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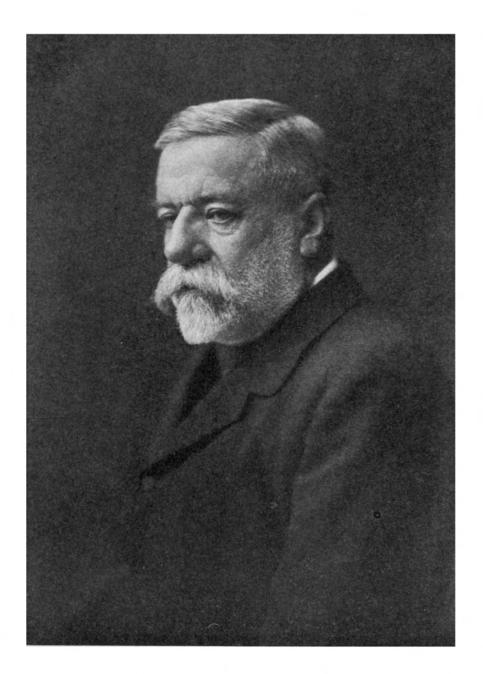
OF

CHARLES SPRAGUE SARGENT

BY

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C.S. Sayunt

CHARLES SPRAGUE SARGENT

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"One day," said Edward Everett Hale, "a man looked up—and saw a tree."

He was speaking of our late associate, Charles Sprague Sargent: director of the first forest census of the United States; gatherer of a great museum exposition of our trees; author of the first comprehensive treatise on our woods and their properties and uses, of a compact and workable handbook of our native trees, and of a sumptuously published Silva of North America; founder and editor of a journal, Garden and Forest, which did much to promote love of the out-of-doors; stimulator of a national forest-preserve and park system; and creator and utilizer of the greatest of tree plantations:—the foremost dendrologist of his day.

Sargent was of good and efficient English ancestry domiciled in New England for over three centuries; he was related to John Singer Sargent who in the field of art rivals Charles Sprague in that of science. He was the son of Ignatius Sargent, a successful merchant, and his life was spent on the beautiful estate Holm Lea, in Brookline, immediately adjoining his father's; within a stone's throw of the home of Francis Parkman, and in relation with many men who made Boston and its environs notable in the Victorian period.

At the age of thirty-two he married Mary Allen Robeson of Boston, a talented and forceful as well as charming woman of Sotch and Huguenot stock, also Americanized for over three centuries; and their life together covered nearly a half century in which it is hard to dissociate the aims and activities of the one from those of the other. Of their five children, four survive both mother and father.

Professor Sargent was a tall man, a little ponderous to those who knew him in his later life, quiet, never hurried, but always forging ahead with irresistible momentum; conservative and rather hard to swerve from his course or to retard or accelerate in it. He had the reputation of being bluff and a little overpositive; but those who knew him well saw a sympathetic kindliness as underlying any superficial reactions.

Through his long life he maintained the habits of methodical industry that underlie a successful business career, in its later vears dividing his time between productive activity at his desk and constructive supervision of the plantations in which his lifeeffort finds embodiment. This routine was broken by many and fruitful journeys-always connected with an unceasing effort to know trees and an insatiable enjoyment of personal contact with them. Though always deliberate, he was built for a long stride, and less favored companions did not find a day's tramping with him easy. On these field trips, which in later days did not involve the hardships of pack and camp-life, he uniformly found something to praise in all except the very worst of mountain and swamp hospitality, though the best was in striking contrast with the comfort to which he was accustomed at home. His zeal as a collector and his patient work in saving the fruits of a day's collecting were remarkable. Though unaccustomed to doing what he could get somebody else to do. as Professor Gray early observed and pointed out approvingly in a letter to Hooker, he always met efficiently the need of doing for himself whatever fell to his task and he did not spare himself in doing it: and his voluminous systematic work came from his own pen.

Sargent was graduated from Harvard University in 1862, and immediately entered the army and served until the end of the Civil War in 1865 as a commissioned officer. Three years of European travel followed his mustering-out, and after four more years of study and preparation he launched into his life work as Professor of Horticulture, Curator of the Arnold Arboretum, and Director of the small but famed botanical garden of Harvard University in Cambridge. The custody of this garden remained in his hand for seven years, as an apprenticeship for greater things.

Whatever of good-and it was much-had come to him

through travel, study, and association with Asa Gray, Sargent's real education began in 1873 when he was appointed by Harvard University the Director of the Arnold Arboretum-to-be. In 1879 he was given the titular Arnold Professorship of Arboriculture, a chair which he held through the rest of his life.

No other pen can picture the productive part of his life so well as one may see it in and between the lines of an account of "the first fifty years of the Arnold Arboretum" which he contributed to the Journal of the Arnold Arboretum in 1923—an impersonal, straight-forward, historical statement with few words as to the aims and ideals of the writer, who had made the history.

The Arboretum had been nominally established in the spring of 1872 through an agreement between Harvard University and trustees created under the will of James Arnold, a New Bedford merchant who had died in 1869. By this agreement, the University set aside 125 acres of land forming part of the Bussey estate which had passed to it earlier, and received from the Arnold trustees a little over \$100,000, the income from which was applicable to the development and maintenance of a plantation in which as far as practicable all of the trees, shrubs, and herbaceous plants hardy in the region were to be grown and distinctly labeled. Tree knowledge, and matters naturally, directly, and usefully connected with it, were to be taught as a function of the new establishment.

