



---

## A Generally Overlooked Refined Paper

Author(s): E. D. Merrill

Source: *Proceedings of the American Philosophical Society*, Vol. 86, No. 1, Symposium on the Early History of Science and Learning in America (Sep. 25, 1942), pp. 72-90

Published by: American Philosophical Society

Stable URL: <https://www.jstor.org/stable/985080>

Accessed: 02-01-2019 20:13 UTC

## REFERENCES

Linked references are available on JSTOR for this article:

[https://www.jstor.org/stable/985080?seq=1&cid=pdf-reference#references\\_tab\\_contents](https://www.jstor.org/stable/985080?seq=1&cid=pdf-reference#references_tab_contents)

You may need to log in to JSTOR to access the linked references.

---

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



JSTOR

*American Philosophical Society* is collaborating with JSTOR to digitize, preserve and extend access to *Proceedings of the American Philosophical Society*

# A GENERALLY OVERLOOKED RAFINESQUE PAPER

E. D. MERRILL

Administrator of Botanical Collections of Harvard University

## ABSTRACT

A consideration of an overlooked paper published by Rafinesque in 1834, containing 31 generic names and 15 binomials that have been entirely overlooked by all botanists. Some consideration is given to the reasons why Rafinesque's work was ignored by his contemporaries and successors. Fourteen Rafinesque titles are added to Fitzpatrick's bibliography of 1911, eight of which were actually published by Rafinesque between 1820 and 1839. Thirty-four additions are made to Fitzpatrick's *Bibliotheca Rafinesquiana*, nine of which appeared between 1819 and 1901, the remainder between 1912 and 1942. Rafinesque's papers that appeared in various American and European periodicals are briefly discussed, as well as his personally sponsored serials. There follows a brief consideration of somewhat over thirty privately sponsored botanical periodicals initiated in the United States between 1875 and 1942. The problem of determining the exact status of the many hundreds of new genera and several thousands of new species of plants that Rafinesque described is considered, and some of the difficulties are pointed out, with suggestions as to how the task may possibly be accomplished. The paper closes with a transcript of Rafinesque's statements regarding the new genera and new species proposed by him in 1834 (*Act. Soc. Linn. Bordeaux*, 6: 261-269, 1834), and with a list of additions and corrections to *Index Kewensis* based on this study.

IN November, 1834, there appeared a short botanical paper by Rafinesque<sup>1</sup> that has apparently been overlooked by all botanists, including Rafinesque himself if we may judge by the fact that in some of his later works he republished items that appear in this paper but without references to it. The paper is dated at Philadelphia, May 1, 1834, and, like many of Rafinesque's botanical contributions of this period, leaves much to be desired. It falls in the same category as his reviews of the publications of his contemporary American and other botanists,<sup>2</sup> and the publica-

tion of these could only antagonize his coworkers. In these reviews, where Rafinesque differed from the various authors in their conceptions as to the limits of genera and species and in the application of scientific names, he published, in the course of his cursory remarks, scores of new generic and specific names. Although these are difficult to detect, most of them have been included in standard indices, except those that appear in the paper on de Candolle, the subject of this article. In this most casual method of publication of new names Rafinesque was the pioneer, but fortunately for the taxonomists and the systematists his innovation was not followed. In our times it is an unwritten law among botanists that new names shall not be coined in actual reviews and abstracts. In all published papers since Rafinesque's time I know of only one case where this unwritten law has been violated, and the only reason that the binomial *Thea buisanensis* (Sasaki) Metcalf appears in the last Supplement to *Index Kewensis* is that I called the attention of the Kew staff to this strange procedure. Metcalf was reviewing a paper by Sasaki in which the description of *Camellia buisanensis* Sasaki appeared, and de-

<sup>1</sup> Rafinesque, C. S. Remarques botaniques sur quelques plantes de l'Amérique Septentrionale, dans les quatre premiers volumes du *Prodromus* ou *Synopsis plantarum* de de Candolle. *Act. Soc. Linn. Bordeaux*, 6: 261-269, 1834.

<sup>2</sup> Rafinesque, C. S. [Review of] *Flora Philadelphica Prodromus*. . . By Dr. William P. C. Barton. *Am. Month. Mag. Crit. Rev.*, 1: 356-359, 1817.

—. [Review of] *A manual of botany for the Northern States*. . . By Amos Eaton. *Am. Month. Mag. Crit. Rev.*, 1: 426-430, 1817.

—. [Review of] *Flora Americae Septentrionalis*. . . By Frederick Pursh. . . *Am. Month. Mag. Crit. Rev.*, 2: 170-176, 265-269, 1818.

—. [Review of] *Florula Bostoniensis*. . . By Jacob Bigelow. . . *Am. Month. Mag. Crit. Rev.*, 2: 342-344, 1818.

—. [Review of] *A sketch of the botany of South Carolina and Georgia*. By Stephen Elliott. . . *Am. Month. Mag. Crit. Rev.*, 3: 96-101, 1818.

—. [Review of] *The Genera of North American Plants*. . . By Thomas Nuttall. . . *Am. Month. Mag. Crit. Rev.*, 4: 184-196, 1819.

—. Remarques critiques et synonymiques sur les ouvrages de MM. Pursh, Nuttall, Elliott, Jorrey [= Torrey], Eaton, Bigelow, Barton, Muhlenberg, etc. sur les plantes des États-Unis. *Jour. Phys. Chim. Hist. Nat.*, 89: 256-262, 1819.

—. Remarks on the *Encyclopedia of Plants of Loudon*, Lindley, and Sowerby. *Loudon's Gard. Mag.*, 8: 245-248, 1838; reprinted by Britten, *Jour. Bot.*, 38: 225-229, 1900, under the title: "An overlooked paper by Rafinesque."

—. American botany, remarks on the *Flora of North America* by Torrey, Gray [= Gray] and Nuttall. *Good Book*: 37-44, 1840.

liberately made the transfer to *Thea* (see *Lingnan Sci. Jour.*, 12: 180, 1933). What an opportunity this opens up for the "shufflers" as Rafinesque called them, overlooking the fact that he himself was a past master in the gentle art of changing names in a most unorthodox fashion.

Rafinesque's title is included in the Royal Society's *Catalogue of Scientific Papers*, but is missing from Fitzpatrick's<sup>3</sup> comprehensive bibliography of Rafinesque. In the course of my investigations regarding the particular paper that is the subject of this article, I note several other items that Fitzpatrick apparently overlooked, in spite of the fact that most of them are listed in the *Catalogue of Scientific Papers* (5: 75-76, 1871), where a total of forty-three entries are to be found under Rafinesque.

Another reason why Rafinesque did not get along too well with his contemporaries is that, having become familiar with the natural system of classification in Europe, he advocated its adoption in the United States at a time when all our professional botanists were ardent followers of the Linnaean artificial system of classification. Let me quote one violent criticism of the natural system of classification by one of his contemporary American botanists, Amos Eaton, inspired by John Torrey's publication in 1831 of his American edition of Lindley's *Introduction to the Natural System of Botany*. It should be kept in mind that John Torrey was trained in botany by Amos Eaton, and here is a case where the preceptor lagged while his former student forged steadily ahead. In the introduction to the sixth edition of Eaton's *Manual of Botany for North America* (1833), he states:

Since Dr. Faustus first exhibited his printed bibles in the year 1463, no book has, probably, excited such consternation and dismay as Dr. Torrey's edition of Lindley's *Introduction to the Natural System of Botany*. And to make the horrors of students, as well as of ordinary teachers, still more appalling, Dr. Torrey's *Catalogue of American Plants* at the end of his Lindley, was so singularly presented, that it would seem to indicate an awful catastrophe to all previous learning. To relieve all concerned, let me make this pledge: Nothing new is presented either in the text or in the catalogue [*i.e.* his own *Manual*], excepting what ought to have been discovered in this progressive science, since the fifth edition of this *Manual* was printed; and not so much real improvement has been added as between the fourth and fifth

editions. . . . As far as I have any influence I pledge it here, that the embarrassing innovations of De Candolle and others, are of *no possible use* to the science of Botany. . . . An attempt is made by Lindley to prove that the Artificial method of Linnaeus is unnecessary. In doing this he proposes an *Artificial Method*<sup>4</sup> of eleven pages. As those who have not read Torrey's Lindley, will scarcely believe this unaccountable absurdity, they are requested to examine, unbiased, that work between the pages LXVI and LXXX of the introduction. This artificial system is said to lead to the Natural Method. . . . The improvements upon Linnaeus, which have been made, do not authorize any change in the science of Botany other than mere additions and corrections. . . .

It is rather amusing to note Miss McAllister's statement<sup>5</sup> in reference to a published letter written by John Torrey, November 2, 1833, to L. D. von Schweinitz, in that this time Torrey was *more effusive* in his praise of Eaton's *Manual*, quoting: "Have you seen the 6th edn. of Eaton's *Manual of Botany*? . . . I began to read the preface in a bookstore the other day, & it seemed to be a most remarkable performance." What she did not quote was Torrey's statement that he had seen scarcely more than the covers of the book, as he was interrupted before he had finished the first page; and the first page begins with Eaton's castigation of Torrey, my quoted passage: "Since Dr. Faustus first exhibited his printed bibles in the year 1463, no book has, probably, excited such consternation and dismay as Dr. Torrey's edition of Lindley's *Introduction to the Natural System of Botany*." No, Torrey's statement regarding Eaton's work as "a most remarkable performance" cannot be interpreted as "effusive praise," but it is manifestly as sarcastic and ironic as a gentle soul like John Torrey cared to be.

It will be noted, from the data given below, that Rafinesque was not only encyclopedic in his writings, as to subject matter, but also most diffuse as to places of publication. In his own *Life of Travels* (1836: 8-9) he says regarding his education:

<sup>4</sup> This is scarcely true, for what is presented is an *artificial analysis* of the orders, in the form of a key to the classes (Vasculares, Cellulares), subclasses (Exogenae or dicotyledonous plants, and Endogenae or monocotyledonous plants), tribes (Angiospermae, Gymnospermae, Petaloideae, and Glumaceae), and to the families under each division and subdivision, these families, as to limits (but naturally not as to sequence, as at present understood), much the same as they stand today.

<sup>5</sup> McAllister, Ethel M. *Amos Eaton, scientist and educator*. Philadelphia: xiii + 587, 8 pl., 1941 (p. 235).

<sup>3</sup> Fitzpatrick, T. J. *Rafinesque. A sketch of his life with bibliography*. Des Moines: 1-241, 32 pl., 1911.

I never was in a regular College, nor lost my time on dead languages; but I spent it in learning alone and by mere reading ten times more than is taught in Schools. I have undertaken to learn the Latin and Greek, as well as the Hebrew, Sanscrit, Chinese and fifty other languages, as I felt the need or the inclination to study them.

How close Rafinesque was to the modern and generally accepted principles of evolution is indicated by the following quotation from his *Herbarium Rafinesquianum* (1833: 11–12), where he expresses his principles of philosophy in reference to new genera and new species of plants and animals. It will be noted that this sounds “very modern” indeed:

*Extract of a letter to Dr. J. Torrey of New York dated 1st Dec. 1832:*—I shall soon come out with my avowed principles about G. and Sp. partly announced 1814 in my principles of Somiology, and which my experience and researches ever since have confirmed. *The truth is that Species and perhaps Genera also, are forming in organized beings by gradual deviations of shapes, forms and organs, taking place in the lapse of time. There is a tendency to deviations and mutations through plants and animals by gradual steps at remote irregular periods. This is a part of the great universal law of PERPETUAL MUTABILITY in every thing.*

Thus it is needless to dispute and differ about new G. Sp. and varieties. Every variety is a deviation which becomes a Sp. as soon as it is permanent by reproduction. Deviations in essential organs may thus gradually become N.G. Yet every deviation in form ought to have a peculiar name, it is better to have only a generic and specific name for it than 4 when deemed a variety. *It is not impossible to ascertain the primitive Sp. that have produced all the actual; many means exist to ascertain it: history, locality, abundance &c. This view of the subject will settle botany and zoology in a new way and greatly simplify those sciences.* The races, breeds or varieties of men, monkeys, dogs, roses, apples, wheat . . . and almost every other genus, may be reduced to one or a few primitive Sp. yet admit of several actual Sp. names may and will multiply as they do in geography and history by time and changes, but they will be reducible to a better classification by a kind of *genealogical* order or tables.

