Poivre in the Isle de France, which Lamarck in 1797 named *Menispermum palmatum*, stating that this *menispermum* (of which he described the male plant only) perhaps yielded the root that is brought to us from India under the name of *calombo* or *colombo* root. He adds, however, that "it seems to be indigenous to India."

In 1805 a distinct advance was made in establishing its African origin. M. Fortin in this year brought the root of a male calumba plant from Mozambique to the city of Madras, where it was raised and cultivated by Dr. James Anderson. From this specimen Dr. Berry (63), in 1811, published a botanical description in the "Asiatic Researches," in which he also gives definite information regarding its origin and uses in its native country. The specimen was transported

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later by him to the Calcutta botanical gardens. De Condolle in 1818 named the plant *Cocculus palmatus*. However, the female plant was still unknown.

In 1825 Captain W. F. Owen brought a male and a female plant from Oibo, in East Africa, to Mauritius, where it was cultivated and observed by Bojer. From this source, at last, Sir W. J. Hooker (324) in 1830 was enabled to describe the whole plant, both male and female, under the name of *Cocculus palmatus*, Hooker.

The name of the genus *Jateorhiza* was finally created in 1849 by Miers. (Hooker, *Niger Flora*, p. 212.) *Chasmanthera columba* is another synonym for this plant proposed by Baillon (33). (*Nat. Hist. of Plants*, Vol. III., London, 1874.)

CAMBOGIA

Cambogia (*Garcinia hanburii*) is a production of a Siamese tree from Camboja, from whence it derived its name. Chinese travelers over a thousand years ago mentioned it, describing the method of obtaining it by an incision in the stem of the tree, whilst the Chinese herbal "Pun tsao" includes it in its pages, the drug being regarded by the Chinese as poisonous, its use being chiefly as a pigment. Clusius (153) described (1605) a specimen of gamboge brought from China in 1603, after which it drifted into European medicine as a purgative. It was one of the articles of commerce of the East India Company, and was recognized pharmaceutically in the shops of the city of Frankfurt as early as 1612. The date of the introduction of gamboge into Chinese art and medicine is beyond the records of established history.

CAMPHORA

Camphor (from *Cinnamomum camphora*) has been made in China since the earliest record. Marco Polo (518), who visited that country in the thirteenth century, saw many of the trees producing it. It was known to the Chinese writers of the sixth century, as well as were its qualities as a valuable timber. The earliest mention of camphor occurs in one of the most ancient poems of the Arabic language, by Imru-l-Kais, who lived in the beginning of the sixth century. Camphor was once considered as a rare and precious perfume, being mentioned in connection with musk, ambergris, and sandalwood as treasures of the Sassanian dynasty of the kings of Persia. Notwithstanding all this camphor did not, so far as has been determined, reach Europe during the classical days of Greece and Rome. Possibly the first mention of camphor as a European medicine was by the Abbatisa Hildegarde (316), in the twelfth century. Since its introduction, it has always been an article in domestic medication and as a perfume constituent.

CANNABIS INDICA

This drug (*Cannabis sativa*) is one of the Oriental products, the beginning of whose use is lost in antiquity. Its name threads the literature of Arabia and India, hashish (or *bhang*) being continually men-

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tioned in the Arabian Nights (88); e. g., "going up to Gharib, blew the powdered Bhang into his nostrils, till he lost his senses." (Burton edition, vol. vii, p. 76. History of Gharib and His Brother.) Imported into Europe preceding 1690, it passed into disuse until Napoleon's expedition to Egypt (1809-10), when it was again revived by De Sacy and Bouger. Its introduction into European medicine followed (1838-39) the experiments of O'Shaughnessy in Calcutta (484), since which date cannabis and its resin have received a place in most pharmacopœias. From the beginning of East Indian history hemp has been smoked as a narcotic intoxicant, and when surreptitiously added to sweetmeats and foods, has in Oriental life been employed as a narcotic with the utmost recklessness. This is shown in the exaggerations of the Arabian Nights, which portrays so many life habits of those times. This writer found hashish of several qualities in the bazaars of Asia Minor and in Constantinople, one specimen "extra fine hashish" costing in a Constantinople bazaar over two dollars an ounce.

CANTHARIS (CANTHARIDES)

Spanish Flies (*Cantharis vesicatoria*). This once popular remedial agent has lost its position in modern medication. Its use came hand in hand with mediæval medical cruelty, and was an heirloom of ancient heroic medication. Hippocrates (B. C. 375-400) valued cantharides in dropsy and also in amenorrhœa, and it goes without question that a substance so heroic in its action would once have been popular in both domestic and professional American medication. Its use in erysipelas and as a plaster, and to "draw the nervous energy and the circulating fluid" to the surface, and "thus again relieve irritation and inflammation of internal parts," are relics of quite recent American medical authority, all writers in good reputation (Regular) commending it highly. At present, however, cantharis is in such disfavor as to make it a novelty for a cantharis plaster to be prescribed by a modern physician of any school, and to ignore its use is no longer a mark of heresy. This change from extreme popularity to practical disuse has come within the experience of this writer.

CAPSICUM

This drug, *Capsicum fastigiatum*, is of American origin, its home being in the West Indies, Mexico, and other tropical countries of America, where it, at the time of the discovery of America, was used by every one as an important pepper in preparing food. In domestic American medicine capsicum has ever been an important remedy, being also a prominent drug in the Thomsonian school (638) of American medicine. It was introduced into the Pharmacopœia and used principally in the form of a tincture, and is now a member of most *materia medica*s throughout the world. By far the largest amount of capsicum, however, is consumed in culinary directions.

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CARDAMOMUM

Cardamom (*Elettaria repens*) has been used in India from a remote period, being mentioned in the writings of Susruta (522). It appears in the list of India spices liable to duty in Alexandria, A. D. 176-180. The Portuguese navigator Barbosa (39) first definitely describes its origin as a product of the Malabar Coast. Since its introduction from the Orient cardamom has been used, as it has been in its home from all time, as a flavor and a stomachic. Several forms of the cardamom are found in the bazaars of Turkey and Arabia, where it is brought by means of caravans. It is largely cultivated at the present time as an article of commerce. This writer found (1907) large cardamom seeds strung on strings and sold by number in bazaars in Asia Minor.

CARUM

Although the home of caraway (*Carum carvi*) appears to have been in the northern and midland parts of Europe and Asia, it was known to the Arabians, and at an early date was introduced into England. In German domestic medicine of the twelfth and thirteenth centuries the word *cumich* occurs, which is still the popular name for caraway in Southern Germany. At the close of the fourteenth century caraway was much used in England, where it was largely employed in cooking. It was not used in India either in cooking or in medicine, nor does it appear in the record of the early days among Indian spices. It has a domestic reach that dominates its every use.

CARYOPHYLLUS

Indigenous to the Molucca Islands proper, cloves (*Eugenia aromatica*) have been an article of Indian commerce since an early date. Known to the Chinese writers of the Han dynasty, B. C. 266 to A. D. 220, cloves became known in Europe about the fourth century, after which they became increasingly an article of commerce, although, for a long time, very expensive. The original home of the clove, the Moluccas or Clove Islands, now produce no cloves at all. The aromatic nature of cloves made of them a great favorite, and they were therefore used to perfume the breath and to flavor food, as well as being employed in domestic medicines, such as stomachic cordials. The well-known Blackberry Cordial of Kentucky is largely spiced with cloves and cinnamon, its blackberry part being the juice of the ripe berries, its alcoholic part being whisky. The domestic use of this pleasant carminative cordial gave it a place in the Pharmacopeia.