Half a century later. Sargent modestly admitted that neither the University authorities who had accepted the charge nor the man selected to carry out its provisions had then an idea of what an arboretum ought to be or what it was going to cost in time and money—and he might have added in intelligence. Could James Arnold, whose modest gift (not specifically for an arboretum) started it, or George B. Emerson, a writer on New England Trees, and John James Dixwell, an equal lover of trees, who were among Mr. Arnold's trustees and gave to the endowment this direction, see what has come of their hopes they would hardly grasp the breadth and meaning that have been given embodiment in the arboretum that Sargent visualized when the privilege and duty became his.

From the first it was evident that the income available from an endowment little exceeding \$100,000 (actually stated to have been less than \$3,000 a year then applicable) was not adequate to properly developing and planting even 125 acres, and a decade was consumed in fighting through to consummation the first farreaching plan of the young director; but in 1882 the title to the property was passed to the City of Boston which gave to Harvard on nominal rental a virtually perpetual leasehold on it and not only freed it from present and future taxation but undertook to construct and maintain in it roads and paths and to protect and police it—while giving to the University all freedom in carrying out the plans for the Arboretum with which the Director's mind was constantly occupied.

Ultimately the area allotted to the Arboretum was enlarged; a wall which elicits the admiration of many and has evoked the vilification of others was built along its front; roads, paths, and drainage were brought into existence; and Sargent lived to see the saplings that he planted between 1882 and 1885 grow into stately and shapely trees—isolated so that they might attain their maximum symmetry, and elsewhere so massed that the grouped effect of each species might take its part in a landscape of beauty—all labeled with an accuracy and effectiveness that could but have given pleasure as well as satisfaction to those who over half a century ago stressed the educational necessity of this feature of such a collection.

Through the main or exclusive effort of its director, the area of the Arboretum had been doubled; its endowment before his death had been increased nearly eight-fold; necessary buildings and furnishings had been provided; and a special construction fund larger than the original endowment had been accumulated.

Even as I write, less than a year after his death, the announcement is made that the new constructions for which he planned and provided are to be begun at once, and that steps are well under way toward doubling the endowment of above three quarters of a million dollars to which he himself had raised the original fund of \$103,847.57, and the scope of activity of the Arboretum is said to be in process of proportionate enlarge-

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ment—not beyond what Sargent foresaw but in advance of what, taking each step firmly and surely, he lived to incorporate in its successful activities.

He lived to convert the original "worn-out farm partly covered with natural plantations of native trees nearly ruined by excessive pasturage"—but including the famed hemlock hill—into a rarely beautiful park in which over 6,500 named species or varieties of choice trees and shrubs grow as representatives of 339 genera; and an incredible number of hardy plants of this kind have been introduced meantime into American and even European cultivation through its agency. To-day in its field it stands foremost.

Though methodical planting had to be deferred for more than a decade after Sargent assumed the direction, propagation and plant introduction began very early in the history of the Arboretum. His master efforts were brought to success here confessedly largely through the skill of Jackson Dawson as a propagator and of Ernest Henry Wilson, whose explorations in China—known since the days of Fortune as the home of a vast number of the choice garden plants of the Occident—have added to our treasures from this source more than had all of his predecessors combined, and on whose collections is based one of the most important scientific publications from the Arboretum.

The first decade was not given over entirely to preparations for embodying Sargent's forming plans in the great out-of-door museum that they rapidly assumed thereafter. Midway through it, the need of timber planting on the plains and the actual forest resources of the country claimed recognition in an essential item of the forthcoming census, and Sargent was entrusted with and carried out an investigation of our forests which gave him personal contact with a larger proportion of the North American trees then known than had been the privilege of any earlier student of them. It also enabled him to prepare for the American Museum of Natural History timber-size examples of their trunks—with beautiful illustrations of their botanical characters which Mrs. Sargent made, and evoked through the Watertown

Arsenal a comparative and careful study of their physical properties. The publications on this forest census and its adjuncts were and remain far more than "government documents."

More than plans for the future was in process of incubation also during the ten years in which the Arnold Arboretum lay fallow after its establishment while its director had leisure for forestal travel and statistics-gathering. Out of it has emerged a national policy of intelligent forest conservation and utilization, of salvaging the relicts of lumbering, and of preserving for future generations samples of Nature's own great arboretum in the form of national parks. Aside from his activities in connection with the census, Sargent exercised lasting influence in these directions also as a member of the Northern Pacific Transcontinental Survey (1882-3), chairman of a New York commission on the Adirondacks and Catskills (1884) and, later, as chairman of a Committee of the National Academy of Sciences on a Federal forest policy (1896).

Synchronously with these foundations for dendrology in its broad and economic aspects and for its dissemination, it was inevitable that even a less far-sighted man to whom Asa Gray was more than a name should have seen and provided for those indispensable tools of every working botanist, a library containing what has been pictured in word and pen and those vestiges of trees that preserve their characters in the herbarium for centuries—even after the giants of which they once formed part may have yielded to the assaults of man or of the elements.

Starting from a literal zero-line in 1873, the library of the Arboretum has been brought, essentially at the director's own expense, to over 40,000 publications on woody plants; and the herbarium, tracing its beginning essentially to gatherings of the census explorations, now contains specimens of a fifth of a million kinds of woody plants—among them the prized "types" of a vast number of new species to which students will refer for centuries to come as question arises in connection with still other new forms claiming recognition.

Without these adjuncts, not even the comparatively few native trees and shrubs with which the plantation started and the limited introductions from foreign lands which quickly followed could have been accurately labeled; and without them many hitherto unknown components of our native forest flora and the vast gatherings into the Arboretum from Asia would have remained unanswered quæries: without them a "Forest Flora of Japan" could not have been written by Sargent in 1894. They were tools provided and constantly used in his rapidly growing activity.

