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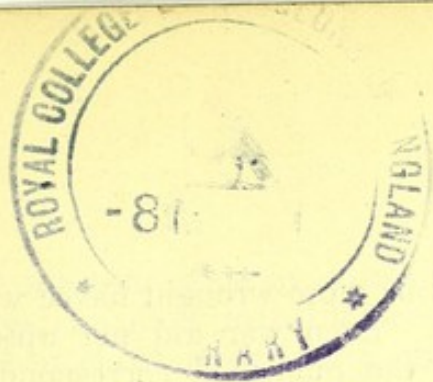
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18.

SOME AMERICAN MEDICAL BOTANISTS *

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BALTIMORE

One of the first reuniting links between England and the Pilgrim Fathers was a floral one. Confronted at the outset with epidemics incidental to acclimatization and poor sanitation, the few doctors in America eagerly scanned the ponderous herbals they had brought over and searched the country in hopes of finding the well-known febrifuges and other remedies they had used in the old country. Ship's captains were given letters to friends asking for plants and seeds required, but these, too, received after interminable delays, had to become acclimatized. In searching for remedies many new and wonderful plants were discovered and sent as specimens or exchanges to the great European botanists, arousing their eager interest in the new country and a great desire to have such plants in the botanic gardens then flourishing.

Boerhaave at Leyden was in the habit of making large exchanges, and Dr. Fothergill, who sent us the anatomic pictures for the University of Pennsylvania, now in the museum of the Pennsylvania Hospital, had 4,000 plants in his botanical garden near London. Dr. John Mitchell, who came over to Virginia in 1700, sent plants to Linnæus and to Bartram, and in 1763 refers to the white double daffodil brought over by the first settlers. American oaks planted centuries ago still flourish in England, while wistaria and "Virginia creeper" still climb over the walls of hundreds of houses in foggy London. Sponsoria! compliments abounded in floral godchildren such as the *Mitchella*, *Gardenia* and *Bigelowia*, which were as tenderly reared in Europe as were the *Boerhaavia*, *Meadia* and *Lettsomia* in America. There were anxious periods of waiting; for a voyage of

* The substance of an address before the Medical-Historical Society of Chicago, 1910.

seventy days or more wrought havoc with plants, insects and reptiles. Even war did not upset botanical sympathies and the published correspondence in times of warfare and Indian raid shows chiefly anxiety lest, a ship being captured by the enemy, seeds and plants should be thrown overboard. Michaux, the great botanist, speaks of the French Revolution (1789) merely as a hindrance to his gathering specimens from abroad. John Bartram, in 1763, laments that a government scheme of exploring Louisiana cannot be carried out because the scientists would be exposed to "the greatest savage cruelty of the gun, tomahawk and torture" by the Indians. He did venture once with a guide, but says, "An Indian met me and pulled off my hat in a great passion and chawed it all around to shew me how he would eat me if I came again."

There was sometimes, however, bloodless warfare in the botanical camp in disputation over the alleged medicinal merits of certain plants. Lawrence van der Veer of New Jersey (about 1796), cures 400 hydrophobia patients with the *Scutellaria lateriflora*. Dr. Lyman Spalding first praises it, then later wishes "to be stricken from the list of believers," while Barton of Philadelphia condemns him for believing in it at all. Dr. John Tennant, an enthusiastic botanist of Virginia, swears against all disputants by Seneca snakeroot for pleurisy; the experimenter and botanist, Dr. Samuel Thomson, later uses *Lobelia inflata* in his "Thomsonian System" for nearly every evil, and creates endless opposition. But the search for remedies was keen in days when malaria and dysentery ravaged whole towns and paralyzed industry.

Of the young British doctors who came over here, John Mitchell was the earliest. This botanist, the date of whose birth is uncertain, as there were several scholarly John Mitchells of that time, was born, educated and took his M.D. in England. He came to America about 1700 and lived in Virginia at Urbana on the Rappahannock. The climate and people must have pleased him for he stayed about forty-seven years, interested in everything scientific, especially in botany, making long excursions to gather plants. He wrote also on electricity, yellow fever and politics, and published a map of the British and French dominions in America which is said to "mark an era in the geography of North America." Like most doctors and scientists of that

time, he kept his interests wide by corresponding with European confrères, especially with Linnæus, who named the partridge vine or checkerberry after him (*Mitchella repens*).

Every fresh plant seems to have been sent by the American botanists to Linnæus, their acknowledged head, in Sweden, and the great botanist always most courteously thanked his friends and oftentimes pupils for remembering him.

Mitchell returned to London about 1747 and became an F. R. S., the fruits of his literary solitude in America being given to the Royal Society in several addresses, among them one on "The Preparation and Use of Various Kinds of Potash," and one on "The Force of Electrical Cohesion." His chief botanical work was "Dissertatio Brevis de Principiis Botanicorum Nova Plantarum Genera." His biographers simply state that "he died in March, 1768." Where he was buried, no one knows and few even know that he is immortalized in the sweet, lowly little *Mitchella repens*.