CASSIA FISTULA

Galen (254a) mentions a cheap cassia called "fistula," seemingly referring, not to this drug, but to a coarse cinnamon, rolled up as a tube. The fruit now known as Cassia fistula was noticed by Joannes Actuarius (4), of Constantinople, during the thirteenth century, who minutely describes it. The drug is also mentioned by writers of the

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school of Salerno. It was a familiar domestic remedy in England at the time of Turner (656), 1568, and as it is cathartic, it naturally appealed to heroic medicinalists. Although carried in the Pharmacopœia, it has never been much used in American medicine.

CHIMAPHILA

Wintergreen, or pipsissewa, *Chimaphila umbellata*, is a creeping evergreen vine native to northern latitudes of Europe and Asia, and found in the United States in shady woods, where it prefers loose, sandy soil. The Indians of North America considered chimaphila of importance, using decoctions of it in nephritic, scrofulous, and rheumatic disorders. Mitchell (441), in his Inaugural Address, 1803, (University of Pennsylvania) gave the drug particular attention, whilst in domestic medicine it was in favor as a tea, in the sections of country in which it was native, its use being especially in rheumatic and nephritic affections. In these directions it crept into some favor with the medical profession, and thus anticipated the uses of salicylic acid and the salicylates, which in structural form are constituents of this plant.

CHIRATA

An annual herb of the mountainous regions of Northern India, chirata (*Swertia chirayita*) has long been held in esteem by the Hindoos, being frequently mentioned by Susruta (522). It did not attract attention in England until 1829, and was introduced into the Edinburgh Pharmacopœia in 1839. It was first described by Roxburgh (559) in 1814. No record of its introduction into Indian medicine nor to its original usage is possible, other than that it is a gift of native medication and is described in Sanscrit writings.

CHONDRUS

Irish Moss, *Chondrus crispus*, has been known from an early period, its use being chiefly as a domestic medicine. The London or British Pharmacopœia never gave it a position. Todhunter at Dublin 1831, introduced it to the notice of the medical profession. The method of its employment is yet in decoction or infusion, no attempt being made to improve upon its domestic form.

CHRYSAROBINUM

This substance, formerly supposed to be identical with crude chrysophanic acid, is derived from *Goa Powder*, a deposit found in the cavities of the trunk of the *Andira araroba*, a South American tree. It is used in skin diseases in the same manner as the crude Goa powder, from which it is simply a separated material. Goa powder was employed in native medication as a remedy in skin diseases, which brought it to the attention of physicians and led to its introduction into medicine, as well as its final insertion in the Pharmacopœia.

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CIMICIFUGA (MACROTYS)

Cimicifuga is abundantly distributed in rich woodlands over the greater portion of the United States east of the Mississippi River, except in New England and the extreme South. It is also found in Missouri and Arkansas. Cimicifuga was observed by the earliest European travelers in America, being carried to England in 1732, and first described by Plukenet (514a) in 1696. All pre-Linnæan writers classed the plant with actæa, mostly under Tournefort's (649) name, Christophiana. Linnæus (385) gave it the name *Actæa racemosa*, under which it was classed until Pursh (528) referred it to the genus cimicifuga. Rafinesque (535), 1808, by reason of the fact that the fruit of the plant does not accord with that of either actæa or cimicifuga, proposed the name *Macrotys actæoides*, changing the name in 1828 to *Botrophia serpentaria*. Eaton (211) in the fourth edition of his Manual followed Rafinesque, calling the plant *Macrotys serpentaria*.

Cimicifuga was highly valued by the Indians, who employed decoctions of the drug for diseases of women, for debility, to promote perspiration, as a gargle for sore throat, and especially for rheumatism. These uses by the Indians introduced the drug to early "Domestic" American medicine, and it was consequently given much attention by the earliest writers, e. g., Schoepf (582), 1785; Barton (43), 1801; Peter Smith (605), 1812; Bigelow (69), 1822; Garden (256a), 1823; Ewell (230), 1827; Rafinesque (535), 1828; and Tonga and Durand's (222) addition to Edwards' and Vavasseur's *Materia Medica*, 1829. None of these authorities, however, added anything not given by the Indian, so far as the field of action of the drug is concerned, excepting perhaps the statement of Howard (329), 1832, who was an enthusiast in favor of macrotys in the treatment of smallpox, a claim supported forty years after by Dr. G. H. Norris, 1872, in a paper read before the Alabama State Medical Association. He reported that during an epidemic of smallpox in Huntsville, Ala., families using macrotys as a tea were absolutely free from smallpox, and that in those same families vaccination had no effect whatever, so long as the use of macrotys was continued. (See Lloyd Brothers' Drug Treatise No. XIII, Macrotys.)

CINCHONA

Tradition states that the medicinal qualities of cinchona (*Cinchona calisaya*) were known to the aborigines of South America from the earliest times. Arrot (*Philosophical Transactions*, xl, 1737-8, p. 48) states that the qualities and uses of the bark of cinchona were known to the Indians before the days of the Spanish conquest. Others declare that the Peruvians distrusted the drug, considering it dangerous; Markham (406) asserting that the native doctors did not employ it. Preceding 1739, a Jesuit missionary, however, was cured of fever by the bark, administered to him by an Indian; a like incident being recorded concerning the Spanish corregidor of Loxa, in 1630. In 1638, the wife of the Viceroy of Peru, the fourth Count of Chinchon, being attacked by a fever, was cured with the powdered bark, which being commended by her, gave to it the name, "The Countess' Powder," or

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cinchona. Introduced into Spain under the name Jesuit bark, or powder, as well as cinchona, it passed thence into other European countries, being largely distributed by the Jesuit Fathers.

Acrimonious discussions, too numerous and too personal to attempt to record, followed the inroads of this once rankly empirical drug, which, however, was possessed of qualities sufficient to establish it finally in the favor of "regular medication." It was introduced into England about 1656, commanding then a price many times above that of opium.

CINNAMOMUM CASSIA

Probably this is the first spice sought in the commerce of the Orient or from the Indian Ocean, its early record being lost in antiquity. It is mentioned as a precious spice in the Psalms, Proverbs, Ezekiel, Revelation, etc., and by the ancient historians Theophrastus (633), Herodotus (314a), Galen (254a), Dioscorides (194), Pliny (514), Strabo, and others. No distinction was then drawn between cinnamon and cassia, the difference being considered one of quality only. Cinnamon and cassia are mentioned as ranking in value with gold, ivory, and frankincense, and as being among the most costly of the offerings in the temple of Apollo in Miletus, B. C. 243. No mention is made in any old historical document of its being derived from Ceylon. It is accepted as being mentioned in the Chinese herbals from 2700 B. C. to 1200 B. C. Many varieties of the tree are found in India, as well as in Ceylon, in which country, however, no mention of cinnamon is made prior to the thirteenth century. Cassia and cinnamon were employed as spices and remedies, especially by the aborigines, and in the religious services of the early peoples of the countries mentioned. The aromatic drugs drifted into Europe as exceedingly rare and valuable products some time before the date of the East India Company. Cassia was one of the ingredients of the embalming mixtures used by the Egyptians (see Myrrh).