Corresponding to the gradual material evolution of the Arboretum, its productivity in publication—for it has met its educational responsibility chiefly in this wise and through exemplifying in the open its lesson of tree-lore—has progressed by natural steps. Very early a catalog of the woody plants then in cultivation was printed, with a catalog of those being propagated (1874). Had his life been spared a little longer, Sargent's publications apparently would have ended in a catalog of the plants now growing in the Arboretum, on which he was at work at the end. A few suggestions on tree planting followed these first lists (1876), with various notes on trees and tree planting (1878, 1886), etc. As a partial forerunner of the comprehensive census and Jesup-collection publications, a short account of the forests of central Nevada appeared in 1879.

No small credit must be accorded the journal Garden and Forest, which he directed through its all-too-limited existence (1888-1897) as a stimulator of popular love for nature and a mentor of good taste in planting. Perhaps Sargent's first technically "botanical" papers were published in the Botanical Gazette—on Vitality of the seeds of Pinus contorta (1880), and some additions to the sylva of North America (1886); but as materials accumulated his botanical publications became frequent, often bulky, important, and always resting on an infinity of patient attention to details.

He did not need to be shown the importance of knowing what others have done before publishing one's own views or discoveries. Following the death of Engelmann, he published (1884) a list of the publications of this fellow-explorer and master in American tree-lore—of whom he was a devoted friend; and no fitter compiler of the publications of Asa Gray (1889) was to be found. Under his direction was compiled by

Alfred Rehder the five-volume quarto Bradley Bibliography; a guide to the literature of the woody plants of the world (1911-1918), toward which Sargent had been looking long.

It was while the census work was in course of publication that the idea of a full account of our trees in dignified presentation shaped itself into plans for the Silva of North America—Sargent's magnum opus. First thought of as a possible output of the Smithsonian Institution—a project which Professor Baird, then Secretary of the Institution, is said to have favored or even to have suggested, the "Silva" seemed more hopefully undertakable through a publishing house, and it was brought out by Houghton, Mifflin & Co. Unsparing in editorial and artistic talent it stands today as the most elaborate of American botanical books: costly, but abundantly paying its way, and a rarely good investment for early purchasers.

For twenty-one years the "Silva" was in process of making. The publication of its beautiful folio volumes was distributed over the years 1891-1902, and the originally contemplated thirteen had grown to fourteen. Hardly was the last volume off the press when manuscript with excellent smaller illustrations was ready for a simplified portable handbook of comparable scope, and Sargent's Manual of the trees of North America, exclusive of Mexico appeared in 1905, and reached a second edition in 1922 and a corrected reprint a year before his death. He lived to see, also, Rehder's Manual of Cultivated Trees and Shrubs, the preparation of which he had encouraged.

Except for a few of the earliest, and for these comprehensive works, Sargent's botanical publications were closely confined to descriptive botany in the field of dendrology, as a rule each dealing with a restricted topic. Such publications were inevitable in an institution which was gathering in and trying to make known collections of living and herbarium material with increasing rapidity as the years wore on. Though *finis* had been written to the "Silva," no such word can be applied to our forest flora itself—of which the trees, only, found inclusion in the "Silva"—or to the contents of parks and gardens, and it is natural that three years after the appearance of the last volume of the "Silva," a comparable publication entitled *Trees*

and Shrubs should have started at the Arboretum under Professor Sargent's editorship. Unfortunately only two volumes of this appeared (1902-1913), but in contents and make-up it forms a worthy companion-piece to the "Silva," like which the volumes were well illustrated. The marvelous success of Wilson as a collector of worthwhile plants then necessitated the editing by Sargent of a tree-volume *Plantae Wilsonianae*, enumerating the plants collected for the Arboretum by Mr. Wilson, the publication of which extended over the years 1911-1917.

A full enumeration of Professor Sargent's publications is hardly necessary here, for in 1926 there was issued from the Arboretum a list of all "Publications of the Arnold Arboretum of Harvard University and its staff, 1874-1926, chronologically arranged under authors," in which his own titles appear; and these are listed separately by Mr. Rehder in a biographic sketch published in the eighth volume of the Journal of the Arnold Arboretum, which list is appended to the present sketch, by permission.

His very latest publication, in *Home Acres* of February, 1927, fittingly deals with the realized ideal of his life: "The greatest garden in America, the Arnold Arboretum."

Sargent's style, adapted to each purpose, was simple, concise, and finished. An appreciative tone pervades the occasional tributes to friends; Asa Gray, to whom he owed great inspiration; George Engelmann, whose master knowledge of trees he revered; Charles Edward Faxon, the superb delineator of the "Silva"; Horatio Hollis Hunnewell, with whom he maintained a life-long friendly rivalry in growing the most beautiful conifers and rhododendrons on their estates, and who gave liberally for the purposes of the Arboretum.

Sargent early acquired the conservative views of "species" prevalent in the first period of Darwinian philosophy. Our western forests never have been seen by a young man more favorably environed than he was when he visited them in company with Engelmann, following Asa Gray and Sir Joseph Hooker—the most traveled of botanists. That was before *Crataegus* in the United States seemed to comprise above a dozen species (he himself has since described over 700 as new),

and when recognized plums were few in number and satisfactorily identified when encountered; and to him, then, the segregation views of certain continental systematists seemed beneath contempt, as he once expressed himself. It was before in a more casual but still very extensive way he had begun to raise seedlings in propagating material for his Arnold Arboretum planting and, like the much maligned Jordan, had found that small as well as large dissimilarities reappear generation after generation. The end of his life found him in general almost as conservative as he was in his early prime, except in the groups on which his own special studies had centered, in which he has been considered an ultraradical, though it is not impossible that as these become better known and made more easily recognizable when keyed apart on more readily observable even though less technically taxonomic differences he may achieve recognition as conservative even here.

