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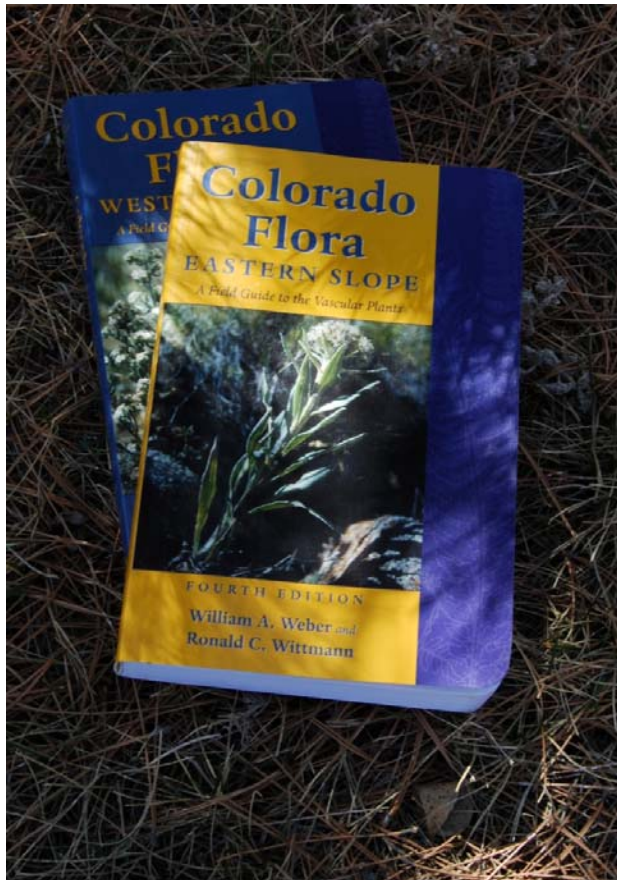
Newsletter of the Colorado Native Plant Society

Dedicated to furthering the knowledge, appreciation and conservation of native plants and habitats of Colorado through education, stewardship and advocacy



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This special issue of Aquilegia celebrates the publication of the 4th edition of Weber and Wittmann's Colorado Flora, as well as the enormous contributions of founders Dr. William A. Weber and Dr. John W. Marr to Colorado native plants and to the Society.

The review, articles, and recollections published here provide a variety of interesting and unique perspectives on Dr. Weber, Dr. Marr, and their ongoing legacies. Enjoy!

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A SPECIAL ISSUE

BOOK REVIEW

Colorado Flora: Eastern Slope: A Field Guide to the Vascular Plants (4th ed.) and Colorado Flora: Western Slope: A Field Guide to the Vascular Plants (4th ed.) by William A. Weber and Ronald C. Wittmann. Boulder, CO: University Press of Colorado, 2012. Print and e-books.

By Jan Loechell Turner

The creation and updating of a flora for an entire state with the great variety of floristic zones found in Colorado is a daunting task. Some states have no recent publications about the flora and others have large regional tomes that are not easily carried in a pack. Colorado botany-lovers owe a debt of gratitude to William (“Bill”) Weber and Ronald (“Ron”) Wittmann for producing up-to-date, lightweight floras with dichotomous keys to the plants of Colorado, geared for use in the field by both amateur and professional botanists. Much thought has obviously gone into the books and it would be difficult to do a better job of providing so much information in a field guide that is so portable (8.5 inches tall by 5.5 inches wide, just over an inch thick, and only a pound and a half in weight – *Eastern Slope*). The volumes are a bit larger than the previous ones but have the nicely rounded corners of the earlier *Rocky Mountain Flora*.

The books are heavily used not just here but throughout the West and are used extensively for educational pursuits. If you travel to other states such as Arizona and New Mexico, you will find them on the shelves of herbaria and nature centers. Arizona has no current flora, so *Colorado Flora* is frequently consulted by botanists there. *Colorado Flora* is a required text for the Native Plant Master classes through Colorado State University Extension, used to train students to identify native plants and noxious weeds. It is also used as the text in college courses dealing with the identification of the flora.

In 2012, the fourth edition of Weber and Wittmann’s *Colorado Flora: Eastern Slope* and *Colorado Flora: Western Slope* was published. This two-book set of field guides represented almost seven decades of work. The first edition was written by Weber alone and the revisions were produced by the team of Weber and Wittmann. The new edition was welcomed with a party

held in June 2012 at the University of Colorado Museum.

A question that many of us had was whether the 4th edition of Weber and Wittmann’s books would incorporate some of the new arrangements of genera and families adopted by the *Flora of North America* and other recent works such as *Flora Neomexicana*. For example, would the Scrophs be split up? The answer to the question is no. In the new edition, for example, *Castilleja* remains in Scrophulariaceae instead of being found under Orobanchaceae but the proposed changes based on DNA analysis are noted under genera. The guide is meant for use in the field by amateurs and professionals employing observations of morphological characteristics and ecology. Weber felt that introducing changes that were based on non-observable features would detract from the usability of *Colorado Flora* as a field guide and would serve to frustrate its users.

A wonderful addition to *Colorado Flora* is the inclusion of the history of the herbarium at the University of Colorado, information on early botanists (Edwin James, Thomas C. Porter and John M. Coulter, Alice Eastwood, Per Axel Rydberg, T.D. A. Cockerell, Leon Kelso, and Harold D. Harrington) and floras of Colorado, the history of Weber’s field guides, and interesting stories that include how Weber became a botanist, how Harrington was tricked into dining on prairie dog, and an incident in which Weber and some friends were mistaken for cattle rustlers. A list of books on botanical history and exploration are provided to inform and excite readers about botany. Weber is an entertaining story-teller and skillful writer, so the anecdotes and background information about plants found throughout the guides make for enjoyable reading. Although it has been re-named “A vade mecum [handbook or guide] for the field botanist,” the

introduction remains almost the same as that in the previous edition with minor additions and word changes.

Maps of Colorado's counties, river systems, and major topographical features are included as are charts of the elevations of some Colorado's towns and mountain passes. The introductory material contains a wealth of information. Tips on recognizing the larger plant families found in Colorado may help the user skip parts of the key and go directly to the families. Weber states, "Success using a field guide comes when one knows the large families without using a key." (2012, p. xxxix) The Eastern Slope volume provides characteristics of the high plains, the mountain front, the intermountain parks, North Park, South Park, the San Luis Valley, the Sawatch Range and Upper Arkansas Valley, as well as the Wet Mountain Valley and Spanish Peaks. The Western Slope volume provides descriptive information about the northern section, the middle section, the southern section, and Middle Park. In addition, a variety of other useful topics are discussed including endangered species, non-native plants, pronunciation of scientific names, and plant collection techniques.

The books contain a section of black and white botanical illustrations and the new edition contains scanned images of *Botrychium* from the Ada Hayden Herbarium. Drawings of *Botrychium* have also been incorporated into the key. There is a bibliography, which is a new feature to *Colorado Flora*, a glossary, and illustrations of plant structures. Common and scientific names have been integrated into one index, a time-saving feature. The color photos have been eliminated from the last two editions by the publisher because of cost.

The dichotomous keys are fairly sleek and straightforward, beginning with a key to the families. The key to the angiosperms is divided into five groups: parasites/saprophytes, aquatics, vines, monocots, woody dicots, and herbaceous dicots. The latter group is further broken down into 5 separate keys.

Weber's keys are designed for ease of use and that has been achieved. The dichotomous keys are left-justified rather than indented which not only saves space but saves time searching for the other half of a couplet and thus wear and tear on the users' eyes and nerves. The families, genera within the families, and species within the genera are arranged alphabetically. This is a great convenience and allows the user to quickly locate the species of interest.

Fascinating information is provided for each family, and the information may be historical, about the structures of the plants, about pollination, or other identifying features. The derivation of the names of family, genera, and species is provided and the habitat and distribution are usually indicated. Common names for families, genera, and species are often included, although Weber expresses some strong opinions about the use of common names. The current edition includes updated information and adds new species that have been discovered since the publication of the previous edition.

What is it that makes Weber & Wittmann's floras so good? There are a number of features that combine to make the books so usable. They are arranged alphabetically by family, genus, then species, so it is not necessary to consult the index. Information about the families and genera are included. They are geared for amateurs and professionals to use in the field and are a convenient size, designed to fit easily into a pack. Their size makes them more affordable (under \$30 and only \$22 for the Kindle eBook). The key is left justified and easy to follow with a number at end the of line directing users to the next couplet. The flora covers a limited geographical area, which means it covers a limited number of species and can therefore employ simpler keys. The common and scientific names are integrated into one index, in contrast to earlier editions, which divided them into separate indexes. They are kept up-to-date with revisions. They are written to be simple enough for the amateur and a glossary of terms is included for easy look-up. They include great stories. Weber is a wonderful story teller and has known many people who have played crucial roles in botany and other fields. The keys have been

field tested for years and have been proofed by the many people who have used the floras. There is a section of illustrations. They make the books a bit larger, but as is said, a picture is worth a thousand words. Weber and Wittmann have obviously listened to the feedback of their readers because they have settled on features that make the *Colorado Flora* a very usable field guide.

About the Authors

Bill Weber was born November 16, 1918 in New York, New York. He roller-skated to high school through Bronx Park where he observed birds. Not only did he found the Sialis Bird Club, but he attended meetings of the Linnean Society of New York which was populated by numerous people who would become famous, including Ernst Mayr and Roger Tory Peterson. Bill is mentioned multiple times in the book, *Birdwatcher: The Life of Roger Tory Peterson* by Elizabeth Rosenthal. He received his BS in 1940 from Iowa State College, where he met Selma “Sammie” Ruth Herrmann, who he married August 5, 1940. They had three daughters, Linna, Heather, and Erica.

After receiving his doctorate in 1946 from Washington State University, he joined the Biology Department at University of Colorado advancing from Instructor to Assistant Professor (1953), Associate Professor (1956), and full Professor of Natural History at the University of Colorado Museum in 1962, where he was Curator of the Herbarium. As he did in Bronx Park, Bill used his roller skates in the Herbarium. After retiring in 1990 as Professor and Curator Emeritus, Bill has continued be quite active in research and publishing.

Bill is not shy about expressing his opinions in person or in writing and these ideas come through clearly in *Colorado Flora*. He is passionate about the preservation of the habitats of native plants and is quite concerned about the destruction of habitat by mountain goats on Mt. Evans. Bill, a Fellow of the Linnean Society of London, has published many books and journal articles and is currently working on his autobiography. He is an avid reader who speaks German, Spanish, and Swedish and has traveled extensively in the Americas, Europe,

and Asia, which has given him a greater understanding of intercontinental floristic relationships.