My last work on Botany if I live and after publishing all my N. Sp. will be on this, and the reduction of our Flora from 8000 to 1200 or 1500 primitive Sp. with *genealogical* tables of the gradual deviations having formed our actual Sp. If I cannot perform this give me credit for it, and do it yourself upon the plan I trace. C. S. R.

There is no doubt as to Rafinesque’s versatility, nor as to the brilliance of his mind, yet at the same time he was most erratic. Weiss<sup>6</sup> does not overstate the case in the following quoted passage:

Rafinesque has been described as an eccentric, absent-minded person, whose classrooms were places of easy behavior. Some of his communications were rejected by the Academy of Natural Sciences as “wild effusions.” His scientific weaknesses have been exposed and described in uncomplimentary adjectives. He did not always give credit to the sources of his information, and this displeased his contemporaries. He started many things, only to abandon them. He was distrustful, and blamed his failures on “secret foes.” He allowed his imagination to run wild. He was a genius. He was egotistical. He was erratic. He did not fit into accepted patterns. And yet in spite of all, he accomplished much that will remain as long as natural history is studied.

Regarding his biological work Rafinesque himself says:<sup>7</sup>

As I think that I am gifted with a peculiar sharp sagacity in discriminating Genera and Species of Plants and Animals, it behooves me to use it in order to rectify these objects and the sciences relating thereto. It is what I have often done, am now doing, and will continue to do as long as I live, not being prevented by the sneer or neglect of any one whom I consider less sagacious than myself, who cannot discriminate between the most conspicuous characters blended by the Linneists or modern Blenders and Schufflers.

And as to his own belief in himself, note the next to the last paragraph in his own *Life of Travels* (1836):

Versatility of talents and of professions, is not uncommon in America; but those which I have exhibited in these few pages, may appear to exceed belief; and yet it is a positive fact that in knowledge I have been a Botanist, Naturalist, Geologist, Geographer, Historian, Poet, Philosopher, Philologist, Economist, Philanthropist. . . . By profession a Traveller, Merchant, Manufacturer, Collector, Improver, Professor, Teacher, Surveyor, Draftsman, Architect, Engineer, Pulmist, Author, Editor, Bookseller, Librarian, Secretary . . . and I hardly know myself what I may not become as yet; since whenever I apply myself to anything, *which I like*, I never fail to succeed if depending in me alone, unless impeded and prevented by lack of means, or the hostility of the foes of mankind.

<sup>6</sup> Weiss, H. B. *Rafinesque’s Kentucky friends*. Highland Park, N. J.: 18, 1936.

<sup>7</sup> Rafinesque, C. S. *New flora of North America*, 4: 6, 1838.

Just how impracticable Rafinesque could be at times is well illustrated by his remarkable letter to Dr. Charles W. Short, February 22, 1822, reproduced by Perkins.<sup>8</sup> Apparently dissatisfied with his position in Transylvania University, and learning of a proposition to establish the Western College of Kentucky in Hopkinsville, he urged Dr. Short to use his influence with a view to offering him the presidency of this proposed new institution. He states:

I conceive that 50 students could easily be procured to begin with, from your town and neighborhood (even young ladies might be admitted as in Cincinnati in the beginning) which at \$40.00 each per year (tuition is now \$50.00 in our Univ'y) tuition would produce \$2000.00 upon which I calculate that a start might be made. I would only require for me from \$1000. to \$1500. say \$1200. to be increased if more pupils are rec'd and two Professors or tutors might be procured from our University for \$400 or \$500 each yearly, to teach the grammar, the latin and greek languages, mathematics, and otherwise help me in my branches, which would be all the arts and Sciences, literature, History, Drawing, the French & Spanish languages &c.

Rafinesque's offer included his library of 1000 volumes, an herbarium of 15,000 specimens, and a cabinet or museum of 5000 specimens of minerals, fossils, shells, insects, animals, etc. Mr. Perkins' comment on this is short and to the point, closing with this statement: "In other words, the \$800.00 left over after Rafinesque's yearly salary might be used, he suggested, to pay two professors and the running expenses of the institution for a year. What an astonishing offer! No wonder it was not accepted."

Other evidence of his impracticability was his persistence in publishing, at his own expense, an extraordinary number of books, pamphlets, and periodicals, between the years 1803 and his death in 1840, other than the numerous papers that he published in various American and European serials. For most of his independently published technical works there could have been only a very limited demand in the United States at the time they appeared. There were few botanists and zoölogists, and few institutions that sponsored this type of investigation at the time Rafinesque was active. Rafinesque realized this, for he states<sup>9</sup> regarding his *Flora Telluriana*: "Only 160 copies

were printed, which makes it high, as but few copies can be sold in America, where Botanists cannot duly appreciate it, and they must be sent to Europe, to be often exchanged instead of sold." Imagine the persistence of an individual, living in Philadelphia in the decade between 1830 and 1840, who had the courage of his convictions, and prepared and published a *Flora* and a *Sylva* of the World! He lived penuriously, devoting every penny and every dollar that he could save from his income, which never could have been very large, to the advancement of his natural history and other work, and to the actual publication of his writings. It is pathetic to note how little encouragement he received from others. In 1821, when he proposed to publish in Lexington, Kentucky, by subscription at \$1.00 per volume, a selection of his miscellaneous works and essays, he met with very little success, for the copy of his prospectus in the *Library of the Museum of Comparative Zoölogy at Harvard University* is apparently the one that he used in canvassing, and this bears the signatures of only eight subscribers! The proposed publication was never issued. Even today, with the vastly increased interest in natural history, with its many thousands of devotees and hundreds of institutions and libraries concerned more or less with the type of technical literature that Rafinesque sponsored, it is very doubtful if receipts from sales would actually cover publication costs had these works been issued a century later.

We should, however, take exception to the current gross exaggeration regarding Rafinesque's paper on lightning (*Western Rev.*, 1: 60-62, 1819). Regarding this Fitzpatrick states:

A popular account of the lightning with descriptions of the various shapes which the flash may assume. This article is the basis of the gross calumny inflicted upon Rafinesque by various writers. They only discredit themselves who charge that Rafinesque deliberately described twelve new species of thunder and lightning.

Yet this is one of the myths that is repeated over and over again. One has only to read the article to realize how false the accusation is.

Botanists are apt to think of Rafinesque primarily as a botanist, and zoölogists tend to consider him as a zoölogist; he was essentially a naturalist. His published papers appertain not only to such diverse phases of natural history as botany, horticulture, ornithology, ichthyology, mammalogy, entomology, conchology, palaeontology,

<sup>8</sup> Perkins, S. E., III. Letters by Rafinesque to Dr. Short in the Filson Club Archives. *Filson Club Hist. Quart.*, 12: 200-239, 1938.

<sup>9</sup> Rafinesque, C. S. *Flora Telluriana*, 4: 4, 1838.



geology, mineralogy, etc., but also to such wide-ranging subjects as geography, meteorology, agriculture, medicine, materia medica, pharmacology, chemistry, metaphysics, political economy, statistics, history, art, commerce, mathematics, legislation, education, banking, ethics, comparative philology, astronomy, archaeology, travel, philosophy, phrenology, Free Masonry, and various other subjects. He even dabbled in literature, writing both prose and poetry. This very diffuseness of publication was undoubtedly another factor that discredited Rafinesque among his contemporaries.

Under these circumstances naturally a complete bibliography is an exceedingly difficult task, and the surprising thing is that Fitzpatrick located so much, listing as he does about nine hundred and forty titles,<sup>10</sup> not including numerous unpublished manuscripts. The situation is further complicated by Rafinesque's listing in his various publications numerous titles of articles that he proposed to publish. Some of these were unquestionably in manuscript form, but others were probably never written. In many cases he gives the titles of manuscripts that he sent to various individuals and organizations for publication—manuscripts that were lost, declined, or merely ignored by those who received them. The following may be added to Fitzpatrick's bibliography of Rafinesque:

Rafinesque, C. S. Ueber eilf neue Sippen von Mollusken, **ausgestellt 1814.** *Isis von Oken* 1820, 1: Lit. Anz., 244-247, 1820.

This is a German translation of Fitzpatrick's item no. 301: "Descriptions de onze genres nouveaux de mollusques, publiés en 1814." *Jour. Phys.*, 89: 150-154, 1819.

—. Natürliche Verwandtschaften zwischen den Sippen *Viscum*, *Samolus* und *Viburnum*. *Isis von Oken* 1821, 2: 978-979, 1821.

This is a German translation of Fitzpatrick's no. 345: "Remarques sur les rapports naturels des genres *Viscum*, *Samolus* et *Viburnum*." *Ann. Gén. Sci. Phys.*, 5: 348-351, 1820.

<sup>10</sup> This is a false total, as Rafinesque's different titles are considerably less than this number. Fitzpatrick numbered each part of the continued works separately, such as the three parts of the *Autikon Botanikon*, which form one continuously paged volume, the several parts of the *Medical Flora*, the *Flora Telluriana*, and the *New Flora and Botany of North America*, while the titles of Rafinesque's various serials are numbered independently of the titles of the papers included in each. The listing of the separate parts of *The School of Flora* between nos. 476 and 604 as 96 separate titles is pure padding. The number of really distinct papers should be reduced by well over a hundred. A certain number are reprints of Rafinesque's papers that were issued by various individuals long after his death.

—. Beschreibung und natürliche Classification der *Floerkea*. *Isis von Oken* 1822, 2: 1319-1321, 1822.

This is a German translation of Fitzpatrick's no. 284: "Description and natural classification of the genus *Floerkea*." *Am. Jour. Sci.*, 1: 373-376, 1819.

—. Drei neue Pflanzensippen aus dem Staate New-York. *Isis von Oken* 1822, 2: 1321-1323, 1822.

A German translation of Fitzpatrick's item no. 285: "Descriptions of three new genera of plants from the State of New-York." *Am. Jour. Sci.*, 1: 377-379, 1819.

—. Über *Myosurus Shortii*. *Isis von Oken* 1822, 2: 1322, 1822.

A German translation of Fitzpatrick's no. 286: "Notice on the *Myosurus Shortii*." *Am. Jour. Sci.*, 1: 379-380, 1819.

—. Remarques botaniques sur quelques plantes de l'Amérique Septentrionale, dans les quatre premiers volumes du *Prodromus ou Synopsis plantarum* de de Candolle. *Act. Soc. Linn. Bordeaux*, 6: 261-269, 1834.

—. Sur les fossiles de la vallée Sherman des monts Alleghany. *Bull. Soc. Géol. France*, 10: 381-383, 1839.

—. Descriptions des genres fossiles *Ditaxopus*, *Trianisitis*, *Troxites*, *Menepites*, et *Trianistes*. *Bull. Soc. Géol. France*, 10: 378-381, 1839.

—. Neogenyton, or indication of sixty-six new genera of plants of North America: 1-4, 1825.

No. 1 of a series of reprints of rare classical works of natural history, issued by the *American Midland Naturalist*, July, 1912. Supplementary to Fitzpatrick's no. 474.

—. Monographie des coquilles bivalves et fluviatiles de la rivière Ohio. Remarques sur les rapports naturels des genres *Viscum*, *Samolus* et *Viburnum*. A Bruxelles, de l'Imprimerie de Weissenbruch père, Rue du Musée, No. 1057. 1820 [part of *Annals of Nature*] pp. 17 to 60 (41 pages).

No. 2 of a series of reprints of rare classical works of natural history, issued by the *American Midland Naturalist*, July, 1912. The title is as printed in that journal. The title-page, second page, and three plates are said to be facsimile reproductions, the text a word-for-word reprint. This is supplementary to Fitzpatrick's Nos. 344, 345, 363, 934, the originals of both papers included being in the *Ann. Gén. Sci. Phys.*, 5: 287-322, 348-351, 1820.

—. 10. Scadiography of 100 genera of ombelliferous plants, etc.: 49-61, 1840.

No. 3 of a series of reprints of rare classical works of natural history, issued by the *American Midland Naturalist*, July, 1913. This is a reprint of pp. 49-61 from Rafinesque's *Good Book*. Supplementary to Fitzpatrick's no. 911.