COCA (THE DIVINE PLANT OF THE INCAS)*

Erythroxylon coca is a tree native to the eastern slopes of the Andes, where, especially in Bolivia, large plantations are cultivated. The leaves have been highly valued, from the earliest records, by the natives of Peru, Chili, and Bolivia, by whom the tree was called "The Divine Plant of the Incas." In 1569, Monardes (447), of Seville, published an article on the drug, reproduced, 1577, in London. (Dowdeswell (196a).) This is among the first references to the drug in print, known to us, and it was followed by the botanical description, by Clusius (153), in 1605.

The history of coca, in its many phases, is most exhaustively presented by several travelers and authors, a large illustrated work of near 600 pages by W. Golden Mortimer, M. D., under the title *Peru. History of Coca*, being of exceeding interest (451a).

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That coca was honored in their sacred ceremonies by the natives of the lands producing it, is evidenced by the following "recital" (451a), addressed to the sovereign:

Oh, mighty lord, son of the Sun and of the Incas, thy fathers, thou who knoweth of the bounties which have been granted thy people, let me recall the blessings of the divine Coca which thy privileged subjects are permitted to enjoy through thy progenitors, the sun, the moon, the earth, and the boundless hills.

A plant so regarded necessarily fell under the adverse criticism of the devoutly religious, early Spanish explorers, who naturally directed their efforts against everything that, in their opinion, constituted a part of heathen worship and diverted the natives from the true God. This is shown by the following quotation from Mortimer:

In 1569 the Spanish audience at Lima, composed of bishops from all parts of South America, denounced Coca because, as they asserted, it was a pernicious leaf, the chewing of which the Indians supposed gave them strength, and was hence: "*Un delusio del demonio.*"

In this connection the following quotation will indicate how distasteful are the methods of the natives, even yet, to those whose first duty consists in suppressing such ceremonies as are therein described:

When the period for departure (on a dangerous journey.—L.) actually arrives, the Indians throw Coca in the air, just as did the Incan priests of old, to propitiate the gods of the mountains, who, presumably, do not wish their domains invaded.

The native Indian use of coca was exhibited where it was necessary for men to make the most exhausting physical effort, as the Indian "runners" of the Andes, carrying with them a modicum of food or other burdens. A few coca leaves sufficed as a hunger pacifier, and upon this as a basis the runners underwent the most exhausting and exacting journeys. It was accepted by observing travelers that the leaves, being chewed, would yield an abundance of "vital strength." The endurance of people thus employing the drug is noted also by the Jesuit Father Blas Valera (656d) under the name *Cuca*. After observing the methods of the Jesuit explorers, he writes as follows:

It may be gathered how powerful the *Cuca* is in its effect on the laborer, from the fact that the Indians who use it become stronger and much more satisfied, and work all day without eating.

Notwithstanding all this, fortified by repeated experiences of travelers, the world of scientific medicine ignored, or even ridiculed, the drug, until its emphatic introduction in the latter part of the last century (about 1870, in England), forced those concerned in authoritative medicine to give it some recognition. Numerous experimentations on its composition had been made by Dr. Weddell, in 1850 (671), and others, succeeding as well as preceding that date, who tried vainly to discover an energetic constituent of the drug. It was at first believed that the leaves owed their inherent qualities (if they had any, which was questioned) to some volatile principle, a supposition that proved a fallacy, other than in the discovery of the volatile base named by them *hydrine*, which did not at all represent coca and which is no longer mentioned. However, the persistent reports concerning the use of coca

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and its reputed powers as an empirical substance that was creeping into the use of practicing physicians, led such chemists as Hesse, Niemann, Stanislas, Martin, Maisch, Lossin, Woehler, and many others, to repeated chemical examinations of the drug and its qualities, resulting in a number of products, such as coca-wax, coca-tannic acid, and even of several alkaloidal bases, including one named *cocaine*, this alkaloid being discovered in 1860 by Niemann, an assistant in the laboratory of Professor Woehler, of Göttingen, Germany.

But notwithstanding the identification, half a century ago, of its now well-known alkaloid, coca was long thereafter "authoritatively" considered as inert, or simply a mild stimulant, like tea. Its alleged properties were deemed legendary and imaginary, its alkaloid similar to caffeine, both in constitution and qualities. This view prevailed until Koller, in 1884, confounded the professional world, as well as that of science, by announcing the marvelous qualities of cocaine as a local anesthetic. In this connection we may further anticipate by saying that previous investigators of coca had already employed the physiological method of injecting the alkaloid cocaine into the veins of the lower animals, as well as the utilization of other scientific methods of determining its value, such "authoritative" investigations being accepted as conclusive evidence of the fact that coca, other than as a mild stimulant, like tea or coffee, was worthless and inert, and that its alkaloid, cocaine, was similar in effect to caffeine. Physicians using coca were thus becoming subjects of ridicule, as being incapable of judging a remedy's qualities; pharmacists making preparations of the drug were tinctured with the odium of being concerned in a fraud, while the natives who employed it in their daily life, as well as travelers impressed thereby, were regarded as being involved in ignorance and imbued with superstitious imaginings. Into these classes were thrust such men as Poeppig, von Tschudi, Scherzer, Stevenson, Weddell, Spruce, Markham, and others, scientists and travelers, who spoke from personal observation or experience. Although other pessimists contributed in the same direction, the most authoritative investigations to discredit coca appeared in the *London Lancet*, 1876 (196a), and in the *Edinburgh Medical Journal*, Vol. XIX, 1873 (55b), which may be summarized as follows:

G. F. Dowdeswell, B. A., of London, England, being conversant with the record of coca and much interested in the subject, determined to establish its position unquestionably, by personal experimentation in a scientific way. With this object, he made a careful study of the record of coca (196a) and its reputed action. He took pains to credit those who had previously made reports, describing in detail the processes of the native coca users, and including the experiments of Dr. Alexander Bennett, 1873 (55b), in which the physiological action of cocaine on frogs, mice, and rabbits gave no therapeutic promise of individual characteristic other than the suggestion that it paralleled caffeine, theine, and theobromine, the summary (Bennett) being as follows:

When we compare this cocaine with theine, caffeine, and guarana, we find that if it is not identical with these substances, it is intimately related to them in chemical composition; (p. 324).

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The investigator had not enough cocaine to give completely its action on temperature and the glandular secretions, but adds that (p. 235) (55b), as compared with caffeine, theine, and so forth, "in every other respect cocaine had similar action," thus giving it no quality of its own (55b).

Having reviewed the literature on coca (including Bennett's physiological investigations on cocaine), Dowdeswell first obtained specimens of the drug, of unquestioned quality. He then interested in his work such authorities as Ringer (who furnished instruments of "perfectly accurate results") and the conspicuous Professor Murrell, of University College. The preparations employed were made by the well-known English chemist Mr. Garrard, referred to by Dowdeswell as follows:

All of which were well prepared by Mr. Garrard, of University College Hospital, who has taken much interest in the subject, and who has also very successfully obtained the alkaloid and the volatile constituent of the leaf, and is still continuing an investigation of its pharmaceutical properties, for which his skillful preparations of other previously unknown alkaloids, as of jaborandi, eminently qualify him.