Ron Wittmann brings to the books his knowledge of botany (he was a student of C. Leo Hitchcock) and the logical mind and technical skills that served him well as a physicist with the National Institute of Standards and Technology. He is an expert on the flora of Colorado with over thirty years of experience and is a Museum Associate at the University of Colorado Museum of Natural History. He has known Weber since the 1970s and has played a role in the production of all of the editions of *Colorado Flora*, becoming co-author in 1996. Ron met his wife Judy in 1974 when they were both graduate students at the University of Colorado and they were married in 1976. She has a Ph.D. in German linguistics. Their son Matthew is currently working on a Ph.D. in physics at the University of California at Santa Cruz.



Bill Weber and Ron Wittmann

Photo by Heather Harris

Jan Loechell Turner is on the CoNPS Board and Chairs the Research Grants Committee. She is a Reference Librarian and Associate Professor at Regis University.

WHAT DID BOTANISTS HAVE TO SAY ABOUT THE NEW EDITION OF COLORADO FLORA?

The previous book review was written from the perspective of an amateur botanist. You may be interested in reading the comments of botany experts. Below are excerpts from book reviews by Kelly Allred and Rudi Schmid. Our thanks to the authors for their permission to print portions from their reviews. (JLT)

Kelly Allred, Curator of the Range Science Herbarium at New Mexico State University

Excerpts from a book review in the *New Mexico Botanist* (No.58, Sept. 19, 2012, p.2)
<http://aces.nmsu.edu/academics/rangescienceherbarium/documents/newslet58.pdf> :

These volumes present not only the flora of Colorado through the eyes of Weber, but also his view of the current state of affairs of phylogenetics, classification, nomenclature, biological sciences in general, and practical botany in particular. He is a patron of the amateur botanist, clearly trumpeting their contributions past, present, and future.

He also champions his right as an individual botanist to hold somewhat radical botanical views, and not only to publish and promulgate them, but also to proselytize others to his cause (I suppose I am a convert, to some extent).

Weber and Wittmann clearly know their Colorado plants, and this is the greatest accomplishment of their work. You may differ with their classification and nomenclature (and you will), but you will rarely argue with how they lead you to a plant or where to find it. The keys contain numerous features that are field-worthy and not just herbarium-worthy; they tell us what we might expect to see when we encounter the plant in the meadow or on the slope, oftentimes features that disappear upon collecting, pressing, and mounting for the herbarium. This expertise comes to one only after long years of study and experience. We are the beneficiaries of their sharing it. You will not only use these books, you will enjoy them.

Rudolf “Rudi” Schmid, Professor Emeritus, Department of Integrative Biology, UC Berkeley

Excerpts from an article entitled, “A Venerable Field Guide goes Phylogenetic – Sort of” published in the journal *Taxon*, 62(1) Feb. 2013, p.202-204:

All eight volumes in the four editions retain Weber’s excellent, detailed, and delightfully opinionated “introduction” that is a mini-course in classical taxonomy.

Edition 4 is a quasi-revolutionary upgrade because nonagenarian author Weber has gone quasi-molecular. The authors for the latest revision “had to grapple with the problem of how and what to treat, in a field guide” (W.A. Weber, pers. comm., 6 Apr. 2012). That is, how to deal with the brave new, topsy-turvy world of phylogenetic taxonomy where things are not what they used to seem, for instance, where most scropps are plantains and where most plain lilies are no longer such.

Weber & Wittmann’s solution is to call attention to the molecular work and then mostly ignore its results. Adding the subtitle *A field guide to the vascular plants...* facilitate(s) dismissal of the molecular work. After all, the users of a guidebook want practicality, not virtual reality; they want a morphological, ecological guide to the biota, not an homage to its molecular makeup, which may lack physical distinctions.

The frustration that many critics have had with “the current cladistics tripe that is overwhelming [taxonomy]” is not only its inclusiveness but also its changeability. The results often derive from lab workers who shun the field and are unappreciative of morphological variation. Moreover, as techniques and concepts change, cladists arrange and rearrange their molecular phylogenies (APG in 1988, APG II n 2003, APG III in 2009), seemingly debating as did the perhaps apocryphal theologians of yore about how many angels can dance on the head of a pin. Ultimately, if and when a molecular phylogeny is finalized for the angiosperms and other supergroups, molecularists must provide a reliable nomenclator guide for their new names versus the old field names of the guidebook realists.

I believe Weber & Wittmann’s approach, namely stress on practicality, allowance of paraphyly, and mention of cladistic alternatives, is a perfectly acceptable approach, and in their case, the only feasible approach.

THE EVOLUTION OF WEBER & WITTMANN'S COLORADO FLORA

By Jan Loechell Turner

The story of the *Colorado Flora* began before many of the current members of CONPS were born. In 1946 shortly before he turned 28, Dr. William ("Bill") Weber, arrived at the University of Colorado as a biology instructor and the successor to Joe Ewan in the biology department. Just three years earlier in 1943, Dr. Harold Harrington, who was 40 at the time, returned to Colorado A & M College (Colorado State University) after several years teaching at Chicago Teachers College (Chicago State University) and began work on the *Manual of the Plants of Colorado*, a massive book including keys and descriptions of families, genera, and species, which was published in 1954.

Because no current key was in print, Weber undertook the creation of a set of keys to the plants in the Boulder area (*Flora of Boulder County, Colorado*), which was completed in 1949 and mimeographed for use by his students. Weber's keys were field-tested by students and friends, who also helped clarify the wording. In 1953, Weber's *Handbook of Plants of the Colorado Front Range*, which consisted of keys and an illustrated glossary, was published by the University of Colorado Press.

It can be observed that the early 1950s marked a time of great importance for Colorado's professional and amateur botanists and gardeners. Weber and Harrington produced their complementary publications: Weber's portable field guide/key for the Front Range and Harrington's detailed manual for the state, within a year of each other. This was also the time when George Kelly, a pioneer of Colorado horticulture, produced *Rocky Mountain Horticulture is Different: How to Modify the Climate to Fit the Plants* (1951), which reflected a sense of place, namely the Colorado plains and mountains. Kelly was an early advocate of the use of native plants in the garden and it was Kelly who wrote the foreword to Weber's *Handbook*.

The evolution of Weber's floras from the mimeographed set of keys to the Boulder plants in 1949 to the recently revised two-book set of field guides/keys for the plants of the entire state of Colorado went hand in hand with Weber's collecting efforts and the development of the herbarium at University of Colorado. Joseph Ewan, Weber's predecessor at the university, had taken his collections with him to Tulane University. Francis Ramaley's collection remained and Alice Eastwood's collection was donated to the herbarium. In 1962 Weber moved from the Biology Department to the Museum as a full professor. "From about 30,000 specimens in 1946 the collection has grown to 500,000" (in Preface to the Second edition of *Colorado Flora*).

Weber realized from the beginning that there was a need for a portable guide with keys, which could be taken into the field to identify plants. Amateurs had played an important role in Colorado botany. Francis Potter Daniels' *Flora of Boulder County, Colorado* was published in 1911. Ruth Ashton's (later Ruth Ashton Nelson's) *Plants of Rocky Mountain National Park* (1933) and Walter Pesman's *Meet the Natives* (1942) were already cherished by the plant lovers of Colorado when Weber arrived in the state. By providing amateurs and professionals with field guides with easily used keys, Weber could spur the study of Colorado botany.

A revised (2nd) edition of *Handbook of Plants of the Colorado Front Range* was published in 1961 at 232 pages. The third edition of the *Handbook* was published under a new title, *Rocky Mountain Flora* in 1967. It was a much larger book, at 479 pages, and contained a section of beautiful color photographs, many by Weber, and black and white botanical illustrations. Weber realized that the title was a misnomer since the coverage of the book was limited to the Colorado Front Range, but the publisher had insisted on the title name change. The fourth edition was published in 1972 and in 1976 the fifth and final edition of *Rocky Mountain Flora*

was published. This was three years after the Endangered Species Act of 1973 and the same year that the Colorado Native Plant Society was founded by a group of Coloradans including Bill Weber and John Marr.

With the publication of *Colorado Flora: Western Slope* in 1987, Weber had extended his flora to include the entire state rather than limiting it to the Front Range. This was followed by its companion volume, *Colorado Flora: Eastern Slope* in 1990 and *Catalog of the Colorado Flora: A Biodiversity Baseline* by Weber and Ronald Wittmann in 1992, which documented changes, deletions, and additions to the taxa listed in Harrington's *Manual of the Plants of Colorado* (1954) and provided synonymy and a bibliography. A version of the catalog dated March 11, 2000 is available at <http://cumuseum.colorado.edu/research/botany/Databases/catalog.html>. The catalogs include statistics on the number of accepted taxa of vascular plants, mosses, and lichens. Prior to the *Catalog*, Weber and B.C. Johnston produced the *Natural History Inventory of Colorado*; 1. *Vascular Plants, Lichens, and Bryophytes* (1976, 1979).

In 1996, Ronald Wittmann, a physicist from the National Institute of Standards and Technology (NIST) and talented amateur botanist, joined Weber as co-author in the revised editions of *Colorado Flora: Eastern Slope* and *Colorado Flora: Western Slope*. In addition to print versions of these books, electronic book versions

were later published through NetLibrary, a Boulder company. The color plates were eliminated in the third edition (2001) because of cost.

In 2012, the 4th edition of Weber and Wittmann's *Colorado Flora* was published. Weber, now age 94, claims that this will be his last revision of the flora. He plans to concentrate on other publications now including his autobiography.



Bill Weber and Ron Wittmann Photo by Heather Harris

RECOLLECTIONS

By Ron Wittmann

In the course of preparing this issue, we asked Ron Wittmann several questions about how he came to be involved with *Colorado Flora*, his work on the various books and collections, and the evolution of the work. Below are some of the thoughts he provided, which we believe provide interesting background to those interested in the history of the work.

I came to the University of Colorado in 1972 as a graduate student in physics. Among my first purchases

were Harrington's *Manual* and Weber's *Rocky Mountain Flora* and I immediately set about collecting and identifying the local plants.

Bill and I were introduced by a mutual friend in 1977. The first plant that I brought to him was *Echinacea angustifolia*, a new record for Boulder County. I was an avid collector and, fortunately, was able to find enough interesting material to catch Bill's attention. Soon I joined the staff as a Museum Associate.

In the herbarium I busied myself studying plants from all over the world, but I also found a niche as a computer "specialist." Bill had purchased an Apple 2e, apparently without a clear idea of how it should be used. One of my first projects was to write a label generating program for it (a miniature word processor). The code was crude but it served us well for a number of years. The labels we made can be easily spotted in the collections because the ink from the dot-matrix printer tended to run.

Bill had also acquired a Micom word processor, a massive device that took up the corner of his office. He used this for typing papers, writing correspondence, and making revisions to his floras. One day after being driven to distraction by the endless cacophony generated by his daisy-wheel printer, I suggested that we purchase one of those newfangled IBM AT's (with a 40 MByte hard drive!) and an ultra-quiet, ultra-fast Hewlett-Packard LaserJet printer. I thought that Bill hadn't heard me but was soon surprised when he called and asked me to place an order. The new setup was a great success and a major shift in paradigm. The first edition of the *Colorado Flora: Western Slope* (1987) was produced, camera ready, on such a system.

