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Revision of Eric Walther's monograph Echeveria (1972)

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Introduction

Edward Eric Walther was born on August 14, 1892 in Dresden, Germany. In 1909 he emigrated to California. Around 1915 he became interested in landscaping and began to work as a gardener. Later he was employed by Golden Gate Park, San Francisco, although he had no formal training in horticulture or botany. In 1933 he was named first Director of Strybing Arboretum and Botanic Garden where he remained until his retirement in 1957. In the course of the years he developed a special interest in succulent plants and published many articles in the *Cactus and Succulent Journal of America*. During the 1930s he became particularly interested in genus *Echeveria*. He made trips to Mexico to study plants in habitat and communicated that he intended to publish a monograph. As nobody else was studying this genus he soon was considered an expert and the expectations concerning the publication of his findings were accordingly high. When he suddenly died 1 July 1959 the monograph was not yet complete and it took 13 years until it finally appeared in print (1972). The joy was great and it seems that nobody subjected the book to a thorough critical examination. Although Reid Moran pointed out major inconsistencies in his book review and although Charles Uhl's articles did contain references to or doubts about some of Walther's claims this had no further consequences, the situation remained unchanged over the following decades. As a result, even the treatment of genus *Echeveria* in the *Crassulaceae* Lexicon of the *Illustrated Handbook of Succulent Plants*, 2003 is still largely based on Walther's monograph. And basically Walther's monograph *Echeveria* is still today considered THE reference for echeverias, so to speak the "bible".

Walther's monograph is an inventory of the echeverias known at his time. It consists of 2 parts:

1. An **Introduction** (p. 1-61) that in short chapters highlights historical and geographical aspects and includes notes on taxonomy and cultivation, and
2. what is called "**Systematics**" which is a survey of all *echeverias* known at the time.

This revision concerns mainly the **Systematics** which comprises 143 *Echeveria* species and varieties, classified into 14 series of very different sizes. The 143 species can be divided into 2 groups :

- 98 species which have been described by various authors before Walther's time and
- 45 species and 10 varieties described by E. Walther.

The problems of Walther's monograph regarding the **Systematics** will be explained following a short

Survey of the history of *Echeveria* publications

1. in Europe – ca 1900

In the 19th century, echeverias were a predominantly European affair. The genus *Echeveria* was established by the Swiss botanist Augustin Pyramus De Candolle in 1828, on the basis of 4 species, the earliest of them introduced to Europe in the late 1780s and described 1793 as *Cotyledon coccinea* by Cavanilles in Madrid, the second *Cotyledon caespitosa*, imported from California and described by Haworth in 1803, later classified as a *Dudleya* species, and *E. teretifolia* and *E. gibbiflora*, described by De Candolle himself, based on drawings of the Mexican artist Atanasio Echeverria y Godoy. Almost simultaneously Adrian Hardy Haworth published *E. grandifolia*, a plant grown from Mexican seed in a London nursery.

The next species to be published was *E. racemosa*, described by Schlechtendal & Chamisso in 1830, collected by the two German explorers Schiede and Deppe in Jalapa, Veracruz. The plant was cultivated in the Berlin Botanical Garden, and Christoph Friedrich Otto, inspector of this garden, informed his friend Haworth about this novelty and provided details, apparently without communicating however that it had already been named and described. In the following year (1831) Haworth published his own description of this plant under the name of *E. lurida* !

In 1834 *E. peruviana* was described by Franz Julius Ferdinand Meyen as a footnote in his travelogue *Reise um die Erde*, collected, as the name implies, in Peru, more exactly near Tacna, in the south of this South American country.

Strictly speaking, this was not the first South American *Echeveria* : already in 1823 – 5 years before De Candolle created the genus *Echeveria* - a Humboldt & Bonpland collection from Caracas, Venezuela, had been described by Kunth as *Sedum bicolor*, later classified as *Echeveria bicolor* by Walther. And in the same year Kunth also described *Sedum quitense*, again a Humboldt & Bonpland collection, this time from near Quito in Ecuador, of which already De Candolle assumed that it might rather be an *Echeveria* species. In 1852 in the *Journal of the Horticultural Society*, Lindley published it as *E. quitensis*.

Back to Mexican echeverias : In 1837 John Lindley published *E. secunda* in *Edwards' Botanical Register*, a plant from Real del Monte, Hidalgo and in 1839 three more plants from Hidalgo were published as *E. bifida*, *E. mucronata* and *E. pubescens* by Diederich Franz Leonhard von Schlechtendal, at the time Professor of Botany at the University of Halle.

E. rosea flowered for the first time in England 1841 and its description, again by John Lindley, was published in the following year also in *Edwards' Botanical Register*, together with a superb illustration. In the same magazine and also with an excellent illustration Lindley presented in 1845 *E. scheeri*, shortly described by himself and more detailed in 1869 by John Gilbert Baker.

In the same year 1845 the French botanist and botanical author Charles Lemaire described *E. fulgens* in *Hortus Vanhoutteanus*, grown from seeds received from Mexico.

The next *Echeveria* species to be published was *E. nuda* in 1856, also by Lindley, and this time in the *Gardeners' Chronicle and Agricultural Gazette* – a plant which had been found on Orizaba in the Mexican State of Veracruz.

1863, in *L'illustration horticole*, under the title "Histoire, espèces et culture du genre *Echeveria*", Charles Lemaire published a survey of the then known 35 *Echeveria* species, several of them in fact belonging in genus *Dudleya*. Also the First Description of *E. agavoides* was published by him.

A much more elaborate monographic treatment was composed by the English botanist John Gilbert Baker, working at the Herbarium of the Royal Botanic Gardens, Kew. It was published in *Saunders' Refugium Botanicum* in 1869. Baker reclassified all *Echeveria* species as *Cotyledon* which however was not accepted by subsequent authors, some of them were soon after again reclassified as *Echeveria* species by Edouard Morren, the editor of *La Belgique horticole* and published in this journal. New descriptions by Baker were *E. stolonifera*, *E. sprucei* and *E. nodulosa*, all in 1869, and *E. carnicolor* and *E. atropurpurea* in 1870.

An interesting publication appeared in 1874, again in the *Gardeners' Chronicle*, namely *E. peacockii*, "a neat Californian species", that means though published as an *Echeveria*, it was clearly belonging in genus *Dudleya*.

In 1875 *E. amoena* was advertised in Louis de Smet's nursery catalogue as "charmante plante [...] introduite du Mexique en 1874".

Before the turn of the century only two more *Echeveria* species were published in Europe :

Cotyledon chilensis, described by John Ball in "Contributions to the Flora of the Peruvian Andes", published in the *Journal of the Linnean Society* 1887 (transferred to genus *Echeveria* by Berger 1930) and *Sedum chilonense*, described by the wealthy German business man Otto Kuntze and published in *Revisio generum plantarum* 1898. He had found it 1892 on a tour around the world near Chilon in the Department Sierra de la Cruz in Bolivia.

1904 Alwin Berger published *E. pulchella* in *Gartenflora* 53: 206, origin not recorded, cultivated at La Mortola where Berger was the curator of Thomas Hanbury's Botanical Garden.

As a matter of course the more echeverias arrived in Europe the more they were sought after and big nurseries like those of Louis Benoit Van Houtte (1810-1876) and Louis de Smet (1810-1887), both in Belgium, advertised regularly new names in their catalogues, not necessarily new species but rather selections and hybrids – the latter however named as if they were species. *Echeveria* hybrids were relatively easy to create and contributed a lot to their popularity – the probably most famous hybridiser of the time was Jean-Baptiste A. Deleuil at Marseille. Lists of his hybrids were published by Morren in *La Belgique horticole* in the 1870s and thus made known to a wider public. One of his most famous creations is *E. 'Imbricata'*, possibly still in cultivation somewhere. The European enthusiasm for echeverias peaked in the 1870s and came to a rather rapid end in the 1880s.

2. in the US

The situation in the US was different : While echeverias were highly regarded in Europe, they played no role at all in the US and there is also no evidence that an *Echeveria* was ever sent from Europe to the US during this period. The first two descriptions of *Echeveria* species were written by Asa Gray in 1852 and concerned *E. paniculata*, collected 1846 by Wislizenus in Chihuahua, and *E. strictiflora* found 1849 in Texas, the latter being the only species of genus *Echeveria* occurring in the US.

Between 1852 and 1882 no new descriptions were published in the US. In 1882 Sereno Watson, curator of the Gray Herbarium of Harvard University, in *Proceedings of the American Academy of Arts and Sciences*, published the description of *Cotyledon schaffneri* (*E. schaffneri*) and 1890 that of *Cotyledon pringlei* (*E. pringlei*).

1893 saw the publication of *Cotyledon subrigida* by Robinson and Seaton also in *Proceedings of the American Academy of Arts and Science*, classified as *E. subrigida* by Rose in 1903.

The situation began to change in the last decades of the 19th century when plant hunters like Palmer, Pringle, Parry and later also Purpus extended their collecting activities as far as Mexico and came across hitherto unknown plants of all kinds, of course also echeverias.

And the situation changed even more when **Joseph Nelson Rose** (1862-1928) became assistant botanist in the United States Department of Agriculture. There he came into contact with Edward Palmer and his rich Mexican collections which sparked his interest in succulent plants. Between 1897 and 1911 he visited Mexico eight times and collected countless plants, very many new to science. Regarding echeverias in 1909 he could write : "It is probable that no one had ever before had so full a representation of this genus, since only 4 known species were wanting" (*Contr. U.S. Natl. Herb.* 12: 393, 1909). His first paper on *Crassulaceae* was published jointly with Nathaniel Lord Britton in the *Bulletin of the New York Botanical Garden* 1903. 13 newly described *Echeveria* species were presented and a few already published ones were also listed. *North American Flora* 1905 contained a systematic treatment of the entire north American *Crassulaceae*. Regarding genus *Echeveria* 58 species were recognised, 16 of them again newly described by Rose. Britton & Rose's treatment of genus *Echeveria* in the *Flora* also took into account the species published in Europe during the last century. It is noticeable, however, that they did not make any particular effort to find out the circumstances of the 'European' descriptions and when they received a 'European' plant they did not bother or were not able to identify it correctly. They took the names at face value and published the selections as species – see comment to 30. *E. pumila* and 30b. *E. pumila* var. *glauca*.

Newly described species by Rose, published in 1903, were : *E. pulvinata*, *E. montana*, *E. australis*, *E. maculata*, *E. platyphylla*, *E. tenuis*, *E. humilis*, *E. obtusifolia*, *E. heterosepala*, *E. cuspidata*, *E. palmeri* and *Oliverella elegans* (*E. harmsii*).

The monographic treatment of 1905 included another 14 new descriptions by Rose : *E. sessiliflora*, *E. goldmanii*, *E. subsessilis*, *E. byrnesii*, *E. pinetorum*, *E. turqida*, *E. tolucensis*, *E. elegans*, *E. simulans*, *E. rubromarginata*, *E. lozanoii*, *E. scopulorum*, *E. expatriata* and *E. purpusii*.

In the following years more new descriptions by Rose were published in *Contributions from the United States National Herbarium* : *E. multicaulis*, *E. walpoleana*, *E. pittieri*, *E. maxonii*, *E.*

guatemalensis, E. bifurcata, E. trianthina, E. lutea, E. subalpina, E. gloriosa, E. holwayi and E. crenulata.

E. gigantea and E. setosa were described by Rose & Purpus.

In short : Within very few years about 50 new species had been described by Rose, a truly remarkable achievement.

3. 20th century publications before Walther

In the following years not many new *Echeveria* descriptions were produced :

In 1911 the US botanist and mycologist Charles Henry Thompson, back then in charge of the department of succulent plants at the Missouri Botanical Garden, published E. fimbriata in *Transactions of the Academy of Sciences of St. Louis*.

In 1921, Joseph Anton Purpus, the inspector of the Darmstadt Botanical Garden, wrote the description of E. derenbergii which was published in *Monatsschrift für Kakteenkunde*.

In 1936 the German botanist Karl von Poellnitz composed a monographic treatment of genus *Echeveria* with the title "Zur Kenntnis der Gattung *Echeveria* DC". It is a comprehensive and very conscientious work, written in German.

Prior to this in 1934 von Poellnitz had described E. buchtienii, a plant from Bolivia, considered to be synonymous with *E. whitei*, and in 1935 in an article titled "Die südlich von Mexiko vorkommenden Arten der Gattung *Echeveria* DC" he had presented E. aequatorialis, E. backebergii, E. columbiana, E. cuencaensis and E. pachanoi. *E. aequatorialis*, *E. columbiana* and *E. pachanoi* are currently considered to be synonymous with *E. quitensis* with *E. cuencaensis* as a variety of the latter, and *E. backebergii* is currently classified as a variety of *E. chilensis*.

The last *Echeveria* description by von Poellnitz is that of E. sturmiana, published in *Desert Plant Life* 1938, currently considered a synonym of *E. nodulosa*.

4. Walther's publications

In the early 1930s it was clear for Walther that he wanted to produce a monographic treatment of genus *Echeveria* and he started to publish preliminary studies in *Cact. Succ. J. (Los Angeles)* 1935, titled "Notes on the Genus *Echeveria*". The first part in vol. 7(3) includes *E. crassicaulis*, *E. longipes*, *E. paniculata*, *E. bicolor*, *E. rosea*, *E. gracilis* and *E. chilonensis* ; "Notes on the Genus *Echeveria* II" in vol. 7(4) includes *E. harmsii* and var. *multiflora*, *E. agavoides*, *E. potosina*, *E. gilva*, and "Notes on Genus *Echeveria* III" in vol. 7(5) presents *E. runyonii* and var. *macabeana*, *E. heterosepala*, *E. teretifolia* and var. *schaffneri* and var. *bifurcata*, *E. humilis*, *E. alpina* and *E. elatior*.