Like Mitchell, John Clayton was born and educated in England and came over to America to join his father, the Governor-General of Virginia, about five years after Mitchell came here. He had, too, a similar compliment from Linnæus in having one of our most delicate, graceful, much-loved little flowers, the spring beauty, called after him *Claytonia virginica*.

Whether Clayton was a graduate physician or not, he practiced as one, but it is only as a botanist that any record of his work survives. He kept a noted botanical garden and published a work of two volumes on botany, and made a collection of dried plants, a "Hortus Siccus," of folio size, with marginal notes and directions to the engraver in preparing the plates for the proposed work. These were left in the charge of the county clerk of New Kent and were unfortunately burned, together with the county records at the beginning of the Revolution.

His long life was chiefly spent in botanical exploration and in the description of the plants of the colony. As a practical worker, he was without any superior in his day, and is credited with having added more species to the catalogue of plants than any one before him.

Numerous articles descriptive of the plants he discovered were published in the *Philosophical Transactions of the Royal Society of London*. Several of these treated

of medicinal plants, others of the species of tobacco and their cultivation. His chief work was his "*Flora Virginica*," editions of which were issued from the press at Leyden in 1739, 1743 and 1782, which is referred to by all writers on North American plants.

When over 70 he made a botanical exploring tour of Orange County, Virginia, then largely a wilderness, and he is said to have visited almost every part of the colony in botanical research.

This old naturalist was a pious member of the Church of England. It was impossible, he declared, that a botanist could be an atheist, seeing, as he did, the infinite wisdom and skill displayed in the smallest plant. A scientist of world-wide reputation and a citizen of sterling integrity, after a long and useful life, he passed away Dec. 15, 1773.

The third link in the botanic chain was another young doctor from Britain, "a truly great philosopher and a very great and ingenious botanist," who came to be lieutenant-governor of New York. He was the son of the Rev. Alexander Colden, minister in Dunse, Scotland, and was born Feb. 17, 1688; he was educated at and took his M.D. from Edinburgh University. Attracted by the fame of William Penn's colony, he came over to America and practiced in Pennsylvania for seven years, and then returned to England.

While Colden was in London, Dr. Edmund Hally was so pleased with a paper of his on "Animal Secretions" that he read it before the Royal Society and introduced the writer to many learned men—Lettsom, Fothergill and others—who became Colden's intimate friends.

From London he made a short visit to Scotland, long enough, however, to get him a wife, Miss Christie; then he returned to Pennsylvania and became a public character, holding in succession the offices of surveyor-general, master in chancery and lieutenant-governor.

He devoted all the time spared from official duties to his well-beloved study of botany, maintaining withal "with great punctuality" a correspondence with learned friends, such as Linnaeus, Gronovius, Fothergill, Darwin, Collinson, Franklin, Bard and Garden, delighting to write to Franklin about electricity, and suggesting, according to Franklin, the idea and plan of the American Philosophical Society.

The Linnaean system was introduced by Colden into America only a few months after its publication in

Europe. To the author himself Colden sent a description of some three or four hundred American plants and Linnæus gracefully acknowledged the gift by publishing the record in his "*Acta Upsaliensa*," and by giving the name *Coldenia* to a genus of boraginaceous herbs of the tribe *Ehreticæ*, though a prettier version is that Miss Jane Colden sent him a specimen and he named it after her, a compliment he was fond of paying ladies. The same Miss Jane taught our Dr. Samuel Bard to love botany when as a boy he stayed with her, an obligation to which he gratefully refers. Lady Ann Monson found in *Monsonia* the same perpetuation that was given to Miss Colden in *Coldenia*.

Colden made up his mind in 1775 that the stamped paper made necessary by Grenville's Stamp Act should be used, but the official distributor of stamps refused to receive it, so Colden, sympathizing with the English, went off to Fort George with a garrison of marines. When the New York populace protested, he ordered the marines to fire. They would not, and the people seized Colden's carriages and burnt them along with effigies of Colden and the devil. The following year brought the Declaration of Independence, but Colden had already retired to a large grant of land called Coldenham, near Newburgh, where he wholly gave himself to science, especially to botany and mathematics. Here he wrote, in 1774, his "*Plantæ Coldenhamæ*," the earliest treatise on the botany of New York. His home was a rendezvous for all learned men; his greatest pleasure was to receive them there. On Sept. 28, 1776, he died, leaving a son distinguished as a mathematician and a philosopher.

Two of our greatest pioneer botanists, John Bartram and Humphrey Marshall, of North England stock, were not physicians. They had settled in Pennsylvania and were most enthusiastic, genial friends with all the European botanists and intimate with our own men, Colden among them.

It is Humphrey Marshall's son, Moses, a physician, who next claims our attention. The fame of this expert medical botanist has been somewhat eclipsed by that of his uncle Humphrey, of whom Darlington left studious and loving record in his "*Memorials of Bartram and Marshall*," but Moses made several long exploring journeys through the wilds of the West and rendered valuable assistance to his uncle in preparing the "*Arbustum Americanum*."