Early in his own career, Asa Gray, keen in seeing and selecting essentials in the characters on which plants are classified, conceived the idea of presenting the genera of our flowering plants in a series of select illustrations simplified to the essentials of type. It was then that Hooker was utilizing the talent of Bauer, the master plant delineator of his day; but the remarkable skill of this great man in line drawing was surpassed under tutelage by Professor Gray's illustrator, Isaac Sprague, whose plates for the *Genera Illustrata* still stand at the head of American plant portraits as models of all-inclusive effective simplicity.

Sargent was equally fortunate in the long continued artistic cooperation of Charles Edward Faxon, whose work while lacking the extreme simplicity of Sprague's has its expressiveness and gives to the illustrations of the "Silva," of *Trees and Shrubs* and of *Garden and Forest*, and even of the "Manual" a value scarcely inferior to that of the descriptions that they accompany.

Every teacher knows that if required to draw what he describes, a laboratory student sees things not before seen by him—and sometimes unknown to the teacher. It may be that more than one keen observation recorded in the text of the "Silva" came to due notice as the more or less blurred and

obscure features of a plant found expression in seemingly novel form when standing out sharply in clean-cut line and stipple perhaps allowed to stand only after a more or less protracted discussion in which the gentle manner of the artist prevailed with difficulty over the positive manner of the man of affairs. Even more helpful in such matters may have been the rapid presentation of contradictory facts by his equally keen younger associate Alfred Rehder, on whom his mantle in a sense appears to have fallen. To these men, as to Wilson as a collector and Dawson as a propagator—capable almost of resurrecting a dead stick and certainly of coaxing into vigorous growth a twig found in the pocket of a shooting-jacket weeks after this had been laid aside—Sargent was unstinting in recognition. spoke less freely of her, through life he knew in his wife a collaborator equal to any of those whose names are joined in every mouth with his achievements, a help-meet who was an inspiring part of himself.

Publicity was not of Sargent's seeking but he did not escape many and highly prized recognitions of his talent and accomplishment. Harvard conferred the honorary degree of Doctor of Laws on him at the age of sixty. He was the recipient of medals from the Société d'Agriculture de France (1893), the Massachusetts Horticultural Society (1910), the Garden Club of America (1920) and the American Genetic Association (1923), and of the Loder Rhododendron Cup from the Royal Horticultural Society of England (1924). The Veitch memorial medal was given him in 1896. He was elected to membership in the National Academy of Sciences in 1895; and held honorary or corresponding membership in many of the best organizations touched by the interests of his life.

In the activities which make Boston what Boston is, his sterling integrity of character, good taste, and conservative business sense necessarily enlisted his service, though in general he shrank from active participation in even professional gatherings. Among the offices that he long and serviceably held are the presidency of the somewhat patrician Massachusetts Society for the Promotion of Agriculture, which he held for a quarter-century; the vice-presidency of the Massachusetts

Horticultural Society, for half a century; and trusteeships, further, in connection with the Boston Museum of Fine Arts and the Brookline Library. He also served Brookline as a Park Commissioner.

Dear to a botanist's heart is commemoration in the names which fellow-craftsmen give to newly discovered plants. Numerous garden varieties and spontaneous varieties and species have been dedicated to him by their describers, and Sargentia and Sargentodoxa are genera named in his honor respectively by Sereno Watson, and by Rehder and Wilson, while a subgroup of Prunus has been called Sargentiella by the German dendrologist Koehne.

Wherever Professor Sargent's life touched or intersected the lives of men he will be remembered gratefully. In helpful service along many lines his life is memorable; but outstanding above all is the vision and the creation of his most serious life-effort, the Arnold Arboretum. In these grounds, which attract more lovers of the beautiful in plants than all other Boston offerings and to which students of trees come from the four quarters of the earth, might well be found a simple tablet bearing his name and that beautiful line marking the resting-place of Sir Christopher Wren in St. Paul's Catedral:

Si monumentum quaeris, circumspice.

BIBLIOGRAPHY OF THE PUBLISHED WRITINGS OF CHARLES SPRAGUE SARGENT*

Report of the director of the Arnold Arboretum. [1873–74]—87-88. Salem Press, etc. 1874–89.

After 1889 included in the Annual Report of the President of Harvard University.

A catalogue of the ligneous plants growing in the Arnold Arboretum, Sept. 1, 1874. (Arnold Arboretum. Report of the director, 1873–74, pp. 7–9.)

A catalogue of the ligneous plants raised at the Arnold Arboretum during the two years ending Dec. 1, 1874. (Ibid., pp. 10–16.)

A few suggestions on tree-planting. Boston, Wright & Potter. 1876. pp. 35.

"From Report of Massachusetts state board of agriculture for 1875."

The same. [Boston, A. Mudge & Son. 1876.] pp. 7-29. Prefixed (p. 1-6): Prizes for arboriculture . . . Boston, 1876.

The forests of central Nevada, with some remarks on those of the adjacent regions. [New Haven. 1879.]

"From the American Journal of Science and Arts," 1879, 3d ser. xvii, 417-426.

Les forêts du Nevada central, avec quelques remarques sur celles des regions adjacentes. [Traduit par Charles Naudin. Paris. 1878.]