The preparations made by Garrard were not only such as paralleled the products of the native users of coca, but also included others, suggested by his own chemical and pharmaceutical knowledge. The experimentation considered, in detail, bodily conditions, rate of pulse, temperature, urine, urea excretion, etc., etc., as influenced by coca. Two detailed tables (p. 666) (196a), give the results, which, to the utter disparagement of coca, are summed up by Dowdeswell as follows:

It has not affected the pupil nor the state of the skin: it has caused neither drowsiness nor sleeplessness; assuredly it has occasioned none of those subjective effects so fervidly described and ascribed to it by others—not the slightest excitement, nor even the feeling of buoyancy and exhilaration which is experienced from mountain air, or a draught of spring water. This examination was commenced in the expectation that the drug would prove important and interesting physiologically, and perhaps valuable as a therapeutical agent. This expectation has been disappointed. Without asserting that it is positively inert, it is concluded from these experiments that its action is so slight as to preclude the idea of its having any value either therapeutically or popularly; and it is the belief of the writer, from observation upon the effect on the pulse, etc., of tea, milk-and-water, and even plain water, hot, tepid, and cold, that such things may, at slightly different temperatures, produce a more decided effect than even large doses of Coca, if taken at about the temperature of the body.

The result of the investigations of these eminent authorities, in connection with the physiological experimentations with cocaine, demonstrated to the satisfaction of the world of science and the professions that this drug was, at the very best, merely a something in the line of the caffeine-bearing stimulants, such as tea and coffee, and, next, that instead of being of any value whatever, or of possessing any inherent quality whatever, it was positively inert, having (196a)

an action so slight as to preclude the idea of its having any value, either therapeutically or popular;

that it has no greater effect on the pulse than

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tea, milk-and-water, or even plain water, hot, tepid, and cold;

that it

occasioned none of those subjective effects so fervidly described and ascribed to it by others—not the slightest excitement, nor even the feeling of buoyancy and exhilaration which is experienced from mountain air, or a draught of spring water.

To this may be added the similar results obtained by Professor Roberts Bartholow, M. D., to the effect that "it acts like theine and caffeine as an indirect nutrient," etc. (*Therapeutic Gazette*, July, 1880, p. 280) (564).

Just at that time the American "New Remedy Craze" of the 70's was at its height. Among the substances eulogized was coca, which had received thereby a position in the Prices Current of all the American manufacturing pharmaceutical establishments, as well as the eulogistic commendations of physicians in American medical prints.

Paralyzing to such as these were the adverse "authoritative" reports concerning the worthlessness and inertness of the drug (196a). All this, together with the variations in the quality of the commercial article (such variations in quality being confirmed later by Professor H. H. Rusby, M. D.), very much disturbed the talented, careful, and exceptionally conscientious chemist, the leading American manufacturing pharmacist of that date, Dr. Edward R. Squibb, of Brooklyn, N. Y. In the height of the commercial demand for coca he determined to sacrifice his commercial opportunities to his professional ideals, and to accept the provings of "scientific authority," by excluding all coca preparations from his pharmaceutical list, commending tea and coffee in their stead. He writes as follows in his *Ephemeris* (610a), July, 1884:

Almost every purchase (of the crude drug.—L.) has been made on mental protest, and he (Squibb) has been ashamed of every pound of the fluid extract sent out, from the knowledge that it was of poor quality; and there seems to be no more prospect of a supply of a better quality than there was this time last year, because so long as an inferior quality sells in such enormous quantities at good prices, the demands of trade are satisfied.

Under this condition of the markets, the writer has finally decided to give up making a fluid extract of Coca, and has left it off his list, adopting a fluid extract of tea instead, as a superior substitute, for those who may choose to use it, and regrets that this course was not taken a year ago.

Dr. Squibb, however, with even more than his usual carefulness and desire to extend professional courtesy to one and all, perhaps guided also by a latent questioning of the possibility of paralleling the action of a drug in abnormal conditions of the human being by a study of the action of that drug on the lower animals or even on a man in health, refers to the fact that "authorities are often in error or opposed in opinion," fortifying this statement in the following words:

Conflicting and contradictory testimony from competent authority is not uncommon in therapeutics, and the reasons for it are well recognized in the impossibility of an equality in the conditions and circumstances of the investigations, and hence the general decision commonly reached, is upon the principles of averages.

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And yet, the investigations of Dowdeswell seeming incontrovertible, Dr. Squibb adds as follows:

But there has been no observer on either side whose researches have been anything like so thorough, so extended or so accurate as those of Mr. Dowdeswell. Indeed, no other account has been met with, wherein the modern methods of precision have been applied to the question at all; the other testimony being all rather loose and indefinite, often at second or third hands, or from the narratives of more or less enthusiastic travelers. But if Mr. Dowdeswell's results be accepted as being conclusive, the annual consumption of 40,000,000 pounds of Coca, at a cost of \$10,000,000, promotes this substance to take rank among *the large economic blunders of the age*.

Now came the "irony of fate!" Scarcely had the ink dried in the publication (*Ephemeris*) aforementioned, recording Dr. Squibb's faith fore it was announced in a letter to Dr. Squibb, dated September 19, 1884, from Dr. Henry D. Noyes, a physician of New York then in the results of the investigations of Bennett and of Dowdeswell, be-Kreuznach, Germany (*Ephemeris*, Nov., 1884, p. 685), that a medical student named Koller, of Vienna, had discovered that a solution of hydrochlorate of cocaine was possessed of marvelous qualities as a local anesthetic.

This letter of Dr. Noyes was immediately given a setting, or reference was made thereto, in every pharmaceutical and medical journal of America. Such an authority as Dr. D. Agnew, of Philadelphia, wrote as follows in the *Medical Record*, October 18, 1884:

We have to-day (Oct. 18, 1884), used the agent in our clinic at the College of Physicians and Surgeons, with most astonishing and satisfactory results. If further use should prove to be equally satisfactory, we will be in possession of an agent for the prevention of suffering in ophthalmic operations of inestimable value.

Came also leading editorials in the various publications on medicine and pharmacy, of which that from the pen of the then editor of the *Druggists' Circular*, Mr. Henry B. Parsons, brother of the present editor of the *Practical Druggist*, is typical. From it we quote as follows:

For the past month American medical journals have fairly bristled with reports from various hospital surgeons, and it is pleasing to note that, on the whole, the claims first made for this remedy have been sustained. It seems to be proved that, in the majority of cases, the application to the eye of a few drops of a 2 or 4 per cent solution of this salt will produce a more or less complete, but transient, insensibility to pain, with enlargement of the pupil. Operations upon the conjunctiva and cornea ordinarily requiring the use of chloroform or ether have been performed upon patients conscious of everything being done, but saved from pain by the application of a weak aqueous solution of this salt. In several operations for removal of hard cataract, the patients complained of no pain whatever, the entire conjunctival surface being insensible to repeated pinchings with the surgeon's forceps. The only sensation described was that of "numbness and hardness." After a time the eye returns to its normal sensitiveness, and there seems to be no troublesome local after-effects.

Let it be observed that in the beginning cocaine was commended in operations on the cornea of the eye, its latest application in minor operations in surgery, dentistry, and elsewhere being at that time not even a theoretical possibility.

Turning his face to the future, and accepting the facts of the pres-

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ent, Dr. Squibb now threw all his efforts into a new investigation of coca and its alkaloid, his process of manufacture being yet a standard, and his writings on cocaine being yet authority. These need but be referred to as occupying many pages in the *Ephemeris*, 1884-5. They stand as a lasting memorial to the man who took pleasure in publicly correcting an error, and whose record in American pharmacy is monumental.