He was the son, as I have said, of James and Sarah Marshall, and the grandson of Abram Marshall, who came to Delaware in 1697 from Gratton, Derbyshire, England. He studied medicine under Dr. Nicholas Way of Wilmington, but never held a medical degree, none being required at that time for practicing in Pennsylvania; but, as it was customary to attend a course of lectures, he went to those by Shippen and Rush in Philadelphia.

His diary at this time shows that medicine did not wholly absorb his attention, for frequent mention is made of a certain Polly Howell and a Sally Samson, the latter "behaving for three evenings, especially the last, in a most engaging manner."

Then followed a year or two employed in desultory medical work, including inoculations round about Londongrove, Pennsylvania, and in keeping an apothecary's shop "which came to nothing and less." The truth was that he had not found his true vocation—botanizing. His uncle writes to Franklin in 1785, and Moses himself to Dr. Lettsom in London, suggesting a government-supported exploration of the Western States. In 1786, Sir Joseph Banks wrote to Humphrey Marshall asking for one hundredweight of fresh ginseng roots. Moses spent twenty days in the Alleghanies getting these and charged Lettsom \$1.25 a pound. Lettsom and he seem to have carried on a brisk correspondence, especially concerning the *Talinum teretifolium*, hitherto undescribed by botanists. He sends Lettsom three tortoises and some plants, one of which, a polygala, is thus mentioned in a letter.

"Should this prove to be a new genus, I have designed the appellation of Lettsomia, with this provision, that it might not be displeasing to thee, and that in the interim I should not be able to discover a plant more exalted, conspicuous and worthy."

He also asks for "a surgeon's pouch of instruments" to be sent him, and Lettsom hastens to acknowledge the compliment of a floral godchild and encloses 10 pounds in case Moses should be out of pocket for seeds asked for. A plant was also named *Marshallia* after Moses, which many authorities have claimed for his uncle. Two letters of 1792 have recently come to light which settle the question. Muhlenberg, the correspondent, was himself a leading Philadelphia botanist.

Dear Sir:—I beg leave to inform you that the new edition of the "*Genera Linnæi*" is safely arrived. I am happy to see that the editor, my friend, Dr. Schreber, has done what I requested of him. He has given your name to a hitherto undescribed plant that belongs to the *Syngensia*, which he names the *Marshallia*. Give my best respects to your uncle, Mr. Humphrey Marshall, and believe me with great esteem, sir,

Your humble servant,

HENRY MUHLENBERG.

In the collection of the Marshall papers in the possession of Gilbert Cope there is the following copy of the reply to this note in the handwriting of Dr. Marshall:

WEST BRADFORD, April 13, 1792.

Reverend Sir:—I have just received yours of the 9th inst., and am much pleased to hear of the arrival of the "*Genera Plantarum*." I am very sensible of the honor done me, through your request, by Dr. Schreber, and think myself but too undeserving. I shall be pleased in your calling on your intended journey, and hope you will consider my uncle's house as a welcome stage. I am, with all due respect,

Your much obliged friend,

MOSES MARSHALL.

Marshall's letters speak of many long trips which meant fatigue, danger and expense. His appointment as justice of the peace curtailed excursions, but he continued exchanging specimens and seeds with European confrères. About 1797 he married Alice Pennock and had six children. After his uncle's death, there is not much told of his scientific work, and he died Oct. 13, 1813, leaving behind a friend whom I now introduce:

Alexander Garden was the greatest friend of Marshall Senior. He had followed in the wake of many English doctors and scientists eager to drink in all that London and Edinburgh and European doctors could teach them.

Travel fever had laid strong hold in 1750 on this Scotch lad in Aberdeen, who was destined to be a botanist in America. Born about 1728, a son of the Rev. Alexander Garden of Aberdeen, he not only came to the United States but stayed thirty years, yet not one in a thousand, either here or in England, knows after whom the genus *Gardenia* was named.

His medical education was obtained with the celebrated Dr. John Gregory in Edinburgh and at Aberdeen University. He arrived in South Carolina about 1750 and settled down to practice with a Dr. Rose in Prince

William parish. At once he started on his favorite study of botany, but ill health compelled a voyage northward and he was offered, but declined, a professorship in the New York Medical College. Returning to Charleston, he began a successful practice. An odd little glimpse of his life at this time is given in a letter to John Bartram, the botanist:

Think that I am here, confined to the sandy streets of Charleston, where the ox, where the ass, and where men as stupid as either fill up the vacant space while *you* range the green fields of Florida.

The study of zoölogy, especially fishes and reptiles, filled up the leisure left from a large practice and botanizing, and he kept up an active correspondence also with Linnæus. It was John Ellis, the botanist, who named the beautiful Cape jessamine *Gardenia* in his honor.

Thacher, who loves to disguise weaknesses in wordy dressing, and admits only that a doctor "was addicted to the too frequent imbibition of spirituous liquor," but never that he was drunk, says that Garden was "particularly fond of refined female society and to it devoted a considerable portion of his time, *but enough was reserved for mental improvement*"!