More "Notes on Genus *Echeveria*" were published in irregular intervals in the same journal until 1959, the year of Walther's death.

Eric Walther's method of working or the problems of the Systematics

As already mentioned **Systematics** consists of two kinds of species : those described by various authors in the past and those newly described by Walther. Most objectionable is the fact that – regarding the former - Walther consistently failed to quote the First Description. As is well known regarding the identification of a species the First Description and its type are decisive. Concerning the already described species this would have meant to indicate the date of publication and the type and to quote the original description, and possibly to add some remarks / observations / experiences. Not so Walther. His approach is the following : He quoted the dates of the publication of the protologue and indicated the type but instead of making the original descriptions available to users of his monograph, he wrote a new description for each species - only ca 1/7 of the already described species is presented **with** the original first description, sometimes only in part – due to the circumstance that he did not have a suitable plant. He did this so consistently that one has to assume that he believed he could replace the first description with a new description of his own and that his own new description in any case would be better than the original one. Basically a later description can never replace the First Description, the latter is and remains the basis for the correct identification of a plant / species. So in fact a new description is superfluous. If it were made from a plant also originating from the type locality or from a descendant of such a plant, it could at best contribute to a better knowledge of the species in question by adding details not mentioned in the protologue. Regarding Walther's monograph however, this is not the case at all. The plants he used for his descriptions were neither collected at or near the type locality nor were they descendants of type plants, his plants – with very few exceptions – were of dubious identity and dubious or unknown origin, so the descriptions were based

- "upon material long cultivated locally "
- on plants cultivated "in Californian gardens",
- on plants "grown in the Strybing Arboretum, Golden Gate Park, San Francisco",
- on cultivated plants received from various collectors,
- on plants grown by Victor Reiter Jr. or
- on plants received from the University of California Botanical Garden.

This also applies to cases like

- "Description based on locally cultivated plants originally received from Dr. Rose" (*E. gracilis*) where Walther used a garden hybrid for his description which of course he cannot possibly have "received from Dr. Rose", or
- "Descriptions from plants locally cultivated, presumably received from Dr. Rose" (*E. goldmanii*), a statement of which he provides no proof at all, i.e. the plant is dubious and accordingly also his description, or
- "Description largely from living plant grown by V. Reiter, Jr." (*E. chilonensis*) – the indication of V. Reiter cannot hide the fact that the origin of this plant is completely unknown, or similarly

- "Description from living material found in the garden of Sr. C. Halbinger, Mexico City" (*E. agavoides* var. *prolifera*) – the mention of Sr. C. Halbinger cannot make up for a not known wild Mexican origin, or
- "Description from living plants collected by E.K. Balls in 1938" (*E. byrnesii*) – the mention of Balls cannot make up for the fact that Walther erred regarding the collection locality of Balls' gathering and thus used a wrong plant, or
- "Description from living plants imported from R. Graessner, Perleberg" (*E. pilosa*) – again a plant of unknown origin because Perleberg in Germany is the address of the sender and gives no hint regarding the true origin of the plant, or
- Descriptions from plants "received from UCBG" - there is no guarantee that plants from UCBG were correctly identified, or
- "The description takes into account the several forms, from several sources, that have been grown locally" (*E. obtusifolia*) – certainly no precised origin, or
- Description "compiled from all available specimens / all available material which was collected at several distinct stations in Guatemala, often at considerably different elevations" (*E. steyermarkii*), etc.

The list can be extended at will. *E. fulgens*, *E. obtusifolia*, *E. trianthina*, *E. nuda* and *E. alata* are even lacking any information to this effect.

In short : The vast majority of Walther's new descriptions of already published *Echeveria* species is based on plants of unknown origin. A comparison of these descriptions with the respective First Descriptions shows that as a rule they do not correspond what means that his plants were not only of unknown origin but also wrongly identified by him. It is obvious that Walther omitted to compare his own descriptions with the original ones, i.e. that he did not find it necessary to check his plants against the corresponding original description. If he had done this he would have been able to notice whether the plants he was using were not the correct species. The logical consequences of this omission are 1. that he himself often had no correct idea of the species he was working on, which led to false conclusions when making comparisons and to inconsistencies in the various keys, and 2. that the descriptions of the vast majority of the already published species are of no use at all. But what is much worse - they are misleading and had fatal consequences – since the publication of Walther's monograph 1972, considered to be THE reference for genus *Echeveria*, both botanists and laymen relied unreservedly on what Walther had written. It never occurred to anyone to scrutinise his texts and to go back to the first descriptions. In this way, Walther's false descriptions have shaped the image of countless *Echeveria* species, i.e. have falsely characterised them to this day - an image that has become entrenched over decades and is unlikely to ever be eradicated. So Walther's new descriptions are not only not a possibly welcome addition to the first descriptions but rather a misleading of the users of his book who - deprived of the first descriptions - are unable to recognise their incorrectness.

That he worked on the basis of wrongly identified plants had of course also consequences regarding his own collection. Plants cultivated in local gardens since an unknown time – even if they originally had been correctly identified - may no longer have been the true species and regarding Walther's own collection at the Strybing Arboretum - with the disorganisation that prevailed there - a mix-up of labels was, so to speak, pre-programmed. When labels were confused Walther did not realise this and as a result described the wrong plant without noticing his error. This meant that he did not know certain species properly. A good example is *E. subrigida* : While it is true that he had collected it himself in 1934 at the type locality, when it came to its description labels had been confused in his messy collection and he described a somewhat similar plant as *E. subrigida* – in fact he rather described *E. cante*, named only many years after his death, and the 'photographic memory' he boasted of obviously did not protect him from such confusions. Another example is *E. expatriata* : For his description Walther used "plants cultivated locally" which did not correspond at all to Rose's description, i.e. were wrongly identified. But because he did not consult the original description, he did not realise that he had the wrong concept of *E. expatriata*, with the consequence that when he received an unnamed plant from Scott Haselton he did not notice that it was *E. expatriata* but published it as the new species *E. globuliflora* and included it even in Series *Nudae* ! !

Some of Walther's major errors regarding the species published before his time

1. ***E. gibbiflora* and *E. grandifolia*** : The publication history of these two species shows that when Haworth published his *E. grandifolia* he could not be familiar with *E. gibbiflora* DC, i.e. that he couldn't know that they were one and the same species. Because Walther overlooked these facts, he claimed that Haworth had been well acquainted with *E. gibbiflora* DC and treated *E. grandifolia* as a species distinctly different from the latter. Moreover he suggested a neotype for *E. gibbiflora* because he obviously did not read De Candolle's description where the type of *E. gibbiflora* is clearly indicated - see comment on 58. *E. gibbiflora* / 59. *E. grandifolia*.

2. ***E. racemosa* and *E. lurida*** : As already mentioned the former was cultivated in the Berlin Botanical Garden, and Christoph Friedrich Otto, inspector of this garden, informed his friend Haworth about this novelty and provided details, apparently without communicating however that it had already been named and described. In the following year (1831) Haworth published his own description of this plant under the name of *E. lurida*. There is no question however that *E. racemosa* and *E. lurida* are identical. Again Walther did not take the effort to research the true origin of *E. lurida* and treated it as a distinct species – see comment on 108. *E. racemosa* and 109. *E. lurida*.

3. ***E. bicolor*** : This was described in 1823 as *Sedum bicolor* and classified by Walther as an *Echeveria* species. While he was perfectly correct in identifying the *Sedum* from Caracas as an *Echeveria* species, he was very wrong in his interpretation of the collections localities indicated by Humboldt & Bonpland : Because again he spared himself a thorough study of the collection

information on the herbarium specimens in question, indicating two localities near Caracas, he arrived at the conclusion that the two world-famous scholars had found this *Sedum* both near Caracas and in the south of Colombia, with corresponding consequences concerning his idea of the distribution of *E. bicolor*. See comment to 105. *E. bicolor*.

4. *E. mucronata* is noteworthy for the following reason : When botanising in Mexico in 1934 Walther failed to find this species at one of the collection localities indicated by Schlechtendal. However in a different part of Hidalgo he came across a plant he was sure to be *E. mucronata* – quite wrongly however because it was *E. platyphylla* ! And because he mistook *E. platyphylla* for *E. mucronata*, when he came across the true *E. mucronata* he did not recognise it and described it as *E. crassicaulis*. Of course a careful study of Schlechtendal's description and the excellent illustration accompanying it would instantly have revealed the wrong identification. See comment to 126. *E. mucronata* and 128. *E. crassicaulis*.

5. *E. pubescens* is in fact a re-description of *E. coccinea* – obviously Schlechtendal had ignored the publication by Cavanilles. Walther, again not using Schlechtendal's description but producing a new one from locally cultivated plants of unknown origin, considered *E. pubescens* as distinctly different from *E. coccinea* - for the simple reason that his locally cultivated plants were not the species *E. pubescens* but the *E. coccinea* hybrid *E. 'Pulvicox'*. A careful reading of Schlechtendal's description could easily have revealed the misidentification. See comment to 132. *E. pubescens*.

6. *E. scheeri* : In their treatment of the *Crassulaceae* in *North American Flora* (1905), Britton and Rose also listed *E. scheeri* Lindley, however instead of quoting the original description Rose wrote a new one from a plant in cultivation. Because his description does not agree with Lindley's at all, it is obvious that the US plant was wrongly identified. Of course Rose could easily have noticed this had he seriously studied the European material regarding *E. scheeri*. Walther followed him in also not doing this and even claimed to have an *E. scheeri* in his own collection in Strybing Arboretum. And in his monograph he published a photo of 'his' *E. scheeri* - of a plant that could not be more dissimilar to *E. scheeri* Lindley ! And one wonders how he could seriously assume that his plant was identical to Lindley's. Of course *E. scheeri* Lindley is long lost to cultivation and may well have been a hybrid – see comment to 40. *E. scheeri*.

7. *E. quitensis* : Like *Sedum bicolor* this was also collected by Humboldt & Bonpland - this time in Ecuador, near Quito - and also described in 1823, as *Sedum quitense*, classified by Lindley already in 1852 as an *Echeveria* species. As usual Walther again produced a description of his own. However lacking an **Ecuadorian** plant from Quito he used a plant grown from seed collected in the south of **Colombia** – of course a completely useless endeavour – see comment to 83. *E. quitensis*.

8. *E. sprucei* is a particularly interesting case as it shows the methods Walther worked with, as in a burning glass. Baker described *E. sprucei* from a herbarium specimen and listed it under "Imperfectly known species". It had been collected by R. Spruce "in Andibus Ecuadorensibus" and in "Andes quitenses" – clearly in **Ecuador**. Of course Walther did not have this plant. As always, he was unwilling to accept Baker's description and made a new one from a plant Joseph Harry Johnson had collected somewhere in **Colombia**, precise locality unknown – which, no surprise, does not at all agree with *E. sprucei* Baker. But that did not stop Walther from manipulating the herbarium specimen of Johnson's collection in a way that it became the specimen of Baker's imperfectly known *E. sprucei*. And to make the matter watertight, he

used the locality indication on an **Ecuadorian** herbarium specimen, mentioned by von Poellnitz in connection with *E. quitensis*, and added it on the Johnson specimen. In this way a plant collected somewhere in Colombia – exact wild origin unknown - mutated into a plant found in Ecuador and even with exact locality data, and Walther could boast of having the elusive Baker plant in his own collection – of course nothing is true. For details see comment to 84. *E. sprucei*.

9. *E. atropurpurea* deserves a special mention. Walther did not have this plant (it can be assumed that it had never arrived in the US) and was forced to quote Baker's description and he also copied the illustration from *Saunders' Refugium Botanicum*. But he couldn't leave the matter at that and instead designated 1. the specimen of Purpus 4455, determined as "Cotyledon" as "vic. *E. atropurpurea* (Bak.)" and 2. the specimen of a not identified plant once cultivated at the Missouri Botanical Garden as *E. atropurpurea* what allowed him to list them under COLLECTIONS what could serve as a proof that – at least – it once had been present in the US. But that's not all : He published plate 10, undoubtedly representing *E. racemosa*, as *E. atropurpurea*. For details see comment to 101. *E. atropurpurea*.

10. *E. canaliculata* is another elusive species whose presence in the US Walther endeavoured to prove : In the US herbarium he found a specimen (US 592711), annotated simply as "Echeveria", consisting of a piece of stem, an inflorescence and a single leaf, and - most deserving - of a photo of the living plant apparently cultivated at the Dept. of Parks, Bronx, from which the New York Botanical Garden had received it where it had flowered in 1910. There is no information regarding the origin of this plant. In any case **it does in no way represent *E. canaliculata***, the leaves are far too small and the flowers not even half the size of those of the latter. But this did not stop Walther to determine it – of course wrongly - as *E. canaliculata* so that he could list it under COLLECTIONS. See comment to 102. *E. canaliculata*.

11. *E. acutifolia*.