—. 5. Botany. The natural family of Carexides: 23-28, 1840.

No. 4 of a series of reprints of rare classical works of natural history, issued by the *American Midland Naturalist*, July, 1913. This is a reprint of pp. 23-28 from Rafinesque's *Good Book*. Supplementary to Fitzpatrick's no. 906.

—. *Autikon Botanikon*: 1-200, 1840.

A facsimile lithoprint reproduction of this work, July, 1942, Arnold Arboretum, Jamaica Plain, Mass. Supplementary to Fitzpatrick's nos. 897, 898, 899.

To Fitzpatrick's *Bibliotheca Rafinesquiana* (pp. 223-239), may be added:

- Anonymous. The *Lexington Herald*: Body of Rafinesque, famous scientist, is brought to Transylvania College. March 1, 1924. *Medical Life*, 31: 155-158, 1924.
- . Constantin Rafinesque. *Missouri Bot. Gard. Bull.*, 15: 164-171, 1927.
- . Celebrated conservationists and naturalists in our National Parks. Constantin Samuel Rafinesque. U. S. Dept. Interior, press release: 1-11, 1938.
- Barkley, A. H. Constantin Samuel Rafinesque. *Ann. Med. Hist.*, 10: 66-76, 2 portr., 1928.
- Barnhart, J. H. Brief sketches of some collectors of specimens in the Barton Herbarium. *Bartonia*, 9: 35-42, 1926 (Rafinesque, p. 41).
- Chase, A. The Durand Herbarium. *Bartonia*, 17: 40-45, 1936.
- On page 44 Mrs. Chase notes that Durand preserved none of Rafinesque's type specimens of the grasses.
- Coulter, J. M., and Rose, J. N. Musineon of Rafinesque. *Bot. Gaz.*, 20: 258-260, 1895.
- Coville, F. V. The technical name of the camas plant. *Proc. Biol. Soc. Washington*, 11: 61-65, 1897.
- Fernald, M. L. Some genera and species of Rafinesque. *Rhodora*, 34: 21-28, figs. 1-6, 1932.
- Haag, H. B. Rafinesque's interests—a century later; medicinal plants. *Science*, n.s., 94: 403-406, 1941.
- Hance, A. M. Rafinesque; the great naturalist. A paper read before the Bucks County Historical Society at Langhorne [Pa.], June 4th, 1914. 1-12, 1914.
- Harrison, I. W. The Transylvania Botanic Garden. A little-known American enterprise of great historic, scientific, and educational interest. A study of "The Athens of the West"—Lexington, Kentucky. Home of the first printing press, newspaper, public library, and university, west of the Alleghenies. A pioneer naturalist of a century ago [Constantin Samuel Rafinesque] and the botanic garden he sought to found. *Jour. Am. Hist.*, 7: 901-909, 1913.
- Heck, E. L. W. Constantine Rafinesque. *Sci. Monthly*, 25: 554-558, 1927. (Reprint: 1-5.)
- Jordan, D. S. The bones of Rafinesque. *Science*, n.s., 59: 553-554, 1924.
- Leonard, W. E. Some early Philadelphia botanists; Schweinitz, Nuttall, Rafinesque and Darlington. *Bull. Minnesota Acad. Nat. Sci.*, 3: 29-37, 1889. (Rafinesque, pp. 31-35.)
- Merrill, E. D. Modern facsimile reproductions of rare technical publications. *Science*, n.s., 96: 180-181, 1942.
- Pennell, F. W. "Unrecorded" genera of Rafinesque. —1. Autikon Botanikon (1840). *Bull. Torrey Bot. Club*, 48: 89-96, 1921.
- . Elias Durand and his association with the Academy of Natural Sciences of Philadelphia. *Bartonia*, 17: 33-39, 1936.
- Includes important data regarding the fate of Rafinesque's herbarium.
- . New light on Rafinesque. *Chron. Bot.*, 6: 125-126, 1940.
- . The life and work of Rafinesque. An address delivered at Transylvania College, Lexington, Kentucky, at the centennial held in Rafinesque's honor on October 30, 1940. Lexington: 1942 (in press).
- . Botanical collectors of the Philadelphia local area. *Bartonia*, 21: 38-57, 1942.
- Includes very important data regarding Rafinesque's herbarium, pp. 50-55.
- Perkins, S. E., III. Letters by Rafinesque to Dr. Short in the Filson Club Archives. *Filson Club Hist. Quart.*, 12: 200-239, 1938.
- Rehder, A. Note on *Basilima* and *Schizonotus* of Rafinesque. *Bot. Gaz.*, 32: 56-58, 1901.
- Rhoads, S. N. Rafinesque as an ornithologist. *Cassinia*, 15: 1-12, portr., (1911) 1912.
- . Additions to the known ornithological writings of C. S. Rafinesque. *Auk*, 29: 191-198, 1912.
- Includes reproductions of two papers by Rafinesque published in the *Kentucky Gazette* in 1822, under the subtitle of *The Cosmonist*, nos. 3 and 4, with notes.
- . Ornithological notes of Rafinesque in the *Western Review and Miscellaneous Magazine*, Lexington, Ky. *Auk*, 29: 401, 1912.
- Brief abstracts of Rafinesque's notes on birds and meteorological subjects.
- Rodgers, A. D., III. John Torrey, a story of North American botany. Princeton: 1-352, 1 portr., 1 map, 1942.
- Rafinesque, pp. 16, 22, 24-25, 29-34, 36, 38, 68, 89, 99, 107-108, 148, 229.
- Smyth, S. G. Rafinesque. The errant naturalist. *Hist. Soc. Montgomery County [Pa.] Historical Sketches*, 6: 300-341, 1 pl., 1929.
- Sprengel, K. Florula Ludoviciana 1817. *Jahrb. Gewächsk.*, 1(2): 165-166, 1819.
- . Constant. Sam. Rafinesque's neueste Entdeckungen. In his: *Neue Entdeck.*, 1: 142-146, 1820.
- Steudel, E. G. Ueber C. F. [sic!] Rafinesque in Philadelphia literarische Arbeiten und Tausch-Anerbietungen. *Flora*, 3(1), Beil., 2: 33-42, 1820.
- Tornabene, F. Quadro storico della botanica in Sicilia che serve di prolusione all' anno scolastico 1846 e 1847 nella Regia Università degli studi in Catania: 1-70, 1847.
- Includes a brief summary of Rafinesque's published work on the flora of Sicily, pp. 50-51, with data regarding his proposed but never consummated publication of Cupani's plates of the *Ponphyton Siculum* (Pritzel, no. 1995); see Fitzpatrick's item no. 23.
- Weiss, H. B. Rafinesque's Kentucky friends. Highland Park, N. J.: 1-70, 25 pl., 1936.
- The illustrations are reproductions of Rafinesque's sketches of various individuals he knew, chiefly residents of Kentucky, the originals in the library of Transylvania College, Lexington, Kentucky.
- Welden, L. von. Rafinesque Entdeckung neuer Gewächse im Schwimmen. *Flora*, 5(2): 719, 1822.
- This very curious title appears only in the Inhaltsverzeichnis in the Sechste Beilage, page 86. In the text the article appears under the heading "Curiosa."
- Whaler, J. Green River, a poem for Rafinesque. New York: 1-153, 1931.

#### RAFINESQUE'S PUBLICATIONS IN AMERICAN PERIODICALS

As one scans a chronological list of Rafinesque's published papers, one notes immediately that, as

far as publication in periodical literature is concerned, the period of acceptance for publication in any one serial is always short, and this applies to both the American and the European periodicals to which he sent manuscripts. Some of the American periodicals, with the years in which Rafinesque papers appear, are: *The Medical Repository*, 1804; *The Philadelphia Medical and Physical Journal*, 1805; *The American Monthly Magazine and Critical Review*, 1817–19; *The American Journal of Science and Arts (Silliman's Journal)*, 1818–21; *The Western Review and Miscellaneous Magazine*, 1819–21; *The Kentucky Gazette*, 1821–22; *The Cincinnati Literary Gazette*, 1824; *The Saturday Evening Post (Atkinson's Post)*, 1826–31; *The Casket, or Flowers of Literature, Wit and Sentiment (Atkinson's Casket)*, 1826–31; and *The Monthly American Journal of Geology and Natural Science*, 1832.

Doubtless the reason why Rafinesque did not continue to contribute to any single periodical for more than a few years, is indicated in a footnote to the following paragraph in Asa Gray's essentially fair summarization of Rafinesque's botanical work:<sup>11</sup>

A gradual deterioration will be observed in Rafinesque's botanical writings from 1819 to about 1830, when the passion for establishing new genera and species appears to have become a complete *monomania*. This is the most charitable supposition we can entertain, and is confirmed by the opinions of those who knew him best.

The footnote from this passage by the editor of the *Journal* (Benjamin Silliman) is as follows:

It was in this year (1819) that I became alarmed by a flood of communications announcing new discoveries by C. S. Rafinesque, and being warned, both at home and abroad, against his claims, I returned him a large bundle of memoirs, prepared with his beautiful and exact chirography, and in the neatest form of scientific papers. This will account for the early disappearance of his communications from this *Journal*. The step was painful but necessary, for if there had been no other difficulty, he alone would have filled the *Journal*, had he been permitted to proceed.

We can only assume that editors of other periodicals found it necessary to take similar action.

It will be noted that many of the American periodicals in which Rafinesque published are not strictly the type in which later generations of tax-

onomists would expect to find systematic papers. Complete sets of some of these are rare in American libraries, and if American scientists are handicapped in gaining access to some of Rafinesque's papers, how much more seriously handicapped are our European colleagues! Still it should be remembered that in Rafinesque's time there were no American botanical periodicals, the first one in North America, the *Bulletin of the Torrey Botanical Club*, not being established, and then only on a very modest scale, until 1870, and the second, *The Botanical Gazette*, on an equally modest scale five years later.

#### RAFINESQUE'S PUBLICATIONS IN EUROPEAN PERIODICALS

If Rafinesque scattered his contributions to American serials, to the vexation of most scientists who must occasionally consult them, he was equally diffuse in his sendings to European periodicals; and acceptance or rejection of his papers there apparently followed the American pattern mentioned above. Some of these foreign periodicals are: *Bulletin des Sciences de la Société Philomatique de Paris* (1803); *Journal de Botanique*, Paris (1808–09); *Journal de Botanique* (Desvaux) (1813–14); *The Philosophical Magazine and Journal*, London (1819); *Journal de Physique, de Chimie et d'Histoire Naturelle, et des Arts*, Paris (1819–20); *Isis von Oken* and its supplement, the *Litterarischer Anzeiger*<sup>12</sup> (1819–21); *The Quarterly Journal of Science, Literature and Arts*, London (1820); *Annales Générales des Sciences Physiques*, Brussels (1820–21); *The Gardener's Magazine and Register of Rural and Domestic Improvement*, London (1832); *Actes de la Société Linnéenne de Bordeaux* (1834); *Bulletin de la Société Géologique de France*, Paris (1839); and *Journal of the Royal Geographical Society of London* (1841). As many of the American periodicals favored with Rafinesque's contributions are not generally available to European scientists, so also, most of the European periodicals listed above were, and in many cases still are, not generally accessible to their American colleagues.

#### RAFINESQUE'S PRIVATE PERIODICALS

A third and interesting category of Rafinesque's serial publications comprises those periodicals, all

<sup>12</sup> This is usually cited by Fitzpatrick merely as *Litterarischer Anzeiger*. This forms a separately paged part of certain volumes of *Isis von Oken* as *Litterarischer Anzeiger sur Isis* or merely as *Litterarischer Anzeiger*.

<sup>11</sup> Gray, A. Notice of the botanical writings of the late C. S. Rafinesque. *Am. Jour. Sci.*, 40: 221–241, 1841.



short-lived, that he established, edited, and published, such as the *Specchio delle Scienze o Giornale Enciclopedico di Sicilia* (1814); *The Western Minerva; or American Annals of Knowledge and Literature* (1820); *Annals of Nature* (1820); *The Atlantic Journal and Friend of Knowledge* (1832–33); the *Herbarium Rafinesquianum* (1833); the *Bulletin of the Historical and Natural Sciences* (1836–39); and *The Good Book and Amenities of Nature* (1840); most of these did not get beyond volume one, and some ceased with number one. These were all projected as periodicals. In addition to his own short-lived serials and the numerous papers published by him in various foreign and domestic periodicals, he independently published a great many pamphlets and books, and some of these items are now among the rarest of botanical papers, existing in only a very few libraries. It is worthy of note that in the second edition of his *Thesaurus* (1871) Pritzl admitted only four of Rafinesque's works, although in the first edition (1851) he listed fifteen titles. This probably reflects the poverty of European botanical libraries in Rafinesque's publications.