About 1772 Garden was made a Fellow of the Royal Society of London and eventually its vice-president. Eager to extend his knowledge, in 1755 he accompanied James Glen, governor of South Carolina, when the latter penetrated the Indian country and formed a treaty with the Cherokees.

He introduced into medical use the *Spigelia marilandica* or Maryland pinkroot, as a vermifuge. Anyone who would like to know more of Garden's travels and pretty, reverent letters about Nature should get the "Linnæan Correspondence," edited by Sir J. E. Smith, London, 1821.

A somewhat pathetic interest is attached to a little granddaughter named "Gardenia." Her father, Garden's only son, joined Lee's legion against the British and was never forgiven, nor was the little girl, his granddaughter with the flower name, ever received into the house.

Tuberculosis, hitherto successfully fought, began to tell on Garden's health in 1783, although it was hoped, in vain, that "revisiting the haunts of his youth and the pleasing recollections of juvenile scenes would have salu-

tary influence in arresting the disease. The good time every learned man tried to give him as guest during his progress homeward and while traveling in Europe exhausted his strength. He stayed with his wife and two daughters in Cecil Street, off the Strand, London, a narrow street up which to-day as then creep fog and mists from the river; a bad exchange for Carolina sunshine. There, patiently realizing that nothing could be done, he put on paper all he could of his Carolina work, enjoyed the men who flocked to him and got ready for his last long journey. He died peacefully in London, 1792.

Meanwhile, botanists were increasing in number in the States, in Pennsylvania especially, which gave us our next worthy, Adam Kuhn.

It was of him that the great Linnæus sat down on Feb. 24, 1763, to write to Adam Kuhn, senior, living in Philadelphia, in fine Latin commending his pupil, Adam junior:

He is unwearied in his studies and daily and faithfully studies materia medica with me. He has learnt the sympathetic history of diseases in an accurate and solid manner. In natural history and botany he has made remarkable success. He has studied anatomy and physiology with other professors.

Kuhn was born at Germantown, near Philadelphia, Nov. 17, 1741. His grandfather, John Christopher Kuhn, and his father, Dr. Adam Simon Kuhn, came from Heilbronn, Swabia, to Philadelphia in September, 1733. Adam first studied medicine with his father, then sailed for Europe in 1761 and arrived at Upsal by way of London.

There is a little glimpse of his life in Upsal in the diary of one Fabricius, fellow-pupil with Kuhn, who writes:

For two whole years [from 1762 till 1764] have I been so fortunate as to enjoy his [Linnæus'] instruction, his guidance and his confidential friendship. Not a day elapsed on which I did not see him, on which I was either present at his lectures, or, as it frequently happened, spent several hours with him in familiar conversation. In summer we followed him into the country. We were three, Kuhn, Zoega and I, all foreigners. In winter we lived directly facing his house and he came to us almost every day in his short red *robe de chambre* with a green fur cap on his head and a pipe in his hand. He came for half an hour but stopped a whole one and many times two.

His conversation on these occasions was extremely sprightly and pleasant. It either consisted in anecdotes relative to the learned in his profession, with whom he got acquainted in foreign countries, or in clearing up our doubts, or giving us other kinds of instruction. He used to laugh then most heartily, and displayed a serenity and an openness of countenance which proved how much his soul was susceptible of amity and good fellowship. (Stoever's Life of Linnæus.)

Of Kuhn himself, Dr. Charles Caldwell, cold, cautious and sarcastic, says:

He was by far the most highly and minutely furnished specimen of old-school medical production I have ever beheld. He wore a fashionable, curled and powdered wig; his breeches were black, a long-skirted buff or white waistcoat, his coat snuff-colored. He carried a gold-headed cane and a gold snuff-box; his knee and shoe buckles of the same metal. His footsteps were sternly and stubbornly regular; he entered the sick-room at a given minute and stayed a given time and never suffered deviation from his directions.

Linnæus, following a pretty fancy, named an American plant *Kuhnia* (*Kuhnia eupatorioides*), after his pupil, and when the latter returned to Philadelphia wrote very intimate and graceful letters to him in Latin. One has this injunction in it: "I pray and entreat send me some seeds and plants, among which I ardently desire the seeds of the *Kuhnia*, which perished in our garden."

Kuhn went to London in 1764 and studied there awhile, and in 1767 was in Edinburgh, where he took his M.D. the same year. His thesis on "De Lavatione Frigida," or the use of cold bathing in fevers, was dedicated to his friend Linnæus. He visited France, Holland and Germany, but whether before or after Edinburgh is not clear. In 1768, after his return to Philadelphia, he became professor of materia medica and botany in the University of Philadelphia, being the first professor of the latter science in America.

He was a discreet young physician, "not remarkable for powers of imagination, but his talent for observation profound, a lover of music, abstemious in diet, neat in person."

He did not marry until he was 39; "he had two sons, respectable characters," by his wife, Elizabeth, daughter of Isaac Hartman of St. Croix.