This is the most corrupt of all of Walther's texts. It is the product of his boundless ambition to show off plants that no one else knew or had, or that had long since disappeared from cultivation, thereby outdoing botanists like Rose. His ambition, bordering on obsession, blinded him to the absurdity of his combinations, classifications and redeterminations. No forgery or fraud was too far-fetched for him to achieve this goal, and there is no denying that his readers were blind enough to be taken for fools. See comment to 56. *E. acutifolia*.

Regarding the **second group of species**, i.e. the new species described by Walther, the problems are partly the same and partly different. Whenever he came across a nameless plant, it had to be described even when data regarding origin and / or collector were missing. What follows is a list of his new species and their origin :

E. albicans : The type plant, from which Walther wrote the description, is of unknown origin – "originally received from F. Schmoll, Cadereyta, Mexico".

E. affinis : described from a plant of completely obscure origin.

E. agavoides* var. *prolifera : a plant found in the garden of C. Halbinger in Mexico City, origin unknown.

E. agavoides* var. *multifida : The description was made from a plant cultivated at the University of California Botanical Garden : "Original collector and collection locality uncertain."

E. alpina : Description made from the blurred photo of the herbarium specimen Heilprin & Baker 14'200 ft on Mt. Ixtaccihuatl, Mexico at US (original is PH 01031608).

E. amphoralis : Description from plant and flowering material furnished by Mr. Don B. Skinner, Los Angeles, i.e. origin unknown.

E. angustifolia : Description "based solely on the type and US photograph number 719", i.e. a redescription of *E. humilis* Rose.

E. ballsii : Description from living material cultivated in the Strybing Arboretum, Golden Gate Park, San Francisco, origin unknown.

E. bella* var. *major : Description from material supplied by Dr. C. Uhl of Cornell University.

E. colorata : Described from a plant in cultivation in a garden in Guadalajara. Wild origin unknown.

E. cornuta : Collected 1935 between north of Zimapan and Encarnación, description made on the basis of a single gathering.

E. craigiana : The description was not made from the type plant rather from a plant without known origin.

E. crassicaulis : Description from living plants collected at the type locality by the author. However what he had collected is ***E. mucronata*** !

E. dactylifera : "Description from greenhouse-grown plant cultivated by Victor Reiter, San Francisco, ... native along road from Mazatlan do Durango, near Sinaloa-durango boundary", i.e. exact origin unknown.

E. elatior : The description was made from a single gathering collected 1934 at El Chico, near Pachuca (Hidalgo).

E. elegans* var. *hernandonis : From Hacienda del Carmen near Omitlán, Hidalgo.

E. elegans* var. *tuxpanensis : Described from a herbarium specimen of *E. turgida*, i.e. definitely wrong.

E. erubescens : described from a plant he had "received from Sr. C. Halbinger, Mexico City in 1935" and cultivated in Golden Gate Park, San Francisco, i.e. with unknown origin.

E. gilva : "Description from locally grown plants" – i.e. origin unknown.

E. grisea : Described from a single gathering near Iguala, Guerrero.

E. globuliflora : Description from plants received from Scott Haselton, Pasadena, California, i.e. origin unknown.

E. goldiana : "Description from plants flowering in garden of Victor Reiter, San Francisco ... originally found near Valle de Bravo, Estado de Mexico, Mexico, and received from Sr. Dudley B. Gold of Mexico City" – however Gold disclaimed " any knowledge of the plant, saying that it probably was collected by someone else and that the locality very likely is wrong. He says that some of the Society members have looked for it about Valle de Bravo, with no success" (R. Moran Notes) – so *E. goldiana* was described from a plant with unknown origin.

E. halbingeri : "Description from living plants grown at the Strybing Arboretum, Golden Gate Park, San Francisco." Again a plant of unknown origin.

E. hyalina : Description made from plants of unknown wild origin, found in the garden of Christian Halbinger in Mexico City.

E. johnsonii : "Description from living plant cultivated in the Strybing Arboretum, Golden Gate Park, San Francisco, originally collected in Ecuador at Ibara, by Mr. H. Johnson" – precise collection locality unknown.

E. juarezensis : Description from a plant from UCBG, with wrong information regarding its origin, in fact picked up at an Oaxaca market, no wild origin known.

E. lindsayana : The description was made from a plant of unknown origin, never found in the wild.

E. longiflora : Description from "living plant grown at Strybing Arboretum, Golden Gate Park, S.F., originally received from Sr. C. Halbinger, Mexico City", origin and collector unknown, most likely a hybrid.

E. longipes : Description as amplified from type material, type "found by Eric Walther on river bank at Puente Grande, Huehuetoca, Hidalgo".

E. longissima : Emended description from type plant, received through Sr. M. Martínez of Santiago de Mihautlan, Puebla, Mexico.

E. lutea* var. *fuscata : "Description from Reid Moran's field notes."

E. macdougallii : Described "from living plant grown at Strybing Arboretum, Golden Gate Park, San Francisco", i.e. origin unknown, "substantiated" by a specimen of "B-15", which however is not true : The specimen has no MacDougall n°, that means is not a plant MacDougall had collected in the wild, and it is definitely not B-15. >>> *E. macdougallii* was described from a plant of unknown origin.

E. megacalyx : Description of original plant cultivated in Golden Gate Park, San Francisco, originally from the garden of C. Halbinger in Cuernavaca," who had obtained it through Sr. O. Nagel, without definite locality".

E. meyranaiana : Described from plant collected on limestone hill across road from Laguna de Alchichica – i.e. description again made from a single gathering.

E. moranii : Description from plant cultivated in San Francisco by Victor Reiter, originally received from Cornell – this means from Uhl. This will have been a plant Uhl originally had got from Moran, i.e. the correct *E. moranii*.

E. nodulosa var minor : Received from F. Schmoll, Cadereyta, Queretaro, i.e. origin unknown.

E. pallida : Description from plant "found in cultivation in Mexico City and grown in Golden Gate Park, San Francisco", i.e. a plant with unknown wild origin and unknown collector, again described from a single gathering.

E. parrasensis : Described from a plant identified as *E. cuspidata* (M 6294).

E. penduliflora : Description of B-174.

E. potosina : Description made from a plant received from Romeo and Posselt of San Luis Potosí, i.e. a plant of unknown origin.

E. proxima : Description "from a plant cultivated in Los Angeles by Don B. Skinner. Mr. Skinner had it from Thomas MacDougall (his B-140) who had collected it in Oaxaca" - however B-140 was collected near the type locality of *E. moranii*, i.e. is in fact *E. moranii*.

E. pulidonis : Description of this new species from a "single plant received from Sr. Miguel Pulido of Mexico City, 1959" who had collected it "in Hidalgo, Mexico, at Beristain, 30 kilos from Necaxa on lateral road leading to Zacatlan".

E. pumila var. glauca : Description from living material grown in Golden Gate Park, San Francisco, originally from Penas Cosas, Distrito Federal – plants without any relation to either *E. pumila* or *E. glauca*, completely absurd.

E. reglensis : Description from plants grown in Golden Gate Park, San Francisco, originally collected at Santa Maria Regla, Hidalgo – description from a single gathering.

E. runyonii var. macabeana : "Description of living plant purchased from McCabe Cactus Garden, San Diego, California" – origin unknown.

E. sanchez-mejoradae : What he described was a plant of unknown origin.

E. sayulensis : Description "from plants cultivated in the Strybing Arboretum, Golden Gate Park, San Francisco. These plants were received through Sr. C. Halbinger of Mexico City from Sayula, near Guadalajara, Jalisco, Mexico" ; they seemed to be of garden origin as no wild origin was known and are probably hybrids.

E. sedoides : Described from material received through Mr. Don B. Skinner, L.A, i.e. of unknown origin.

E. semivestita var. floresiana : Description from material furnished by R. Flores, found during one of his various collections trips to Mexico "along road from Antigua Morelos to San Luis Potosí".

E. shaviana : Plants collected by Meyer & Rogers "along road between Adelaida (and) Dulces Nombres, Tamaulipas, Mexico".

E. skinneri : This is a tall tale. What he wrote in the monograph is all lies.

E. tenuifolia : Described from a plant "imported from unrecorded locality in Mexico by the late Dr. M. Morgan of Richmond, California".

E. violescens : Described "from living plant obtained from E.O. Orpet, Santa Barbara, California" - "no definite locality is on record so far" Walther added under OCCURRENCE., i.e. a plant of unknown origin.

E. viridissima : Description "from living material obtained from UCBG ", in fact however the plants were confused.

E. westii : Description from plants collected by the late Mr James West on ruins of Ollantaytambo.

In short : The majority of these plants is obviously dubious because lacking information regarding their origin. It is obvious that Walther had no inhibitions to describe plants lacking any information regarding their origin, i.e. probably being garden hybrids, as new species. To describe a single plant devoid of any serious information as a species testifies to a considerable degree of self-importance and insolence. To put it bluntly, one could say every single, nameless plant he came across had to be described at all costs, no matter how obscure its origins were. That the lack of data was a flaw in Walther's eyes is shown by the fact that he tried to conceal it by all means possible, for ex. by equipping plants with a fictitious origin and collector and a fictitious collection locality. For the reader of Walther's monograph who does not take the trouble to check Walther's texts carefully, it all looks quite credible....

A few examples which illustrate Walther's 'method' of creating new species :

1. *Echeveria amphoralis*

In 1958 Eric Walther received a plant from his friend Don Skinner of Los Angeles which he considered a new species of genus *Echeveria*. He decided to describe it and to name it *Echeveria amphoralis* because – as he stated in his description – its flowers were amphora-shaped. For the publication in the Cactus and Succulent Journal of America (30(5): 149-150. 1958) he produced a sketch of the floral parts (Fig. xx), the flower itself however – surprisingly – does not look amphora-like at all.

For the name of a plant to be valid, a herbarium specimen of the plant in question has to be prepared and deposited at one of the numerous herbaria. This specimen represents the type of the plant. Walther refrained from doing so and instead visited the herbarium of the California Academy of Sciences (CAS) to look for an already existing specimen he could use as type for his newly described *E. amphoralis* – an absurd idea of course. He was successful in finding the specimen of a nameless plant of unknown origin, prepared at an unknown date with the CAS n° 409844. He determined it as type of *E. amphoralis*. He thus linked the name *E. amphoralis* with a specimen that had nothing to do with the plant he had described. Moreover in view of the lack of information regarding the origin of this nameless specimen he suggested that it could be a plant collected by the well-known plant hunter Thomas MacDougall, namely his n° B-82 - a totally unfounded proposal though.

So when Walther's text of *E. amphoralis* was published in the journal, the readers learned that its type was the CAS specimen 409844, that it had been collected by T. MacDougall in Oaxaca, Mexico and that it was his B-82. Of course none of these statements is true or correct :

- While the so-called type specimen representing a nameless plant of unknown origin now was equipped with a name : *E. amphoralis*, the plant Walther had described as *E. amphoralis* still was lacking a type specimen and even had lost its name to the specimen.
- The collector of the so-called type specimen is totally unknown, in any case it was not MacDougall.
- Therefore it cannot possibly have a MacDougall collection number and cannot possibly have been collected at the locality of B-82 in Oaxaca.

But that's not all : To enhance the text in the US journal Walther added photos taken in the nursery of his friend Victor Reiter of a plant also without known origin, possibly a hybrid, and also with obviously not at all amphora-like flowers.

In the monograph these photos were replaced by two new ones, taken – according to the caption – from MacDougall's B-82, however the latter strictly denied that they represented his B-82. And last but not least another photo was added by the editor of the book, not by Walther, from a plant collected in the south of Oaxaca by H.E. Moore, again with a flower-shape resembling everything but an amphora but arbitrarily captioned *E. amphoralis*.

To summarise : Walther's publication of *E. amphoralis* consists

1. of the description of a plant provided by Don Skinner, origin unknown, which might even have been a hybrid, with flowers stated to be amphora-like though this is clearly disproved by Walther's sketch ;
2. of a herbarium specimen (CAS 409844) which is not made from the described plant, i.e. cannot therefore be the type of the latter, but will fix the name *E. amphoralis* from now on and for all eternity ;
3. of a collector indication which is simply not true ;
4. of a collection number (B-82) and a collection locality which are also in no way true ;
5. of the photo of a plant cultivated by Victor Reiter, in no way related to either the described plant, the CAS specimen or B-82 and
6. of the photo of another not correctly identified plant collected by H.E. Moore in Oaxaca.

In short : The name *E. amphoralis* belongs to the specimen CAS 409844, not to a living plant. To search for *E. amphoralis* wherever is pointless.

Comment : To designate an unidentified specimen of unknown origin as type of another plant of unknown origin is of course complete nonsense and to provide this specimen with a fictitious collector and a fictitious collector number and collection locality is nothing other than a fraud.

But this is still not the end of the story : Only 2 months after Walther had, as we have seen, completely arbitrarily declared B-82 to be *E. amphoralis*, he fundamentally changed his mind and reclassified it as *E. skinneri* – as if one and the same plant could be two different species ! (For more details see comment to 140. *E. amphoralis*.)