#### RAFINESQUE'S OVERLOOKED NAMES

One result of Rafinesque's publication methods has been most unfortunate, in that some of his generic names and very many of his published binomials are not listed in any botanical indices to date. Thus eighty-three new generic names and seventy new binomials published by Rafinesque in his *Autikon Botanikon* in 1840 were not listed in *Index Kewensis* until the seventh supplement appeared in 1929, and then the entries were made from Pennell's paper, "Unrecorded Genera of Rafinesque" (*Bull. Torrey Bot. Club*, 48: 89–96, 1921); there was no copy of the *Autikon Botanikon* at Kew. Incidentally there are several hundred validly published binomials in this work that are still not included in *Index Kewensis*. The numerous new names in several other volumes and some of Rafinesque's scattered small papers still remain to be listed. It is suspected that these overlooked and unrecorded generic and specific names, published in 1840 and earlier, may exceed one thousand and possibly approximate fifteen hundred. Because of the homonym rule, if for no other reason, it is highly desirable that these names be listed, and I personally think that after a lapse of over a hundred years it is high time that this task was accomplished; I plan to prepare and publish such a list.

#### A REVIEW OF AMERICAN PRIVATE BOTANICAL PERIODICALS

In the establishment of privately published, short-lived technical periodicals, consisting solely of papers prepared by the proprietor-editor-publisher, Rafinesque was apparently the pioneer in his *Specchio delle Scienze* (1814), *Annals of Nature* (1820), and others mentioned above, for he had an overwhelming urge to publish. In this particular field he had no followers in the United States until toward the end of the nineteenth century, when the publication urge again became strong with various botanists, and the idea burgeoned anew and with a diversified assortment of titles, in printing good, bad, and indifferent. This American botanical effort is summarized below. In this recrudescence Greene, characterized by Underwood as Rafinesque's one real successor, like Rafinesque, changed his titles at intervals, including *Pittonia*, 1–5 (1887–1905), *Leaflets of Botanical Observation and Criticism*, 1–2 (1903–12), and *Cybele Columbiana* (1914) (only volume one, number one, issued). But we may also list the Brandegee-Eastwood-Brandegee *Zoe*, 1–5 (1890–1908), the Orcutt *West American Scientist*, 1–22 (1884–1919), the Orcutt *American Botanist*, 1 (1, 2) (1898–1900), the Orcutt *American Plants*, 1–3 (1907–12), the Orcutt *Orcutt*, 1 (1 only) (1897),<sup>13</sup> the Jepson *Erythraea*, 1–7 (1893–99) plus 8, nos. 1–13 (1922 and 1938), the Heller and Heller-Kennedy *Muhlenbergia*, 1–9 (1909–1915), the Kellermann *Journal of Mycology*, 1–14 (1883–1915), the Fitzpatrick *Iowa Naturalist*, 1–3 (1905–11), the Bailey *Gentes Herbarum*, 1–5 (1920–42), the Suksdorf *Werdenda*, 1 (1–8) (1923–31), the Blanchard *Betula*, 1 (1, 2) (1904), the Jones *Contributions to Western Botany*, 1–18 (1891–1935) (in part consisting of reprints from other periodicals), the Ames *Schedulae Orchidaceae*, 1–10 (1922–31), the Elmer *Leaflets of Philippine Botany*, 1–10 (1906–1939), the Eastwood-Howell *Leaflets of Western Botany*, 1–3 (1932–42), the Gleason-Moldenke *Phytologia*, 1–2 (1933–42), the Clute *American Botanist*, 1–48 (1901–1942), the Clute *Fern Bulletin*, 1–20 (1893–1912) (volumes 1–4 as the *Linnaean Fern Bulletin*), *The Asa Gray Bulletin*, 1–8 (1893–

<sup>13</sup> The only part of this issued, to my knowledge, is the very poorly printed number one, consisting of twelve pages "price 15 cents, issued weekly, \$5.00 a year in advance," with a proposition for life subscriptions at \$50.00! The one part issued is of no botanical or other value and is worthy of mention here only as a bibliographical curiosity because of its extraordinary title.

1900), the Grout-Smith *The Bryologist*, 1 (1898) to 14 (1911), after which it was taken over officially by the Sullivant Moss Society and is now in its forty-fifth volume, the Knowlton-Pollard-Lloyd-Shreve *Plant World*, 1-22 (1897-1919), the Gleason-Fulling *Botanical Review*, 1 (1935) -8 (1942), and even *Lorquinia*, 1-2 (1916-1917). An abortive attempt to establish a periodical is perhaps represented by the Ashe *Botanical Contributions from my Herbarium*; one wonders just why the redundant word "Botanical" was included. No. 1 was issued privately October 28, 1897, the title of the one article being: "The genus *Asarum* in Eastern America." The paper was apparently written for the *Journal of the Elisha Mitchell Scientific Society*, but no explanation is given of its earlier issue as an independent publication. It appears, with some eliminations and emendations in that journal (14: 31-36, 1897) as: "The glabrous leaved species of *Asarum* of the Southern United States," without the "Botanical Contributions" part of the title. The series was continued in the form of reprints from various periodicals as *Contributions from my Herbarium*. The Smith *Species Lupinorum* (1938-1942), twenty signatures, must, I believe, be considered as a periodical. It is privately published (offset reproduction of typed copy, like *Phytologia*) in Saratoga, Calif. What may prove to be even another privately published serial is advertised by the same author (Charles Piper Smith) at the bottom of page 304 of signature nineteen, September, 1941, as: "Two signatures of 'Geranium Records' are also available"; I have seen no copy of this. Perhaps the most extraordinary of all of these is the very recent Davis *Nature Leaflet*, number one, 1941, presumably published in Brownsville, Texas.<sup>14</sup> The *Mycological Writings of C. G. Lloyd*, 1-7 (1898-1925), probably belongs in this category as it was issued during the period that the author operated the

<sup>14</sup> This very recent attempt is in a class by itself, and violates most accepted principles of technical publication, in that it is unpagged and bears no place of publication. It is a small folder, 15.5 × 9.5 cm., consisting of a title-page and a page and a half of text containing the technical description of *Verbena cameronensis* sp. nov. by L. Irby Smith. It was issued August 15, 1941, with a "second printing" August, 1941, "correcting the errors in the first." At the bottom of the title-page is the imprint "Lower Rio Grande Valley Nature Club." Its price is given as five cents. Regarding it, Dr. W. H. Camp (*Taxonomic Index*, 4: entry 305, 1941) says: "Because of certain Post Office laws, our opinion of such media for publication of new species cannot be expressed here."

Lloyd Library, which in 1938 established a standard quarterly periodical under the name of *Lloydia*. The Tidestrom *Elysium Marianum* [1-3] (1906-10) is perhaps to be considered rather as small individual volumes than as a "periodical."<sup>15</sup>

As to names, *Werdenda* is perhaps the most curious, being a hybrid of German-Latin construction. Suksdorf had encountered difficulties in getting his papers, written wholly in German, accepted for publication in German and American periodicals, and solved his difficulties by establishing his own medium of publication. He explains the name *Werdenda* thus: "Der Name 'Werdenda' soll dieses andeuten: zugleich ist damit auch die Gegenwart gemeint, den diese ist der Zeitraum oder der Augenblick des Werdens<sup>16</sup> und des Wachsens. Eine der Nornen heisst *Werdendi*, die Gegenwart." Comment on Orcutt's peculiar title for his abortive journal *Orcutt* is superfluous.

In some of these periodicals, particularly those of Jones and Orcutt, the printing leaves very much to be desired, being not unlike some of Rafinesque's attempts at private publication, but in others

<sup>15</sup> Contemporaneous with and immediately following Rafinesque is a curious series of titles, some of which, on occasion, were considered as botanical, although in them botany is conspicuous largely by its absence. They are for the most part periodicals devoted to the support of the Thomsonian system of medicine, a system that quickly gained its apogee and as quickly declined. One of the doctrines was that as all minerals are from the earth, their use tends to send men to their graves; ergo, if one uses mineral drugs, one dies early, but if one uses herb remedies, one presumably might live forever, or at least greatly prolong one's life, as herbs grow upward. This phenomenon is mentioned here in passing because not infrequently one finds runs of these magazines in botanical libraries, because trusting and not too well-informed librarians and even directors of botanical institutions have been beguiled into purchasing such sets from the titles. Dr. Samuel Thompson of Massachusetts lived from 1769 to 1843, and I note that as late as 1889 this statement is made: "Even to this day Thomsonianism has its votaries, and lobelia and rum sweats are retained with the tenacity of old friends" (*Pop. Sci. News*, 23: 61, 1889). Among the titles are the *Botanic Investigator*, 1 (1-5) (1835), *Botanic Journal*, 1 (1-11) (1836-37), *Botanic Luminary*, 1-2 (1836-38), *Botanic Watchman*, 1-2 (1834-35) (*The sun of science arising upon the flora of North America*), *Botanic Advocate*, 1 (1-11) (1835-36), *Botanic Advertiser*, 1-5 (1839-40), *Botanic Sentinel*, 1-8 (1835-44), with various others published here and there in Poughkeepsie, Boston, Maryville, Norwich, Burlington, Manchester, Cincinnati, Philadelphia, and probably in other centers as "Thomsonian" periodicals but without the modifying term "Botanic." The period covered is from about 1834 to 1840, a few persisting until 1844.

<sup>16</sup> Werden to become, grow; to be created; to happen or occur.

it is excellent, there being all shades of gradation from atrociously bad to thoroughly good. Incidentally, the language in some of these privately operated periodicals is distinctly robust when it comes to the expression of frank opinions on the part of certain of these author-editor-proprietor-publishers regarding details of the work of their associates and contemporaries, in some cases sinking to the level of personal vituperation. I am somehow reminded of President Lowell's comment, when he had to settle some problem that arose among certain *prima donna* botanists at Harvard: "What is it about the pretty little flowers that make the botanists quarrel so much among themselves?" And here I feel inclined to interpolate a quotation from Bret Harte:

Now, I hold it is not decent for a scientific gent  
To say another is an ass—at least, to all intent;  
Nor should the individual who happens to be meant  
Reply by heaving rocks at him to any great extent.

Occasionally one can smile at an editor-author-proprietor's expressed opinion of himself, for I have always been intrigued by this gem:

Come to think of it, this magazine [*The Fern Bulletin*] and the *American Botanist* [also published by the same individual] are about the only two botanical publications that can boast an editor. The so called editors on [sic!] most of the others are mere proof readers and copy holders—sort of elevated office boys. (*Fern Bull.*, 19: 24, 1911.)

It will be noted that most of these hopefully established "personal" periodicals are western in origin, but the east held the record for brevity in Blanchard's *Betula* (1904) that consists of volume one, numbers one and two, with a total of three printed pages, until the even more abbreviated Davis *Nature Leaflet* appeared in 1941. While I have confined my attention to the American contributions to this type of private botanical serials, the phenomenon is by no means confined to the United States nor to botany.