When 73 he "grieved" his patients by giving up practice, and in June, 1817, began to feel conscious that life

was ending. After a short confinement of three weeks to the house, but suffering no pain, Adam Kuhn passed away on July 5, 1817, in full serenity of mind and heart, leaving behind him a friend and fellow-worker in natural science named Caspar Wistar.

Wistaria, the beautiful flowering vine, is known, of course, to all: "Wistar parties" to most of us, so it comes to pass that the memory of one of our great surgeons is conserved in two emblems of festivity rather than, as he perhaps imagined, in his original observation and "Description of the Posterior Portion of the Ethmoid bone with the Triangular Bones Attached." (Thacher.)

His grandfather, Caspar Wistar, a German, came to Philadelphia in 1717, and Dr. Wistar was born there in 1761. He had the advantage as a medical student of sitting under Morgan, Shippen, Rush and Kuhn, after which, like most men of his day, he went to Europe, taking his M.D. at Edinburgh University. His inaugural thesis, "*De Animo Demisso*," was dedicated to Franklin and Cullen. He studied under Cullen and, rare honor for a youthful stranger, was twice president of the Royal Medical Society of Edinburgh.

On his return to Philadelphia after three years, he was associated with Dr. John Jones, author of the first work on surgery which appeared in America, who was delighted with Wistar's surgical skill. Wistar became professor of chemistry and physiology in the College of Philadelphia, and held other appointments, among them the adjunct professorship of anatomy and surgery with William Shippen. He wrote "*A System of Anatomy*" for his students, and spared no pains in securing models for his class. His memory has been perpetuated in the Wistar Institute of Anatomy and Biology in West Philadelphia. The work of the Historical and Literary Committee of the American Philosophical Society aroused his keenest interest and he did much to stimulate the society to collect the fleeting materials of American history. He kept up a delightful correspondence with Correa da Serra, the botanist who named the wistaria and was a frequent guest at Wistar's house. Wistar also kept in touch with Humboldt, Soemmering, Camper, Michaux, Marshall and various English scientists.

When Humphrey Marshall, the great botanist, was 71, young Wistar performed on him the operation of

couching for cataract, with partial success, for the old man was at least enabled to distinguish his favorite plants as he walked in his gardens. The instruments were probably those in the case Wistar afterwards gave to his pupil, Short, another botanist, when the latter left him. I had a pleasant note from Dr. Thomas Wistar of Philadelphia in answer to one of thanks for a portrait of Wistar.

Dear Dr. Kelly:—Well may you be “in love with Dr. Wistar.” Everyone was in love with him! It was probably his most marked characteristic to draw the admiration, love and respect of all with whom he came in contact. By virtue of his social and scholarly instincts his rooms were informally open to his friends on Sunday; later (by request of his wife) on Saturday evenings, when tea and cake were handed and every savant from far and near was sure of an invitation to his salon.

His biographers tell us that soon after his return “he was united in matrimony” with Isabella Marshall, but she died childless. Eight years later he married Elizabeth Mifflin, who made him happy with two sons and a daughter. He was a Quaker and a religious man, and brought up his children to revere God’s word, of which he carried a cherished copy given him by Dr. Charles Stuart of Edinburg. He often took his children out in the carriage with him to talk of the teachings of the Bible.

Troubled for many years with an organic affection of the heart, he died comparatively young, on Jan. 18, 1818, working almost to the last.

Among Wistar’s college friends was the handsome Benjamin Barton, destined to become one of America’s foremost botanists. He was the son of the Rev. Thomas Barton, an Episcopal minister, and was born Feb. 10, 1776, in Lancaster, Pa. He was but 8 when his mother died and but 14 when left an orphan. He went to live with an elder brother and studied at the College of Philadelphia, beginning to study medicine under Dr. William Shippen, Jr. While still Shippen’s pupil, young Barton journeyed with his maternal uncle, David Rittenhouse, and the other commissioners appointed to survey the western boundary of Pennsylvania, and thus had his attention directed to the study of the Indian tribes, a subject which possessed the greatest interest for him throughout life. In 1786, he went abroad to pursue his medical and scientific studies, first in Edinburgh

and London, afterward going to Göttingen, where he received his medical degree.

His reasons for not taking the degree of M.D. to which he was entitled by his studies at Edinburgh University were set forth in a letter to his brother, written in London, 1789, in which he states that he preferred getting his diploma from Göttingen because he was dissatisfied with the discourteous manner in which two of the professors at the University of Edinburgh treated him.

He, however, when in Scotland received several honors: the membership of the Royal Society of Edinburgh, and also from that society an honorary premium for his dissertation on *Hyoscyamus niger*. This was the Harveian prize, consisting of a superb quarto edition of the works of William Harvey.

While living in London, he published a tract entitled "Observations on Some Parts of Natural History, to Which is Prefixed an Account of Some Considerable Vestiges of an Ancient Date Which Have Been Discovered in Different Parts of North America." This little book he afterwards characterized as a "premature work" and regretted its many deficiencies.