Annales des sciences naturelles, 6 ser. Botanique, 1878, ix, 36-46.

Notes on trees and tree-planting. Boston, Rand, Avery & Co. 1878. pp. 22.

"From the 25th Annual Report of the secretary of the board of agriculture."

Some additional notes upon trees and tree planting in Massachusetts. Boston. 1886. pp. 21.

"Printed in the Annual Report of the Massachusetts state board of agriculture."

^{*}This bibliography is quoted from "Charles Sprague Sargent" published in the Journal of the Arnold Arboretum, vol. viii, 1927, and was prepared by Dr. Alfred Rehder of Arnold Arboretum.

A catalogue of the forest trees of North America. Washington. 1880. ff. 93. (United States—Department of the Interior. 10th census. Forestry.)

[Letter to C. H. Dalton, regarding the trees of Common-wealth Avenue mall. By C. S. Sargent and F. L. Olmsted. Brookline. 1880.] pp. [3].

Botanical gazette (contributions, in 1880–1923).

- v. 1880. Vitality of the seeds of Pinus contorta, p. 54.
- ix. 1884. Botanical papers of George Englemann, p. 69–74.
- xi. 1886. Some additions to the sylva of North America, pp. 313–315.
- xxvii–xxxiii. 1899–1902. New or little known North American trees. xxvii, 81–94; xxxi, 1–16, 217–240; xxxiii, 108–125.
- xxxv. 1903. The genus Crataegus in Newcastle County, Delaware, pp. 99–110; Crataegus in northeastern Illinois, pp. 377–404.
 - xliv. 1907. The black-fruited Crataegus of western North America, pp. 54–66; Names of North American trees, pp. 225–227.
 - 1xv-1xvii. 1918-19. Notes on North American trees, i-iv. 1xv, 423; 1xvi, 229, 421, 494; 1xii, 208. (v-xi publ. in the Journal of the Arnold Arboretum, 1919-23.)

Des Cars, A. J. A treatise on pruning forest and ornamental trees. Translated from the 7th French edition with an introduction by C. S. Sargent. Boston, A. Williams & Co. 1881. pp. xiv, 65, [2]. Illustr. (Massachusetts society for the promotion of agriculture. Publication.)

The same. London, Rider and Son. 1883.

The same. 2d ed. Boston, Cupples, Upham, and Co. 1884. pp. xiv, 65, [2]. Illustr. (Massachusetts society for the promotion of agriculture. Publication.)

The same. 3d ed. Boston, The Society. 1894. pp. xiv, 65, [2]. Illustr. (Ibid.)

The same. 4th ed. Boston, The Society. 1900. pp. xiv, 65, [2]. Illustr.

The same. London, W. Rider & Son. 1902. pp. 61. Illustr.

United States—Department of the Interior—Census office. Forestry bulletin. No. 1–25. Washington. 1881–83. Maps. Contents: 1. The Pine supply of Texas. 1881. 2. The Pine supply of Florida. 1881. 3. The Pine supply of Alabama. 1881. 4. The Pine supply of Mississippi. 1881. 5. The Pine supply of Minnesota. 1881. 6. The timber supply of Michigan. 1881. 7. The timber supply of Wisconsin. 1881. 8. Pine supply of North Carolina. 1881. 9. The Pine supply of Louisiana. 1881. 10. The Pine supply of Georgia. 1881. 11. The Pine and Hemlock supply of Pennsylvania. 1881. 12. The Pine supply of Arkansas. 1881. 13. The Redwood supply of Cali-1881. 14. Pine supply of South Carolina. 1881. 15. The Pine and Spruce supply of Maine. 1881. 16. The timber supply of New Hampshire. 1881. 17. Statistics of the lumbering industry of the U. S. for the year ending May 31, 1880. 1882. 18. Fuel value of some of the more important woods of the U.S. 1882. 19. The forests of California. 1881. 20. The forests of Oregon. 1882. 21. The forests of Washington Territory. 1882. 22. Specific gravity and ash of the woods of the U. S. [By S. P. Sharples.] 1882. 23. Partial estimate of the consumption of forest products as fuel in the U. S. during the census year. 1883. 24. Amount of tannin in the bark of some of the trees of the U. S. 1883. 25. The forests of West Virginia. 1883.

Letters [on progress made in the Division of forests of the Northern transcontinental survey, March 1–August 31, 1882.]

From Narthern transcontinental survey. Annual report, 1882, i, 15-16.

The protection of forests. Cambridge, University Press. [1882.]

"From Annual report of the director of the Arnold Arboretum for 1881-82."

Forest fires. Boston. 1883. pp. 12.

"Extract from the 30th Annual Report of the secretary of the board of agriculture."

Forests, North American. [New York. 1883.] Press proofs of the American cyclopedia, 1883, vii, 847-854. A national forest preserve. [The first suggestion for the Glacier national park in Montana.] (Nation, 1883, xxxvii, 201.)

Report of the forests of North America (exclusive of Mexico). Washington, Govt. Printing Office. 1884. pp. ix, 612. Maps and atlas of 16 maps. (U. S.: 47th Congress, 2d session: House of Representatives. Misc. documents 1882–83. vol. 13, pt. 9.)

The same. Washington. 1884. pp. ix, 612. Maps and atlas of 16 maps.

Published by the Department of the Interior, Census office.

Jesup collection,—North American forestry. [Set of labels prepared for the Jesup collection, Natural history museum, New York.] N. P. [1885.] 411 [432] plates.