And this leads us to the story of

2. *E. skinneri*

When describing the new species *E. skinneri*, Walther again used a plant without known origin, provided by his friend Victor Reiter. This time the type specimen was correctly prepared from the described plant and deposited at the California Academy of Sciences as nr° 413180. The flaw of this plant however was the lack of information regarding its origin. To compensate for this Walther suggested it could be the MacDougall collection B-166 – a rather unfortunate proposal because B-166 is an *E. gibbiflora*-like plant. Later he changed his mind and wrote that the Victor Reiter plant of unknown origin was MacDougall's n° B-204, collected by the latter on Cerro Madreña, Oaxaca. This proposal was in no way more appropriate because B-204 does not correspond at all to the type specimen CAS 413180, i.e. Victor Reiter's plant cannot possibly have been collected and provided by MacDougall. But that did not prevent Walther from designating B-204 as paratype of *E. skinneri* – of course a complete nonsense : The type plant (CAS 413180) and B-204 being two different plants, the latter cannot possibly be the paratype of the former. And as already mentioned above, also B-82, first designated by Walther as *E. amphoralis*, couldn't help being cited as paratype of *E. skinneri* in the final text in Walther's monograph. And last but not least Walther announced : "My material of this was

first received through Mr. Don B. Skinner". (For more details see comment to 92. *E. skinneri*.)

3. *E. ballsii*

Aug 4, 1942 Walther prepared the herbarium specimen CAS 297644 of a plant growing in his collection in Strybing Arboretum, Golden Gate Park, San Francisco without any determination. Some time later on the determination label the following text was added : "*Echeveria colombiana*. Grown from plant, coll. by E.K. Balls, n° 7587, Siachoque, Boyaca, Colombia 25/5/1939." That means the plant from Strybing Arboretum, with no known origin, was stated to have been originated from B 7587 and thus it became *E. colombiana*. However, in 1957, Walther redetermined CAS 297644 as "*Echeveria ballsii* sp. nov." and published this new species in *Cact. Succ. J. (Los Angeles)* 30: 44, 1958. Under OCCURRENCE the protologue indicated : "Colombia : Dept. Boyaca, near Siachoque (Type-material), also **US: 1779205 & UC: 682828**".

The specimen **US 1779205** had been prepared August 25, 1939. The determination label reads : "Plants of Colombia. *Echeveria colombiana* Poell., det. **E. P. Killip**, no. 7587, Edward K. Balls, collector". A label bottom left provides the following text : "*Echeveria*. Siachoque, dep. Boyaca, Colombia. 25.8.1939. 8,55 ft. Flowers scarlet and yellow, rather short, rounded bells. Slender stems to 12" tall. Leaves small pointed and rather rounded (longwise) small terminal rosettes on grey, woody stems. Growing on the tops of dry, Adobe walls, 7587".

The specimen **UC 682828** was also prepared August 25, 1939. The determination label reads : "Expedition to the Andes, 1938-1939, Colombia, *Echeveria colombiana* Poell. Dupl. det. **E. P. Killip**. Altitude 8,500 feet. Siachoque, dept. Boyaca. E. K. Balls B7587."

That means : The 2 herbarium specimens **US 1779205** and **UC 682828** refer to the same collection, namely **E. K. Balls 7587**, determined as *E. colombiana* Poell., and this not by anyone but by E. P. Killip who formerly had collected the type of *E. colombiana* Poell. And the first determination of CAS 297644 proves that Walther himself likewise considered B-7587 as *E. colombiana*.

However by 1957 at the latest, Walther changed his mind :

11/20/57 **CAS 297644** was redetermined as *E. ballsii* sp. nov. type.

10/23/57 **US 1779205** was redetermined as *E. ballsii* sp. nov. isotype, and

8/24/58 **UC 682828** was redetermined as *E. ballsii* topotype.

In short, *E. colombiana* Poelln. had become *E. ballsii* Walther. He seems to have completely tuned out the fact that B 7587 was undisputedly identified as *E. colombiana*, i.e. was not a "novel species" needing a name.

Moreover the plant of unknown origin from Strybing Arboretum Walther has described as *E. ballsii* is an almost sessile plant with very small leaves and a rather long inflorescence with small flowers – clearly not corresponding to von Poellnitz's description of *E. colombiana* which is a distinctly caulescent plant. In other words : The Strybing Arboretum plant cannot possibly

have been "grown from plant, coll. by E.K. Balls, n° 7587, Siachoque, Boyaca, Colombia 25/5/1939", and the photos published with the protologue and again in the monograph are irrefutable evidence – they prove that these are two completely different species. Walther's redetermination of *E. columbiana* specimens to type, isotype and topotype of *E. ballsii* is not only absurd, it is an act of fraud. This is – another - deceitful attempt by Walther to enhance the value of a plant of unknown origin from his collection, i.e. the pretended origin from Balls' collection is nothing other than a lie. Unfortunately Balls' name is now fixed to a species (or hybrid) with which he has never had anything to do.

Conclusion : *E. ballsii* is one of the numerous plants of unknown origin in Walther's collection at Strybing Arboretum, "immortalised" as CAS 297644, but certainly long lost to cultivation, and it is pointless to search for it in Colombia or anywhere in Central or South America. (For more details see comment to 117. *E. ballsii*.)

4. *E. macdougallii*

Walther made the description from a "living plant grown at Strybing Arboretum, Golden Gate Park, S.F.", i.e. from a plant with unknown origin, and published it in *Cact. Succ. J. (Los Angeles)* 30: 87, 1958. Because he had not prepared a specimen of the plant he had described he was in need of a type to make his description valid and searched the CAS herbarium for an appropriate candidate. The specimen CAS 268566 of a plant originally supplied by Tom MacDougall appeared very suitable as type of *E. macdougallii* sp. nov. and he indicated as "Type : T. Macdougall B-15, collected on rocks at 4000 feet, Cerro Tres Cruces, Tenango, Oaxaca, Mexico (CAS 286566)".

However this is not correct : The specimen CAS 268566 is very poor, it does not allow a positive identification. It was prepared in 1939 from a Victor Reiter plant, apparently sent to him the previous year by T. MacDougall from his home address in New York. Neither the time when it had been collected is known nor does it have a MacDougall field number. The latter means that it had not been gathered by MacDougall in the wild. (It was a rule that plants given to him by a helper or picked up in a garden or on a market were not given a field number.) In any case it was not *E. B-15*, as indicated by Walther, because according to MacDougall's *Plant Exploration in the States of Oaxaca and Chiapas*, 2, 1972, and to his plant lists, MacDougall collected *E. B-15* only **Feb 6 1939**, so the plant he sent to Victor Reiter in 1938 could not possibly have been *E. B-15*, and accordingly the specimen CAS 268566 – prepared from Reiter's plant – cannot possibly represent *E. B-15*. Therefore Walther's indication "Type : CAS : 268566, T. MacDougall B-15, Feb. 6, 1939, Cerro Tres Cruces, Tenango, Oaxaca, on rocks at 4'000 ft." does not correspond to truth, i.e. is a lie. Thus - once more - Walther misused a nameless specimen by designating it as type of a new species the description of which he had made from a plant of unknown origin.

To summarise :

1. We have the specimen of a plant with unknown Mexican origin, prepared 1939, because of Walther's designation as type of *E. macdougallii* now carrying this name.
2. We have B-15, mentioned several times but not involved in any way and never pressed / named / described.

3. We have a plant from Walther's collection, origin unknown, whose description was published in *Cact. Succ. J. (Los Angeles)* 1958, lacking a name because it does not correspond to the specimen designated as type and therefore bearing the name *E. macdougallii*. That means the plants circulating as *E. macdougallii* are wrongly named and the correct *E. macdougallii* – the specimen CAS 268566, lacking any information regarding an origin in the wild and too scanty for a reliable identification – is a plant of unknown origin which could even have been a hybrid, and it is pointless to search for it anywhere in Mexico.

This is one of the biggest frauds Walther has committed.

(For more details see comment to 90. *E. macdougallii*.)

5. *E. viridissima*

Walther described *E. viridissima* "from living material obtained from UCBG " and published it in *Cact. Succ. J. (Los Angeles)* 31: 22-24, 1959. The protologue consists of a detailed text, a sketch and 3 photos (included unchanged in the monograph) :

The type of *Echeveria viridissima* is MacDougall's B-134, collected at San Pedro Mixtepec, 10'000 ft. alt. Tom MacDougall passed plants to UCBG where they got the acc. n° 56.805. Several specimens were prepared and are currently available online. They give a good idea of the characteristics of the plant in question, apart from the fact that - of course – they do not give information regarding the colours of living plants and a possible papillosity.

The plant Walther described has leaves 10 cm long and 6 cm wide, bracts 35 mm long, sepals to 20 mm long and a 16 mm long corolla and accordingly the **sketch** shows a rather big corolla with huge recurved sepals. In short, this is a fairly big plant with quite respectable flowers. The **photos** however show a plant with leaves only half as long and rather small flowers without huge sepals. In other words : While the photos are correct, i.e. show B-134, the description and the sketch do not agree at all with the type specimen B-134. In other words : The protologue is a mixture of contradictory components. Amazingly no one has noticed this until today.

What has happened ? Walther stated that he had made the description "from living material obtained from UCBG". But as the description evidences this "living material" was not from B-134.

Because the photos illustrating the protologue show the correct plant it can be assumed that the material from UCBG was correct and that Walther subsequently confused it with other "material" (easily possible with the known mess in his collection in Strybing Arboretum) which - as the naming demonstrates - must have been extremely green! In view of the fact, that the photos which Walther himself added in the protologue are correct, it is totally incomprehensible that he did not notice that he had described the wrong plant. As far as the name is concerned, it is clearly not appropriate for B-134 – photos of plants in habitat do not show a distinctly green plant. In short : The name is fixed to the type, Walther's description titled "*E. viridissima*" however is not referable to the type, this means the true *E. viridissima* is lacking a description.

Plants currently circulating as *E. viridissima* are only correctly named if they originated at the type locality. And Walther's description should best be wiped out because it conveys a completely false image of *E. viridissima*. See also comment to 81. *E. viridissima*.

6. *E. cuspidata* and *E. parrasensis*

The type locality of *E. cuspidata* is in the vicinity of Saltillo, Coahuila. It has also been found S and SE of Saltillo and at Parras (ca 100 miles W of Saltillo) as the respective herbarium specimens attest – most of them explicitly determined as *E. cuspidata*. Specimens of both localities agree regarding shape and size of flowers. Several specimens are lacking leaves or rosettes, however if leaves are present it is obvious that plants from the Saltillo region have somewhat blunter leaves than those from Parras. While Rose indicated the inflorescence of *E. cuspidata* as "a simple secund raceme", the specimens evidence that inflorescences of this species vary from simple to 3-branched. **In any case there is no reason at all to treat *E. cuspidata* from Parras as a species entirely separate / different from *E. cuspidata* from Saltillo as Walther did.**

Walther did not have either a plant from Saltillo or a plant from Parras. For his description of *E. cuspidata* from the Saltillo region he used a plant he himself had collected at El Tunal – a locality which however is not traceable. Regarding Parras he used M 6294, a collection of Reid Moran, also from the Saltillo region, unquestionably identified as *E. cuspidata* by him. Walther mistakenly believed that Moran had collected it at Parras and described it as *E. parrasensis*. In other words, his basis were two plants from more or less the same region which he tried to present in a manner that they should look as two clearly different species what he further endeavoured to substantiate by classifying them into two different series : *Urceolatae* and *Secundae*. Walther's description of *E. parrasensis* is in parts literally identical with Moran's own description of M 6294 as *E. cuspidata*, i.e. it is nothing else than a redescription of *E. cuspidata*. This he could easily have noticed if he had not been obsessed with the fixed idea to prove with all possible means that *E. cuspidata* and *E. parrasensis* were two completely different species.

As main differences between *E. parrasensis* and *E. cuspidata* Walther indicated that

- *E. cuspidata* always has a simple inflorescence, what according to the above mentioned specimens is not correct,
- sepals and corolla are larger, what according to the above mentioned specimens likewise is not correct and
- leaves are thinner, broader and blunter. The latter is correct, whether they are thinner is impossible to verify by means of herbarium specimens.

As type for his *E. parrasensis* he indicated a Purpus collection of 1904 (Rose 965) from near Parras – why he didn't designate a type that belonged to the same gathering as that on which he based his description, namely M 6294 (which he erroneously thought to originate at Parras), is not comprehensible.

Under Collection localities of *E. parrasensis* he listed 3 specimens from the region of the type locality of *E. cuspidata* at Saltillo which he had redetermined as *E. parrasensis* in order to be able to include them in his list of collections of the latter.

An interesting detail : In *Monatsschrift für Kakteenkunde* 1907 J.A. Purpus had published a photo of a plant originating from Ixmiquilpan, Hidalgo, which he mistook for *E. cuspidata* and captioned accordingly – wrongly, because *E. cuspidata* is not occurring in Hidalgo. In fact it showed *E. tolimanensis* Matuda. Walther noticed that it could not be *E. cuspidata* but was sure : "My new *E. parrasensis* was grown here [in Darmstadt] too and published as *E. cuspidata*." That it did not correspond to M 6294, the plant he had used for his description of *E. parrasensis*, he evidently ignored completely. The unbridled ambition to bring another new species into the world blinded him to the obvious. And in accordance with this misinterpretation he indicated it as synonym of *E. parrasensis*, calling it "*Echeveria cuspidata* J.A.Purpus; not *E. cuspidata* Rose " – overlooking that the German description was a the translation of **Rose's** English description of *E. cuspidata*. So the later *E. tolimanensis* Matuda mutated to *E. parrasensis* Walther and the correct description of *E. cuspidata* Rose became the description of *E. parrasensis* Walther – what nonsense - but on the other hand completely correct, because *E. parrasensis* is nothing other than *E. cuspidata* ! That he had scored an own goal he obviously did not realise. And an "*Echeveria cuspidata* J.A.Purpus ; not *E. cuspidata* Rose" is of course also complete nonsense.