The *Catalog of the Colorado Flora* (1992) was also computer-aided. We designed and populated a

database and then the book was basically "written" by a program that extracted information from the database and produced a formatted Word Perfect document.

In subsequent years we produced a 2nd (revised) and 3rd edition of the *Floras* (1996, 2001) and *Bryophytes of Colorado* (2007). I am definitely a junior author, but my role has expanded with time. I have always managed production and formatting issues and have had a significant stylistic influence; however, my understanding of taxonomy and botanical nomenclature has proved useful and, most importantly, Bill and I share a first-hand knowledge of Colorado plants that has been gleaned from many, many hours of field and laboratory work.

Production of the 4th edition of the *Floras* (2012) was a collaborative effort. We worked together for half days, 6 days a week, over a span of nearly 2 years. The documentation of our efforts requires nearly 4 feet of shelf space. In accomplishing my botanical tasks, I gratefully acknowledge my mentor Bill Weber and his patient tutelage through the years.

ANNOTATED CHRONOLOGICAL BIBLIOGRAPHY OF SOME FLORAS OF COLORADO

by Jan Loechell Turner

The following list is not comprehensive, but covers some of the works mentioned by Weber and Wittmann in the 4th edition of *Colorado Flora* in "Background of Floristic Work in Colorado," which is fascinating and informative reading. This list also includes the succession of Weber's books that led to the current edition of *Colorado Flora*, starting with *The Flora of Boulder County, Colorado*. Before Weber wrote his field guides/keys and Harrington wrote his manual to the *Colorado flora*, a number of

botanists in the 1800s and early 1900s produced keys, manuals, and plant lists. Thanks to the digitization of older books, many of these can be read online at the Internet Archive (<http://archive.org>), a non-profit organization based in San Francisco, which provides free open access to important books from the past. The web address for each book is listed after its entry.

1874

Porter, Thomas C. and John M. Coulter. 1874. *Synopsis of the Flora of Colorado*. Washington, DC: Government Printing Office.

Over 1,100 flowering plants and approximately 218 mosses, lichens, and fungi are included in this book. The plants are arranged by family starting with Ranunculaceae and include descriptions of species and locations. An index by scientific name is at the end.

Thomas Porter (1822-1901) was a botany professor at Lafayette College in Pennsylvania. He is not to be confused with Cedric L "Ted" Porter (1905-2000), who was the curator of the Rocky Mountain Herbarium.

John M. Coulter (1851-1928) was Professor of Natural Sciences at Hanover College when this book was written. He was affiliated with a division of the Hayden survey and had collected plants in Colorado. He went on to become President of Indiana University, President of Lake Forest University, and Botany Professor and head of the Botany Department at the University of Chicago. He was founder of *The Botanical Gazette* and served as its editor. <http://archive.org/details/synopsisoffloraoooportrich>

1876

Brandege, Townshend. 1876. *Flora of Southwestern Colorado*. Washington: Dept. of the Interior, U.S. Geological and Geographical Survey of the Territories.

This book begins with descriptions of the country and plants Brandege observed as he traveled through Southwestern Colorado and notes the large number of grasshoppers defoliating the plants. *Flora of Southwestern Colorado* contains a list of plants, with locations, that were not included in the *Synopsis of the Flora of Colorado*. New species are described. Also contained is a list of plants growing below 8,000 feet in Southwestern Colorado, which was included for comparison with

the Eastern Slope plants and a list of mushrooms and liverworts.

Brandege (1843-1925) was a civil engineer and botanical collector who served as assistant topographer and botanist for the Hayden Survey in 1875. He was honorary Curator at the University of California Herbarium in Berkeley. His wife, Katharine, became Curator of the Herbarium at the California Academy of Sciences before Alice Eastwood and she was responsible for bringing Eastwood there as Co-Curator.

<http://archive.org/details/floraofsouthwestoobranri ch>

1885

Coulter, John M. 1885. *Manual of the Botany (Phaenogamia and Pteridophyta) of the Rocky Mountain Region, from New Mexico to the British Boundary*. New York, NY: American Book Co.

Also known as, *Coulter's Manual of Rocky Mountain Botany*, this book contains a key and descriptions of plant species with their ranges, grouped by family. It was an outgrowth of *Synopsis of the Flora of Colorado* and was modeled on Gray's *A Manual of the Botany of the Northern United States*. It covers plants of Colorado, Wyoming, Montana, Western Dakota, Western Nebraska, and Kansas. Much of the flora of contiguous areas is also described including those of Eastern Utah, Northern New Mexico and Arizona, Northwestern Texas, and Idaho. "Introduced plants are placed in foot-notes that they may be separated as far as possible from our native plants, and their relation to the flora thus emphasized." (from Preface, p. vii).

John Coulter (1851-1928) was a Professor of Botany at Wabash College in Crawfordsville, IN, and Editor of *The Botanical Gazette* at the time this book was produced.

<http://archive.org/details/manualbotanyphnoocoulgoog>

1893

Eastwood, Alice. 1893. *A Popular Flora of Denver*. San Francisco, CA: Zoe Publishing Co.

A Popular Flora of Denver contains no keys and was meant to help students to identify plants growing in the Denver area. Species are grouped by family with brief descriptions and their locations in Denver. In the Preface, Eastwood states: “Establishing the identity of a plant is the first step toward knowing it, though it generally becomes also the last. There should follow observations of its habits and environment; the noting of the insect visitors, their actions and results; comparison with other plants of the same species and with those of allied species to discover variation and detect relationships that may be unsuspected. This is a vast field of original work that has been so neglected that we are forced to admit that we know very little beyond the name of a plant. It is hoped that by facilitating that labor more time can be spared for the intimate acquaintance with the plants.”

Alice Eastwood (1859-1953), originally from Canada, graduated from and taught at East High School in Denver. She collected widely and was known to be quite hardy. Mary Katharine “Kate” Brandegee, Curator of the prestigious California Academy of Sciences Herbarium and wife of Townshend Brandegee, invited Eastwood to share the job with her, and when Brandegee retired, Eastwood became Curator of the Herbarium. She published over 300 articles and numerous books.
<http://archive.org/details/popularfloraofde00eastrih>

1900

Eastwood, Alice. 1900. *Bergen’s Essential of Botany. Part II. Key and Flora: Rocky Mountain Edition*. Boston, MA: Ginn & Company. 139 p.

This key and flora covers the most widely distributed species in Colorado, Wyoming, Idaho, Montana, Utah, New Mexico, the western part of North and South Dakota, Nebraska, Kansas, Oklahoma, and the eastern part of Arizona.

Because the book was intended to be used by secondary school students, plants that would be found blooming in the spring and early summer near the larger cities and towns are included as are plants found near mining towns at higher elevations. Eastwood states, “It is unfortunate that at present there is so much confusion regarding the names of plants. Owing to differences of opinion among authorities, many plants are known by several different names. It has been deemed advisable to give in this book several names so as to enable teachers and students to identify species...” (p. 2). The book includes a Key to Some Families of Phanerogams. Classes, families, genera, and species are described. Habitat or range and bloom time are included for some. The index includes scientific and common names. This specific book is not available online but can be read at the library at the Denver Botanic Gardens.

Alice Eastwood worked at the California Academy of Sciences when this book was written.

1902

Nelson, Aven. 1902. *An Analytical Key to Some of the Common Flowering Plants of the Rocky Mountain Region*. New York, NY: D. Appleton and Company.

Also called *Key to Rocky Mountain Flora*, the booklet was not meant to be a manual for the Rocky Mountain flora. It contains only a few hundred of the approximately 3,000 species that were recognized in the area at that time and was meant to be used in the classroom with examples of plants contained in the key but not to be used in the field to key out plants because so many species were not included. People who supplied plant lists to Nelson included George Osterhout of New Windsor, Colorado; Prof Eugene Beardsley, Colorado State Normal School; Prof Francis Ramaley, University of Colorado, Prof Ellsworth Bethel, Denver High School; Mr. H.L. Shantz, Colorado College. Nelson mentioned that Dr. Coulter’s *Manual of the Rocky Mountains* was the only one at the time that covered the region although many of the Rocky Mountain species were found Gray’s and in Britton’s *Manual*.

Nelson (1859-1952) received a PhD from University of Denver (dissertation, 1904: *Contributions to Our Knowledge of the Flora of the Rocky Mountains: A Collection of Papers [by Nelson] Published in Various Journals, 1898-1904*) and was one of the founders of the University of Wyoming, co-founder of the herbarium, first librarian, botany professor, and 10th president of the university. He was the husband of botanist Ruth Ashton Nelson, author of *Handbook of Rocky Mountain Plants*.
<http://archive.org/details/cu31924051783789>

1906

Rydberg, Per A. 1906. *Flora of Colorado*. Fort Collins, CO: Experimental Station.

The keys in this flora are divided by orders, families, genera, and species. Species entries give the habitat, altitude, and range. Genera include the common name as well the scientific name. The end of the book contains a gazetteer of locations mentioned in the text (Mrs. L.G. Carpenter helped with this) and an index.

Per Rydberg (1860-1931) was born in Sweden and received a PhD from Columbia University in 1898 after which he was hired by the New York Botanical Garden (NYBG). Ewan states, "No botanist was more critically involved in the history of study of the Rocky Mountain flora." (Ewan, 191). Rydberg collected in Colorado in 1891 and in 1900 and he had some skill as an artist, illustrating his botanical papers. Professor L. G. Carpenter of the Colorado Agricultural College in Fort Collins contacted N.L. Britton at the NY Botanic Garden in 1901 to ask if one of the botanists could identify the plants from the collection in Fort Collins, which numbered 1,400. Professors James Cassidy and C.S. Crandall had done much of the collecting. Dr. Rydberg was the Rocky Mountain flora specialist at the NYBG, so he undertook the identification of the collection and other Colorado specimens. Rydberg had already started work on a key to Rocky Mountain flora so he was able to take the relevant part of the keys that applied to the plants of Colorado. He states that he "belongs to the radical school which believes in small genera with closely related species rather than in larger ones with a heterogeneous

mass of different groups of plants having relatively little relationship to each other" (p. xiv of this book). In other words, he was a splitter. Rydberg researched the work of earlier collectors so the catalog included 2,912 species.

<http://archive.org/details/floraofcoloradoorydb>

1909

Coulter, John M. and Aven Nelson. 1909. *New Manual of Botany of the Central Rocky Mountains (Vascular Plants)*. New York, NY: American Book Company.