Both Hunter and Lettsom were Barton's good friends and appear to have appreciated his scientific merits.

Dr. Barton returned to Philadelphia and practiced medicine in 1789, in the same year being appointed professor of natural history and botany in the College of Philadelphia, a position he held after the union of the College of Philadelphia with the University of the State of Pennsylvania in 1791.

On the resignation of Dr. Griffith from the chair of materia medica in Pennsylvania, Dr. Barton was appointed. When Benjamin Rush died, Barton was appointed professor of the theory and practice of medicine, and continued to hold also the chair of natural history.

His published works include "The Elements of Zoölogy and Botany," or "Outlines of the Natural History of Vegetables"; "Collections for an Essay toward the Materia Medica of the United States"; "Fragments of the Natural History of Pennsylvania"; "Essay on the Fascinating Power Ascribed to Serpents, etc."; "Views of the Origin of the Tribes and Nations of America."

In 1805 he started publishing the "Medical and Physical Journal" and also wrote many short articles on topics connected with medicine and history and arche-

ology, much of his work appearing in the *Transactions of the American Philosophical Society*.

During his early years he was greatly afflicted with hemorrhage and gout. He had given only two courses as the successor of Rush when he had to seek relief by a sea voyage. He sailed to France in 1815, returning disheartened by way of England. At New York he was afflicted with hydrothorax. Finally, reaching home very ill, he became rapidly worse and was found dead in bed on the morning of Dec. 19, 1815. Feverishly anxious to work, three days before his death he wrote a paper concerning a genus of plants named in his honor by Nuttall, a young English botanist whom Barton had financed for a scientific tour in the southern states. The plants were of the class *Icosandria monogynia* (Linnaean system) found in hilly districts between the Platte and the Andes and named *Bartonia polypetala* and *Bartonia superba*.

William Darlington was another of the famous group of scientists exploring, writing and keeping up a keen scientific correspondence with each other.

From Europe to America, from America to Europe, news of fresh plants, packets of seeds, graceful congratulations were sent, Linnaeus being the brightest star and one whose opinion was first sought.

The seeming hardship of having to work on a farm and lead an outdoor life may have stimulated William Darlington's botanical interests. His great grandfather, Abraham Darlington, had come over from England to Pennsylvania when a young man and settled near Chester. William had simply a common-school education and, hungry for more, persuaded his father to let him study medicine with Dr. John Vaughan of Wilmington, Delaware. He took also private French lessons, studied hard at Latin, Spanish and German, and received his M.D. from the University of Pennsylvania in 1804.

A voyage to India as ship's surgeon gave him leisure for study and reflection. The following year he settled down to practice in West Chester after marrying Catherine, daughter of General John Lacey of New Jersey.

In the midst of much civic business, he finds time to botanize, also to found the Chester County Cabinet of Natural Science and to publish his first botanical work: "Florula Cestrica, or Catalogue of Plants Growing Round West Chester, Pennsylvania."

That which pleased him most was the perpetuation of his name in flower form. Professor de Candolle of

Geneva named a genus after him, but it did not prove to be sufficiently distinct, and another friend, Professor Torrey of New York, dedicated to him a finer plant of the order *Saraceniaceæ* (pitcher-plants), which grow in California. Darlington certainly deserved the honor, for a more generous man never lived. This was shown in his gathering together all the letters and memoranda of Dr. William Baldwin, a zealous botanist who died still young while on a botanizing expedition up the Missouri. Darlington called the book "*Reliquiæ Baldwinianæ*" (1843), and six years later made all botanists his debtors by his loving work shown in "*The Memorials of John Bartram and Humphrey Marshall*" (1849), the careful footnotes alone constituting valuable references to the botanical lore of that period.

Darlington willed that his herbarium and all his botanical works should go to his own County Museum, and these are still in the museum of the West Chester State Normal School, a collection now too little known. Learned societies—more than forty in number—elected him a member.

The loss of a soldier son from fever off the African coast and the death of his wife in 1845-6 broke his health, and in the spring of 1862 Darlington had a slight attack of paralysis, followed in 1863 by another, from which he died on Thursday, April 23, 1863, nearly 81 years old and with mind still unimpaired.

He was buried in Oakland Cemetery, Philadelphia, and on his tomb was carved: "*Plantæ Cestrienses quas dilexit atque illustravit super tumulum ejus semper floreant.*" As perennial as the plants was the heritage of love and zest Darlington and his colaborers bequeathed to science.

Massachusetts has the honor of giving us a great educational reformer, one of America's most learned botanists, Jacob Bigelow, closely associated with the leading scientists of the world. He was of New England ancestry, his people coming over about 1640 and settling in Watertown, Mass. Jacob was the son of Jacob Bigelow, a Congregational minister who married a daughter of Gershom Flagg.