The discovery of the anesthetic qualities of coca marked the beginning of an epoch in medication whose story, in connection with the past, pleads irresistibly for tolerance of thought and action toward men who know that which they know by reason of personal experience and the art of empirical experimentation. Perhaps in no other instance has the almost hopeless cry for recognition of the facts developed by empiricism been more prominently illustrated than by the struggle of this drug. One of the greatest blessings to humanity, it was for nearly three centuries neglected by men of science and subjugated by professional prejudices. At last the eminent botanist and pharmacologist Henry H. Rusby, M.D., was led to undertake a journey to South America in behalf of science, coca being a dominant factor, in which enterprise the great pharmaceutical house of Parke, Davis & Co., of Detroit, who financed the expedition, deserves great credit. The result of Dr. Rusby's study is presented in *The Therapeutic Gazette* (564), 1886, pp. 14-18, and 1888, pp. 158-303, and it may be added that this exceptionally valuable treatise is at this date not less important than when written.

Needless is it to do more than refer to the marvelous reaction that followed Koller's discovery of the power of cocaine as a local anesthetic. A library would be required to shelve the works devoted, eulogistically, to the new discovery. A volume would scarcely print the names of the enthusiastic converts to cocaine, formerly so discredited, and the titles of their contributions.

Let us now do tardy justice to the prophetic words of the seer-like poet, who so often foresees that which others either neglect or do not appreciate. The poet Cowley, 1618-1667 (170a), in his *Book of Plants*, published in 1662, not only mentions coca, but sets forth that marvelous drug in terms that, neglected and discredited for nearly three centuries, need to-day no apology, as evidenced by the following translation:

Eulogy of Coca

From Cowley's *Book of Plants*,* V: 783-838.

Translated from the Latin by Margaret Stewart, M. A.

The vine departs; and all the deities of the old world applaud,
and with purpled hands seize the clusters. Bacchus, in jesting

*In this portion of the poem, Cowley describes a feast of the gods, including the deities of both the New and the Old Worlds. Venus presides, and Bacchus offers wine to Omelochilus, a South American deity. Pachamama (the "skin mother") is a leading deity of the Incas. The "Quitoita," "Vicugna," and "Paci" are tribes of Indians, now obscurely known. The translation is in most cases strictly literal, but in a few lines the sense requires a somewhat free rendering. Several editions of Cowley's "Sex Libri Plantarum" are on the shelves of the Lloyd Library. The one from which the translation is made was printed in London, 1678.—S.

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mood, brings a generous cup of wine, pressed from many grapes, to thee, Omelochilus. "Come, drink, comrade," he said. "If thou dost taste this wine, no other of the gods will be more fit than thou to tempt the crude appetites of the cannibals."

And Omelochilus, not accustomed to the acid Grecian wine, drinking it, rages in frantic wrath, and would doubtless repay the jest with blows, but fears the well known strength and courage of the European deity. Therefore (to be quits with his tormentor.—S.) he bids the fruits advance to strife less cruel. They all stand forth in beautiful array, displaying their various products, and like Amazons they advance, with pictured armor.

First in line, dishonored from lack of fruit,* stands Coca, a little tree, gleaming with slender stem. And Venus scoffs. "Truly, the race of American husbandmen have chosen with little judgment, coming into a contest as regards fertility with a dwarf eunuch as their leader." The gods shout with laughter. But Mother Pachamama rebukes the bold goddess, and defends her loved Coca. "How greatly dost thou err, Cytherea! Truly, the lustful fertility of lovers is alone known to thee. Here, thou art a bad judge. My realms, lacking sex, are an unknown country to thee. Beyond all others, everywhere, the land is fertile. This tree at which you scoff, is perennially fertile, and ever swells with unnumbered fruits. Do you still laugh? See how full of leaves it is! In every leaf it bears a fruit. Nor will these leaves yield in usefulness to any fruits from any tree. These, by the wonderful gift of Pacchamacus Virococha (who was moved to pity by the coming hardships of the land, reduced to poverty because of its too great wealth), remaining for a time in the mouth, the juice trickling thence continuously to the stomach, restore the weak, made languid by long continued hunger and lengthened toil, and give back vigor to the limbs and strength to the weak body, tottering under its burden, in a manner such as you, Bacchus and Ceres, deities both, could never do. The Quitoita, carrying three of these as supplies for their journey, will sometimes endure for twice three days, and feasting abundantly upon these, will traverse the dreadful Andes, a frightful land, situated among the highest clouds, the home of winds and rain and winter storm, and likewise thine, brave Coca, whom the warlike goddess Venus derides as an insignificant leader. Nor shalt thou be less esteemed for thy admirable qualities, illustrious Coca, than for thy services to mankind. The merchant fears not to seek thee here, to bear thee hence. Yearly he loads the groaning Vicugni and Paci in countless numbers with thy leaves, bringing a pleasing commerce to the wretched world."

Thus speaks the mother Pachamama, her skin painted with numberless figures, and with a nod she bids Hovia to advance, Hovia, bearing fruits stony and despised, but ranking next in value (to those of Coca.—S.) though of different kind.

*The shrub coca bears a creamy white flower, and a berry somewhat like a small cranberry, red when immature, but darkening to nearly black. Of this Cowley was evidently unaware.—S.

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COCCUS

The cochineal insect, *Pseudococcus cacti*, is native to Mexico and tropical America, where it feeds on certain species of cactus. These insects were thence imported into the Canary Islands, where they are raised in large numbers, as well as in the West Indies and other countries. They are sources of great profit to the Mexicans, who, so far as known, have always been acquainted with their quality of imparting a red color to confectionery and pastry, for which purpose (and as the source of carmine) they are still chiefly employed. In domestic medicine they have been commended in whooping cough and neuralgic affections, but have never been seriously considered by the medical profession.

COLCHICI CORMUS ET SEMEN

Colchicum (*Colchicum autumnale*) was known in very early days. Dioscorides (194) mentioning its poisonous properties. It was used as a rheumatic or gout remedy by the Arabians, as noted in the writings of Tragus (650), 1552, who warns his readers against its use in gout. It was employed empirically in these directions in domestic English medicine, but was, however, in disfavor with the medical profession, being called by them *Colchicum perniciosum*, and considered "very hurtfull to the stomacke." Wedel (672), in 1718, held colchicum in great disfavor, as indicated by the following quotation: "Velut in fame habitum et damnatum fuit colchicum, indignum habitum inter herbas medicas vel officinales."

Colchicum was mentioned in the London Pharmacopœia, second edition, 1618, and was given an occasional place in subsequent editions, but was altogether omitted in the editions between 1650 and 1788, after which, owing to the investigations of Störck (617), it was again given an authoritative place.

COLOCYNTHIS

The colocynth plant occupies the vast area extending from the west coast of Northern Africa (Senegambia, Morocco, and the Cape Verde Islands), eastward through the Sahara, Egypt, Arabia, Persia, Beluchistan, and through India, as far as the Coromandel Coast and Ceylon, touching northward the Mediterranean and Caspian Seas. At the Red Sea, near Kosseir, it occurs in immense quantities (239-240). It is also found here and there in Southern European countries, e. g., Spain and the islands of the Grecian archipelago. Isolated specimens occur in the Cape of Good Hope, Japan, Sicily (57), and it is suggested that birds of passage have much to do with the distribution of the seed. Even from our hemisphere we have recent reports of its successful cultivation on a small scale.

In the island of Cyprus the raising of colocynth has been a source of revenue since the fourteenth century, and it still forms an article of export at the present time.