Also known as the *New Manual of Rocky Mountain Botany*, this book was out-of-print when Weber came to Colorado in 1946. Aven Nelson, Professor of Botany at the University of Wyoming, took on the task of rewriting and updating Coulter's earlier manual. The new manual was to contain the complete flora of Colorado and Wyoming, Yellowstone Park, and the Black Hills of South Dakota. It also contained much of the flora of Montana, southern Idaho, eastern Utah, northern New Mexico, and the adjacent part of Arizona. The Analytical Key to the Families was adapted from *Gray's New Manual of Botany* revised by Robinson and Fernald. Engler's sequence of families was used. A glossary and index are included. Descriptions of the species include range.
<http://archive.org/details/newmanualbotanyoonelsgoog>

1911

Daniels, Francis P. 1911. *The Flora of Boulder, Colorado, and Vicinity*. The University of Missouri Studies, Vol. 2, No. 2, Columbia, MO: University of Missouri.

This was the only plant list for Boulder County when Weber arrived at the University of Colorado. Daniels' collections were originally in the Herbarium of the University of Missouri but are now at the Herbarium at University of Colorado. The plants were collected from June 18 to September 3, 1906 so plants were not collected during the spring. The introductory material discusses the topography, geology, climate, and zones of vegetation of the

area and the species are listed by vegetation zone followed by a list of saprophytes, parasitic plants, forage plants, weeds, and cultivated plants that have escaped. This is followed by a bibliography that includes many of the publications of Francis Ramaley, plant ecologist at University of Colorado. The list that follows is by subkingdom, order, and family. Localities and ranges are given for species and common names are included.

Francis Potter Daniels was Professor of Romance Languages at Wabash College and dedicated the publication of the flora to Professor T.D.A. Cockerell, who served as the subject of books by William A. Weber. Daniels had been hired by the Botany Department at the University of Missouri to collect plants in Colorado for their herbarium and he collected approximately 1,036 species in Boulder County. He worked briefly as an assistant curator at the U.S. National Herbarium. <http://archive.org/details/floraofbouldercooodanirich>

1917, 1922

Rydberg, Per A. 1917. *Flora of the Rocky Mountains and Adjacent Plains: Colorado, Utah, Wyoming, Idaho, Montana, Saskatchewan, Alberta, and Neighboring Parts of Nebraska, South Dakota, North Dakota, and British Columbia*. New York, P.A. Rydberg, 1917, 1st ed., 1922, 2nd ed.

This book describes 5,900 plant species and covers Colorado, Utah, Idaho, Wyoming, Montana, Saskatchewan, Alberta, and contiguous parts of Nebraska, South Dakota, North Dakota, and British Columbia. Rydberg had already started developing the keys in this book when he was asked by Colorado Agricultural College (now known as Colorado State University) to identify the specimens in their herbarium and produced *A Flora of Colorado*. In the introduction to first edition, Rydberg said he had spent eleven summers in the Rocky Mountain region. The keys are indented and descriptions of species include habitat and range. <http://archive.org/details/floraofrockymounoorydboft>

1949

Weber, William A. 1949. *The Flora of Boulder County, Colorado: Keys to the Native and Naturalized Species of Vascular Plants of the Boulder Area* (mimeographed). Boulder, CO: Department of Biology and the University of Colorado Museum. 314 p.

Weber prepared these mimeographed keys for students in his classes at University of Colorado because no current key to the flora was available at the time. Coulter and Nelson's book was out-of-print and Harrington's book was not completed until 1954. The key begins with a Table of Contents which is an alphabetical list of families with page numbers. This is followed by a Key to the Families and A Guide to the Ferns and Fern Allies of Boulder County, Colorado, which contains an introduction and brief bibliography. Descriptions are absent. A Key to the Species of a family is followed by an annotated check list of the species which includes location collected, date of collection, and collector. The collector is often Francis Ramaley, who collected in Boulder, Gilpin, Larimer, and Weld counties and the San Luis Valley.

1953

Weber, William A. 1953. *Handbook of Plants of the Colorado Front Range: Keys for the Identification of the Ferns, Conifers, and Flowering Plants of the Central Rocky Mountains from Pikes Peak to Rocky Mountain National Park, and from the Plains to the Continental Divide*. Boulder, CO: University of Colorado Press.

Unlike the mimeographed key to the Boulder flora, this book contains introductory information about the Front Range and its plant zones, instructions on how to use the key, how to make a plant collection, scientific and common names, and descriptions of plant forms (annuals, perennials, etc.), diagrams of flowers, placentation, and so forth. A list of recommended books is included. In the Foreword, horticulturist George W. Kelly states that a strength of the Handbook is that it confined to plants of the Front Range, which restricts the number of species to those in a limited area and thus makes it much

easier to use than a key for a larger area with more species. The keys are similar to the keys found in later editions of Weber's floras, which give the type of habitat. Family descriptions are generally absent. An illustrated glossary is included as is an index that integrates scientific names (family and genera but not species) and common names.

1954

Harrington, Harold D. 1954. *Manual of the Plants of Colorado*. Denver, CO: Sage Books. 1954, 1964. Out-of-Print. Available for purchase through CONPS as a book on CD, <http://www.conps.org/Bookstore/index.shtml>

This massive book is essential because it is the only manual for Colorado that contains plant (family, genera, and species) descriptions as well as keys, but there have been no updates of the book. The keys are indented and the families are not arranged alphabetically so the index is necessary. Within each family is a description of the family and key to the genera and within each genus is a description of the genus, including common name, with a key to the species. The species descriptions vary in detail and are quite useful for plant identification. Weber states, "It was the very first and still the only flora of Colorado that contains keys and adequate descriptions for the vascular plants of the state" (*Colorado Flora: Eastern Slope*, 4th ed., p. xx). The book includes a description of vegetation zones in Colorado by David Costello of the Rocky Mountain Forest and Range Experiment Station. A glossary is contained and the index includes common and scientific names.

Harrington (1903-1981) received his PhD from the University of Iowa in 1933. He taught taxonomy at Colorado State University from 1936 to 1939, leaving to teach Botany and Zoology at Chicago's Teachers College from 1939 to 1944. He returned to CSU in 1944, serving as Professor and Curator of the Herbarium until he retired in 1968. He entertained students on field trips by playing the ukulele, violin, and Spanish guitar. In addition to the *Manual of Plants of Colorado*, he authored numerous books and publications including *Grasses of Colorado* (1946), *Colorado Ferns and Fern Allies: Pteridophyta* (1950), *The True Aquatic Vascular Plants of*

Colorado (1955), and *How to Identify Plants* (1957, 1979, 1985), a classic book used in plant taxonomy classes, which was illustrated by L. W. Durrell. *Edible Native Plants of the Rocky Mountains* (1967) was illustrated by Y. Matsumura and contains information on poisonous, edible, and useful plants and includes recipes. Harrington's wife, Edith, was also a botanist. She worked at the CSU Seed Laboratory, collected plants with her husband, and edited his books. She even produced the typewritten copy of the *Manual*. Marilyn Colyer's fascinating account of her involvement in the collection of information for Harrington's book, which included interviewing Ute Indians and old timers from Southwestern Colorado about their use of plants, can be read in "Memories of a Colorado Botanist: Harold D. Harrington," *Aquilegia*, 2009, Vol.33, No. 1, pages. 3-4, available on the CoNPS website.

The CD, Harrington's *Manual of the Plants of Colorado*, is sold by CoNPS thanks to the efforts of Patrick Murphy and includes the following publications: Harrington's *Manual of the Plants of Colorado*, an index to the *Manual* by Harold Dahnke that includes species as well as genera, *Catalog of Colorado Flora*, *Colorado Checklist* from the Rocky Mountain Herbarium, *Colorado Wetland & Riparian Field Guide*, *Field Guide to Sedge Species of the Rocky Mountain Region*, *Key to Colorado Grasses*, *Native Species Revegetation Guide*, and *Colorado Weeds*, and a biography of Harrington. \$15.00.

1961

Weber, William A. 1961. *Handbook of Plants of the Colorado Front Range: Keys for the Identification of the Ferns, Conifers, and Flowering Plants of the Central Rocky Mountains from Pikes Peak to Rocky Mountain National Park, and from the Plains to the Continental Divide*. Boulder, CO: University of Colorado Press.

This second, revised, printing of the 1951 first edition included new species, name changes, and eliminates some misidentified species. Weber was Associate Professor of Biology and Curator of the Herbarium at University of Colorado when this was published.

1967

Weber, William A. 1967. *Rocky Mountain Flora: A Field Guide for the Identification of the Ferns, Conifers, and Flowering Plants of the Southern Rocky Mountains from Pikes Peak to Rocky Mountain National Park and from the Plains to the Continental Divide*. rev. and illus. Boulder, CO: University of Colorado Press.

The title was changed but this was a revised version (3rd edition) of the *Handbook of Plants of the Colorado Front Range* with the addition of illustrations by Dr. Charles F. Yocum, Humboldt State College, who was an old classmate and friend of Weber's. The illustrations are located near the plants in the key, which is the most useful location. This was Weber's first book to employ the user-friendly alphabetical arrangement of families, "heretical in botanical circles" (p.19). In the Introduction, Weber encourages amateurs to make contributions, noting that Darwin and Mendel were amateurs. Weber was Professor of Natural History at the time this book was published.

1972

Weber, William A. 1972. *Rocky Mountain Flora: A Field Guide for the Identification of the Ferns, Conifers, and Flowering Plants of the Southern Rocky Mountains from Pikes Peak to Rocky Mountain National Park and from the Plains to the Continental Divide*. Boulder, CO: University of Colorado Press. (4th ed. rev. of *Handbook of Plants of the Colorado Front Range*).

This revised, 4th edition, includes a section of color plates.

1976

Weber, William A. 1976. *Rocky Mountain Flora: A Field Guide for the Identification of the Ferns, Conifers, and Flowering Plants of the Southern Rocky Mountains from Pikes Peak to Rocky Mountain National Park and*

from the Plains to the Continental Divide. Boulder, CO: University of Colorado Press. (5th ed. of *Handbook of Plants of the Colorado Front Range*).

This 5th edition was a major revision of the previous editions and reflects the maturation of Weber's ideas as a botanist. Weber's viewpoint, as expressed in this book, developed after traveling the world and recognizing the association between the Colorado flora and that of the northern continents of the world. He embraced some of the new concepts put forth by Eurasian botanists, returning to some of the narrower generic concepts of Rydberg and Greene, and thus migrating from the lumper to the splitter camp. We are starting to hear Weber's voice more clearly in this book.

1987

Weber, William A. 1987. *Colorado Flora: Western Slope*. Boulder, CO: Colorado Associated University Press.