The native woods of Essex County, Massachusetts; an account of the general distributions and uses, the determinations of the specific gravity, etc., as shown by tests upon specimens furnished by the Peabody academy of science. Extracted from [his] Report on the forests of North America published in vol. ix of the Reports of the 10th census of the U. S., with notice of the scope of the report, tables, etc., prepared by John Robinson. Salem. 1885. pp. [37]. 2 tables.

Reprinted from Reports of Peabody academy of science for 1884, pp. 103-137.

Report of the Forestry commission appointed by the comptroller [of New York. By C. S. Sargent and others]. Albany, Weed, Parsons and co. 1885. pp. 57. Map and plates.

The woods of the United States; with an account of their structure, qualities and uses. New York, D. Appleton and Co. 1885. pp. viii, 203. (American museum of natural history. Jesup collection.)

Asa Gray. Boston, Rand, Avery & Co. [1886.] pp. 16. "Reprinted from the Sun newspaper of Jan. 3, 1886."

Some remarks upon the journey of André Michaux to the high mountains of Carolina, 1788, in a letter addressed to Asa Gray. [With note on Shortia by Asa Gray. New Haven. 1886.] pp. [8].

"From the American journal of science," 1886, 3d series, xxxii, 466-473.

Michaux, André. Journal, 1787-1796. With an introduction and notes by C. S. Sargent. [Philadelphia. 1888.] pp. [4], 145.

"Proceedings American philosophical society, vol. xxvi, no. 129."

Garden and forest. Conducted by C. S. Sargent. 10 vol. New York, Garden and Forest publishing co. 1888–97. 4°. Illustr.

—— (contributions in). 367 articles, 1888–1897.

Gray, Asa. Scientific papers; selected by C. S. Sargent. 2 vol. Boston, etc., Houghton, Mifflin and co. 1889.

The same. 2 vol. London, Macmillan & co. 1889.

The silva of North America; a description of the trees which grow naturally in North America exclusive of Mexico. Illustrated with figures and analyses drawn from nature by C. E. Faxon. 14 vol. Boston, *etc.*, Houghton, Mifflin and co. 1891–1902. 740 plates.

i. Magnoliaceae-Ilicineæ. 1891. Pl. 1–50. ii. Cyrillaceæ-Sapindaceæ. 1891 [May 23]. Pl. 51–97. iii. Anacardiaceæ-Leguminosæ. 1892 [Jan. 21]. 98–147. iv. Rosaceæ-Saxifragaceæ. 1892 [July 2]. Pl. 148–197. v. Hamamelideæ-Sapotaceæ. 1893 [Oct. 30]. Pl. 198–251. vi. Ebenaceæ-Polygonaceæ. 1894 [May 18]. Pl. 252–300. vii. Lauraceæ-Juglandaceæ. 1895 [Feb. 1]. Pl. 301–355. viii. Cupuliferæ (Quercus). 1895 [Sept. 20]. Pl. 356-438. ix. Cupuliferæ-Salicaceæ. 1896 [March 16]. Pl. 439–496. x. Liliaceæ-Coniferæ. 1896 [Nov. 30]. Pl. 497–537. xi. Coniferæ (Pinus). 1897 [Apr. 27, 1898]. Pl. 538–592. xii. Coniferæ (Abietineæ after Pinus). 1898 [Jan. 10, 1899]. Pl. 593–620. xiii. Supplement: Rhamnaceæ-Rosaceæ. 1902 [Dec. 15]. Pl. 621–704. xiv. Supplement: Caricaceæ-Coniferæ. General index. 1902 [Dec. 15]. Pl. 705–740.

Vol. i-v "engraved by Philibert and Eugene Picart."

Forest flora of Japan. Boston, etc., Houghton, Mifflin and co. 1894. f°. pp. [8], 93. Plates.

First printed in Garden and Forest, 1893.

A forest policy in suspense. (Atlantic monthly, 1897, lxxx, 268–271.)

Report of the committee appointed by the National Academy of Sciences upon the inauguration of a forest policy for the forested lands of the United States to the Secretary of the Interior, May 1, 1897. [By C. S. Sargent and others.] Washington. 1897.

Abies. (Bailey, L. H. Cyclopedia of American horticulture, 1900, i, 1–3.)

The same. (Bailey, L. H. Standard cyclopedia of horticulture, 1914, i, 172-175.)

Rhodora (contributions in).

- iii. 1901. Notes on Crataegus in the Champlain Valley, pp. 19–31; Notes on a collection of Crataegus made in the province of Quebec near Montreal, pp. 71–79.
- v. 1903. Recently recognized species of Crataegus in eastern Canada and New England. Pt. 1–5.
- vii. 1905. Recently recognized species of Crataegus in eastern Canada and New England. Pt. 6.
- xi. 1909. American Crataegi in the Species plantarum of Linnaeus, pp. 181–183.
- xiv. 1912. A Connecticut station for Ilex mollis, p. 205.
- xvii. 1915. Three of Clayton's Oaks in the British museum, pp. 39–40; Washington (George) and Michaux, pp. 49–50.
- xviii. 1916. The name of the Red Oak, pp. 45-48.
- xix. 1917. Botanical activities of Percival Lowell, pp. 21–24.
- xx. 1918. Charles Edward Faxon, pp. 117-122.

Crataegus in northeastern Illinois. [Chicago. 1903.] "Reprinted from the *Botanical Gazette*," 1903, xxxv, 377–404.

Crataegus in Rochester, New York. Rochester. 1903. "Proceedings of the Rochester academy of science," 1903, iv, 93–136.