#### EARLY EUROPEAN PRIVATE BOTANICAL PERIODICALS

In any discussion of privately published botanical periodicals it is only fair to note that in the beginning of botanical serial publications the earliest ones were all privately sponsored. As these were more or less in advance of their times, the mortality was great, for few persisted for more than one to three volumes. Among the pioneer

botanical serials may be mentioned the *Usteri Magazin für die Botanik—Annalen der Botanik—Neue Annalen der Botanik*, 1–24 (1787–97), the *Römer Neues Magazin für die Botanik*, 1 (1794), the *Botanical Review, or the Beauties of Flora*, 1 (1789–90), the *Römer Archiv für die Botanik*, 1–3 (1796–1803), the *Schrader Journal für die Botanik*, 1–5 (1799–1803), the *Schrader Neues Journal für die Botanik*, 1–4 (1806–10), the *König and Sims Annals of Botany*, 1–2 (1805–06), the *Journal de botanique* (Desvaux), 1–4 (1813–14), and its predecessor *Journal de botanique* (Paris), 1–2 (1808–09), the *Sprengel, Schrader, and Link Jahrbücher für Gewächskunde*, 1–3 (in one) 1818–20, the *Guillemin Archives de Botanique*, 1–2 (1833), the *Duchartre Revue botanique*, 1–2 (1845–47), the *Henfrey Botanical Gazette*, 1–3 (1849–51), and the *Miquel Journal de botanique néerlandaise*, 1 (1861). In none of these were the included articles limited to the writings of the editors, but the pages were apparently open to any responsible contributor. Junk<sup>17</sup> gives some interesting data on the beginnings of botanical periodical literature.

#### INSTITUTIONAL VERSUS PRIVATE PERIODICALS

There are, of course, some serials optimistically initiated by institutions and organizations, that, like most of the personally operated ones, languish and die after a relatively short period of issue. The causes for their demise are various, but not infrequently their disappearance may be explained by the sudden departure or death of the individual who initiated the enterprise. Thus the *Pomona College Journal of Economic Botany and Subtropical Horticulture* came to an untimely end when its founder, Charles F. Baker, left to accept an appointment in the Philippines. Its life was about three years, 1 (1911) to 3 (1913), actually forming one continuous volume of 482 pages. There is no very sharp line of distinction between what I have called personal serials and institution- or organization-sponsored ones. Occasionally a personally operated serial may be taken over as an institutional one, as illustrated by the *Kellermann Journal of Mycology*, which suspended publication in 1908 and was immediately taken over by the New York Botanical Garden under the title *Mycologia* in 1909, and still later, in 1933, was made the official organ of the Mycological Society of America, thus now enjoying both insti-

<sup>17</sup> Junk, W. Die Anfänge der Botanischen Zeitschriften-Litteratur. *Rara Hist.-Nat. Math.*, 1: 37–39, 1903.

tutional and organizational support. Attention is also called to the fact that one of our leading botanical periodicals, *The Botanical Gazette*, was commenced by John M. Coulter in 1875 (the title of its small first volume being the *Botanical Bulletin*) as a privately published serial, and continued by Coulter and his associates until Vol. 21 (1896) as such, when it became officially sponsored by the University of Chicago.

The chances of survival is infinitely better with institution- or organization-sponsored periodicals than with those hopefully initiated by individuals. Of over thirty personal botanical serials commenced between 1875 and 1941 in the United States, only a very few continue to appear, and several of these few lead a distinctly tenuous existence; I say "tenuous," for volume one of the Gleason-Moldenke *Phytologia*, initiated in 1933, closed with number fifteen in 1941, an eight-year interval, and in 1941-42 only two small numbers of volume two have appeared, while the Eastwood-Howell *Leaflets of Western Botany*, established in 1932, is now in its third volume. The Jepson *Erythraea* is in a category by itself. After seven volumes were issued, its publication was suspended in 1899. Twenty-two years later volume eight, numbers 1-12, suddenly appeared, and after another lapse of sixteen years volume eight, number 13, was issued in December, 1938; there is no evidence that this serial is defunct. The Brandegee-Eastwood-Brandegee *Zoe* also suffered a lapse. Volumes one and two (1890-1892) were issued by T. S. Brandegee, volume three (1892-93) by Alice Eastwood, volume four (1893-94) by a group of six individuals; it was then suspended. Six years later it was resurrected by Katherine Brandegee, eleven numbers, forming the incomplete volume five, appearing between 1900 and 1908. With records like these is it any wonder that librarians grow gray? I think it is evident that many of those who initiated these "private" periodicals were individualists, impatient of delay in publication and firmly convinced that what they had to offer was worthy of publication. They did not hesitate to back their convictions by publishing their serials at least partly at their own expense, for rarely have these children of the botanical mind been wholly supported by receipts from sales and subscriptions. In botany, as in other fields of natural science, the demand for technical, semitechnical, and sometimes even popular serials is limited, and those that have succeeded in maintaining themselves over a long term of years have been in general

those that have been subsidized by institutional funds or provided for through membership dues in special societies. The editorial and other work associated with these privately operated publications has always been a labor of love, for the profit incentive is absent.

#### OPINIONS OF RAFINESQUE'S WORK

Doubtless there are those who would most gladly outlaw all or most of Rafinesque's systematic papers were it possible to do so, but, with others, I hold that the good should be retained, in spite of the often rather unorthodox methods of presentation and publication. As expressed by Underwood:<sup>18</sup>

He published voluminously and so miscellaneously that some of his papers are still coming to light. Much of his work is worthless, yet there are veins of good interlarded among the bad that it still remains the task of the future to sift and save. In his crazy notions regarding the multiplicity of species, Rafinesque has no equals, a few weakling imitators, and only one real successor.<sup>19</sup>

No matter what we, our predecessors, and our successors may think of Rafinesque and his work, we cannot afford to forget Dr. John Torrey's statement<sup>20</sup> regarding his ability as a naturalist, for he, knowing Rafinesque personally, writing in about 1821, states: "He is the best naturalist I am acquainted with, but he is too fond of novelty. He finds too many new things. All is new!" On which Mr. James remarks: "A fault which is common to many even of our modern scientists, and for which Rafinesque ought not to be blamed any more than another."

It is, of course, regrettable that Rafinesque did not conform more closely to the concepts of his contemporaries, in reference to the delimitation of genera and of species, and particularly in his methods of presentation. That he was a very

<sup>18</sup> Underwood, L. M. *Pop. Sci. Monthly*, 70: 511-512, 1907.

<sup>19</sup> By "only one real successor" Dr. E. L. Greene is indicated, and I would certainly add the names of Michael Gandoger (1850-1926) and Augustin Abel Hector Léveillé (1863-1918). I am not so sure that some of our more recent American botanists do not qualify. I should add here that Underwood did not originate this characterization of Greene; see Katherine Brandegee (*Zoe*, 4: 420, 1894), who, in reviewing a paper by Greene, states: "A year or two before his death Dr. Gray dubbed the author 'The new Rafinesque.' In this he was unjust to Rafinesque who was at once a great egotist, a little mad, and somewhat of a genius. Prof. Greene lacks the genius."

<sup>20</sup> James, J. T. A letter from Dr. Torrey to Amos Eaton. *Bot. Gaz.*, 8: 289-291, 1883.



keen observer and a naturalist of most unusual attainments is clear, but where he failed was in his concepts of the limits of genera and species and in his methods of presentation of the published word.

His was the opportunity, as a pioneer botanist, working on the then relatively little-known North American flora, to clarify rather than to confuse, and yet all who work with his published data will agree that he confused rather than clarified. Manifestly his name was anathema to his contemporaries, and as he left literally hundreds of problems for later generations of systematists to solve, I am afraid that to most of my contemporaries his name is still anathema. No more scathing criticism can be levelled at a modern taxonomist than to characterize his work as Rafinesquian. And yet such a conservative botanist as Asa Gray, writing about Rafinesque's work in 1841, states: <sup>21</sup>

It is indeed a subject of regret, that the courtesy which prevails among the botanists of the present day, (who are careful to adopt the names proposed by those who even suggest a new genus) was not more usual with us some twenty years ago. Many of Rafinesque's names should have been adopted; some as a matter of courtesy, and others in accordance with strict rule.

#### MODERN INVESTIGATIONS OF THE WORK OF EARLY BOTANISTS

I know that I have been subjected to published and spoken criticism by various botanists working on problems involving species described by Rumphius, Blanco, Llanos, Burman, Osbeck, and Loureiro, particularly when my conclusions have shown the necessity, under the prevailing rule of priority, of displacing a widely used binomial in favor of an earlier one, in accordance with the principle of priority. On the publication of my study of Loureiro's genera and species,<sup>22</sup> a former associate who knows little or nothing about the problems involved, is reported to have expressed the opinion that it ought to be suppressed! Why not go the whole distance and suppress Loureiro's original work as well as the publications of all botanists whose species are not actually represented by extant types, including even the high percentage of the Linnaean species that fall in this category? We should at least be logical. In some cases pages of print have been used to show,

<sup>21</sup> Gray, A. *Am. Jour. Sci.*, 40: 234, 1841.

<sup>22</sup> Merrill, E. D. A commentary on Loureiro's "Flora Cochinchinensis." *Trans. Am. Philos. Soc.*, n.s., 24(2): 1-445, 1935.

in great detail, how my conclusions cannot possibly hold; and in general the rebuttal argument *contra* is no more convincing than the original argument *pro*. In any case of disagreement the position of the dissenter could have been stated in a very few words rather than perpetrating pages of mere verbiage regarding, after all, what are really very minor and really inconsequential points.<sup>23</sup> One almost suspects that the objective of these critics might be to discredit all work on several thousand species on the basis of differences of opinion as to the status of a very few only!

In reference to Rafinesque's taxonomic botanical work I feel confident that with a proper study of his descriptions, associated with special field work and a study of reference material collected in the regions that he explored, many of his entities, the names of which still encumber botanical literature, can definitely be placed, this even when his type specimen is no longer extant; in other words, by an application of the principles developed in reference to the very numerous problems associated with species proposed by early oriental authors, a reasonably high percentage of Rafinesque's species can be placed even in the absence of type specimens. I am convinced that in the United States there is today, in relation to Rafinesque, as nice a series of problems to be solved, as I encountered in my attempts to elucidate the species based by Linnaeus and his successors on Rumphius' *Herbarium Amboinense* (1741-1755), some 350 new binomials in all being involved; those described by Blanco in his *Flora de Filipinas* (1837, 1845); Llanos in his *Fragmentos de algunas plantas de Filipinas* (1851); and Loureiro in his *Flora Cochinchinensis* <sup>24</sup> (1790). Here, supplemented by somewhat similar studies based on entities described by Osbeck (1757) and by Burman (1768), between 5500 and 6000 descriptions are involved

<sup>23</sup> See particularly Furtado, C. X. *Palmae Malesicae* II, *Gard. Bull. Straits Settlements*, 8: 159-163; IV, *op. cit.*, 321-338, 1935; The typification of *Rhus javanica* L., *op. cit.*, 10: 330-335, 1939; and with more restraint, Corner, E. J. H. Notes on the systematy and distribution of Malayan phanerogams I, *op. cit.*, 10: 1-55; II, 56-81; III, 239-329, 1939.

<sup>24</sup> Merrill, E. D. An interpretation of Rumphius's *Herbarium Amboinense*. *Philippine Bur. Sci. Publ.*, 9: 1-595, 2 maps, 1917.

— Species Blancoanae: A critical revision of the Philippine species of plants described by Blanco and by Llanos. *Philippine Bur. Sci. Publ.*, 12: 1-423, 1 map, 1918.

— A commentary on Loureiro's "Flora Cochinchinensis." *Trans. Am. Philos. Soc.*, n.s., 24(2): 1-445, 1935.



appertaining to various genera, species, varieties, and forms, very many of which were proposed as new, with, for the most part, no type specimens extant. Should we abandon the numerous new names proposed merely because no type specimens were preserved, and thus admit our inability to interpret a species from the description, supplemented by a study of the material from the type localities, together with habitats, local names, time of flowering, economic uses, and such other data as are given in the original descriptions? To admit inability to interpret such descriptions places us in the egotistical category of assuming that we can describe species that others can recognize; but I wonder just how many of our descriptions would be any more intelligible to other workers than are those of Blanco, Loureiro, and numerous other early authors, if we did not preserve our type specimens that may be inspected in case of any doubt as to the status of a proposed genus or species?

In the case of all binomials based on the descriptions and illustrations in Rumphius, all species described by Blanco and most of those described by Llanos, there are no extant specimens or types to represent them. In the case of Loureiro there are extant specimens representing only about 300 of the 1292 species that he described. Thus, for the most part, the interpretations of genera and of species proposed by these authors must be based primarily on the published record. When, however, this published record is investigated in connection with field work prosecuted in the classical localities, together with a study of ample botanical collections from these *loci classici*, it becomes possible definitely to place a high percentage of the binomials that have vexed taxonomists from the time that they were proposed.