With this book, Weber provided keys to the plants of the Western Slope and the book received the title *Colorado Flora*. In an attempt to keep the book portable, the size of the print is smaller. The book was dedicated to Constantine Rafinesque, Edward Lee Greene, Per Axel Rydberg, Wendell Holmes Camp, Lloyd Shinnars and Åskell Löve. The striking cover features an attractive photo by Weber of a flower-covered hillside near Gothic, Colorado, surrounded by a black background with the title in white. The foreword is by Gordon Gee, at that time President of the University of Colorado. The book mentions the contributions of Ron Wittmann in the field and with the computer and also mentions many of the people we know from the Colorado Native Plant Society. Weber hoped that his book would be used to help make conservation decisions. In the preface, Weber sounded the alarm about the development of the Western Slope and the threats to the environment. He was concerned that floras were not being funded, that students weren't trained in floristics, grant money was not going to field work, and that herbaria were being neglected and abandoned. Weber included only the plants of the Western Slope rather than the entire state in order to retain a portable size and also to keep the keys simpler by including a smaller number of

species. The line drawings are still integrated within the text and there is a section of color plates. Weber's three letter codes for families are included. There is a great deal of valuable introductory information including "Eponymy – Botanists Honored in Colorado Plant Names." The index to genera gives the three letter family code rather than the page number and the common name index gave scientific name of genus and three letter family code.

1990

Weber, William A. 1990. *Colorado Flora: Eastern Slope*. Niwot, CO: University Press of Colorado.

This is the companion volume to *Colorado Flora: Western Slope*, which was published in 1987. The line drawings are no longer integrated into the text but are in a section in the back.

1992

Weber, William A., and Ronald C. Wittmann. 1992. *Catalog of the Colorado Flora: A Biodiversity Baseline*. Niwot, CO: University Press of Colorado.

The catalog, which covers vascular plants, mosses, hepatics (liverworts), and lichens, includes changes, additions, and deletions to the Colorado flora since the publication of Harrington's *Manual of the Plants of Colorado*. It also includes the names used by Porter & Coulter and by Rydberg in their floras. The lists give accepted names in bold followed by synonyms in italics. Codes are given for bibliographic references, which are included at the end of the book arranged alphabetically by code. A list of synonyms refers the user to the accepted name by means of a code. The catalog includes statistics on the number of accepted taxa of vascular plants, mosses, and lichens. The online version of the catalog was updated in 2000 and is available on the University of Colorado Museum website.

1996 (print), 1999 (online)

Weber, William A., and Ronald C. Wittmann. 1996. *Colorado Flora: Eastern Slope*. Rev ed. Boulder: University Press of Colorado. (Electronic reproduction. Boulder, CO: NetLibrary, 1999).

This second edition was dedicated to George J. Goodman, who was Weber's professor as an undergraduate, and contains additions and corrections to the key and text. The index was changed to include page numbers and the common and scientific names were in separate indexes. In the Preface, Weber states "This edition is my last effort. I will have completed fifty years as a resident botanist in Colorado, and I have seen over 99 percent of the flora in the field." Fortunately, his statement did not turn out to be true. Wittmann is introduced as Weber's co-author. Weber comments that there has been more concern about protecting rare plants than protecting native plants from noxious weeds.

Weber, William A., and Ronald C. Wittmann. 1996. *Colorado Flora: Western Slope*. Rev ed. Niwot, CO: University Press of Colorado. (Electronic reproduction. Boulder, CO: NetLibrary, 1999). This edition was dedicated to the Colorado Native Plant Society and Weber states, "This edition is my final effort" (p. ix).

2000

Weber, William A., and Ronald C. Wittmann. March 11, 2000. *Catalog of the Colorado Flora: A Biodiversity Baseline*. Accessed Feb. 13, 2013. <http://cumuseum.colorado.edu/Research/Botany/Databases/catalog>
This online version of the catalog was updated in 2000 and is available on the University of Colorado Museum website.

2001

Weber, William A., and Ronald C. Wittmann. 2001. *Colorado Flora: Eastern Slope*. 3rd ed. Boulder, CO: University Press of Colorado.
This edition was dedicated to F. Martin Brown and Josiah Otis Swift. The color illustrations were removed to save space and expense. Keys were improved and altered and errors were corrected.

Weber, William A. and Ronald C. Wittmann. 2001. *Colorado Flora: Western Slope*. 3rd ed. Boulder, CO: University Press of Colorado.
This edition was dedicated to the memory of Rupert Barneby.

2012 (Print and e-book)

Weber, William A., and Ronald Wittmann. 2012. *Colorado Flora: Eastern Slope: A Field Guide to the Vascular Plants*. 4th ed. Boulder, CO: University Press of Colorado. (Also available as eBook).
See the book review in this issue for details. This edition has a different look and is slightly taller and wider than previous editions. It also includes a new section, "Background of Floristic Work in Colorado." This edition was dedicated by Weber to his late wife, Sammie (1917-1996), his daughters, Linna, Heather, and Erica, and their families, and to his friends, mentors, colleagues, and students. Wittmann dedicated the book to his wife, Judy, his son, Matthew, and his friends.

Weber, William A., and Ronald Wittmann. 2012. *Flora: Western Slope: A Field Guide to the Vascular Plants*. 4th ed. Boulder, CO: University Press of Colorado (Also available as eBook).



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University of Colorado Museum of Natural History. 2008. "Botany on the Frontier. Alice Eastwood's Collection." Accessed April 1, 2013.
<http://cumuseum.colorado.edu/exhibits/objects/botany-frontier-alice-eastwoods-collection>

BOOKS BY WILLIAM A. WEBER (from his *Curriculum Vitae*, 2012)

This bibliography is from Bill Weber's *Curriculum Vitae* (updated in 2012) and it represents only a small portion of Weber's publications, which include monographs and numerous articles.

1953. *Handbook of Plants of the Colorado Front Range*. 232 pages, 68 figs. Univ. of Colorado Press, Boulder.
1961. *Handbook of Plants of the Colorado Front Range*. 2nd ed., revised. Univ. of Colorado Press.
1966. *Theodore Dru Alison Cockerell, 1866-1948 (Bibliography)*. Univ. Colorado Studies, Ser. Bibliography 1:1-124. frontispiece.
- _____. *Wildlife of the Southern Rocky Mountains* [with R. C. Beidleman & C. F. Yocom]. The Naturegraph Company.
- _____. *Rocky Mountain Flora*. 437 pages, 346 illustr. Univ. of Colorado Press.
1969. *Grand Canyon. Daily Log and Guide Book for Field Trip No. 1*. XI International Botanical Congress. 100 pages.
1972. [Scheda for] *Cryptogamae Formationum Coloradensium*. Centuries I-VI, numbers 1-615, 1905-1908, distributed by Frederick Edward Clements (1874-1945) and Edith Schwartz Clements (1877-1971). 66 pages, offset. Printed by the New York Botanical Garden.
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- _____. *Rocky Mountain Flora. Fourth edition*. 437 pages, 16 color plates. Colorado Associated University Press.
- _____. *Random-Access key to the genera of Colorado mosses* [with Patricia Nelson]. 203 cards, booklet. Univ. of Colorado Museum.
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1976. *Theodore D. A. Cockerell: Letters from West Cliff, Colorado, 1887-1889*. 222 pages, illustr. Colorado Associated University Press (received Centennial Medal).
- _____. *Rocky Mountain Flora*, 5th edition revised. 479 pages, 375 figs., 32 colored plates. Colorado Associated University Press.
- _____. *Natural History Inventory of Colorado, I. Vascular plants, lichens and bryophytes* (with Barry C. Johnston). 206 pages. Computer-generated. University of Colorado Museum.

1987. *Colorado Flora: Western Slope*. 530 pages, 64 color plates, 107 line drawings, 1 map. University Press of Colorado. August 5.
1990. *Colorado Flora: Eastern Slope*. 530 pages, 64 colored plates, 115 line drawings. University Press of Colorado. May.
1992. *Catalog of the Colorado Flora: a Biodiversity Baseline*. (with Ronald C. Wittmann). 215 pages. University Press of Colorado.
1996. *Colorado Flora: Eastern Slope*. Second Edition. 524 pages. University Press of Colorado.
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- _____. *Flora of Colorado: Western Slope* [with R. C. Wittmann], Third edition. 488 pages. University Press of Colorado.
2004. *The Valley of the Second Sons: Letters from Theodore Dru Alison Cockerell written to his sweetheart and her brother about his life in West Cliff, Wet Mountain Valley, Colorado, 1887–1890*. 566 pages, illustr. Pilgrims' Process, Inc., Longmont, Colorado.
- _____. (As editor of) Horner, John. *Colorado University—The Austere Years*. 179 pages. illustr. University of Colorado.
2007. *Bryophytes of Colorado: Mosses, Liverworts, and Hornworts* [with R. C. Wittmann]. 238 pages. 8 plates. Pilgrims Process, Inc., Santa Fe.
- _____. Materials for a personal memoir. In progress, on disk.
2012. *Flora of Colorado: Eastern Slope* [with R. C. Wittmann], Fourth edition. 555 pages. University Press of Colorado.
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SPEECH TO THE COLORADO NATIVE PLANT SOCIETY

(SEPTEMBER 2011)

By Bill Weber

PROLOGUE

I was asked to come early so that visual aids, like Power Point charts and other “apps” could be installed, ostensibly to interfere with my visual and oral communication with all of you. I decided to use a better alternative. Today Ron Wittmann and will be your visual aids. I like to talk with people, and it dismays how one-on-one communication without requiring any technological “aid” has become so rare in this society.

REFLECTIONS

This narrative demonstrates some ways in which my general education contributed, over the course of ninety years, without any planning beforehand, to a completely unanticipated and unrelated scientific hypothesis. Secondly, this story proves, as Steven J. Gould wrote in his *Structure of Evolutionary Theory* (2002, p. 117): “Revolutions usually begin as replacements for older certainties and not as pristine discoveries in uncharted terrain.”

1. The collector

When I was a kid four or five years old, I was a collector. I started with cigar bands. Each brand had a colorful one. I would find them in the gutters, unglue the ends, flatten them out, and paste them in hard cover black notebooks. Unable to find a “cigar-bandarium,” I had no place to donate them to when I grew up. I also collected license plates, just recording the colors and the states. I would stand on busy corners and copy down what I could, and had a great list. They were of no particular interest, but when I went to college in Iowa, each license plate had one or two digits on the left, and they indicated the county. People from the same county could stop their cars and know they could talk with a friend. Cars were relatively

uncommon then, but eventually this numerical system was abandoned, but it was fun while it lasted. People did speak with each other in those days. My father had a stamp collection, and gave it to me. I became an eager collector, and once I bought the complete mint set of George Washington, and invested in a stamp album. “Stamp collector” is a rude reference to some plant collectors, but I hadn’t reached that stage. It was an educational boon to me, for I learned some valuable world geography, I learned the Arabian numerals. I learned the ins and outs of watermarks, perforations, got a Scott’s catalog and marveled at the values (greatly inflated from actual). My father brought home some packets of stamps from exotic places, and I actually wrote to the consul of the Hawaiian Islands, who was gracious to kids. Hawaiian stamps were in great demand. I had literally thousands of German stamps of post-World War I times, when the stamps bore huge surcharges, up in the “milliarden.” Yet they were absolutely worthless! My stamp collection, like most others, move down the line from fathers to sons, and my collection is now with my grandchildren. Stamp collecting lost its charm with me when Jim Farley, Franklin Roosevelt’s Secretary of Stamps began to print special editions lacking perforations or with upside down portraits and misspellings, in order to increase the market value of the stamps. It ruined stamp collecting for me. Nevertheless, stamp collecting did contribute much to my extracurricular education.