Jacob the younger was born Feb. 27, 1787, and his childhood was passed in the country at farm work, with scanty schooling. Painfully his father managed to send him to Harvard, where he graduated in 1806, and in 1808 attended the medical lectures there as a pupil under Dr. John Gorham and taught in the Boston

Latin School. Then he went to Philadelphia to attend the lectures of Rush, Wistar, Barton and Coxe and to receive the doctor's degree. To bring himself early before the professional public he took to writing and secured the Boylston prize four successive years. So promising seemed his career that the elder James Jackson chose him as associate in practice. He was a born artist, craftsman and inventor. When occasion came for illustrating his "Medical Botany" with colored engravings and before modern photography and lithography were invented he devised a means of illustration which proved both practical and beautiful and furnished sixty plates and 6,000 colored engravings for this monumental and now rare work.

He speaks laughingly of his first lesson in botany given when, as a little boy, he asked a learned gentleman the name of the plant "Star of Bethlehem." "That? Why, that's grass, you little fool." When he wished for drawings and models for his lectures as Rumford professor he knew how to make them. In 1812 his interest in the study of botany led him to give a course of public lectures in Boston.

Botany was his great hobby and his "Florula Bostoniensis" was a simple, charming book; well known to our grandfathers. In 1815 he was appointed lecturer on materia medica and botany, and two years later when he was 30 his title was changed to professor. Then, too, it is pleasant to believe that Count Rumford left behind him in his native state a young disciple as first Rumford professor who fulfilled all his desires.

But the work which brought Bigelow into closest contact with European savants and gave him honor in his own country was the elaborate series published under the title "American Medical Botany," which was noted for its finish and beauty and avoidance of technical terms. In 1820, when 33, he was associated with Spaulding, Hewson, Ives and Butts in editing the United States Pharmacopeia. He followed up this labor by adding Bigelow's Sequel, a perspicuous commentary on current remedies.

Three years previously he had married Mary, daughter of Colonel William Scollay of Boston, and they had five children, one son, Harry, becoming a doctor.

When the great cholera epidemic of 1832 in New York carried off some 3,000 victims, Boston's death-roll numbered only 100, owing to the fact that the authorities were wise enough to adopt the stringent sanitary

precautions urged by Bigelow, who, with Ware and Flint, offered his services as investigator of the conditions in New York.

Bigelow at middle age was visiting physician to the Massachusetts General Hospital, professor of materia medica at Harvard, had an enormous consulting practice, and wrote frequently for the press, and keenly worked for reform in the practice of medicine. It was one of his hobbies to dwell on the self-limited character of disease. In 1835, when he read an address with this title before the Massachusetts Medical Society the effect was immense. O. W. Holmes says: "This remarkable essay had more influence on medical practice in America than any other similar brief treatise." This paper is bound up in a little volume entitled "Nature in Disease and Other Writings" (1854).

His educational pamphlets caused wide-spread discussion at home and abroad. Lecky wrote a strong letter of dissent, but Lyell, Huxley and Spencer were vigorous in commendation. The Massachusetts Institute of Technology, with its splendid curriculum and strong staff, is a monument, in part at least, to his untiring energy.

Bigelow was still active in his declining years and became a most distinguished and approachable old-man oracle. He was blind nearly five years, and bedridden, but with mind undimmed at 92. "His religion, not for speech, discussion or profession, was that of a serious man living very near the realities of life!" Unforgotten to the end, though long inactive, he died January, 1879, and was buried in the beautiful Mount Auburn Cemetery which he himself had originated (Mumford).

Among the pupils who loved Caspar Wistar, and was ever a welcome guest at his house, was a Kentucky lad named Charles Short, son of Peyton Short, born in Surrey County, Virginia, in 1794.

His biographer says that as a boy he was noted "for exemplary conduct and love of nature"; also in later life that he was "of medium height with blue eyes and an ample forehead and a smile radiant with goodness and beneficence."

I can touch now only on the botanical side of Short. He graduated from the University of Pennsylvania when 21 with a thesis on the "Medical Virtues of *Juniperus Sabina*," and turned his attention that same year to wooing and wedding his stepsister, Jane Churchill. The young couple traveled home to Kentucky in a spring

cart, Short botanizing on the way, and the journey, whether owing to Jane or to the specimens, is described as "replete with interest." So also was the scene of his first settled practice, Hopkinsville, then a wild, romantic district where he gathered patients and plants, soon getting into touch with scientific men everywhere by exchanging specimens. This gave him reputation, and led eventually to an invitation, which he accepted, to become professor of natural medicine and medical botany in Transylvania University. Benjamin W. Dudley and Daniel Drake were his colleagues. Short's heart was thoroughly in his work and he stayed there until internal dissensions in 1837 made Short and Drake accept the same professorships in the University of Louisville, whence, in 1849, Short went away to Hayfield, his country home, five miles from the city, and for the last fourteen years of his life cultivated plants and friendships, wrote and read, took long journeys and made the finest herbarium in the country.

These excursions must have been very interesting. Picture Short, his brother and three other botanists setting out "in a light covered wagon" to study the autumnal flora of the prairies, traveling over 400 miles in Illinois. What careful pressing and storing in the evening with thoughts flying ahead across the Atlantic to botanical comrades destined eventually to receive some of the spoils of the day!