Recently recognized species of Crataegus in eastern Canada and New England. 6 pt. [Boston, etc. 1903-05.]

"From *Rhodora,*" 1903–05, v. 52–66, 108–118, 137–153, 156–168, 182–187; vii, 162–164, 174–185, 192–219.

CHARLES SPRAGUE SARGENT-TRELEASE

Horatio Hollis Hunnewell. [Boston. 1904.]

"From the Proceedings of the American academy of arts and sciences," 1903-04, xxxix. 656-658.

Huntington, A. O. Studies of trees in winter; with an introduction by C. S. Sargent. Boston. 1905.

"Introduction," pp. xv-xviii.

Crataegus in eastern Pennsylvania. [Philadelphia.] 1905. "From Proceedings of the Academy of natural sciences of Philadelphia, 1905," pp. 577-661.

Trees and shrubs; illustrations of new or little known ligneous plants prepared chiefly from material at the Arnold Arboretum of Harvard University. Edited by C. S. Sargent. 2 vol. Boston, etc., Houghton, Mifflin and co. 1905 ['02]–13. 200 plates. With the collaboration of Alfred Rehder, B. L. Robinson, J. M. Greenman, M. L. Fernald, J. D. Smith, G. R. Shaw, and Alice Eastwood.

— (contributions in). 103 articles, of which 58 describe new species, and 5 new forms, varieties, or hybrids.

Results of spraying experiments against caterpillars of the gypsy and browntail moths. [By C. S. Sargent and others. Boston.] 1905.

Manual of the trees of North America (exclusive of Mexico). Illustrations by C. E. Faxon. Boston, *etc.*, Houghton, Mifflin & co. 1905. pp. xxiii, 826, [1].

The same. [2d impression.] Boston, etc., Houghton, Mifflin & co. 1905. pp. xxiii, 826, [1].

The *same*. 2d ed. Boston, *etc.*, Houghton, Mifflin & co. 1922. pp. xxvi, 910. Map and illustr.

The same. 2d ed., reprinted with corrections. Boston, etc., Houghton, Mifflin & co. 1926.

Letter to H. H. Hunnewell. (Hunnewell, H. H. Life, letters and diary, 1906, i, 255-256.)

The Rhododendrons at Wellesley in 1905. (Hunnewell, H. H. Life, letters and diary, 1906, iii, 96–98.)

The Pinetum at Wellesley in 1905. (Hunnewell, H. H. Life, letters and diary, 1906, iii, 167–168.)

Reprinted with separate pagination.

Species of Crataegus found within twenty miles of Albany. By C. S. Sargent and C. H. Peck. Albany. 1906.

"Reprinted from New York state museum bulletin 105. Report of the state botanist."

Crataegi of Ontario. [Guelph. 1907.] pp. 4. "From the Ontario natural science bulletin, no. 3, Aug. 1907."

The genus Crataegus in North America. London. [1907.] "From the *Journal of botany*, 1907," xlv, 289–292.

Crataegus in southern Michigan. Lansing. 1907. pp. [62]. "Published by the State board of geological survey as a part of the report for 1906 and as a contribution to the Biological survey of the state."

Crataegus in southern Ontario. [Guelph. 1908.] pp. [90]. "From the *Ontario natural science bulletin*, 1908," iv, 11–98.

Some additions to the Crataegus flora of western New York. Notes on a collection of Crataegus made by G. D. Cornell in the neighborhood of Coopers Plains, Steuben County, New York. New York species of Crataegus from various localities. Albany. 1908. pp. [106].

"From N. Y. State museum bulletin 122, Report of the state botanist, 1907."

Das Arnold Arboretum. [Wendisch-Wilmersdorf. 1908.] 2 plates.

"Sonder-abdruck aus Mitteilungen der Deutschen dendrologischen gesellschaft," 1908, pp. 163-166.

Crataegus in Missouri. [St. Louis. 1908–12.] 2 pt. "From the Annual report of the Missouri botanical garden." 1908–1

"From the Annual report of the Missouri botanical garden," 1908-11, xix, 35-126, xxii, 67-83.

American Crataegi in the Species plantarum of Linnaeus. [Boston, etc. 1909.]

"Reprinted from Rhodora," 1909, xi, 181-183.

CHARLES SPRAGUE SARGENT-TRELEASE

The trees of Commonwealth Avenue, Boston. [Boston.] 1909. pp. 8.

"Printed for the author."

Crataegus in Pennsylvania. ii. [Philadelphia.] 1910. "From the Proceedings of the Academy of natural sciences of Philadelphia, 1910," pp. 150-253.

Country life in America. Vol. xx, no. 4. The Rose-lover's number. Edited by C. S. Sargent. Garden City, N. Y., etc. 1911. Illustr.

Roses in the United States, their limitations and their possibilities. (Country life in America, 1911, xx, 19-21.)

A guide to the Arnold Arboretum. Cambridge, The Riverside Press. 1911. pp. [2], 33. Plates and maps.

The same. Cambridge, The Riverside Press. 1912. pp. [2], 33. Plates and maps.

The same. 2d ed. Cambridge, The Riverside Press. 1921. pp. [2], 33. Plates and maps.

Plantae Wilsonianae; an enumeration of the woody plants collected in western China for the Arnold Arboretum during the years 1907, 1908, and 1910 by E. H. Wilson. Edited by C. S. Sargent. 3 vol. Cambridge, University Press. 1913 ['11]-17. (Arnold Arboretum. Publication, 4.)