2. Puzzles

My aunt and uncle had a great collection of very expensive beautiful hand-sewn wooden Pastime jigsaw puzzles. Often they were cut along color lines. I recall that the first one I put together was one with a painting on both sides: Washington at Valley Forge, and The Yellowstone Bison in Winter. Whenever our family went next door, the men to listen to football games (my uncle had a RADIO!) and the women to prepare

Sunday dinner, I was given a puzzle to while away my time. These puzzles were fine wooden ones that had pieces that were full of curlicues, interspersed with pieces representing nursery rhyme characters. Each puzzle took several hours to complete. Here was where I got early training in recognizing similarity and differences of form and slight variations of colors. I inherited this collection of over 40 puzzles and passed them on to my offspring. Such puzzles are still being made, even perhaps in China. Not long ago, I purchased one for my beloved wife, Sammie, and it cost, for only 150 pieces, about \$250.00!

3. Lists

I also was a list-maker. When I got into bird-watching, I kept records of every day I was in the field. These were entered in hard-cover notebooks, and I also pasted photographs of birds I had taken with my father's F-116 folding Kodak camera. One treasure that was included was a hand-printed plan for the Christmas Census given each of us participants in the Pelham Bay group headed by Joe Hickey. Joe's plan was carefully timed to the minute, telling us when and where we would spend a maximum of so many minutes, say, at the woodcock site. It was written on yellow foolscap. In the thirties some group at Cornell solicited our field notes as an historic archive, but evidently no one there knows anything about the project, and the files must have been discarded. At the time, there were no available ways to make copies, so part of my teen-age life is missing. [This collection miraculously turned up; the circumstances will be narrated separately. October 2012.]

When I attended or worked as nature counsellor at a Scout camp (Ranachqua) in the Catskills, a private boy's camp on Lovejoy Pond near Augusta, Maine, and at the American Museum's Northrop Memorial Camp in the Berkshires of western Massachusetts, I collected plants and made lists. This was wonderful training in memorizing of plant names. My collections went into a few thousand species, including mosses. At Iowa State College I not only collected avidly but prepared a check list of the plants of Story County. When I gave this to the library I discovered that years before, a similar catalog had been made by A. S. Hitchcock (now famous for his Grasses of the United States).

4. Washington State College

In my first year of graduate school, at a departmental seminar I had to discuss a paper by the great Swedish botanist Professor Eric Hultén, (often called the modern Linnaeus). It was his doctoral thesis, entitled: Outline of the history of arctic and boreal biota during the Quaternary period: their evolution during and after the glacial period as indicated by the equiformal progressive areas of present plant species. I knew nothing about hypotheses on plant geography, and I really did not understand the paper, but I walked through it in a half hour. The gist, in very simple terms, was that, on analyzing the lists of plants of the arctic the professor found that there were knots of floras strung like beads around the arctic in which each bead had a group of species in common but each bead differed from the other by having groups of local endemic species. I shall have more to say about this.

5. Lichens

By the time I got to Boulder in 1946 I had a lot of experience learning the floras of the New England forests, the prairies of Iowa, the Canadian Rockies, the flora of eastern Washington and adjacent Idaho. It seemed to me that all of these areas contributed species to the Colorado flora. While my main interest continued to be the vascular plants, I had an experience that made me broaden my horizons. Sam Shushan came on the faculty to teach plant morphology. He needed demonstration material, and asked me if I could find a few lichens for him. All I knew about lichens was the little eastern species of *Cladonia* locally called British Soldiers, but I said I would try. This got me into about 45 years of studying the lichens of Colorado and the world.

There were very few books on American lichens, and fewer botanists who made them a specialty. Sam and I were very lucky to meet L. W. Durrell, a botany professor at Colorado State University who had intended to spend his retirement learning about lichens. He sold us his small library for a hundred dollars. Among the books was a detailed treatise by Hugo Magnusson on the lichens collected in Mongolia by the great traveler Sven Hedin (Magnusson 1940,

1944). I soon discovered that some of our most common and conspicuous lichens described as new species were evidently endemic in that area. The lichen bug had bitten me very hard, and I applied for and received a Senior Postdoctoral Fellowship for a year in Sweden studying those collections and getting to know most of the lichenologists of Scandinavia.

6. Professor Hultén

Professor Eric Hultén was the director of the Riksmuseum in Stockholm, and, like Linnaeus, caring little about lichens, he ignored me except for daily lunch sessions. Dr. Herman Persson was the bryologist, who had visited me in Boulder and helped me with my lichen and bryophyte collections from Mt. McKinley Park in Alaska. Herman evidently told Hultén that I knew something about flowering plants. One day he came to me and presented a small pile of Colorado outline maps and asked me if I could plot the areas of the species named on them. This I could easily do, from memory. From that day on we were bosom buddies. The professor later visited us in Colorado and enjoyed the magnificent flora of Mount Evans. We drove him to Banff for a field trip of the International Botanical Congress and were together on the Arctic field trip. It was interesting that he presented me with the only remaining duplicate copy of his thesis, apologizing that he was not very proud of it, and that he should have realized that his plant geography had not included maps of the southern mountain species. Of course, at that time very little was known about the distributions of American plants, and he needed to improve on the maps that he was planning to publish.

7. Asa Gray and the Arcto-Tertiary Flora

Asa Gray, of the Harvard University Herbarium, on a visit to the Paris Herbarium in 1839, happened to find an André Michaux specimen collected somewhere in the southern Appalachians that turned out to be an undescribed genus which he named *Shortia*. He spent the next 40 years searching in vain for it in nature. It was eventually rediscovered in 1877 by an amateur botanist. This plant became the first evidence of what is now called the Arcto-Tertiary flora, for the same genus was found later to have two species in Japan. This circumboreal forest flora is well documented in

eastern North America, Japan, and eastern Asia. However, it is still not generally recognized that species belonging to this pattern also occur in the Rocky Mountains.

8. Professor Fernald and the Nunatak Hypothesis

Professor Merritt L. Fernald was a later successor to Gray, and was very much interested in the Arcto-Tertiary Flora and was the preeminent student of the flora of eastern North America. He discovered that a number of species occurring in Quebec and, the Upper Peninsula of Michigan were “cordilleran”, that is, Rocky Mountain in principal distribution. He worried a great deal about how such species could have been carried east to these small ‘islands’. Much has been written about this “Nunatak Hypothesis” (see Wikipedia) but until now no conclusion has been reached. The occurrence of these species is still considered to be a case of post-glacial long-distance dispersal.

9. Hooker and Gray in Colorado

In 1877 Sir Joseph Dalton Hooker, the Director of the Royal Botanic Gardens at Kew, and Asa Gray made a joint trip across the United States and spent five days in Colorado. Gray had never visited the West, but Hooker had had extensive experience in the mountains of Middle Asia. In his biography I learned that Hooker was astounded at the Middle Asiatic element in the Colorado flora. He wrote letters to Gray and Darwin, but evidently the news for some unknown reason went right over Gray’s head, and in the joint paper which the two scientists published on the plant geography of the Rocky Mountains, there is no mention of this pattern. Because I had similar experiences with the lichens in the Colorado flora, I began to look at our flora and found that Hooker was right, but I needed to see his evidence. After many years I was able to locate the hand-written list (see how lists come into this?) of the plants he collected. I also discovered that my experience in the field a hundred years later bore out that of Hooker. He of course could not speculate on origins because continental movements were not dreamed of then, but he deserves credit for this discovery.

10. The Altai Mountains

In 1978 and 1987 I was invited to participate in two field trips to the Altai Mountains in southern Siberia. My experiences there, and my discovery of Hooker's list caused me to realize that indeed Colorado has a core of species common to Colorado and the Altai, including not only of flowering plants, but lichens and bryophytes, including species very rare in the Rocky Mountains. My study is summarized in a major paper (Weber 2004). The list is too long to give here. PDF copies are available.

11. The origin of the present-day arctic flora

The facts demonstrate that Hultén was on the right track, but lacked information on the alpine and steppe floras to the south. If information had been available to him, he might have reached the same conclusions that I summarized as follows (2004):

1. The modern alpine and associated marginal steppe and montane floras are of Tertiary age.
2. The Arctic floras have been derived in relatively recent (Pleistocene) times by the local invasion of available territory involving short-distance migrations from high to low altitudes.
3. The floras of the southern mountains, rather than being derived from, antedate those of the present-day Arctic.
4. The Middle Asiatic and the North American floras once enjoyed a contiguous existence over a broad area involving connections between North America and Asia

across the North Pole by way of Greenland, and their present distributions are the products of extinction and attrition of ranges, not of any long-distance migration or dispersal mechanisms.

5. The Nunatak Hypothesis is explained by attrition of the Tertiary flora and needs no support of long-distance dispersal mechanisms.

12. Future research challenges

In my 2004 paper I suggested that “The material presented here constitutes pragmatic data accompanied by a hypothesis. New information is needed that will affirm or refute parts or all of the hypothesis. This was the problem facing the Wegenerian hypothesis of Continental Drift. It took many years before geologists accepted the botanical data and realized that a mechanism was needed to explain them. I believe that in the present instance of the ancient Middle-Asia-western United States enigma at least some of the tools are at hand to begin to come to some valid conclusions.”

John Marr, a founder of this society, has a son Ken, who is a botanist on the faculty of the University of British Columbia. I gave a copy of my paper to his mother, who passed it on to him. Ken Marr, I learned recently, is going to make his third trip to the Russian Altai in search of DNA comparisons of the species we share with the Middle Asian element in the Colorado flora!

“Great oaks from little acorns grow.”



Credit: University of Colorado at Boulder, University Archives, Office of Publications and Creative Services Collection, University Photolab Collection

THE HERNIARIA STORY

By Bill Weber

On April 2, 2012, the fourth edition of the two-volume *Colorado Flora* was published, two weeks before this story began. Over the past year, Linna and Ron had taken over the final proof-reading and indexing, and I was enjoying luxury of a vacation and rest. This was quite a change for me, but I began to tackle all of the un-read books on my shelves — fiction, history, biography. I found many new and interesting people to talk to, someone I could play cribbage with, and after the long and windy winter I needed to get out and take long walks for my health. Botany took a back space in my mind.