#### THE CHALLENGE OF RAFINESQUE'S WORK

The same challenge exists in the United States in reference to much of Rafinesque's work, and has existed for over a hundred years. True, many of Rafinesque's genera and species have been accepted by all botanists and their characters and relationships are thoroughly understood. While some of his very numerous species are represented by extant, authentically named or type specimens, most of his actual herbarium specimens, on which he based his descriptions, were discarded by Elias Durand as valueless. Pen-

nell<sup>25</sup> tells the sad story of what happened after Durand acquired the Rafinesque herbarium, quoting Durand's own words: "I did not care much for his own [Rafinesque's] plants. I knew that his specimens were miserable, but he had come to the possession of Mr. Collins' herbarium . . . Mr. Collins' collections were to me a most valuable acquisition." Pennell himself states:<sup>26</sup>

Evidently no care was given to conserving the types of Rafinesque's many species, but Durand's effort was to salvage what he could of Collins' precious herbarium. Rafinesque's later works received only scorn from his contemporaries, and it was then supposed that his proposed new species could be simply ignored, but subsequently, with the coming of precise and impersonal rules of nomenclature, it is realized that every scrap should have been saved that could help interpret his work.

What a thorough task Durand did in eliminating the Rafinesque specimens, the actual types of very numerous species, is indicated by Dr. Pennell's and Mrs. Chase's statements, that in the Herbarium Durand at Paris the former could find specimens of only eight of about sixty species of Scrophulariaceae that Rafinesque described, while the latter reports that not a single specimen was preserved representing the various genera and species of Gramineae that Rafinesque named and characterized.

Opposed to the relatively small percentage of Rafinesque's genera and species that are universally accepted, there is a very high percentage that still remain, not being understood, in that limbo of *species ignotae* or *species incertae*; and doubtless many of these have been renamed and re-described by the generations of botanists that have succeeded Rafinesque.

Besides describing hundreds of new genera and several thousand new species on the basis of actual specimens (and most of these specimens, as noted above, were later thrown away by Durand), Rafinesque also coined a very large number of new generic and specific names based on the publications of other authors and appertaining to the floras of Asia, Europe, Africa, Malaysia, and Australia, as well as those proposed by him in substitution for names of North American species used in the works of Pursh, Torrey, Eaton, Nuttall, Barton, Elliott, Muhlenberg, de Candolle, Bigelow, Michaux, and others. Thus, in study-

<sup>25</sup> Pennell, F. W. Botanical collectors of the Philadelphia local area. *Bartonia*, 21: 38-57, 1942 (pp. 50-54).

<sup>26</sup> Pennell, F. W. *Bartonia*, 21: 52, 1942.

ing all of Rafinesque's new generic and specific names, a great deal more than a mere study of North American species is involved. Any botanist who has the temerity to reinstate a Rafinesque genus or binomial, reducing some currently used name proposed by a later author to synonymy, may expect short shrift from his conservative contemporaries in spite of the fact that in nomenclature we are supposed to work under the general rule of priority. It is admitted that some botanists have made serious attempts to evaluate and interpret many of Rafinesque's genera and species, but the fact remains that no individual has, as yet, accepted the challenge to examine the Rafinesquian nomenclatural problems *in toto*. Until this is done, many of his names will remain in that most unsatisfactory category of species *ignotae vel incertae*. When the work is done, as some day it must be, undoubtedly many of Rafinesque's names will replace those proposed by his successors and now generally accepted, unless ways and means can be devised to extend the list of *nomina generica conservanda* and to extend this principle to a list of *nomina specifica conservanda*; and so far the International Botanical Congresses have consistently refused to entertain the latter idea.

#### FIELD KNOWLEDGE IN REFERENCE TO RAFINESQUE PROBLEMS

Even when it is clear from a Rafinesque description that he placed a species in the wrong group, if one really knows the flora of a region, it is often possible to place such a species through the process of elimination. *Evolvulus? cuneifolius* Raf. (*Fl. Tellur.*, 4: 82, 1838) was based on a fruiting specimen collected by Rafinesque in the pine barrens of New Jersey, a region having a limited and a characteristic flora. The species has never been placed, and in 1934 Van Oostroom<sup>27</sup> left it among the doubtful and little known species of *Evolvulus*. I then asked Dr. H. N. Moldenke, who is very familiar with the New Jersey pine-barren flora, to scan Rafinesque's description and compare it with those species in various groups of plants that he knew as constituent elements of this limited flora. He reports that *Evolvulus? cuneifolius* Raf. is unquestionably a synonym of *Stylisma Pickeringii* (M. A. Curtis) A. Gray, and thus the species becomes an excluded one under *Evolvulus*, and *Plesilia* Raf.

<sup>27</sup> Van Oostroom, S. J. A monograph of the genus *Evolvulus*. *Med. Bot. Mus. Herb. Rijksuniv. Utrecht*, 14: 1-267, 1934 (p. 244).

(*New Fl. N. Am.*, 4: 56, 1838), here most casually published as a new genus: "probably a subgenus or *G. Plesilia* Raf. but the corolla and stamens must be described, the calix as in *Stylisma*," must be eliminated from the synonymy of *Evolvulus* and transferred to the synonymy of *Stylisma* Raf. (1825). Van Oostroom (*op. cit.*, 19) left *Plesilia* Raf. as a doubtful synonym of *Evolvulus*. This is the process of elimination, but to apply it successfully one must have an intensive knowledge of the flora of the region involved, for a monographer of a natural group could scarcely be expected to place a species so sketchily described as *Evolvulus? cuneifolius* Raf. = *Plesilia cuneifolius* Raf. from the published record alone, when its original author placed it in the wrong genus.

The task of interpreting Rafinesque's genera and species on the basis of his original, usually very short descriptions, supplemented by field work in the classical localities, will be no sinecure. Fernald has indicated some of the difficulties involved.<sup>28</sup> He states that this most erratic student has made unending difficulties for American, and although they apparently do not realize it, European botanists as well; I would amplify this by stating that in his later works Rafinesque originated difficulties not only for the student of the floras of North America and Europe, but also for those concerned with the floras of South America, Africa, Asia, Malaysia, and Australia. While correctly stating that much of Rafinesque's work is too obscure for clarification, he calls attention to the fact that some of his books—for instance the extensive *Antikon Botanikon* (1840) (this is true also of the *Flora Telluriana*, 1837-38, and the *Sylva Telluriana*, 1838)—contain accurate descriptions of genera and species which it is a duty to maintain. He further states:

The task of sifting the comparatively few perfectly sound grains from the chaff and the distorted or unrecognizable grains is a thankless one and, above all, it should be undertaken only by those with intimate knowledge of the floras concerned. . . . I should have, consequently, the gravest misgivings if assigned the unwelcome task of interpreting much of Rafinesque's publication.

#### THE CONTENT OF RAFINESQUE'S OVERLOOKED PAPER OF 1834

Regarding de Candolle's work, Rafinesque (*Act. Soc. Linn. Bordeaux*, 6: 261, 1834) says:

<sup>28</sup> Fernald, M. L. Some genera and species of Rafinesque. *Rhodora*, 34: 21, 1932.

"De tous les ouvrages généraux sur la Botanique, celui de De Candolle, étant le plus récent, le meilleur et le plus accrédité, réclame l'attention de tous les botanists pour le perfectionner."

While one may agree with few, perhaps none, of Rafinesque's proposed changes in nomenclature, one may sympathize with him in that his corrections and emendations to de Candolle's classical work remained in the limbo of overlooked contributions from the time that his paper was published late in 1834 until the present, somewhat over a century; and there is some evidence that Rafinesque himself forgot all about this short paper. The thirty-one generic names proposed as new, as well as fifteen binomials, other than a few later accepted by Rafinesque and published *de novo* elsewhere, have never been cited by succeeding botanists, perhaps chiefly for the reason that this paper was overlooked by Steudel and by the compilers of *Index Kewensis*.

In view of the fact that de Candolle applied the general rule of priority, Rafinesque, with some justification, calls attention to the fact that *Odostemon* Raf. 1817, is not even cited as a synonym of *Mahonia* Nutt. 1818; that *Stanleya* Nutt. 1818, is the same as *Podolobus* Raf. 1817; that *Idistaria* Nutt. 1818 has two earlier names, *Kranushia* Raf. 1808 and *Thyrsanthus* Elliott 1817; why adopt *Ptilophyllum* Nutt. 1818 in place of *Purshia* Raf. 1808, and then apply the generic name *Purshia* to another group?; that *Disco-pleura* DC. 1830 is the same as *Ptilimnium* Raf. 1825; that *Archemora* DC. 1830 is Rafinesque's own genus *Oxipolis* (1824); and regarding *Cryptotenia* (*Cryptotaenia*), "Pourquoi substituer *Cryptotenia*, mauvais nom formé de *Tenia* un genre de vers, pour mon *Cyrtospermum*, 1817, qu'il cite?" "Pourquoi continuer le nom d'*Helianthemum* identique de *Helianthus*! je l'ai changé en *Anthelis* 1814, *Chloris Etnensis*." "Les genres *Hamiltonia* et *Pyrularia* sont absolument les mêmes et fondés sur la même espèce, pourquoi donc les separer, tandis que le genre *Sperma-dyctium* est réuni à *Hamiltonia*!" Of course the answer to most of these criticisms is Rafinesque's unorthodox and often utterly inadequate methods of publication.

On pages 268–269 he notes a curious geographic error under *Misodendron*—"il est appelé boréal parce qu'on l'a cru natif de Staten-Island près de New York, tandis qu'il faut lire australe et natif de Staten-Land ou l'Isle des États, près du cap Horn." As to certain admitted species, he states that *Pulsatilla nuttalliana* Spr. is his *P. cyanea*,

described in 1817 in his *Florula Mandanensis*, having been discovered by Bradbury and not by Nuttall; that *Drosera intermedia*, var. *americana* DC. is the same as *D. foliosa* Elliott; that the American species of *Virgilia* are very different from the African ones and form his genus *Cladrastis*, with various other notes of this nature.

Below is given a summary of the novelties proposed in Rafinesque's paper under discussion. In each case I have quoted all that he wrote regarding each individual entity.

Under *Ranunculus* (DC. *Prodr.*, 1: 32, 1824): "Le *R[anunculus] pusillus* à 3 pétales formera le genre *Sardonula* Raf." (*Act. Soc. Linn. Bordeaux*, 6: 262, 1834).

Under *Anemone* (DC. *Prodr.*, 1: 16, 1824): "Les espèces à Périgone 5-phyl. inégal, forment mon genre *Abalemis*. 1824. J'en cinq espèces types: les *Anemone Virg.* et *Pensylv.* des auteurs, et deux espèces nouvelles" (*Act. Soc. Linn. Bordeaux*, 6: 262, 1834). *Abelemis petiolaris* Raf. "in herb. Paris" was published by Britton (*Ann. N. Y. Acad. Sci.*, 6: 223, 1892) as a synonym of *Anemone virginiana* Linn. I have not been able to locate any publication of *Abalemis* (or *Abelemis*) by Rafinesque in 1824, and this may refer only to a manuscript, or again, it may refer to some as yet undetected published paper by Rafinesque. I take it that *Abalemis* is the preferred form as this is the one that Rafinesque actually published, although *Abelemis* may be correctly formed.

Under *Macrotys* (DC. *Prodr.*, 1: 64, 1824): "DC. à changé mon *Macrotrys* abrégé de *Macrotrys* en *Macrotis* qui signifie grande oreille! c'est un erreur" (*Act. Soc. Linn. Bordeaux*, 6: 262, 1834). But Rafinesque was in slight error here, for de Candolle used the form *Macrotys*, not *Macrotis*. It was published by Rafinesque (*Jour. Bot.*, 2: 170, 1809) as *Macrotrys*.

Under *Hesperis* (DC. *Prodr.*, 1: 188, 1824): "D'après l'avis de DC., j'ai étudié de nouveau les espèces et variétés de *Hesperis pinnatifida* et en ai formé le genre *Oclorosis* dont j'ai trois espèces, etc." (*Act. Soc. Linn. Bordeaux*, 6: 263, 1834). De Candolle admitted the species as *Hesperis pinnatifida* Michx. It is *Thelypodium pinnatifidus* S. Wats. = *Iodanthus pinnatifidus* (Michx.) Steud. The generic name *Oclorosis* Raf. is four years older than *Iodanthus* Torr. and Gray (1838), but it was not validly published, hence no change in generic nomenclature is indicated.