E. cuspidata / *parrasensis* is a showpiece of Walther's not only absolutely negligent but actually criminal way of working : To justify *E. parrasensis* as a species distinct from *E. cuspidata* Rose, Walther was ready to use any means possible, not stopping to redesignate specimens clearly identified by authorities like Rose. However by indicating the same herbarium specimens and the same collection localities for both, he - without noticing it – fell for his own ways by giving the counter-evidence for his claim : plants which are based on the same herbarium specimens and occur at the same localities are one and the same and not two different species and as a matter of course belong in the same series.

(This is a very abridged text, for details see comment to 32. *E. cuspidata* and *E. parrasensis*.)

Summary commentary

The examples listed on the previous pages are only the tip of the iceberg, the part that protrudes above the water surface, what is below the sea level is expounded on pages 31-370.

As already explained the main problem in regard of 2/3 of the species included in this monograph is the fact that Walther replaced the original descriptions with his own descriptions which - because made from dubious plants – give a false picture of the species in question. The users of his monograph couldn't see through this and trusted Walther's descriptions. They couldn't know that his descriptions did not agree with the First Descriptions, they trusted the monograph, they trusted Walther. From then on, his own descriptions were the standard. And since most of them are not correct, the comparisons made with them and the keys to the series are also not correct. And because also Myron Kimnach, the author of the treatment of genus *Echeveria* in the *Crassulaceae* Lexicon of the *Illustrated Handbook of Succulent Plants*, trusted Walther to the full extent these wrong second descriptions were widely distributed. That and why they are not trustworthy has already been explained and can be verified and understood in each individual case in the main part of this work. That Walther's new descriptions of already described species are unusable and often even misleading is obvious. The same applies to his further indications and remarks concerning these species, often abounding with inaccuracies and wrong statements.

But not only the users were given an incorrect concept of a plant, first and foremost Walther himself had an incorrect concept. As a result the conclusion he arrived at are also not correct. And if he subsequently changed his mind, the relationships he earlier had established suddenly did no longer work and the whole construct threatened to falter - it is not for nothing that Walther strictly forbade even the smallest change to be made to his book. Why he was not interested in acquiring a collection of correctly identified plants for his monograph remains his secret.

Another problem is the lack of knowledge of historical facts particularly regarding European publications of the 19th century. Walther made it easy for himself : he cited the relevant literature, however - as already mentioned - he largely or entirely failed to study it himself in depth. Like Britton & Rose he took the names at face value and published the selections as species – see comment to 30. *E. pumila* and 30b. *E. pumila* var. *glauca*. A language problem cannot be used as an excuse, because Walther was a born German. It goes without saying that this lack of historical knowledge led to incorrect conclusions in various respects.

Regarding the new species described by Walther : It is obvious that in his collection at Golden Gate Park, San Francisco, Walther had quite a number of plants without known origin – an unsatisfactory situation of course. This could easily be remedied by **describing** these unidentified plants, namely as **new species**. He had no concerns to describe plants as new species even if they differed from each other only in insignificant features – no surprise therefore that several of them now are considered to be merely synonyms (for ex. *E. potosina* and *E. albicans* are nothing more than synonyms of *E. elegans*; *E. alpina*, *E. elatior*, *E. cornuta* and *E. reglensis* nothing else than synonyms of *E. secunda*; *E. meyranaiana* is synonymous with *E. subalpina* and *E. nodulosa* var. *minor*, *E. runyonii* var. *macabeana*, *E. lutea* var. *fuscata*, *E.*

glauca var. *pumila* and *E. elegans* var. *hernandonis* have lost their status as varieties). The main problem is the fact that the major part of his unnamed plants consisted only of a single gathering of unknown origin, and some of them may even have been garden hybrids. It is obvious that he was not always entirely comfortable with these facts : To compensate for this weak point, Walther used several tricks : 1. instead of preparing a type from the described plants he tried to substantiate them by equipping them with an already 'proven' type, i.e. by (re)determining an already (long) existing specimen as type. That this usually was in no way related with the respective plant did not bother him. The result : At the end of the day – because the name is fixed to the type – we have either a hitherto unnamed or a redetermined specimen with a (new) name while the described plant – in no way connected with its type specimen – is in fact nameless. Or in other words : We have a specimen designated as type of a plant with which it is in no way related but is carrying its name and we have the description of a plant not at all agreeing with its type specimen but who has lost its name to it. And the plant in question from which Walther had made the description - from his collection and of unknown origin - in any case no longer exists. Or 2. he redetermined specimens so that he could indicate them as collection localities for his new species without origin – that these specimens had already been determined and / or were too poor to permit a definite identification did not matter at all. This happened with *E. halbingeri* where he used the geographical information of *E. secunda*. Occasionally he lost track and used the same specimen for different plants. Or 3. he tried to connect his originless plants with a MacDougall collection which however thanks to the field notes and comments of the latter is easy to disprove. In other words : he will use any trick to enhance his plants.

And this brings us to Walther's handling of herbarium specimen. Because the herbaria Walther used to visit by now have digitised large parts of their holdings it is easy to disclose what liberties Walther has taken. Besides a few specimens that he has correctly identified, there are literally countless that he has redetermined for his own purposes regardless of by which undoubted authorities and experts they originally had been identified. No herbarium specimen, no matter how dissimilar, was immune to being misused by Walther for his own purposes and he did not shy away at all from fraudulent practices. Redetermining correctly identified specimen is fraudulent falsification.

His relationship with authorities was ambivalent : If their mention could be of use to him, for example enhancing a plant because it was traceable to Dr. Rose, this was explicitly mentioned, or von Poellnitz was cited in the case he agreed with him. However, when it came to the fact that he had to admit that it was not he but von Poellnitz who was right, he simply devalued the impeccable material of the latter. And when it came to redetermining herbarium specimens originally personally identified by Rose, the expertise of the latter no longer counted – he, Walther, the gardener with no scientific training knew better than Dr Joseph Nelson Rose, acknowledged authority of *Crassulaceae*. Or because he himself could not find *E. elegans* at the type locality, he belittled Rose by insinuating that he also had not found anything there and may have relied on cultivated plants. This know-it-all attitude is obvious, it is a fundamental character trait that manifests itself in countless details. Some examples have already been mentioned : Although Haworth **could not** have known *E. gibbiflora* DC, Walther knew better : Haworth was very familiar with it. And though it was clearly agreed by relevant authors that *E. grandifolia* was nothing else than *E. gibbiflora*, he, Walther, knew better. Or although *E. lurida* is clearly identical with *E. racemosa*, Walther knew better : it is a distinct species – a claim that clearly contradicts the facts. Although the plant he described as

E. parrasensis originated in the region of the type locality of *E. cuspidata*, Walther knew better : this was not *E. cuspidata* but rather *E. parrasensis*. Although Kuntze had mentioned that his plant collected near Chilon had yellow flower, Walther knew better : Kuntze was colour-blind, his plant was – first – red flowered, later white flowered. Or one more example : Rose described *E. lozanoii* from a living plant. Walther did not have it but that did not prevent him from producing a new description "based on the type collection and original description" adding specifications he couldn't possibly have got from this material, i.e. he must have invented : he knew better - he who had never seen a living plant felt called to give a better description than Rose who had had the living plant at his disposal - a truly telling example of his hubris. And to prove that he knows better, he forged unanimously agreed material and overlooked everything that contradicted his opinion. This is much more than bad science, this is criminal behaviour.

How could it come so far ? Walther was in a somehow unique position : No contemporaneous botanist was particularly interested in genus *Echeveria*. So when he started to publish articles with descriptions of newly introduced echeverias in the US journal these met with great interest and it didn't take long for their author to be considered an expert. This flattered his ego quite a lot. And when he even announced that he was planning a monograph on genus *Echeveria*, there was no longer any doubt at all about his outstanding competence – for his contemporaries and above all for himself. Self-doubt was obviously foreign to him. And he obviously succeeded in impressing his contemporaries - it is downright embarrassing how he was courted by the editor of the US journal :

Introduction to Notes on Echeveria

On several previous occasions we have mentioned the forthcoming appearance of a monograph on the genus Echeveria, the work of our friend and associate-editor, Mr. Eric Walther. His desire to be accurate and thorough, as well as our present inability to finance the publication adequately, prevents us from making any definite promise as to date of appearance, but we consider ourselves fortunate in being able to publish the following preliminary notes.

The exigencies of scientific procedure make advisable the early publication of several new species, new varieties and new combinations, thus affording us a foretaste of the complete work.

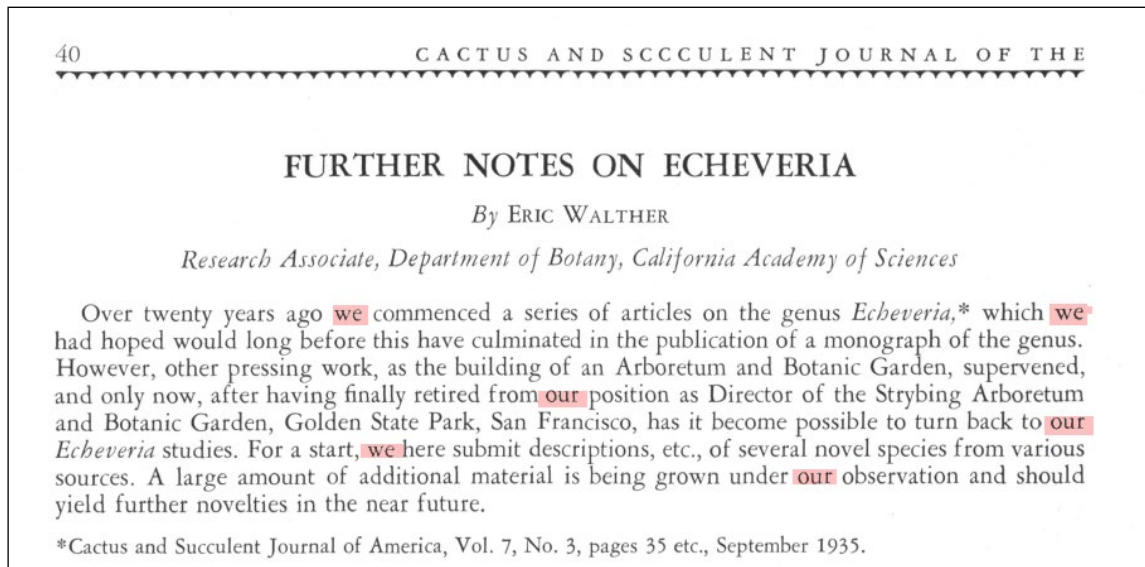
Chaos and confusion aptly describe the state of the nomenclature of our private collections; and the difficulty of correctly determining species from the inadequate and often uncertain descriptions now available makes Mr. Walther's undertaking a most opportune piece of research. To have these puzzling plants unscrambled and properly christened is almost beyond the dreams of Echeveriophiles. If we await its publication with unscientific impatience its long suffered need may be our apology.

We hope that the response of our readers will be such as to encourage Mr. Walther to carry on his studies to an early conclusion; and also induce some publisher to bring out the contemplated Echeveria-monograph in a form worthy of the subject and in keeping with the painstaking manner in which the author has done his share of the work.

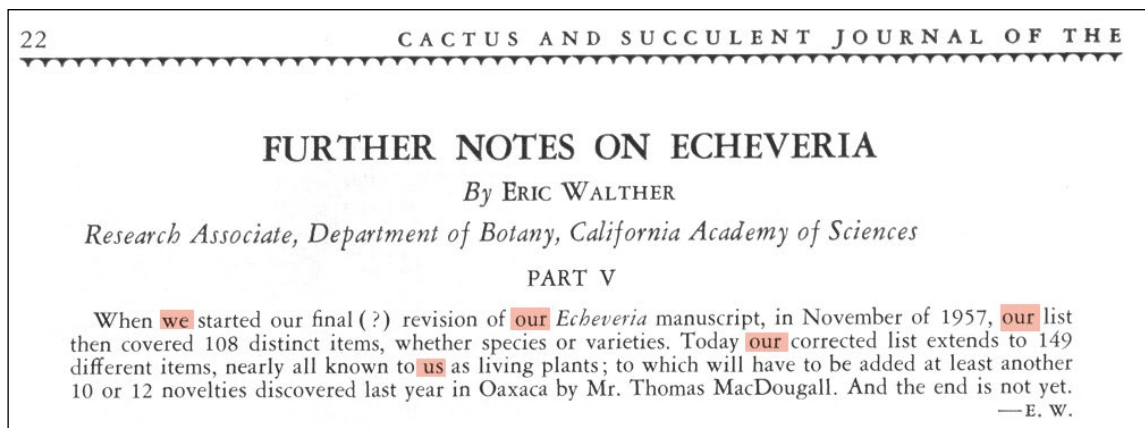
—EDITOR.