Among the books I was reading was a set of 16 volumes of Lillian Beckwith's tales of her twenty years of life in the small village of Bruach in the Scottish Hebrides. I had accidentally encountered *The Hills Is Lonely* when visiting a friend on Grand Manan, Nova Scotia, and became captivated by her style, they would be wonderful books to read aloud. I had lived for a decade at The Meridian retirement home and had read aloud to a small group of oldsters there. When I was "priced out" there, I moved to an apartment complex across Table Mesa Drive, where I live alone. I began to miss greatly the privilege of reading aloud, and recently returned to the Meridian to see if they would like to have me back as a weekly reader. They would!

On May 9, I walked outside to go to my reading class. It is a five-minute walk through the Table Mesa shopping center to the Meridian. I can take a short cut through the parking lot behind King Sooper's. In the parking lot there is a slightly raised linear tree-island that supports a few small trees. Where a tree or two had died, there are patches of hard-packed soil, held together by a low concrete border. Looking down to see where I was going, I noticed a prostrate apple-green annual that resembled some species of *Chamaesyce*. The plant had a rosette up to six inches in diameter, with tiny opposite somewhat succulent oval leaves. The internodes on the branches were very condensed and the green flowers were clustered in the alternate leaf axils. I collected a few branches and put them in a

packet. Unfortunately I was not carrying my hand lens (a measure of my change of life style), so could not make out any further details. I called Ron, who has 20X eyes and doesn't need one, and got him to come to the scene. We found that the flowers had no petals, but had a row of stamens and an alternating row of staminodes where the petals should be, and there were very distinct stipules, which effectively eliminated all families but the Alsinaeae. We collected a nice set of specimens, and Ron went back home to search for a genus that fit.

Before leaving the original site, we walked along the island until we found a small tree that gave some shade to the soil, and there we found and collected beautiful large specimens with spreading, ascending branches up to a foot long, confirming that this species was plastic enough to respond to moisture and shade.

Ron returned home and searched in the *Flora of Palestine* and the *Flora of North America* Volume 8, and was able to find, on Google, a beautiful colored photograph of our plant. It turned out to be *Herniaria glabra* Linnaeus, similar to *Paronychia* but annual, a waif from southern Europe, known from several of the northeastern United States, but known in the west only from a collection at Salt Lake City, Utah.

The habitat where this plant is growing may not last very long, since the packed soil is being removed and replaced by piles of coarse gravel. We do not know yet whether this colony is recent or will be found elsewhere. *Herniaria* is said to be used as a ground cover in some places in the East, so perhaps we have only overlooked it as a weed.

The derivation of the generic name in *Gray's Manual* says "from its reputed medicinal virtues". One can judge that this means the healing of hernias. The common name "Rupture plant" surely dates from the ancient "Doctrine of Signatures", by which some characteristic of the plant was considered a hint to a medicinal use. In this instance, the single large seed, in

its maturing, ruptures the capsule, effectively imitating a hernia.

There is a lesson for us here. Since this is going to be the century of weeds, the Colorado Native Plant Society should not neglect them. It is very important that we document the first occurrence of new weeds

so that we can monitor their spread. Also, we should not neglect to examine the most unlikely habitats in urban areas. And of course, it is very often the case that just after publishing the books, we will find not only the first errors, but at least one species not yet covered.

WEBER FINDS NEW COLORADO SPECIES OR “A DAY IN THE LIFE OF WILLIAM WEBER”

By Mo Ewing, Conservation Chair

Note: before reading this story, remember that William Weber is 93 years old and gets around using a walker.

“It’s *Polytrichum piliferum*, you can distinguish it from *Grimmia* by the lamella on the leaves.” He drew a little sketch of lamella for my edification. We were at the community room at Bill Weber’s condo complex in Boulder reviewing collections of mosses that I had collected from Summit Lake on Mount Evans.

Earlier in the spring Bob Finch, the Director of Natural Resources for Denver Parks had asked CONPS to map the plant communities at Summit Lake. I had been able to muster our best and brightest to survey the vascular plants, grasses, sedges, mushrooms and lichens but there were only two people who could do the bryophytes (mosses, liverworts and hornworts); one was Bill Weber, who can no longer deal with the altitude, and the other was Ron Wittmann, who wasn’t available.

I had said to Bill, “Well I guess I should try to learn the mosses.”

“You’ll never be able to learn the mosses without a mentor,” he said. “I had to do it on my own when I lived in New York City back in the 1930s, and it was really difficult.” Then after a pause he suggested, “I’ll be your mentor.”

So, here we were reviewing my first collection of seven mosses from Mount Evans, most of which he could identify with his hand lens. “That one is not a moss, it is *Salaginella densa* (lesser spikemoss).” Clearly I had a long way to go, but at least *Selaginella densa* had never been collected at Summit Lake before.

We reviewed more mosses from collections I had made from Old Squaw Pass Road, and from my sister’s ranch in Routt County.

“I collected a few species from the trip that I took to Alaska. Want to try to identify those?”

“Sure,” he said. “This is *Racomitrium lanuginosum*. You won’t find it here, but it grows on the moors in Scotland. This one is *Ditrichum gracile*. It’s at Summit Lake. And so it went.

After two hours of reviewing about 30 moss species, Bill said, “there are a couple of mosses that grow on the roots of willows. Want to drive up Beaver Creek Canyon and see them?”

“You sure you’re up to it?”

“Absolutely.”

So after a light lunch we rolled his walker into my car and drove up Beaver Creek Canyon.

“That looks like a good place to look,” he said.

“But it is private property!”

“Well, let’s ask the owner if we can look.”

The owner came to the door.

“Hi,” I said. “This fellow is teaching me how to identify mosses, and says that there may be some interesting ones next to the brook in your back yard. Do you mind if we have a look?”

It was such a weird request that the owner said, “I guess so.” But immediately Bill introduced himself and struck up a conversation and the fellow relaxed and lead us into a back yard with Bill rolling along behind with his walker.

I have always wondered what kind of moss this is,” said the owner pointing to a rock in the back.

“That isn't a moss, it is a lichen,” Bill retorted, and then launched into a discussion about the difference between mosses and lichens.

We found *Amblystegium serpens*, *Brachythecium rivulare* and *Hypnum revolutum*, but not the two species we were looking for.

Farther up the valley Bill sent me down a cliff into a dense willow carr. I returned, bloodied by the willows, with *Fontinalis neomexicana* and *Drepanocladus aduncus*. Again, not the right ones.

“Ever been to Rollinsville?” Bill asked. “There is supposed to be a good fen near the library, we should check there.”

Sneaking a look at my watch, I thought, “3 pm, I am going to hit the Boulder to Denver traffic head on going home. Oh, why not?”

So off to Rollinsville we went, then to the library, then he sent me off into the woods to find the fen. I returned with four mosses.

“This is a *Scorpidium*,” he said after looking at the first. “I can't identify the species without a microscope.” He picked up the second moss, looked and there was a long pause. “Oh my.....I.....don't.....know what this is!” After identifying a *Campylium stellatum* and *Tomentypnum nitens*, he went back to study the second moss.

A bit later, while driving back to Boulder, he suddenly exclaimed, “*Pentagonum*! It is “something *pentagonum*.” It has five rows of leaves that run up the stem! There is only one moss that does that.

Then a little later, “*Conostomum*! That's the genus! *Conostomum pentagonum*!”

“You identified that bloody moss and you've never seen it before?” I wailed.

“I've seen it in a book. This is the first collection in Colorado. I have always wondered what it looked like. Oh, Ron, eat your heart out!” he chuckled.

The “Ron” he was referring to was his close friend, Ron Wittmann who co-authored the [Colorado Flora](#) and [Bryophytes of Colorado](#).

I felt a little better when we went back to his apartment to find that the *Conostomum* species was called *Conostomum tetragonum*, “misnamed” *tetragonum* (4-sided), rather than *pentagonum* (5-sided) which would have been more accurate.

Conostomum tetragonum. Another Colorado first. 93 years old and still finding new species. “This is fun”, he said enthusiastically. “We'll have to go out next week. There are some wonderful *Grimmias* on a rock cliff further down the valley.”

For more information on the mission and activities of CoNPS and for membership information

www.conps.org

JOHN W. MARR

By Ruby Marr

John W. Marr was one of those fortunate individuals whose vocation was also his avocation. As a professor, he considered mentoring and teaching students his major focus and reward. He posted office hours on his door, but below, a note stated “Knock at any time!” John was an ecologist who felt it was necessary for students to spend time in the field. To him, teaching ecology without an intimate look at the ecosystem, was like pulling a shade down on a diorama in a museum and then trying to describe what was behind it! He shared his love of field ecology with his students.

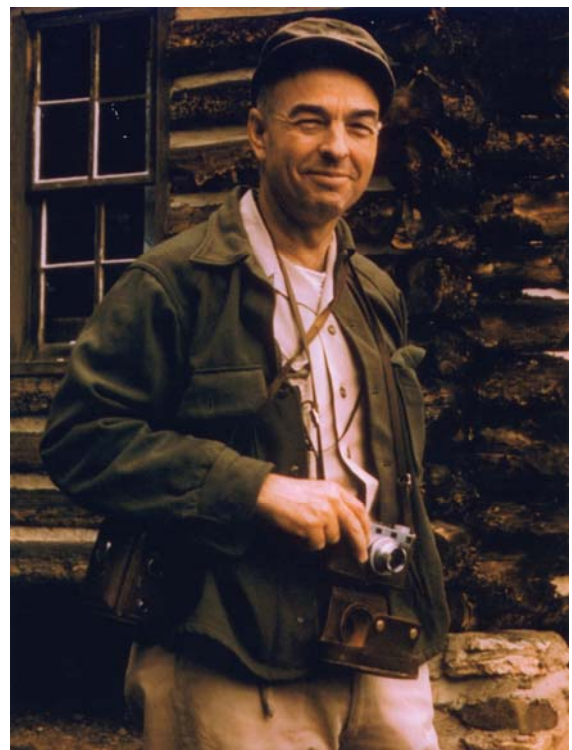
To a beginning student, their first field trip could be a bit unusual. John, after a short time in a natural site, would ask, “What is going on here?” This Socratic questioning encouraged keen observation and problem solving, and was a trademark of his teaching. These quotes, like many from students and peers, attest to the richness of this approach. “John's students were never poured into a mold, their minds were left running free.” “He encouraged independent thinking at all levels of his teaching...he taught by subtle suggestion rather than by dogmatic direction.”

In 1951, he founded the CU Institute of Arctic and Alpine Research, based at Science Lodge, now known as “CU Mountain Research Station,” located at 9,600 feet near Nederland. John obtained grants from government agencies to establish year round, environment monitoring stations on nearby Niwot Ridge. Data is still being collected from these sites, adding to the longest record of continuous year round weather data in the high mountains. In 1962 the Alpine Laboratory was built with funds from the National Science Foundation, to further this research and was later named for him.