Under *Drosera* (DC. *Prodr.*, 1: 317, 1824): "Notre *Dr[osera]* a feuilles rondes, n'est ni le

*rotundifolia*, ni *l'orbiculata* d'Europe; mais mon *Dr. spatulosa*" (*Act. Soc. Linn. Bordeaux*, 6: 263, 1834).

Under *Polygala* (DC. *Prodr.*, 1: 321–333, 1824) several genera are proposed as follows:

"*Asemeia*, Raf. étam. 8, monadelphes, fleurs racémeuses, dont deux espèces: *A. rosea* et *A. carnea* (*P. pubescens* des auteurs) *A. carnea* est glabre" (*Act. Soc. Linn. Bordeaux*, 6: 264, 1834). This is an earlier publication of the generic and both specific names than that currently given in botanical literature: Rafinesque, *New Fl. N. Am.*, 4: 88 (1836) 1838.

"*Iridisperma* R. 1814. *P[olygala] paucifolia*, fleurs axill." (*Act. Soc. Linn. Bordeaux*, 6: 264, 1834).

"*Senegaria*, R. fleurs en épis, feuilles alt. cor. glanduleuse" (*Act. Soc. Linn. Bordeaux*, 6: 264, 1834).

"*Leptrochia*, R. 6 étamines, cor. ent. feuilles verticales, fleurs en épis" (*Act. Soc. Linn. Bordeaux*, 6: 264, 1834).

"*Pylostachya*, R. étamines 4, cor. frang. fleurs capitulées (*P. lutea*, etc.)" (*Act. Soc. Linn. Bordeaux*, 6: 264, 1834).

"*Corymbula* R. les espèces corymbeuses" (*Act. Soc. Linn. Bordeaux*, 6: 264, 1834). This replaces Rafinesque's later publication in *New Fl. N. Am.*, 4: 88 (1836) 1838.

"*Anthallogea* R. Étamines 7–8 stigm. bilabié, cor. 3-lob. sombre (*P. polygama*)" (*Act. Soc. Linn. Bordeaux*, 6: 264, 1834). This was published four years later by Rafinesque (*New Fl. N. Am.*, 4: 88 (1836) 1838) as *Anthallogea*, but here also without transferring the specific name as indicated in *Index Kewensis*; this transfer was validated by Nieuwland (*Am. Midl. Nat.*, 3: 180, 1914) as *Anthallogea polygama* (Walt.) Nieuwland, although I should interpret the *Index Kewensis* reference as a valid transfer and credit the binomial to Jackson as *Anthallogea polygama* Jacks.

Under *Silene* (DC. *Prodr.*, 1: 367–385, 1824): "Ce genre nombreux demande une réforme; les espèces jadis parmi les *Cucubales*, à pétales laciniés non appendicés, forment mon genre *Ixocaulon*" (*Act. Soc. Linn. Bordeaux*, 6: 264, 1834).

Under *Modiola* (DC. *Prodr.*, 1: 435, 1824), as a section of *Malva*: "Il y a un genre de coquille de ce nom: il faudra donc changer en *Diadesma* R. ce genre botanique" (*Act. Soc. Linn. Bordeaux*, 6: 264, 1834). This publication of *Diadesma* is two years earlier than the current reference to Rafinesque's *New Fl. N. Am.* (1: 41, 1836).

Under *Hypericum* (DC. *Prodr.*, 1: 543–555, 1824): "Le genre *Saiothra* doit être restitué pour les espèces à capsule uniloculaire" (*Act. Soc. Linn. Bordeaux*, 6: 264, 1834). *Saiothra* is a typographical error for *Sarothra* Linnaeus, a genus that de Candolle does not mention.

Under *Thermopsis* (DC. *Prodr.*, 2: 99, 1825): "C'est mon genre *Scolobus* ou *Verzinum* de 1817" (*Act. Soc. Linn. Bordeaux*, 6: 265, 1834).

Under *Prunus* (DC. *Prodr.*, 2: 532–534, 1825): "J'en ai décrit 4 espèces nouvelles, *Pr. sessilis* [err. *sessilis*], *Pr. aurantiaca*, etc., et j'en prépare une monographie avec les cerisiers de l'Amérique septentrionale" (*Act. Soc. Linn. Bordeaux*, 6: 265, 1834).

Under *Cerasus* (DC. *Prodr.*, 2: 535–541, 1825) Rafinesque recognized the genera *Cerasus* and *Padus*, and the new: "*Orospondias*. Calice campanule 5-fid., fl. en corymbes" (*Act. Soc. Linn. Bordeaux*, 6: 265, 1834).

Under *Spiraea* (DC. *Prodr.*, 2: 541–546, 1825) as *Spirea*: "Ce genre réclame une réforme complète; il faut restituer les genres des anciens botanistes; auxquels DC. en a ajouté deux: *Phyllocarpus* et *Chamedrys*: et j'en ai aussi ajouté deux autres" (*Act. Soc. Linn. Bordeaux*, 6: 265, 1834). De Candolle (*Prodr.*, 2: 542, 1825) adopted as sections *Physocarpus* Camb. (not *Phyllocarpus*) and *Chamaedryon* Ser. (not *Chamedrys*). Rafinesque's one new genus is:

"*Thecanisia* R. [p. 265] Cal. pers. refl. st. paucis. Pistil 5-stipit. stylosa, stigma cap. capsis theca 5 inaequ. 1–3 Sp. stipitatis. [p. 265] Fl. panic., type *Sp. lobata*. Mais j'en ai cinq espèces en herbier. *Th. lobata*, *angustata*, *angulata*, *amplifoliata* et *discolor*. Il y en a d'autres petits en Sibérie et Orgon." (*Act. Soc. Linn. Bordeaux*, 6: 265–266, 1834). This publication of *Thecanisia* is three years earlier than that listed in *Index Kewensis*: Raf. *New Fl. N. Am.*, 2: 38 (1836) 1837. Rafinesque apparently forgot this earlier publication of the genus, and in 1837 he described it again with four species, *T. angustifolia* Raf., *T. discolor* Raf., *T. lobata* Raf., *T. purpurea*, and later (*Sylva Tellur.*, 152, 1838) added two others, *T. palmata* Raf. and *T. Ulmaria* Raf. *Thecanisia angustata* Raf. is a *nomen nudum* and may be assumed to be the same as *T. angustifolia* Raf., while two binomials, *T. discolor* and *T. lobata*, are three years earlier than their appearance in the *New Fl. N. Am.* (2: 38 (1836) 1837), but *T. discolor* Raf. only as a *nomen nudum*. *T. lobata* Raf. (1834) is validly published, being based on *Spiraea lobata* Jacq. A description of

*Epicostorus* (err. *Espicostorus*), with a single species *E. montana*, follows, but this was originally described by Rafinesque in the *Atlantic Journal* (1: 144, 1832). The curious entry on page 266 following *E. montanus* Raf., "*Spica monogyna*. Teney d'Orgon," is an error for "*Spiraea monogyna* Torrey d'Oregon."

Under *Amelanchier* (DC. *Prodr.*, 2: 632, 1825): "Pourquoi admettre en botanique le nom français d'*Amelanchier* au lieu d'*Axonia* Persoon? encore si l'on l'avait latinisé! en *Amelanchus*! mais cette erreur si palpable est cependant admise!" (*Act. Soc. Linn. Bordeaux*, 6: 266, 1834). This replaces the similar action eighty years later by Vollmann, who (*Fl. Bayern*, 453, 1914) accepts the name as *Amelancus* Med., explaining in a footnote: "Ich nehme daher den Vorschlag von Dr. Franz Müller (Graz 1913) an und schreibe *Amelancus*."

Under *Ammannia* (DC. *Prodr.*, 3: 77–80, 1828): "Les sous genres méritent de former les genres *Cesdelia* DC. et *Boykiana* Raf." (*Act. Soc. Linn. Bordeaux*, 6: 266, 1834). De Candolle recognized four sections of *Ammania*—*Apetalae*, *Tetrapetalae*, *Pentandrae*, and *Diplostemoneae*. I have been unable to locate any publication of a "*Cesdelia* DC.," and *Boykiana* is manifestly a typographical error for *Boykinia* Raf. (*Aut. Bot.*, 9, 1840). This abortive "publication" of *Boykinia* Raf. does not, I believe, invalidate *Boykinia* Nutt. (1834), and Rafinesque's second consideration of his *Boykinia* did not appear until four years after Nuttall's genus had been characterized and published.

Under *Adenarium* (DC. *Prodr.*, 3: 366, 1828): "Les genres *Adenarium* R. 1817, et *Adenaria* Kunth 1821, ne peuvent pas subsister tous deux étant synophones: le dernier doit recevoir le nom de *Decadonia*" (*Act. Soc. Linn. Bordeaux*, 6: 267, 1834).

Under *Bartonia* (DC. *Prodr.*, 3: 339, 1828): "*Bartonia sirus* [*sirus* err. for Sims] est postérieur à *Bartonia*, Wild. [correctly Muhlenberg], et doit se changer en *Nuttalia* R. 1817, ou bien *Rhoanthus* Raf." (*Act. Soc. Linn. Bordeaux*, 6: 267, 1834).

Under *Claytonia* (DC. *Prodr.*, 3: 360–362, 1828): "*Claytonia nemorosa* DC. Willd. paraît aussi devoir former un genre que je nomme *Ditomaga nemorosa*" (*Acta Soc. Linn. Bordeaux*, 6: 267, 1834). This proposed new generic name is a synonym of *Irlbachia* Mart. (1827). The type of *Claytonia nemorosa* Willd. was a specimen collected by Humboldt in Colombia "in umbrosis prope Javitam Orinocensium." Its synonymy is:

*Irlbachia nemorosa* (Willd.) comb. nov.

*Claytonia nemorosa* Willd. ex Roem. & Schult, *Syst. Veg.*, 5: 436, 1819; H.B.K. *Nov. Gen. Sp. Pl.* 6: 64 (fol.) 80 (quart.), 1823 in nota; DC. *Prodr.*, 3: 362, 1828.

*Ditomaga nemorosa* Raf., *Act. Soc. Linn. Bordeaux*, 6: 267, 1834.

*Irlbachia Bonplandiana* Fenzl, *Nov. Stirp. Dec.* 12, 1839; Griseb. in DC. *Prodr.*, 9: 72, 1845. All binomials are based on a single collection.

Under *Seseli* (DC. *Prodr.*, 4: 144, 1830): "DC. n'a pas de genre *Marathrum*, mais *Hyppomarathrum*, où est mon *Marathrum* de 1819, que j'ai changé en *Adorium* [*Neogen.*, 3, 1825] pour éviter la coïncidence?" (*Act. Soc. Linn. Bordeaux*, 6: 268, 1834). *Hyppomarathrum* is a variant spelling of *Hippomarathrum*, and de Candolle uses it as a sectional name, not as a genus, under *Seseli*.

Under *Leptocaulis* (DC. *Prodr.*, 4: 107, 1830): "*Leptocaulis divaricatus* DC. qui a été ballotté dans les genres *Ammi*, *Daucus*, *Sison* et *Ligusticum*, est le type de mon genre *Lepisperma*, qui doit différer des autres *Leptocaulis*" (*Act. Soc. Linn. Bordeaux*, 6: 268, 1834).

Under *Panax quinquefolium* DC. (*Prodr.*, 4: 252, 1830) Rafinesque states that there are several species in Asia and America: "J'en ai trois en herbier: *P. 5-fol. obovatum*, *cuneatum* et *lanceolatum*!" (*Act. Soc. Linn. Bordeaux*, 6: 268, 1834). Of these Rafinesque later described only *Panax lanceolatum* Raf. (*New. Fl. N. Am.*, 4: 57, 1838), and (*op. cit.*, 58) recognized *Panax americanum* Raf. var. *obovatum* Raf. *P. obovatum* Raf. and *P. cuneatum* Raf. are *nomina nuda*, as is *P. lanceolatum* Raf. of 1834.