There was clearly no one who questioned his competence or subjected his articles to critical scrutiny. Contemporaries were obviously just happy that someone had finally taken up the

issue and his articles were published without being questioned. There were no competitors, so Walther was free to do as he pleased. Nothing stood in the way of increasing hubris. And his self-assessment, or rather his overestimation of himself, can be clearly seen in his use of the pronoun 'we' (instead of 'I') for himself in situations in which he alone could be meant (*Cact. Succ. J. (Los Angeles)* 30: 40, 1958) :



or in *Cact. Succ. J. (Los Angeles)* 31: 22, 1959 :



or regarding *E. semivestita* Moran he wrote : "We [= I] had hoped to publish this as a species, but were anticipated by Dr. R. Moran" (*Cact. Succ. J. (Los Angeles)* 30 : 109. 1958). This must have annoyed him enormously, and in order to vent his anger he 'corrected' the description of Dr. Reid Moran, curator of Botany at the San Diego Natural History Museum ! Walther was obsessed with the ambition to bring as many new species into the world as possible and could hardly bear it when someone beat him to the punch with a publication.

Descriptions of plants with unknown or uncertain origin are not worth the paper they are printed on and this applies to the major part of Walther's monograph. That no one of the subsequent botanists – with the exception of Reid Moran – ever questioned Walther's texts or took the trouble to verify them is unbelievable and not glorious but true - with the result that his sometimes almost grotesque but often truly fraudulent combinations were held for decades to be the absolutely authoritative basis for the genus *Echeveria*. Walther has described 44 new species and 12 varieties, the majority of the latter, as already mentioned, not accepted any longer. As far as these are concerned, there is no getting around referring to his book. For the species published before him, however, the only reliable basis is their protologues.

In the preface of his monograph Walther wrote : "Only by a careful comparison with field-collected topotypes and a comprehensive study of all accessible herbarium material, including all recorded literature, has it been possible to clarify many of the specific components of *Echeveria*." The contrary is true : There is no doubt, Walther replaced the original descriptions by his own ones because he was convinced that **his** descriptions are better. If – as already mentioned – 'secondary' descriptions are made from plants from the type locality – though not having the validity of the First descriptions - they may actually be better / more accurate / more detailed than these. However to be convinced that descriptions made from plants of dubious identity and unknown origin should be better requires a large portion of overconfidence or hubris. Obviously, Walther did not lack this at all. The many examples of his know-it-all attitude bear eloquent witness to this. And although he had no academic training as a botanist, he acquired considerable expertise in the course of his life, so that it can be ruled out with certainty that he did not know that what he was doing was in complete contrast to scientifically correct work.

The book has caused immense damage that can no longer be repaired. It is the work of a fraudster and should never have been published.

Revision of the Systematics

Series 1. Paniculatae Berger

1. Echeveria linguaefolia Lemaire (p. 62-66)

E. linguaefolia was described (in French) by Charles Lemaire in 1863 from a plant in cultivation in Belgium, origin unknown (Histoire, especes et culture du genre *Echeveria*. III. Hort. 10, misc.: 81, no. 20, 1863) :

20.*— **linguaefolia** NOB. *Talinum linguaefolium*, *Anacampseros linguaefolia* et *Cotyledon linguaefolia* HORT. Caulescente, ramifiée, entièrement verte; feuilles nombreuses, éparses, obovées-spathulées, subaiguës, extrêmement charnues, légèrement concaves, un peu en pointe au sommet; fleurs..... Espèce nouvelle, très belle et très intéressante, ressemblant assez bien à l'*E. bracteosa* (V. plus haut), mais entièrement verte. Les individus que nous en avons sous les yeux vont entrer en inflorescence (15 oct.!) : circonstance qui nous permettra d'en décrire les fleurs. Très rare encore.

Walther's text

nectaries narrowly lunate, to 1.5 mm. wide. Flowers January to March. Description based on plants grown locally.

Of course Walther did not have the original plant, but instead of citing and/or translating the original description, Walther made a description of his own "based on plants grown locally" – it is of course useless because based on plants of unknown origin.

Error :

COLLECTIONS. *Cultivated*: New York Bot. Gard. in 1909, the plant from Kew (CAS); New York Bot. Gard., 10/63337 (NY,US); Washington Bot. Gard., Rose, 02/6382 (US); garden of V. Reiter, San Francisco, Walther in 1932 (CAS).

The correct number is 10/13337, not 10/63337.

Figure 17. 1. *Echeveria linguaefolia* Lemaire. Inflorescence, $\times 1.5$. Plant flowering in San Diego 19 December 1969; collected at Malinalco, State of Mexico (Moran 14778).

Photo captions of fig. 17 & 18 lack the name of the photographer Reid Moran.

Comment :

Instead of citing / translating the First Description by Lemaire, Walther produced a description of his own – of course of no use because made from plants of unknown origin. Accordingly also the specifications in the Key to Series *Paniculatae* are of no use.

[*E. linguifolia* was reclassified as *Cremnophila linguifolia* by R. Moran (*Baileya* 19: 145, 1975).]

2. Echeveria microcalyx Britton and Rose (p. 66-67)

E. microcalyx was first published by Britton as *E. purpusii* in *N. Amer. Fl.* 22: 26, 1905, thus naming a plant C.A. Purpus had collected in 1903 near Esperanza, Puebla. Because the name was invalid it was replaced in 1911 by *E. microcalyx* (*Contr. U.S. Natl. Herb.* 13: 295, 1911).

59. *Echeveria Purpusi* Britton, sp. nov.

Cauliscent, pinkish-pruinose; stem 1 dm. high or more, the flowering branches slender. Stem-leaves spatulate, thick, bluntly apiculate, 2-3 cm. long, 1-1.5 cm. wide, those of flowering branches oblong, 1 cm. long, obtuse; flowers about 5; pedicels slender, 2-3 cm. long; calyx-lobes orbicular, 2 mm. broad, not appressed to the base of the corolla; corolla yellow-pink, 8 mm. long, 5-6 mm. thick, its lobes about twice as long as the tube, their yellow tips erect, obtusish.

Between Esperanza and Orizaba, Vera Cruz, Mexico, C. A. Purpus, 1903.

Walther's text

Walther did not have a correctly identified plant, nevertheless - instead of quoting the original description and basing himself on it - he wrote a description of his own "based on locally grown plants traceable to Dr. Rose":

longest stamens 6 mm. long, shorter than petals; nectaries very thin, sharp-edged, to 1.5 mm. wide. Flowers from March on. Description based on locally grown plants traceable to Dr. Rose.

However as his description does not correspond to Britton's description, the plants he used cannot have been traceable to Dr. Rose. He could easily have noticed this if he had based himself on Britton.

Errors :

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Puebla: between Esperanza and Orizaba, *Purpus*, 03/R-939 (NY,type); near Esperanza, *Purpus*, 04/R-944 (NY,UC); below Boca del Monte, *Purpus*, 07/R-393 (GH,US); *Purpus*, 12/5823 (MO,UC); Tehuacan, rocky slopes, *Purpus*, 04/944 (GH,US). *Cultivated*: Brooklyn Bot. Gard., *Baldwin*, 23/542 (BH).

Purpus 04/R-944 is from **between Esperanza and Orizaba City**, not from "near Esperanza".

Purpus 07/R-393 is from **Esperanza**, not from "below Boca del Monte".

Purpus 12/5823 is from Boca del Monte.

Comment :

Walther's description of *E. microcalyx* is good for nothing and moreover misleading because of the doubtful origin of the plants he used. Accordingly also the specifications in the Key to Series *Paniculatae* are of no use.

3. Echeveria amoena L. de Smet (p. 67, 68 &70)

E. amoena was first described by L. de Smet in his catalogue of 1875 (in French) :

Echeveria amoena. — « Cette charmante plante, atteignant à peine 3 ou 4 pouces de hauteur, forme de très-jolies touffes trapues et serrées, à branches nombreuses et très-rapprochées. Feuilles petites, ovales, de couleur ardoise pâle à reflet rosâtre. Fleurs rouge-orangé. Introduite du Mexique en 1874. » (*Cat. L. de Smet* 1875).

Walther's text

As Walther did not have a plant with a proven origin, it would have been advisable to quote and/or to translate the original description. Walther however preferred to make a description of his own "from locally grown plants" :

base within; stamens shorter than petals; nectaries thin, sharp-edged, 1 mm. wide. Flowers from May on. Description from locally grown plants.
Color. Leaves deep lichen-green tinged vinaceous-brown, tips maroon; pe-

The description is of no use because the origin and correct identity of the respective plants are unknown.

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Puebla: vicinity of Tehuacan, Purpus, 04/R-945

"Vicinity of Tehuacan" : This collection refers to *E. microcalyx* and has also been listed there – so cannot likewise be correct for *E. amoena* which Walther considered a species distinctly different from the former.

(US); on limestone hill near Limon on road to Perote, Walther, 59 (CAS).

"on road to Perote, Walther, 59" : This suggests that he himself had collected *E. amoena* in Mexico – if this is correct why then did he not use this plant with known origin for his description instead of plants "locally grown" without origin ? Under GEOGRAPHICAL OCCURRENCE (p. 37) however *E. amoena* is not indicated for Veracruz, rather Walther wrote "*E. microcalyx* (?)".

REMARKS. Dr. C. H. Uhl of Cornell has determined the haploid chromosome number of *E. amoena* to be between 56 and 64, in cultivated material. The exact source of my garden plants is uncertain, but probably was some European nursery or botanic garden. Field collections are scarce and in part at least may pertain to the very similar *E. microcalyx*. The latter has slightly larger leaves, reaching a length of 45 mm.; these are more conspicuously pruinose, the caudex is longer, and the scape may reach a height of 20 cm. I have received material from Tehuacan, with no more definite locale, that was identical with my garden plants. Among the latter I have found a form rather smaller in all parts. Berger's *E. pusilla* is a later synonym, as he himself recognized. *Echeveria pulchella* and *E. expatriata* are probably European garden hybrids having *E. amoena* for one parent.

Tehuacan is a Purpus collection locality of *E. microcalyx*. If Tehuacan material corresponds to his garden plants, this means his garden plants are *E. microcalyx* ! However he described his garden

plants as *E. amoena* ! - of which he said that it is clearly smaller in all parts than *E. microcalyx* - rather confusing !

Errors :

Veracruz: near Perote. *Cultivated*: Hort. Belg., 1866/362 (BR); La Mortola,

1. The correct data of this specimen read : "Horti Thenensis Herbarium N° 362 Ser. II, *Cotyledon* / 1.966."
2. Inconsistencies regarding Key to Series *Paniculatae* (p. 62) and description (p. 68) :
 - The Key has pedicels to 10 mm long, while the description indicates them as to 15 mm long.
 - The Key indicates a scape not over 8 cm tall, while the description indicates the length of the inflorescence 10 to nearly 20 cm tall – the latter is the size indicated in the Key for *E. microcalyx*.

Comment :

Apart from the fact that Walther's description of *E. amoena* is unusable and misleading because he made it from locally grown plants without known origin – instead of from his own plant collected near Perote (of which he seems not to have been sure whether they were *E. amoena* or *E. microcalyx*) - , it is above all not comprehensible why it did not occur to him that *E. amoena* and *E. microcalyx* – differing only in size – are rather one and the same somewhat variable species instead of two different ones. His classification as two distinct species is absurd. And of course also the indications in the Key to Series *Paniculatae* are of no use.

4. Echeveria pulchella Berger (p. 68 -71)

E. pulchella was described by A. Berger in *Gartenflora* 53: 206, 1904 (in German) :

No. 8. *Sedum-Cotyledon-Echeveria pulchella*, A. B.
Stengellos, sprossende Rasen bildend. Blätter 20—50, verkehrt eispatelig, kurz gespitzt, flach, unterseits stark konvex, etwas gekielt, Ränder stumpflich, saftgrün, 4—5½ cm lang, 1½ cm breit oberhalb der Mitte und 4—6 mm dick. Schaft 80—40 cm hoch, 4—5 mm dick, mit blattähnlichen Hochblättern bedeckt. Trugdolde 8ästig. Aeste 8—10 blütig, aufrecht. Blüten aufrecht oder wenig nickend. Deckblätter klein, lanzettlich, spitz. Kelchzipfel sehr klein, eiförmig, dick, stumpf. Blume 5kantig, hellrot, 9 mm lang; Blumenblätter bis zu ⅓ verwachsen. Staubgefäße im unteren Drittel eingefügt; Schüppchen halbmondförmig.
Siehe Abb. No. 81.
1. Blütenstand. 2. Blume. 8. Fruchtknötchen. 4. Blatt von unten, 5. von oben.
Alles natürl. Grösse.

Walther's text

Instead of citing / translating Berger's text Walther preferred to make a description of his own of a plant imported from R. Graessner, Perleberg, Germany which he considered to be *E. pulchella* :

base; stamens shorter than petals; nectaries narrowly lunate, to 2 mm. wide. Flowers from April on. Description from plants cultivated in Golden Gate Park, San Francisco, originally imported from R. Graessner, Perleberg, Germany.

However this plant is not *E. pulchella* Berger. It differs in several respects :

Stem : Walther : to 6 m tall / Berger : acaulescent .

Leaves : Walther : strongly mucronate / Berger : not mentioned.

Walther : slightly concave above / Berger : flat.

Inflorescence : Walther : 20 cm tall, with two or three branches / Berger : 40 – 80 cm tall, with 8 branches.

Flowers : Walther : 5-6 per branch / Berger : 8-10 per branch.

Corolla : Walther : dark red / Berger : bright red.

Sepals : Walther : broad, deltoid-ovate / Berger : small, lanceolate, acute.

Walther could easily have noticed this if he had based himself on the original description.