Colocynth, as already stated, is a characteristic desert plant. Hooker and Ball (323a) met with it in the oasis of Sheshuaua in

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Morocco, and state that this characteristic plant of the desert region in North Africa rarely approaches the sea shore. The fruit is used in Morocco for the purpose of protecting woolen clothing from moths; but according to the testimony of these observers the purgative qualities of colocynth do not seem to be known to the native doctors.

Volkens (664a) enumerates *Citrullus colocynthis* (L.) Schrader, among the plants growing in the Egypto-Arabian deserts, pointing to its exceedingly rapid development, especially the fruit, which attains a diameter of ten centimeters. After the vine has withered away the fruits may be seen lying in the sand of the desert, ten to fifteen in number, about each plant. Volkens saw the plant in bloom in May as well as in December, and reports that when the plant is torn from the ground it withers in a short time, owing, he thinks, to the delicacy of the microscopical structure of the leaves.

A brief account of the growth of colocynth in Palestine by E. S. Wallace has more recently appeared in the United States consular reports (1895), from which we abstract the following points of interest: The fruit grows abundantly between the mountains of Palestine and the eastern shore of the Mediterranean, from the city of Gaza northward to Mount Carmel. The plant thrives without any attention whatever on the part of the husbandman, since the climate and soil are all-sufficient for its perfect growth—the natural requirements being merely a sandy soil, warm climate, and little moisture. The fruit which is known in commerce as the Turkish colocynth is collected by the native peasants (fellaheen) in July and August, before it is quite ripe, and is sold to Jaffa dealers, who peel it and dry the pulp in the sun. It is then molded into irregular small balls, packed in boxes and exported, mostly via England. The average annual shipments are stated in the consular reports to be ten thousand pounds, but these must have fallen off considerably during recent years. The reason for this, as we learn from another source, lies undoubtedly in the export tax. The report suggests that probably colocynth may be profitably cultivated in certain parts of the United States.

In this connection we may point to Prof. L. E. Sayre's paper (Am. Journ. Pharm., 1894, p. 273) on American colocynth, and the cultivation of colocynth in Montreal as reported in 1895 by Prof. T. D. Reed (Montreal Pharm. Journ., 1896, p. 334).

The drug is imported from Spain, Trieste, Smyrna, Mogador, and elsewhere (501).

CONIUM

Conium maculatum is native to Asia Minor and the islands of the Mediterranean. It has been naturalized in North and South America and throughout England and other similar locations. It was known to the Greeks, who are said to have used it to execute criminals. It was long known under the name *Cicuta*, but to avoid confusion with *Cicuta virosa*, Linnæus (385) in 1737 restored its classical name, *Conium maculatum*, or poison hemlock, the word hemlock being Saxon, meaning *leek of the border, or shore*. Störck (617), of Vienna, in 1760,

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introduced Conium into regular medicine. Tradition has it that the decoction of this plant was the *φάρμακον* drunk by Socrates (334).

CONVALLARIA

Lily of the Valley, *Convallaria majalis*, is recorded as one of the earliest of domestic remedies, being accepted by Dr. Squibb (610a) as "continuously used in medicine for several hundred years (*Ephemeris*, January, 1884). In *The British Medical Journal*, November, 1883, Dr. Edward Drummond, of Rome, states that in a book of *Commentaries on the Materia Medica of Dioscorides*, Venice, 1621, Dr. Pietro Andrea Matthioli (414) speaks as follows of its use in cardiac diseases:

The Germans use lily of the valley to strengthen the heart, the brain, and the spiritual parts, and also give it in palpitation, vertigo, epilepsy, and apoplexy, etc.

This article led Dr. Squibb, in connection with some private information in a letter from "a very careful and close observer" (Squibb), to favor the drug as a hopeful remedy that in specific and restricted directions would be better employed than digitalis. To such an extent was he impressed in its favor as to lead him to write (1879):

It is to be hoped that the revision committee will recognize it in the forthcoming issue of the U. S. Pharmacopœia.

The commendations of Dr. Squibb were probably instrumental in obtaining for convallaria this honor, for in 1900 it obtained official recognition.

In Russia convallaria was investigated by the medical profession as early as 1880, having long before been used in dropsy by the people. About 1883, as already stated, it became fashionable elsewhere, being generally commended as a substitute for digitalis in certain specific directions.

A study of the chemistry of the drug antedated "authority" in medicine, for in 1858 G. F. Walz published an analysis in the *N. Jahrbuch f. Pharm.*, describing two "most important constituents," viz., *convallarin* and *convallamarin*. He states that his experiments were made long before their publication. It is to be seen that the empirical use of convallaria unquestionably prevailed centuries before its exploitation as a "fashionable" remedy by the licensed profession of medicine (1883), the chemist also anticipating its probable employment in orthodox therapy.

COPAIBA (COPAIFERA OFFICINALIS*)

Copaiba (popularly known as balsam of copaiba) is obtained from South America, principally from Brazil and Venezuela, being produced by numerous species of the genus *copaifera*. This genus belongs to

* ON THE SPELLING OF THE NAME COPAIFERA LANGSDORFFII.

FROM A LETTER BY CHARLES RICE, NEW YORK, TO JOHN URI LLOYD.

I can not refer to Desfontaines' original (*Mem. Mus. Paris*, VII. (1821), 377), but to judge from the Kew Index and some other authorities, Desfontaines spelled the species name *Lansdorffii*. And from Desfontaines the mistake passed into many succeeding

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the suborder of *caesalpinieæ*, of the vast order of *leguminosæ*, and differs from the ordinary type of the order, as we usually know it, in having more regular flowers (*papilionaceous*), resembling in this respect our honey-locust (*gleditschia triacanthos*) and coffee-nut (*gymnocladus*) tree.

The various species of *copaifera* which grow in tropical America are usually small trees (sometimes shrubs).

Flueckiger traced the record of what is probably the first printed statement regarding a resiniferous tree other than the pine, dating back to the last decade of the fifteenth century. He quotes from Michael Herr, "Die Neue Welt der Landschaften und Insulen," Strassburg, 1534, which contains a report made by Petrus Martyr of Angiera to Pope Leo X, wherein this tree is mentioned under the name *copei*.

The next available record dates from a publication of the year 1625, wherein a Portuguese monk, probably Manoel Tristaon (651a), of the convent of Bahia contributes an extensive chapter on Brazil and its products. On page 1308, immediately following the description of *Cabueriba* (or Peru balsam tree) he says: "Cupayba. For wounds. Cuypaba is a fig tree, commonly very high, strait and big; it hath much oile, within; for to get it they cut the tree in the midst, where it hath the vent, and there it hath this oil in so great abundance that some of them doe yield a quarterne of oile and more; it is very clear of the color of oile; it is much set by for wounds, and taketh away all the skarre. It serveth also for lights and burne well; the beasts knowing the vertue thereof doe come and rubbe themselves thereat. There are great store, the wood is good for nothing."

The first explicit description and illustration of one of the trees yielding *copaiba* is to be found in the joint work of Piso and Marcgrav (511) (1648), whose statements form the basis of the subsequent literature on the subject. In this connection it appears rather remarkable that the *Pharmacopœia Amstelodamensis*, sixth edition, which antedates this publication, being of the year 1630, distinctly mentions *Balsam copae yvae*. Some of the statements of Piso and Marcgrav have given rise to discussion; the fact that Piso figured and described the flowers with five sepals, whereas they are now known to bear only four, being one of the points. The pod, however, is figured and described correctly, and the statement is made that it contains an edible nut, which the monkeys of the forest are very fond of eating. As regards the mode of collecting the balsam, Piso relates that an incision

books. Even Bentley and Trimen took up the mistake, particularly emphasizing that Langsdorff is wrong. The mistake was pointed out long ago in the *Pharmaceutical Journal*, IX (1879), 773, and also by Flueckiger in *Pharmacographia* (see 2d ed., p. 228, footnote).