Under *Oldenlandia* and *Hedyotis* (DC. *Prodr.*, 4: 419–429, 1830): "*Oldenlandia* ou *Hedyotis uniflora* paraît non seulement un nouveau genre que je nomme *Edrastima uniflora*, mais ce n'est pas même une Rubiacée puisque les étamines sont opposées à la corolle. Ce sera donc un nouveau genre de la famille des Samolides avec *Samolus*" (*Act. Soc. Linn. Bordeaux*, 6: 269, 1834). This comment refers to *Hedyotis glomerata* Ell. as interpreted in DC. *Prodr.*, 4: 421, 1830, not to *Hedyotis uniflora* Ruiz and Pav. (DC. *loc. cit.*). *Oldenlandia uniflora* Linn. is the species of the eastern United States that Rafinesque had in mind, not the South American species, and it was cited by de Candolle as a synonym of *H. glomerata* Ell. It is the species currently recognized in all our manuals as *Oldenlandia uniflora* Linn. However, if the genus *Oldenlandia* Linn. be combined with



*Hedyotis* Linn., as many authors have done, then the proper generic name under the provisions of the International Code of Botanical Nomenclature is *Hedyotis*, as this was the name selected by those who first combined the two genera, Lamarck and J. E. Smith.

Under *Spermacoce* (DC. *Prodr.*, 4: 552–561, 1830): “Les genres *Spermacoce* et *Diodia* sont si mal distingués que l’on ne peut pas les séparer, car ils n’ont aucun caractère exclusif selon DC., mais il y a de bons caractères dans les calices bidentés, 4-dentés égaux, 4-dentés inégaux, 5-dentés, 10-dentés, de plusieurs espèces, qui devront sans doute former autant de genres, comme suit:

*Diodia*, calice 2-denté.

*Spermacon*, calice 4-denté, égal.

*Dioneiodon*, R. cal. 4-denté inégal.

*Decapenta*, R. cal. 5–10-denté, peut être 2 genres aussi” (*Act. Soc. Linn. Bordeaux*, 6: 269, 1834).

Of these four names, *Spermacon* Raf., *Dioneiodon* Raf., and *Decapenta* Raf. are new. Rafinesque forgot this use of *Decapenta*, and six years later (*Sylva Tellur.*, 165, 1838) used this same name for an entirely different lauraceous group, *Decapenta involucrata* Raf. (*loc. cit.*) = *Litsea sebifera* Pers. = *Litsea glutinosa* (Lour.) C. B. Rob.

#### ADDITIONS AND EMENDATIONS TO *Index Kewensis*

The following additions and corrections to *Index Kewensis* are indicated on the basis of a critical examination of this overlooked Rafinesque paper of 1834. Including minor variants, thirty-one generic names and fifteen binomials are involved. Of these, only six generic names and five binomials appear in *Index Kewensis*, but with references to places of publication later than 1834. May it be hoped that the next overlooked Rafinesque paper that is discovered (for there is no reason to believe that all of his publications have been located), will be less prolific in new generic and specific names than the paper that forms the subject of this contribution!

**Abalemis** Raf., *Act. Soc. Linn. Bordeaux*, 6: 262, 1834 = *Anemone*.

Rafinesque indicates this as dating from 1824, but I have been unable to trace an earlier publication than that above given. “*Abelemis petiolaris* Raf.” was published by Britton as a synonym of *Anemone virginiana* Linn. in 1892.

**Amelanchus** Raf., *Act. Soc. Linn. Bordeaux*, 6: 265, 1834 = *Amelanchier*.

**Anthallogea** Raf., *Act. Soc. Linn. Bordeaux*, 6: 264, 1834 = *Anthallogea* Raf. = *Polygala*.

**Asemeia** Raf., *Act. Soc. Linn. Bordeaux*, 6: 264, 1834 = *Polygala*.

**carnea** Raf. (*loc. cit.*) = *P. pubescens*.

**rosea** Raf. (*loc. cit.*) = *P. pubescens*.

These replace the *Index Kewensis* entries for the genus and for both binomials, there given as Raf., *New Fl. N. Am.*, 4: (1836) 1838.

**Boykiana** Raf., *Act. Soc. Linn. Bordeaux*, 6: 266, 1834 = *Rotala*.

This is manifestly an error for *Boykinia* Raf.; see *Autikon Bot.*, 9, 1840. This genus is not the same as *Boykinia* Nutt. (1834), although *B. humilis* Raf. is entered in *Index Kewensis*, under Nuttall’s genus. De Dalla Torre & Harms (*Gen. Siphon*, 340, 1903) and Koehne (*Pflanzenr.* 17 (IV, 216): 24, 1903) confuse the reference to *Boykinia* Raf. as “Ant. (sic!) Bot. (1817) 9”; the latter adding from *Index Kewensis*, “sec. C. Watson.” Watson’s entry is “Raf. Rev. 1817; Aut. Bot. 9.”

He took the “Rev. 1817” directly from the *Autikon Botanikon*, which was published in 1840. The reference by Rafinesque to “Rev. 1817” may refer to an unpublished manuscript, or possibly to some as yet overlooked paper. I did not find it in the *American Monthly Magazine and Critical Review*, in which Rafinesque did publish various papers in 1817, and have failed to locate it elsewhere. A new entry should be made in *Index Kewensis* as follows:

**Boykinia** Raf., *Aut. Bot.*, 9, 1840 (*Act. Soc. Linn. Bordeaux*, 6: 166, 1834, sphalm. *Boykiana*, *nomen*) = *Rotala* Linn. (*Lythrac.*).

**humilis** Raf., *Aut. Bot.*, 9, 1840 = *Rotala ramosior* (Linn.) Koehne.

**Cesdelia** “DC.” ex Raf., *Act. Soc. Linn. Bordeaux*, 6: 266, 1834 = *Ammannia*.

**Chamedrys** Raf., *Act. Soc. Linn. Bordeaux*, 6: 265, 1834 (error or deliberate change for *Chamaedryon* Ser.) = *Spiraea*.

**Corymbula** Raf., *Act. Soc. Linn. Bordeaux*, 6: 264, 1834 = *Polygala*.

This is four years earlier than the *Index Kewensis* entry: Raf., *New Fl. N. Am.*, 4: 88 (1836) 1838.

**Decadonia** Raf., *Act. Soc. Linn. Bordeaux*, 6: 267, 1834 = *Adenaria* Kunth.

- Decapenta** Raf., *Act. Soc. Linn. Bordeaux*, 6: 269, 1834 (non *Decapenta* Raf., *Sylva Tellur.*, 165, 1838) = *Diodia*?
- Diadesma** Raf., *Act. Soc. Linn. Bordeaux*, 6: 264, 1834 = *Modiola*.  
This publication of Rafinesque antedates by two years the currently accepted one: *New Fl. N. Am.*, 1: 41, 1836.
- Dioneiodon** Raf., *Act. Soc. Linn. Bordeaux*, 6: 269, 1834 = *Diodia*.
- Ditomaga** Raf., *Act. Soc. Linn. Bordeaux*, 6: 267, 1834 = *Irlbachia*.  
**nemorosa** Raf. (*loc. cit.*) = *Irlbachia nemorosa* (Willd.) Merr. (*supra*, p. 88).
- Drosera spatulosa** Raf., *Act. Soc. Linn. Bordeaux*, 6: 263, 1834, *nomen nudum*, probably = *Drosera rotundifolia* Linn.
- Edrastima** Raf., *Act. Soc. Linn. Bordeaux*, 6: 269, 1834 = *Hedyotis*.  
**uniflora** Raf. (*loc. cit.*) = *Hedyotis uniflora* (Linn.) Lam. (*Oldenlandia uniflora* Linn.).
- Espicostorus** Raf., *Act. Soc. Linn. Bordeaux*, 6: 266, 1834, a typographical error for *Epicostorus* Raf. (*Atl. Jour.*, 1: 144, 1832).
- Hippomarathrum** Raf., *Act. Soc. Linn. Bordeaux*, 6: 268, 1834 = *Hippomarathrum* Hall.
- Iridisperma** Raf., *Act. Soc. Linn. Bordeaux*, 6: 264, 1834 = *Polygala*.  
Rafinesque dates *Iridisperma* as 1814, but I have been unable to locate it in any of his numerous papers that are available. It may have been published in some overlooked paper, or it may have been merely a manuscript name.
- Ixocaulon** Raf., *Act. Soc. Linn. Bordeaux*, 6: 264, 1834 = *Silene*.
- Lepisperma** Raf., *Act. Soc. Linn. Bordeaux*, 6: 268, 1834 = *Spermolepis*.
- Leptrochia** Raf., *Act. Soc. Linn. Bordeaux*, 6: 264, 1834 = *Polygala*.
- Oclorosis** Raf., *Act. Soc. Linn. Bordeaux*, 6: 263, 1834 = *Iodanthus*.
- Orospodias** Raf., *Act. Soc. Linn. Bordeaux*, 6: 265, 1834 = *Prunus*.
- Panax cuneatum** Raf., *Act. Soc. Linn. Bordeaux*, 6: 268, 1834, *nomen nudum*.  
**lanceolatum** Raf. (*loc. cit.*), *nomen nudum*.  
This is earlier than the *Index Kewensis* entry; *New Fl. N. Am.*, 4: 57 (1836) 1838; but the description was not published until 1838.
- obovatum** Raf. (*loc. cit.*), *nomen nudum*.  
In his *New Fl. N. Am.* (4: 58, 1838), Rafinesque considers this as *Panax americanum* Raf. var. *obovatum* Raf.
- Phyllocarpus** Raf., *Act. Soc. Linn. Bordeaux*, 6: 265, 1834, err. for *Physocarpus* Camb. = *Spiraea*.  
This is given in *New Fl. N. Am.* (3: 73 (1836) 1838) as *Physocarpa* Raf.
- Prunus aurantiaca** Raf., *Act. Soc. Linn. Bordeaux*, 6: 265, 1834, *nomen nudum*.  
**sessilis** (err. *sessilis*) Raf., *Act. Soc. Linn. Bordeaux*, 6: 265, 1834, *nomen nudum*.
- Pylostachya** Raf., *Act. Soc. Linn. Bordeaux*, 6: 264, 1834 = *Polygala*.  
Typified by *Polygala lutea* Linn., but this binomial was not transferred.
- Rhoanthus** Raf., *Act. Soc. Linn. Bordeaux*, 6: 267, 1834 = *Bartonia* Muhlenberg.
- Saiothra** Raf., *Act. Soc. Linn. Bordeaux*, 6: 264, 1834, typographical error for *Sarothra* Linn. = *Hypericum* Linn.
- Sardonula** Raf., *Act. Soc. Linn. Bordeaux*, 6: 262, 1834 = *Ranunculus*.
- Senegaria** Raf., *Act. Soc. Linn. Bordeaux*, 6: 264, 1834 = *Polygala*.
- Spermacon** Raf., *Act. Soc. Linn. Bordeaux*, 6: 269, 1834 = *Spermacece*.
- Thecanisia** Raf.,<sup>29</sup> *Act. Soc. Linn. Bordeaux*, 6: 265, 1834 = *Spiraea*.  
**amplifoliata** Raf., *Act. Soc. Linn. Bordeaux*, 6: 266, 1834, *nomen nudum*.  
**angulata** Raf. (*loc. cit.*), *nomen nudum*.  
**angustata** Raf. (*loc. cit.*), *nomen nudum*.  
**discolor** Raf. (*loc. cit.*), *nomen nudum*.  
**lobata** Raf. (*loc. cit.*).
- Verzinum** Raf., *Act. Soc. Linn. Bordeaux*, 6: 265, 1834 = *Cytisus*.  
This replaces the *Index Kewensis* entry; *Sylva Tellur.*, 23, 1838. Rafinesque indicated this as dating from 1817, but I have found no other publication of it except the two references above given. Rafinesque's reference to 1817 may refer to an unpublished manuscript, possibly to an overlooked paper.

<sup>29</sup> This reference is three years earlier than the *Index Kewensis* entry; *New Fl. N. Am.*, 2: 38 (1836) 1837; and this applies also to the last two of the binomials here listed, under *Thecanisia*. The genus, with five species, appears again in Rafinesque's *Sylva Telluriana* (152, 1838).