As a matter of course the indications in the Key to Series *Paniculatae* apply to Walther's wrongly identified plant from Germany, not to *E. pulchella* Berger. Whether the former was really wrongly identified or whether Walther had labels mixed in his collection we cannot know, the latter however is by no means unlikely.

Under REMARKS Walther wrote

garden hybrid. The absence of any glaucous bloom, coupled with a dark red corolla, would seem to point to *E. amoena* and *E. linguaeifolia* as possible parents. James West raised numerous seedlings of *E. pulchella*, all of them essentially alike.

This suggestion is rather thoughtless : A hybrid of *E. amoena* and *E. linguifolia* would have a much more multiflorous and more or less horizontally spreading inflorescence, would probably have flowers with rather longer sepals and certainly not a dark red corolla.

Comment :

If he had consulted Berger's description, Walther could easily have noticed that his plant did not correspond to *E. pulchella* Berger. His text is of no use and – moreover – misleading as are also the statements in the Key to Series *Paniculatae*.

[*E. pulchella* is an *Echeveria* hybrid, not a *xCremneria* as suggested by Walther. It was published as *E. 'Green Enigma'* in *CactusWorld* 28(1), 2010.]

<https://www.crassulaceae.ch/de/artikel?akID=48&aaID=3&aiID=G&aID=707>

5. Echeveria expatriata Rose (p. 71-72)

E. expatriata was described by Rose in *N. Amer. Fl.* 22: 26, 1905. He had got the plant from the New York Botanical Garden who in turn had received it from Simon Freres, Paris, 1901, as "*E. cochlearis*".

57. *Echeveria expatriata* Rose, sp. nov.

Low but distinctly caulescent, 8-10 cm. high. Stem crowned by a dense rosette of leaves and giving off new rosettes on the naked part below; leaves narrow, oblanceolate, thick but not terete in section, 2-2.5 cm. long, acute, glaucous; flowering branch ascending, rather weak, pinkish, bearing many small semiterete obtuse leaves; inflorescence at first a rather compact cyme but in age becoming more open; pedicels sometimes 12 mm. long but usually much shorter; sepals ovate, 2-3 mm. long; corolla 6 mm. long, pinkish, with a wide open mouth; stamens of two lengths.

Described from specimens obtained from the New York Botanical Garden, which flowered in Washington in June and September, 1904.

Walther's text

As Walther did not have an *E. expatriata* of undoubted provenance it would actually have been mandatory to quote the original description. Walther however preferred to make a description of his "plants cultivated locally" :

with faint basal hollow, slightly outcurved; stamens longer than carpels, nearly equaling petals; nectaries narrowly lunate, to 1.75 mm. wide. Flowers from February on. Description from plants cultivated locally.

Errors :

1. A comparison of Walther's description with that of Rose reveals that these locally cultivated plants did not correspond to the plant Rose had described : their leaves are much longer and their inflorescences are widely spreading to decumbent, while the inflorescence of Rose's plant is ascending, as the photo from the U.S. National Herbarium demonstrates (mounted on the type sheet) (fig. 22). Moreover the description lacks the petal colour which in the Key to Series *Paniculatae* is indicated as pinkish.

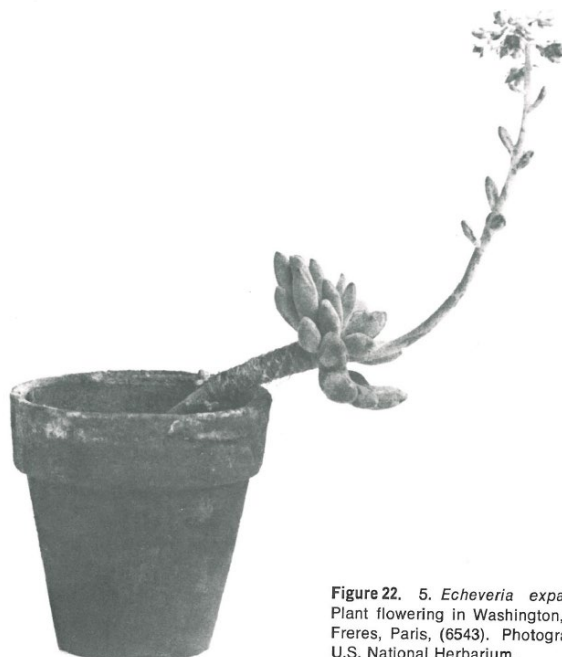


Figure 22. 5. *Echeveria expatriata* Rose. Plant flowering in Washington, from Simon Freres, Paris, (6543). Photograph from the U.S. National Herbarium.

2. Accordingly the indications in the Key to Series *Paniculatae* are also not correct - they refer to the "plants cultivated locally", not to *E. expatriata* Rose :

D. Sepals ovate; inflorescence spreading to decumbent, many branched; petals more or less spreading, pinkish. Probably a garden hybrid. 5. *E. expatriata*

3. As synonym of *E. expatriata* Rose Walther listed "*Echeveria cochlearis* Hort":

Echeveria cochlearis Hort., BERGER, in Engler, Nat. Pflanzenf., ed. 2, vol. 18a, p. 481, 1930.

E. cochlearis was first mentioned in J.B.A. Deleuil's 1875 catalogue as the hybrid of *E. linguifolia* x *E. atropurpurea*. These two species are by far not small plants and a hybrid with *E. atropurpurea* as pollen parent must have been a fairly big plant, very unlike that on the photo from the U.S. National Herbarium (fig. 22). So Walther was correct when he stated :

semblance to *E. linguifolia* is obvious in the decumbent, many-branched inflorescence and the pale petals, but little can be seen here of *E. atropurpurea* (Baker) Morren, said to have been its other parent.

However he drew the wrong conclusion : While obviously the parentage *E. linguifolia* x *E. atropurpurea* is not correct for *E. expatriata* this does not mean that it cannot be correct for *E. cochlearis* ! *E. cochlearis* and *E. expatriata* are clearly two different hybrids, and of course the name "*Echeveria cochlearis* Hort" does not belong in the synonymy of *E. expatriata*. Obviously the plant sent by Simon Freres was wrongly named.

4. Under COLLECTIONS Walther indicated :

COLLECTIONS. Cultivated: Washington, D.C., (US, type); New York Bot. Gard., /6543 (MO, NY, US); Missouri Bot. Gard., 1898/57; Cornell University greenhouses, C. Sands, 32 (BH); Knickerbocker Nursery, San Diego, 36

The correct number is **01/6543**.

Comment :

Because Walther based his description on plants of unknown origin not corresponding to *E. expatriata* Rose and because he erred regarding *E. cochlearis*, the entire text is good for nothing. This applies also to the specifications in the Key to Series *Paniculatae*.

And because Walther failed to consult the original description by Rose he did not realise that his concept of *E. expatriata* was wrong, with the consequence that when he received an unnamed plant from Scott Haselton he did not notice that it was *E. expatriata* but published it as the new species *E. globuliflora* and included it even in Series *Nudae* ! !

[*E. expatriata* Rose was reclassified by R. Moran as *xCremneria* 'Expatriata' (*Baileya* 19: 145, 1975), a hybrid of *Cremnophila linguifolia* x *Echeveria amoena* 'Micocalyx'.]

6. *Echeveria affinis* E. Walther (p. 72-75)

E. affinis was described "from living plant in the Strybing Arboretum, Golden Gate Park, S. F. in 1956" and published in *Cact. Succ. J. (Los Angeles)* 30(4): 105-107, 1958. Walther had got this plant from UCBG where it had been cultivated since 1954. The description in the monograph is not literally the same as that in the protologue however the modifications are inconsequential.

Plants glabrous; stem evident only in age, mostly simple, but ultimately budding below; rosettes dense; leaves numerous, broadly oblanceolate, shortly acuminate, to 5 cm. long and 2 cm. broad, beneath strongly convex, nearly flat above, somewhat upcurved above middle; inflorescences two or three, to 15 cm. tall; peduncle erect, stout; lower bracts few, oblong, acute, to 2 cm. long, ascending-spreading; inflorescence a flat-topped cyme with three to five spreading branches but without an elongated central axis; each branch with five to seven flowers; pedicels to 8 mm. long; sepals appressed, subequal, ovate-deltoid to oblong-lanceolate, turgid, acute at the somewhat incurved tips; corolla urceolate-campanulate, bluntly pentagonal, 10 mm. long, to 8 mm. wide at the spreading petal-tips, petals with small, but definite basal hollow within and apiculate tips; stamens 8 to 9 mm. long; carpels 8 mm. long, with slender styles; nectaries 1 mm. wide, narrowly lunate-reniform. Flowers from August on.

Description from living plant grown in Golden Gate Park, San Francisco, received from the University of California Botanical Garden.

Color. Leaves brownish olive, becoming almost black in full sun, beneath cosse-green; peduncle olive-buff, to corinthian-red above; bracts lettuce-green, to oil-green at tips; sepals scheeles-green, to light jasper-red at anthesis; corolla scarlet-red; petals inside eugenia-red; carpels whitish; styles straw-yellow, as are the nectaries.

The type specimen

It was prepared 15 August 1956 (CAS 403156). The respective label reads : "Type. *Echeveria floresiana* E. Walther, spec. nov. From plant collected in Mexico by R. Flores. (UC no. 54/1241)". To see the name 'floresiana' on a herbarium specimen prepared 1956 is absolutely puzzling because Walther had used the name already 1954 for *E. semivestita* var. *floresiana* Forgotten ? ? ?

Eventually 'floresiana' was crossed out and replaced by 'affinis' (probably in Walther's hand).

In addition to this CAS label, there is also a UCBG label on the type sheet with additional information regarding the source of the plant in question : "Frits Shwarz [should read : Fritz Schwarz], Apartado 347, San Luis Potosí, S.L.P., Mexico, via R. Flores. Field collection data : None. Collected in Mexico by Shwarz [Schwarz]", i.e. the plant was collected by Fritz Schwarz who sent it to Robert Flores, Salinas, CA, from where it was distributed.

And again additionally there is also a remark in Walther's hand : "Locale : Sinaloa, Palmitas ?"

The latter prompted PCH [Paul Clifford Hutchison] to add the following note : "Eric I have no record of locality on this item, and Flores states that Shwarz did not remember where he got it. The appearance in your handwriting of the note "Locale: Sinaloa, Palmitas" would indicate to anyone looking at this sheet that this is where this plant came from. The species may occur there, but we definitely have no locality for 54.1241. These cryptic remarks on sheets should be elaborated to indicate exactly what you mean." Obviously "Locale : Sinaloa, Palmitas ?" was a completely unfounded remark, i.e. an attempt by Walther to endow, after all, the plant with unknown origin with an – invented – origin – fortunately prevented by Hutchison.

Conclusion : The origin of the type plant of *E. affinis* is an indissoluble mystery.

Figure 23. 6. *Echeveria affinis* E. Walther. Flowering plant, $\times 0.75$. Plant photographed in San Diego 11 August 1960; collected near Los Angeles, Durango, Mexico (Moran and Kimmach 7619).

The photos fig. 23 & fig. 25 of a plant collected by Moran and Kimmach in 1959 replace the no longer traceable photos of the protologue. Reid Moran as photographer is not credited.

Errors :

TYPE. From Mexico without definite locality, cultivated in Golden Gate Park, San Francisco, *Walther*, in 1957 (CAS, no. 403156).
OCCURRENCE. Mexico.
COLLECTIONS. *Cultivated*: Golden Gate Park, San Francisco, *Walther*, in 1957 (CAS, type), U.S. Agricultural Research Service, Glenn Dale, Md., no. 197677, from Sinaloa, Mexico (CAS).

1. "in 1957" is not correct, according to the protologue it was **1956**.

2. Indications regarding the inflorescence of *E. affinis* are inconsistent :

Key to Series *Paniculatae* : "with **about 3** short, horizontally spreading branches".

Walther's description : "with **three to five** spreading branches".

Fig. 23, Moran & Kimmach 7619, 11 August 1960 : **at least five** branches

Fig. 25, Moran & Kimmach 7619, 1 August 1964 : **five befurcate** branches.

Comment :

The chapter *E. affinis* clearly leaves much to be desired. Walther's description has the major flaw that the origin of the plant he described as *E. affinis* is completely obscure.

7. *Echeveria craigiana* E. Walther (p. 76-78)

E. craigiana Walther was first published in *Cact. Succ. J. (Los Angeles)* 24(1): 28, 1952. Walther's description in the monograph corresponds to that of the protologue :

Plant glabrous; stem short or none, branching only in age; rosettes very dense; leaves 30 to 40, thick, semiterete, linear-oblong, 8 to 11 cm. long, to 2 cm. broad, above flat, beneath rounded and faintly keeled near apex, acute and shortly subulate-aristate, not papillose but faintly glaucous, upcurved from the middle; inflorescences two or three, to over 50 cm. tall; peduncle stout, erect, to 10 mm. thick at base; bracts few, somewhat spreading, semiterete, oblong, acute, aristate-mucronate, to 5 cm. long and 10 mm. broad, faintly keeled near apex both above and below, at base shortly spurred, readily detachable; panicle elongate, with many short, angularly spreading branches, these at times 2-branched; pedicels to 2 cm. long, rigid, bracteolate when young, only slightly thickened below calyx; sepals much connate at base, slightly but distinctly spreading above, subequal, longest to 9 mm. long, deltoid-oblong, acute, connivent after anthesis; corolla tubular-campanulate, to 11 mm. long, to 13 mm. wide at mouth when fully open, basal diameter 7 mm.; petals bluntly keeled, at base gibbose and with distinct cavity within, strongly recurved at apex; carpels 8 mm. long; stamens slightly longer; nectaries 2 mm. wide, thick, transversely trapezoid. Flowers October and November. Description from living plant, the type, grown in Golden Gate Park, San Francisco.