Some of the botanical authors who happened to know better corrected the mistake without making any remarks. Thus, for instance, Baillon has it right in all his works, for example, in *Histoire des Plantes*, II, 163; also, Rosenthal in his *Synopsis Plantarum Diaphoricarum*, p. 1046, etc. They write *Langsdorffii* (with g and two f's).

George Heinrich, Freiherr von Langsdorff, was born on April 18, 1773, at Woellstein in Rhenish Hesse, studied medicine in Goettingen, then went to Portugal, where he remained from 1797 to 1803. He then participated in Krusenstern's Russian exploring expedition, after which he became Russian chargé d'affaires in Brazil. In 1831 he returned to Germany and died at Freiburg in the Breisgau on June 29, 1852. He wrote an account of Krusenstern's expedition, under the title, "Bemerkungen auf einer Reise um die Welt," 2 vols. Frankfurt o. M., 1812.

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is made through the bark deep into the pith, at the season of the full moon, which causes such an abundant flow of fatty and oily liquid that twelve pounds may exude in three hours. In case no oil should appear, the opening is at once closed with wax or clay, and after two weeks the yield is sufficient to make up for the delay. The fact that the resiniferous ducts in these trees often attain a diameter of one inch, as has been observed more recently by Karsten, seems to be quite in harmony with the statement regarding the abundant yield. It is also related that frequently the balsam accumulates in these ducts and exerts pressure enough upon the enclosing wall to burst the tree with a loud report. According to Piso, the copaiba tree is not very frequent in the Province of Pernambuco, but thrives luxuriantly in the Island of Maranhao, which, he says, furnishes the balsam of commerce in great quantity. He also enumerates the many medicinal virtues of the balsam, making the curious statement that its healing virtues are also experienced as an efficient means to check the flow of blood in the Jewish practice of circumcision.

Labat (365) reports that in 1696 he had an opportunity to observe for the first time the tree yielding copaiba in the Island of Guadeloupe. He relates in detail the manner of collecting the balsam, which he calls huile de copau. The vessels in which the balsam is collected are made of the fruit of the calabash, a kind of gourd. The collection, he states, takes place about three months after the rainy season; that is, in March for the countries north of the equator, and in September for the countries south of this line. The balsam, he states, closes all kinds of wounds except those inflicted by gunshot. He declares it to be a powerful febrifuge, having been used with almost marvelous effect in the fever epidemics at Rennes and Nantes in 1719.

Nic. Jos. Jacquin (338a), a noted Viennese botanist who traveled in the West Indies in Linnæus's time, first observed the tree yielding copaiba in cultivation in the village of Le Carbet at Martinique, and subsequently (1760 and 1765) described it under the name of *copaiva officinalis*. He states that this tree was indigenous to the continent, where it grows frequently around the town of Tolu near Carthagena promiscuously among trees yielding balsams of Tolu and Peru. Jacquin described the flowers of this tree as having four petals, and the calyx as being nonexistent; yet he considers it identical with that of Piso and Marcgrav, which is, however, emphatically denied by De Tussac (656a) in *Dictionnaire des Sciences Naturelles*.

Linnæus (385), in 1762, gave Jacquin's plant the name *Copaifera officinalis*.

Until 1821 it was generally believed that *copaifera officinalis* was the only tree yielding copaiba; in this year, however, Desfontaines (189a) added two new species, *C. guianensis* and *C. Langsdorffii*. At the same time Desfontaines changed the name of *C. officinalis* to *C. Jacquinii*, in honor of its discoverer. The fact that Jacquin's plant was foreign to Brazil and yielded a balsam of inferior quality would indicate that it could not well have been the official balsam tree, while by reason of the publication of Piso's account Brazil had been generally considered the geographical source of the official balsam. However,

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the name *C. officinalis*, Linn., has subsequently been upheld, although the official copaiba balsam is now considered as being mainly derived from *C. Langsdorffii*, the species named by Desfontaines in 1821 in honor of Mr. Langsdorff, the Russian consul general at Rio Janeiro, from whom the specimens were obtained. This name was erroneously spelled "Lansdorffii" by Bentley and Trimen (57), who thus perpetuated what was undoubtedly an error of print in Desfontaines' original memoir. Soon thereafter the recorded species of copaiba increased rapidly. In 1826 Hayne (305a) (*Arznei-Gewächse*) published and described sixteen different species, which, however, all bear resemblances, their distinctive features residing mainly in the form and the arrangement of the leaves. Hayne especially endeavors to place the species made known by Piso, the difficulty being that this ancient work stated that the wood is colored as if with minium. The only species that, in the opinion of Hayne, would answer that description is *C. bijuga*, the wood of the branches of which is pale-red, which color may appear as red in the trunk of the tree. Hayne also states that copaiba is gathered from all species known to the natives, and concludes that most of the balsam is yielded by *C. multijuga* in the province of Para, a species, however, which is now questioned.

According to Flueckiger (239, 240), the following species are the principal sources of the copaiba of commerce:

1. *Copaifera officinalis*, L. (Guiana, Venezuela, Colombia, Trinidad).
2. *Copaifera guianensis*, Desf. (Lower Amazon, lower Rio Negro, Cayenne, Surinam).
3. *C. coriacea*, Martius (Bahia and Piahy).
4. *C. Langsdorffii*, Desf. (Continental provinces of Brazil).

The number of known species has steadily increased until now the Index Kewensis recognizes twenty-three American and five African species.

The copaiba obtained from the vast territory of the Brazilian continent, along the Amazon and its tributaries, is collected in the shipping port of Para. Maranhao Island is also a place of export. Other shipping ports are Maracaibo and Angustura in Venezuela, Trinidad, Demerara (British Guiana), Cartagena (Colombia), and Rio de Janeiro.

CORIANDRUM

Coriandrum sativum is indigenous to the regions of the Mediterranean and the Caucasus, from which it has spread throughout the temperate parts of the whole world, even to the Americas. It was mentioned by early Sanscrit writers and in the Mosaic books, Exodus and Numbers, and occurs in the famous Egyptian papyrus Ebers (213). Its fruit was used by the Jews and the Romans as a medicine, as well as a spice, in very early days. Cato (132) notes its cultivation; Pliny (514) states that it was obtained in very fine quality in Egypt, and it is frequently mentioned in the book of Apicius Coelius (24), about the third century A. D. It is also included in the list of valuable products of Charlemagne.

PHARMACOPŒIAL VEGETABLE DRUGS.

CROTON TIGLIUM

The genus *croton*, established by Linnæus in 1737, is extensive, 625 species being recognized in the *Index Kewensis*. We have a number of herbaceous species in this country, but none of any economic importance. The croton plant is a native of India and is grown all through the East Indies. It is a small tree fifteen to twenty feet high.

Croton tiglium is considered indigenous to Malabar, Ceylon, Amboina (of the Molucca Islands), the Philippines, and Java. Joannes Scott (588a), in his dissertation on the medicinal plants of Ceylon (Edinburgh, 1819), states that the seeds of *Croton tiglium* under the name of "gayapala" are a most powerful purgative, and also that the leaves are very acrid, causing an intolerable burning in the mouth and throat.