With the collaboration of W. G. Craib, S. T. Dunn, W. O. Focke, F. Gagnepain, J. S. Gamble, H. Harms, J. Hutchinson, E. Janczewski, E. Koehne, Henri Lecomte, Th. Loesener, J. B. Norton, Alfred Rehder, A. B. Rendle, A. K. Schindler, Camillo Schneider, G. R. Shaw, W. T. Swingle, H. Takeda, and E. H. Wilson.

Plantae Wilsonianae (contributions in).

- i. 1913. Preface, pp. v-vii; Crataegus, p. 178.
- ii. 1916. Phellodendron, p. 136.
- iii. 1917. Carya, p. 187.

Bradley bibliography; a guide to the literature of the woody plants of the world published before the beginning of the twentieth century. Compiled under the direction of C. S. Sargent by Alfred Rehder. 5 vol. Cambridge, Riverside Press. 1911-18. (Arnold Arboretum. Publications, 3.)

i, ii. Dendrology. 2 vol. 1911–12. iii. Arboriculture. 1915. iv. Forestry. 1914. v. Index. 1918.

Preface. (Rehder, Alfred. Bradley bibliography, 1911, i, iii.)

Bulletin of popular information. Issued during spring and autumn. [By C. S. Sargent.] No. 1–63. May 2, 1911–Nov. 5, 1914; New series. Vol. i-xii, April 28, 1915–December 10, 1926. Jamaica Plain. 1911–1926.

Introduction. (Wilson, E. H. Vegetation of western China, 1912, pp. 3-4.)

Crataegus in New York. Albany. 1913. pp. [74].

"From New York state museum bulletin 167, Report of the state botanist, 1912," pp. 53-124.

Introduction. (Wilson, E. H. A naturalist in western China, 1913, i, xvii-xxxvii.)

Arboretum. (Bailey, L. H. Standard cyclopedia of horticulture, 1914, i, 347–352.)

Henry Winthrop Sargent. (Bailey, L. H. Standard cyclopedia of horticulture, 1915, iii, 1594.)

Catalogue of the library of the Arnold Arboretum of Harvard University. Compiled under the direction of C. S. Sargent, by Ethelyn M. Tucker. 2 vol. Cambridge, Cosmos press. 1914–17. (Arnold Arboretum. Publications, 6.)

i. Serial publications—Authors and titles. 1914. ii. Subject catalogue with Supplement to vol. 1. 1917.

Preface. (Tucker, Ethelyn M. Catalogue of the library of the Arnold Arboretum, 1914, i.)

The Arnold Arboretum. [Articles by C. S. Sargent and others. Cambridge, Mass. 1915.] pp. 12. Illustr.

"Reprinted from the Harvard alumni bulletin of May 12, 1915."

The Arnold Arboretum, what it is and does. Garden City, N. Y. 1917. pp. 8. Illustr.

"Reprinted from the Garden Magazine, Nov. 1917."

CHARLES SPRAGUE SARGENT-TRELEASE

American Azaleas and their hybrids. (Rhododendron society notes, 1917, i, 119–121.)

A garden of trees. (Youth's companion, Mar. 15, 1917.)

The trees at Mount Vernon. Report to the council of the Mount Vernon ladies' association of the Union. [Washington? 1917.] pp. 16. Diagr.

"Reprinted from the Annual Report for 1917 of the Mount Vernon ladies' assoc. of the Union."

The same. [New ed. Washington. 1926.] Diagr.

Charles Edward Faxon. [Boston, etc. 1918.] Port. "Reprinted from Rhodora," 1918, xx, 117-122.

"The Walnut tree" [on the grounds of the Episcopal theological school. Letter to Bishop Lawrence. Cambridge, Mass. 1919].

Official bulletin of the Episcopal theological school, 1919, xii, 29.

Journal of the Arnold Arboretum. Edited by C. S. Sargent. Vol. i-viii, no. 1, July, 1919–January, 1927. Lancaster, Pa., Intelligencer Printing Company, etc. 1919–1927.

Journal of the Arnold Arboretum (contributions in).

- i. 1920 ['19–20]. Introduction; Notes on North American trees, v, vi, pp. 61–65, 245–254 (i–iv were published in the Botanical gazette, 1918–19); Notes, pp. 66, 264.
- ii. 1922 ['20-21]. Notes on North American trees, vii, viii, pp. 112-121, 164-174; Notes, pp. 63-64.
- iii. 1922 ['21–22]. Notes on North American trees, ix, x, pp. 1–11, 182–207; Notes, pp. 55–58; The first fifty years of the Arnold Arboretum, pp. 127–171.
- iv. 1923. Notes on North American trees, xi, pp. 99-107.
- v. 1924. Notes on North American trees, xii, pp. 41-49.
- vi. 1925. Notes on Crataegus, pp. 1-5; Notes [from letters of J. F. Rock], pp. 213-216.
- vii. 1926. Corrections and emendations of the second edition of Sargent's Manual of the trees of North America, pp. 1–21.

NATIONAL ACADEMY BIOGRAPHICAL MEMOIRS-VOL. XII

Preface. (Wilson, E. H., and Rehder, Alfred. A monograph of Azaleas, 1921, p. v.)

The first fifty years of the Arnold Arboretum. [Lancaster. 1922.]

"Reprinted from Journal of the Arnold Arboretum," 1922, iii, 127-171.

Corrections and emendations of the second edition of Sargent's Manual of the trees of North America. [Lancaster, 1926.]

"Reprinted from Journal of the Arnold Arboretum," 1926, vii, 1-21.

The greatest garden in America; the Arnold Arboretum. (Home Acres, xiv, 95, 112, 2 fig. February, 1927.)