Among his most prominent writings were "Notices of Western Botany and Conchology," a paper published jointly by himself and Mr. H. Halbert Eaton (1830); "Instructions for the Gathering and Preservation of Plants in Herbaria"; a "Catalogue of the Plants of Kentucky"; "The Bibliographia Botanica" (1836); "Sketch of the Progress of Botany in Illinois" (1845).

Short's great usefulness in the botanical field was mainly owing to the extent and the particular excellence of his personal collections and to the generous profusion with which he distributed them far and wide among his fellow-laborers in this and other lands. He and the late Mr. Oakes—the one in the West and the other in the East, but independently—were the first in this country to prepare on an ample scale dried specimens of uniform and superlative excellence and beauty and in lavish abundance for the purpose of supplying all who could need them.

The name of Dr. Short is commemorated by a number of plants: the genus *Shortia*, *Vesicaria shortii*, *Phaca shortiana*, *Solidago shortii* and *Carex shortiana*.

The story of the *Shortia*, which was lost for nearly fifty years, is full of interest. "When Dr. Gray was in Paris in 1839 he observed in the herbarium of the elder Michaux an unnamed specimen of a plant. It consisted merely of the leaves and single fruit and its label stated that it had been collected in *les hautes montagnes de Caroline*. On his return to America, Dr. Gray hunted assiduously for the plant in the mountains of North Carolina, but wholly without success. Two years later, however, Dr. Gray ventured to describe the plant which had, he said, the habit of *pyrola* and the foliage of *galax*, and dedicated it to Dr. C. W. Short, the eminent botanist of Kentucky. Henceforth no botanist ever visited the region in North Carolina without searching for *Shortia* as if for the philosophers' stone. In the meantime, Dr. Gray found among a collection of Japanese plants a specimen almost identical with that of Michaux, a coincidence which strengthened his faith in the existence of the American species. It was not until 1877, however, that it was found, and then quite accidentally, by G. M. Hyams, a boy who knew nothing of the good luck that had befallen him. He had picked it up on the banks of the Catawba River near the town of Marion, in McDowell County, North Carolina. Fortunately his father was a professed herbalist, and through a correspondent finally learned the true nature of the plant. It had been collected when in flower, and thus Dr. Gray was able to substantiate his original ideas of the genus and perfect its description. He still clung to the idea that its natural habitat must be, as Michaux said, in *les hautes montagnes de Caroline*, arguing that the point on the Catawba where it had been found was an outlying haven to which it might have been washed. So with renewed energy it was searched for through the mountains, but always without success.

"In the autumn of 1886, Professor Sargent visited the mountainous region of North Carolina about the head waters of the Keowee river, with the object of rediscovering *Magnolia cordata*. At Hog Back, now called Sapphire, he was met by Mr. Frank Boynton, to whom he showed a leaf that he had gathered, and asked what it was. Mr. Boynton at first thought it was *galax*, but on looking at the leaf more closely said that he didn't know. The same evening a letter came from Dr. Gray in which he urged them to discover the original habitat of *Shortia*. Mr. Stiles, the editor of *Garden and Forest*, who was also present on this eventful evening, said in a

joking way: 'That is *Shortia* you have in your hand.' This proved to be true. The leaf was *Shortia*. Professor Sargent had found it, just ninety-eight years after Michaux's discovery, probably near the same spot.

"About two weeks later, Professor Sargent, Mr. Boynton and his brother went to find the exact place of the plant's growth. They found it near Bear Camp creek in a rather limited quantity, but still enough for them to carry away a box full of specimens for distribution. The following spring, Mr. Harbison started out in quest of it. He went beyond Bear creek to the forks of the rivers and there saw it growing in great masses—acres, in fact, covered as thickly as clover fields. Wagon-loads were eventually taken away and still there appeared to be no diminution in abundance. So the search for *Shortia* ended. Through the further efforts of Mr. Harbison, the plant is now well known and a common one in nursery catalogues, though in its wild state it grows at its finest and best under the shade of kalmias and rhodendrons."

Books, too, were a huge delight to Dr. Short. He gathered a fine library, about 3,000 books, one-fourth botanical, but left wall space for engravings of his literary heroes, Walter Scott and Fielding. Some—most, perhaps—of his books came from London. We hear of his rebinding with his own hands those which required it, which marks him as a real book-lover.

One grieves a little to learn that a curious debility and ennui came over him when he was 67; that the old interests failed to attract, and two years later pneumonia, following on typhoid, ended his life on March 7, 1863.

Among the other doctors—some not botanists—who have had plants named after them, are notably: Good-year, William Baldwin, David Townsend, Douglas Houghton, William Douglass, Benjamin Franklin, James McBride, Peter Kalm, Nathaniel Chapman, Asa Gray, John Torrey, George Engelmann and Joseph Le Conte. Some of these I propose to include in a volume on "American Medical Botanists" I have in hand, and I shall be grateful for any names additional to my list or interesting facts concerning our botanical confrères.

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