Dr. Irvine, in 1848, gave a short account of the materia medica of Patna (part of the province of Bengal) mentioning "jamalgoota," which he stated is derived from *croton tiglium* and several other species of croton. The croton seeds furnish a violent purge and are made into pills with ginger and "kutkaranja or kath karanja seeds," which he explains are known as bonduc nut (the febrifuge seed of *caesalpinia bonducella*, or nicker tree).

More recently, Mr. O. Weynton (682) calls attention to the occurrence of *croton tiglium* in all parts of the fertile and wealthy province of Assam, especially in the dry districts. He states that the demand for the drug is small and that the plant has a tendency to spread. Hence efforts are being made to restrict the growth and keep it within certain bounds.

The ancient Hindu physicians were not acquainted with the drug, which seems to have originated in China, from whence at an early day the seeds were also introduced into Persia (where they are now called *dand*), by way of the caravan routes of Central Asia. Subsequently the Arabs derived their knowledge of the seeds from the Persians, their name, *hab-el-kathai* (Cathay seeds), being in turn suggestive of the Chinese origin (209). Some of the vernacular Indian names, according to Dymock, seem to indicate that the plant reached India through the Himalayan province of Nepal (209).

The drug was imported into Europe by the Dutch during the sixteenth century. The first account of the *croton tiglium* plant in European literature, however, must be credited to the Portuguese physician Christoval Acosta, who in 1578 described the wood as *lignum pavanæ* (or *L. panavæ* or *L. moluccense*), and the seeds as *pini nuclei moluccani* (3). The prominent writings of Rheede (1678), who gives the Malayan name *cadel avanacu* (547), Ray (1688) and others subsequently, gave the drug due consideration, while C. Bauhinus (1671) differentiated between several synonyms of the seeds and woods that were then in use. To Caspar Commelyn (1667-1731) is attributed the first use of the name *cataputiæ minores* for the seeds, while the well-known synonym *grana tiglii* is also stated to have been originated in his time. And yet this author's work on the *Flora Malabarica* (1696)

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does not record the first term, although the name *grana tiglii* is therein accredited to Samuel Dale's *Pharmacologia*, (the first edition of which appeared in 1693) (179).

As regards the use of the oil derived from the seeds, E. von Hirschheydt, in the exhaustive historical introduction to his dissertation (318a), mentions that Peter Borellus, a French physician (1620-1689), in 1657 lauds the cathartic virtues of the oil which in as small an amount as two drops caused purging even when merely rubbed into the skin. Similar mention of its virtues is made by Rumphius (*Herbarium Amboinense*, 1750). Geoffroy (260) in his *Materia Medica* (1756) reports that the natives of India use this oil to make what they call the royal purging apple (*poma cathartica*), the mere odor of which is said to purge persons of delicate constitution. The directions for making this potent "apple" are as follows:

Macerate an orange or lemon in oil of tilli (croton oil) for one month. Remove it, hold to the nostrils and inhale the breath; soon afterwards the bowels will move.

About 1750, Cohausen, according to several authorities, employed the oil with success in cases of tenia.

Although during the seventeenth and eighteenth centuries the remedy had been frequently used, it seems that toward the end of the eighteenth century it fell into oblivion, probably on account of the dangers attending its administration. However, its use was revived when in 1812 several English physicians, among them Drs. White and Marshall, observed the action of the seed in medical practice in India, and brought the drug again to the notice of the profession in Europe (209). Ainslie in 1813, and Conwell in 1819, by their publications gave it further prominence. In connection with its reintroduction we note the interesting fact that a Mr. Short then brought the drug to Europe and was so fortunate as to secure the right (license) to its exclusive sale in England. That it at once became an important drug is shown by the attention then given it in medical literature. An extensive list of references to the literature on *croton tiglium* covering the period from 1820 to 1835 alone, may be found in Hirschheydt's dissertation (318a). According to the latter authority (1890) the seeds and the oil are seldom used in Europe other than in veterinary practice, as he states, on account of the uncontrollable influence exerted by the presence of the powerfully toxic ricin (an albuminoid body) in the oil.

As already stated, the genus *croton* was established by Linnaeus in 1737, the name being adopted from the Greek synonym for *ricinus communis*, the seeds of which, as also those of *croton tiglium*, have a resemblance to a tick (dog-tick, *kroton* in Greek). As to the origin of the term *tiglium*, some authorities ascribe it to the Moluccan island of Tilho, while others (696) believe it to be derived (by Dale?) from the Greek word *tillos*, meaning diarrhea. The botanical and vernacular synonyms antedating the name given by Linnaeus are numerous and are generally carried by the older botanico-medical works, e. g. by Dale (179), Bauhinus (47) and others. The post-Linnaean synonyms recorded in the *Index Kewensis* are rarely if ever seen in pharmaceutical print and may well be reproduced. They are as follows:

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- (1) *C. acutus*, Thunberg, 1784.
- (2) *C. jamalgota*, Hamilton, 1825.
- (3) *C. pavana*, Hamilton, 1825.
- (4) *Kurkas tiglium*, Rafinesque (*Sylva Tellur.*), 1838.
- (5) *Halecus verus*, Raf., 1838.
- (6) *Tiglium officinale*, Klotzsch, 1843.
- (7) *Croton muricatus*, Blanco, 1845.
- (8) *Anisophyllum acutifolium*, Bouv., 1860-61.

CUBEBA

Cubeb (Piper cubeba) is the berry of a shrub indigenous to Java, Southern Borneo, and Sumatra. Masudi (413) in the tenth century refers to cubeb as a product of Java. Edrisi (221), 1153, mentions the berries as among the imports of Aden. That they were known in Europe as early as the eleventh century is evident from the writings of Constantius Africanus (165), of Salerno, while Abbatisa Hildegard (316) of Germany mentions them in the thirteenth century, at which time they had become an article of European trade. They were sold in England in 1284, and at that time, or thereabout, were known to European countries generally. The price in 1596 was equal to that of opium or of amber. Cubeb berries were introduced into medicine by the Arabs of the Middle Ages.

CUSSO

The couso tree (*Hagenia abyssinica*) is native to Abyssinia, where it is generally planted about the villages on the high tablelands, from 3,000 to 8,000 feet above the sea level. Bruce (105) observed its uses, 1768-1773, during his expedition to discover the sources of the Nile, and Willdenow (385), 1799, described it under the name *Hagenia*. Its use as a vermifuge was derived from Abyssinian domestic practice, the decoction being used for this purpose. In early European record an extraordinarily high price was asked for this substance. It was introduced in 1850 by a Frenchman, who demanded in the neighborhood of \$9 per ounce. This led to its importation in quantities, when the value soon fell to a normal standard.

CYPRIPEDIUM

Lady's slipper (*Cypripedium pubescens*) is found in several varieties throughout the United States, where it is indigenous to rich woods and meadows. It has been valued as a domestic remedy and was once a home favorite in the form of a decoction for nervous conditions of women and children. It was thus utilized by the early settlers as a substitute for valerian, which fact gave it the name *American valerian*. Creeping thus into domestic therapeutic use, it naturally received the care and attention of the "Indian doctors," and came gradually to the attention of the medical profession. To give the references necessary to its American record would cite all the domestic writers on American medicine of the nineteenth century as well as such authorities as King, Wood & Bache, etc.