The easy access to alpine elevations and the availability of living facilities at Science Lodge drew many international scientists as well as researchers from other universities. In addition there were summer research education programs for High School students, undergraduates, and college teachers, supported by the National Science Foundation. Together these

individuals created a congenial living and learning community.

After 16 years as director of the Institute, John Marr resigned in order to have more time for his own research. John was especially interested in tree limits. He found that the krumholtz tree islands on Niwot Ridge were actually 'migrating' across the landscape. His monograph, “Ecosystems of the East Slope of the Front Range in Colorado,” served as pioneering work in Colorado ecology, and has been cited in numerous publications.



John W. Marr at “Science Lodge”, 1957
Photo by Dwight Billings

John Marr was born and raised in Texas and received his BA from Texas Technological College in 1936 and his PhD in 1942 from University of Minnesota, where his major professor was William S. Cooper. John served as the Arctic Specialist with the Air Force in Greenland

during World War II. He joined the faculty of the CU Biology Department in 1944 and retired in 1982 at which time he was honored to receive the Stearns Award.

As a memorial, in 1989 the John Marr Native Plants scholarship fund was established, in addition to a scholarship fund at CU. These funds have furthered research in plant biology of Colorado ecosystems.

Ruby Marr, the wife of John Marr, met him when she was a graduate student at the University of Colorado in

Boulder. Ruby, a high school biology teacher at West High School in Phoenix, came to Boulder during summers to pursue a graduate degree and to escape the Phoenix desert heat. Toward the end of her graduate work in zoology, Ruby took a leave of absence from her teaching job to finish her degree and it was at this time that she met John. Ruby taught pre-school while her children, Linda and Ken, attended school. Her daughter, Linda Trousil lives in Juneau, Alaska and has a master's degree in elementary education. She has worked as a ranger naturalist and taught at the Teton Science School. Her son, Ken Marr, received his PhD in Botany at the University of British Columbia and is the Curator of Botany at the Royal British Columbia Museum in Victoria, Canada.

JOHN W. MARR

By David Buckner

John W. Marr was a field ecologist whose gentle approach to the understanding of nature in the field allowed his many fortunate students the opportunity to develop subtle but insightful perspectives on the interaction of organisms and environment. He was born in Lamesa, Texas, began his higher education at Texas Tech and later went on to a Ph.D. at the University of Minnesota under first-generation American ecologist William S. Cooper in 1942. His interests in arctic and alpine ecology were stimulated during time in World War II as Arctic Regions Specialist for the Air Force in Greenland. He became part of the faculty at the University of Colorado in 1944.

He came to realize that understanding of the ecology of mountainous regions was at that time limited by, among other things, the dearth of environmental data. In 1951 he established the Institute for Arctic and Alpine Research at CU and soon established 16 meteorological stations west of Boulder at elevations extending from the lower mountains to above tree limit. Some of these stations in four elevational groups have had long histories of data collection and botanical experimentation up to the present. The establishment of this program of extended data collection was consistent with his belief that effective understanding of ecosystem dynamics was dependent on long-term

observation of plants, their environments and the ecological processes relating them.

Through his career as a teaching field ecologist John Marr was particularly effective when, with his students in the field, he invited their observations rather than immediately “downloading” finished explanations. This initially frustrated many but most eventually knew they were far better off for having been “forced” to collect and integrate observations of their own. He also firmly believed that ecology was more than a scholarly pursuit that might like many others remain hidden in academia. His students were encouraged to apply ecological knowledge to real world problems and a large fraction went on to careers in ecology outside of academia.

He was instrumental in establishment of the Colorado Native Plant Society in 1974. After his death in 1989, he, his work and a legacy as a genuine gentleman have been commemorated by two Funds in his name.

David Buckner is a plant ecologist living near Boulder who studied with John Marr from 1972 through 1977. He has since worked in applied ecology across the Intermountain West and has participated with CoNPS as a workshop leader for many years.

THE MARR / MESA VERDE LINK

By Jim Erdman

My experience with Dr. John Marr, the gentle man, included climbing the boulder-strewn talus slopes of the park's Navajo Canyon in the early summer of 1959, now over 50 years ago! I recall that Marr, along with Bill Weber (another influential professor of mine) visited the park and clambered in Navajo Canyon with me where several weather stations were to be installed. I can still see John deep in thought, slowly climbing those slopes, pipe in his mouth.

I'd begun my college years as a premed student at North Central College in Naperville, Illinois with a major in zoology. But then in taking an ecology course my senior year, the book *Reading the Landscape* by May Theilgaard Watts got me focused on plant ecology. Watts' book was among the most widely read and used for decades by educators.

I applied for graduate school at the University of Colorado, Boulder and in the fall of 1958 took both General Animal Ecology from Bob Pennock and General Plant Ecology from John Marr. Their approaches couldn't have been more different! Dr. Marr had his class work in the field, specifically Marshall Mesa south of Boulder, using our eyes to "read the landscape." We never cracked a book during those early fall days in the field.

That winter of 1958, or possibly earlier, Dr. Marr was contacted by Doug Osborne, the Supervisory Archaeologist of the Wetherill Mesa Archaeological Project at Mesa Verde National Park. Chapin Mesa was the only part of the park's prehistory that was open to the public since Mesa Verde was signed into law by President Theodore Roosevelt in 1906, a decade before the National Park Service was created in 1916 by Congress. In 1963, 320,000 visitors came, which was an annual record for the park. Over half a century, that ten-fold increase in visitors demanded opening a new area — Wetherill Mesa. Doug needed a graduate

student in plant ecology for the project. Serendipity, big time!

In early August of 1959, Mesa Verde National Park experienced its first of many extensive fires. Called the Morefield Burn, it served as a wake-up call. Those of us on the Wetherill Project helped fight that fire. That experience led to my doctoral work on the post-fire succession, which included tree-ring analysis. The earliest fire event included a study of the then Long Mesa Burn of 1873. My fire study, "Pinyon-Juniper Succession after Natural Fires on Residual Soils of Mesa Verde, Colorado," was published in a *Brigham Young University Science Bulletin* in 1970.

In 1962, I coauthored, with Dr. Weber, a brief report in the *Southwestern Naturalist*, "*Quercus ajoensis* in Colorado" and co-authored "Annotated checklist of the plants of Mesa Verde, Colorado" in the *Brigham Young University Science Bulletin of Biology*, with Dr. Stan Welsh, in 1964. In 1969, I coauthored a Wetherill Mesa Studies publication with Dr. Marr, *Environment of Mesa Verde, Colorado*.

I surely owe John Marr thanks for the most memorable experience of a lifetime for my family. A mystical time that was in a park unique for its emphasis on early aboriginal history — the Basketmakers and later Ancestral Puebloans (formerly called Anasazi).

Dr. Jim Erdman is retired from the U.S. Geological Survey. In addition to the studies mentioned in his article, his career included the study of surficial effects of underground nuclear testing, plant tissue analysis in the exploration of mineral deposits, environmental contamination issues – the most notable locally - associated with the abandonment of the Summitville gold mine and the effects of contaminated irrigation water on alfalfa grown in the San Luis Valley. Jim is a Scientist Emeritus of the USGS, and a member of the Northern Chapter of CoNPS.

From *READING THE FORESTED LANDSCAPE*

By Tom Wessels

Note: The following is quoted, with permission, from the Introduction to Reading the Forested Landscape (1997), by Tom Wessels (pages 14-15).

The idea of “reading the landscape” was first described by May Watts in her 1964 book of the same title. This was an influential work for me as a college undergraduate because it was my first exposure to the natural history of landscapes as opposed to the natural history of individual organisms. Yet I didn’t really learn the process of reading the landscape until I became a graduate student at the University of Colorado. At that time I worked under the tutelage of plant ecologist, Dr. John W. Marr. It was Marr who took me into the ponderosa pine-covered foothills of Colorado’s Front Range and asked me to explain why two contiguous forests were different in their composition. This process was repeated many times in my studies with Marr and I quickly developed a new way of seeing landscapes – one that focused on their history. But Marr taught me more than the process of how to read forests. He was a rare ecologist who stressed the importance of having a strong emotional connection to landscapes alongside an analytical one. The very foundation of this book and my twenty years of teaching lies with John Marr.

Through Marr, plant identification became a language, one that I could apply to reading the story of a landscape the way I apply English to the reading of a book. To make that analogy even stronger, the book should be *The Adventures of Sherlock Holmes* by Sir Arthur Conan Doyle. The choice of literary genre is relevant because reading the landscape is a process similar to solving mysteries.

Tom Wessels is the author of three books and is Professor Emeritus of the Department of Environmental Studies at Antioch University New England, where he founded a master’s program in conservation biology.



John W. Marr

Credit: University of Colorado at Boulder, University Archives, Office of Publications and Creative Services Collection, University Photolab Collection

2013 RESEARCH GRANT RECIPIENTS

Members' contributions to the John W. Marr Fund and the Myrna P. Steinkamp Memorial Fund support research projects in plant biology. These separate funds honor Dr. John Marr, Professor at the University of Colorado and president of the Society, and Myrna Steinkamp, a founding member of the Society who worked on its behalf for many years in a number of capacities.

The Marr fund supports research on the biology of Colorado native plants and plant communities. The Steinkamp fund supports research on the biology of rare Colorado native plants.

The Society is grateful to those who contribute to the funds. This research contributes to a better understanding of our native plants and is integral for conservation.

Following are the 2013 recipients of research grants.

JOHN W. MARR FUND

- Mari Majeck: \$1,118, The Distribution of *Potamogetonaceae* in Colorado. M.S. Student, University of Colorado, Denver. (Leo Bruederle)
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- Boulder Gore Range Metro-Denver
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Colorado Native Plant Society



The Colorado Native Plant Society is dedicated to furthering the knowledge, appreciation and conservation of native plants and habitats of Colorado through education, stewardship and advocacy.

Membership is open to all with an interest in our native plants and is composed of plant enthusiasts, both professional and non-professional.

Please join us in learning about, enjoying and protecting Colorado's native plants.

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AQUILEGIA

Newsletter of the Colorado Native Plant Society

Aquilegia is the newsletter of the Colorado Native Plant Society, and is available to members of the Society and to others with an interest in native plants. Four regular issues are published each year, plus a special issue for the annual Society meeting held in September.

Announcements, news, articles, book reviews, poems, botanical illustrations, and other contributions should be sent to Jan Loechell Turner at conpsnewsletter@gmail.com.

All contributions are subject to editing for brevity and consistency, with final approval of material changes by the author.

Articles from *Aquilegia* may be used by other native plant societies or non-profit groups, if fully cited to author and attributed to *Aquilegia*.

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- February 15 (Spring issue)
- April 15 (Summer issue)
- June 15 (Annual Meeting issue)
- July 15 (Fall issue)
- October 15 (Winter issue)



Bill Weber and Ron Wittmann
Photo by Heather Harris



John W. Marr at "Science Lodge," 1957
Photo by Dwight Billings