Color. Leaves sorghum-brown to natal-brown, grass-green at shaded base or in shade, slightly glaucous; peduncle pale pinkish cinnamon to light russet-vinaceous; bracts dark olive-buff, to army-brown above; pedicels light corinthian-red; sepals rainette-green to light corinthian-red; corolla rose-doree, inside jasper-red; carpels whitish; styles orange-vinaceous; nectaries whitish.

According to the protologue and the holotype sheet, *E. craigiana* was found by Craig & Lindsay in 1939. The holotype was prepared Oct 1945 "from plants collected 1939 in SW Chihuahua by Craig & Lindsay" (CAS 324971), however the description, published only in 1952, was not made from the type plant but from a plant of unknown origin, grown by Jack Whitehead at the University of California Botanic Garden at Berkeley, California - no number indicated. In the book this information is omitted or rather replaced by the following note : "Description from living plant, the type, grown in Golden Gate Park, San Francisco", what – according to the protologue – is not correct, the description was just **not** made from the type plant.

Errors :

1. The protologue further indicates : "References : *Cactus Journal* 15 : 4 : 52, **1943** [should read **1944**] : George Lindsay, 'Plant Hunting in the Tarahumare Mountains of Chihuahua, Mexico'." This has also been omitted in the book.

2. Walther's description is not in line

a) with the Key to Series *Paniculatae* : It indicates the length of the pedicels as 2 cm, in the Key however it is only 1 cm,

2-branched; pedicels to 2 cm. long, rigid, bracteolate when young, only slightly

b) with the text under REMARKS : While the sepals are described as "**slightly but distinctly spreading**", under REMARKS Walther speaks of "the **appressed**" sepals.

thickened below calyx; sepals much connate at base, slightly but distinctly spreading above, subequal, longest to 9 mm. long, deltoid-oblong, acute, con-

The irregular inflorescence with occasionally bracteolate pedicels, the thin scarcely keeled petals, and the appressed sepals argue for placing this species

3. Under COLLECTIONS Walther listed :

Recubich, *J. Knobloch*, 38/5517 (F,MO). *Cultivated*: garden of V. Reiter, San Francisco (CAS, clonotype).

The correct name of this locality is "Recubichic".

Comment :

The description of *E. craigiana* has the major flaw that it was not made from the type plant but from a plant without known origin, or in other words : the type was not prepared from the plant used for the description. Strictly speaking the name belongs to the type, i.e. to the herbarium specimen CAS 324971, not to the plant Walther has described.

Series 2. Urceolatae E. Walther

The English diagnosis of Series *Urceolatae* indicates the corolla thus :

der, sometimes turbinate thickened below calyx; sepals generally small, unequal, acute, appressed to spreading or more rarely reflexed; corolla globose-urceolate to cylindroid or conoid; petals mostly thin, with shallow basal nectar

While none of the species listed by Walther in Series *Urceolatae* have either a cylindroid or a conoid corolla, and rightly so, *E. cuspidata* and *E. turgida* with a decidedly urceolate corolla are not included herein.

8. Echeveria agavoides Lemaire (p. 81, 82, 84)

E. agavoides was described by Charles Lemaire in *L'illustration Horticole* 10: 78, 1863 (in French) from a plant introduced from Mexico, precise origin unknown :

2.*— **agavoides** CH. LEM. Acaule; feuilles très nombreuses, étalées-rosulées, fort épaisses, très dilatées à la base, étroitement imbriquées, puis atténuées-très aiguës; d'un vert opalin; fleurs d'un écarlate pâle. Magnifique. Mexique; introduite depuis deux ans à peine; forme d'une petite Agave.

Walther's text

Instead of quoting the original description, Walther wrote a description of his own :

lowed within at base, slightly spreading at apex; nectaries thin, sharp-edged. Flowers from March on. Description based on living plants from locality mentioned.

It is not clear to which locality this refers, possibly to the Hacienda de San Francisco mentioned under REMARKS.

Errors :

REMARKS. *Echeveria agavoides* has been in cultivation since 1863 (according to *La Belg. Hort.*) and was well illustrated by Baker in Saunders' *Refugium Botanicum* (*loc. cit.*). It is still widely cultivated today, even if it has

1. Wrong : *La Belg. Hort.* states that it was introduced in Belgium by Verschaffelt already in **1860/61**.

2. In his description Walther indicated the leaves as "chrysolite-green", in the Key to Series *Urceolatae* he stated that they are usually "amber colored" :

B. Leaves much broader than thick, thinner, not aristate; sepals spreading to ascending.
C. Leaves **usually amber colored**, scarcely ever slightly grayish or glaucous; inflo-

3. Under REMARKS Walther wrote :

In 1937 I saw this in its native habitat near San Luis Potosi, where it grew in numbers at the Hacienda de San Francisco. In semishade at the base of the steep sides of a barranca, it grew with xerophytic ferns and *Yucca australis*. A large proportion of these plants were distinct in having bright red margins and tips; this form is now sold locally and needs to be named, as *Echeveria agavoides* cultivar 'Red edge.' Another, rather rare form is fasciated, forming a

The same population consisted of plain green leaved plants and others with red leaf margins, the latter Walther decided to distinguish by the cultivar name 'Red edge'. However the name *E. agavoides* 'Red edge' is invalid (see text 8d. *E. agavoides* var. *multifida*).

8b. *Echeveria agavoides* var. *prolifera* E. Walther, new. (p. 84)

Walther had found this plant in 1934 in the garden of C. Halbinger in Mexico City, origin unknown. A specimen was prepared in 1943 (CAS 304230) and determined - apparently by Walther himself - as "*Echeveria Corderoyi* from Mexico City, cultivated in Strybing Arboretum, Golden Gate Park, San Francisco". Sometime later it was redetermined as type of "*E. prolifera* sp. nov."

TYPE. From plant grown in Golden Gate Park, San Francisco, originally found in cultivation at Mexico City in the garden of Sr. C. Halbinger (CAS, no. 304230).

So again Walther has produced a description from a plant of unknown origin :

Plants glabrous; rosettes to over 25 cm. in diameter, stemless but usually freely offsetting; leaves numerous and crowded, to 30 or more in each rosette, 10 to 12 cm. long, to 30 mm. wide, turgid, subtriquetrous, oblong-oblanco-late, nearly flat above, acuminate-aristate, ascending, inflorescences three or more; peduncle slender, spreading to ascending, to over 15 cm. long; bracts few, appressed, linear-lanceolate, acuminate, 6 to 8 mm. long; branches usually three, secund-racemose, with eight or nine flowers each; pedicels slender, to 10 mm. long, not turbinate; sepals very unequal, deltoid to ovate, acute, slightly connate at base, spreading; corolla narrowly urceolate, to 16 mm. long; nectaries rather broad, obliquely truncate, to 2 mm. wide. Flowers from April on.

Color. Leaves pale dull green-yellow; peduncle pompeian-red; bracts russet-vinaceous; corolla rose-doree to peach-red above, inside capucine-orange; carpels baryta-yellow; styles cosse-green; nectaries pinard-yellow.

While Walther's description calls

1. for a usually three-branched plant, the type specimen shows **two two-branched** inflorescences !

more; peduncle slender, spreading to ascending, to over 15 cm. long; bracts few, appressed, linear-lanceolate, acuminate, 6 to 8 mm. long; branches usually three, secund-racemose, with eight or nine flowers each; pedicels slender, to

2. for "**pale dull green-yellow**" leaves, in the Key to Series *Urceolatae* they are "**uniformly amber colored**":

D. Leaves **uniformly amber colored**, usually without red edges or apices.
E. Rosettes with few or no offsets. 8a. *E. agavoides* var. *agavoides*
E. Rosettes freely soboliferous. 8b. *E. agavoides* var. *prolifera*

The varietal name refers to the numerous proliferous offshoots emitted by each rosette.

Emitting "numerous proliferous offshoots" does not justify the classification as variety - at most that as a forma.

Comment :

A rather inconsistent text ! And the fact that the plant of unknown origin from Halbinger's garden has never been found in the wild strongly suggests that it was a garden mutation / hybrid, i.e. Walther's description is good for nothing.

8c. Echeveria agavoides var. corderoyi (Baker) Poellnitz (p. 83, 85)

E. agavoides var. *corderoyi* was first described by Baker as *Cotyledon corderoyi* in *The Gardeners' Chronicle*, new series 1: 599, 1874 :

<p>COTYLEDON (ECHEVERIA) CORDEROYI. Baker.†</p> <p>Besides the forty species of <i>Echeveria</i> which have been described and figured in <i>Refugium Botanicum</i>, there are several others in cultivation in English gardens which have never been taken up, because either they have never been known to flower, or else when they have flowered no botanist has been at hand to make note of their characters. For our knowledge of the present plant we are indebted to Mr. Justus Corderoy, of Blewbury, near Didcot, who is well-known as a cultivator of succulent plants. All that he knows about its history is that he received it many years ago from Belgium, and has flowered it two or three times. In botanical characters it comes very near to <i>C. agavoides</i> (<i>Ref. Bot.</i>, tab. 67) ; but this latter, which is a native of Mexico, has only about twenty leaves to a rosette and half-a-dozen flowers to a cyme, a larger corolla, and an ascending cup-like calyx, the divisions of which are united together towards the base, with the free portion deltoid.</p>	<p>Glabrous, acaulescent. Leaves 60 to 70 in a dense rosette 7 to 8 inches broad and 3 to 4 inches deep, ovate, 2 to 2½ inches long, 1¼ to 1½ inch broad at the middle, half an inch thick, quite flat on the face in the upper half, rounded on the back, produced into a firm lanceolate mucro, both sides a very pale whitish-green, smooth and rather shining. Flower-stems 3—4 to a rosette, the scape below the cyme 15 to 18 inches long, terete, with only a few minute, scariose, bract-like leaves ; cyme trichotomous, with 15—20 flowers on long red flexuose branches ; bracts minute, lanceolate ; pedicels ½ to ¾ inch long, bright red ; calyx rotate, ¼ inch broad, with lanceolate divisions reaching quite down to the pedicel ; corolla urceolate, ⅝ inch long ; bright red at the base, yellow upwards ; the lanceolate divisions three times as long as the campanulate tube.</p> <p>✓ <i>G. Baker.</i></p>
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Walther's text

Evidently Walther had never seen a living plant of *Cotyledon (Echeveria) corderoyi* Baker, therefore he could not write a description of his own but had to cite Baker :

at base, yellow upwards, the lanceolate divisions three times as long as the campanulate tube. (After Baker, *loc. cit.*)

He was well aware that one of the characteristic features of this plant is its three-branched inflorescence. The United States National Herbarium is storing three specimens determined as "*Urbinia corderoya* Rose" (US 888616, US 888617 & US 888618) of plants collected by Dr. E. Palmer in 1902 in San Luis Potosí – all with **three-branched** inflorescences and therefore matching perfectly Baker's description. Incomprehensibly all of them were redetermined by Walther as *E. agavoides* which however is characterised by a **two-branched** inflorescence. This is all the more unintelligible as it was Walther who designated the illustration of the **bifurcate** *Cotyledon agavoides* Baker as neotype of *E. agavoides*.

Errors :

1. Under OCCURRENCE Walther indicted :

OCCURRENCE. Mexico.
REMARKS. *Echeveria agavoides* var. *corderoyi* was named after Mr. Justus Corderoy, Didcot, a succulent grower of the times. It comes close to var. *aga-*

This is wrong. Mr Corderoy had received his plant from Belgium, with no further information regarding its origin. This was also stated by Baker in the protologue.

2. Under REMARKS Walther wrote :

the base, and a corolla 9 mm. long. The closest relation to var. *corderoyi* would seem to be my var. *prolifera*, found in cultivation at Mexico City in 1934. This last has numerous proliferous offshoots, amber-colored leaves at times to 12 cm. long or more, and a corolla attaining a length of 16 mm.

The comparison is rather absurd : *E. agavoides* var. *corderoyi* is not offsetting at all and has a corolla only 3/8 inch long.

3. In the Key to Series *Urceolatae* Walther indicated :

D. Leaves usually with conspicuous red edges and apices.
E. Rosettes freely soboliferous; sepals very small, linear, free to base; inflorescence usually 3-branched. 8c. *E. agavoides* var. *corderoyi*

E. agavoides var. *corderoyi* according to Baker has no red margins and does not offset at all, Walther's statements "usually with conspicuous red edges and apices" and "freely soboliferous" are complete nonsense.

Under REMARKS Walther wrote :

Some Mexican material referred to this variety from the vicinity of Parras and Saltillo in Coahuila and variously labeled *E. cuspidata* or *E. turgida*, is herein treated as *E. parrasensis* (see no. 14).

This cryptic remark refers (inter alia) to the specimen F 599198, collected by Dr. Edward Palmer 1904, cañon of Big waterfall, Chayo Grande, 24 miles SE of Saltillo, and to Palmer 1902 / Rose 570, originally - and correctly - determined as *E. cuspidata* Rose, in 1958 however by **Walther himself** "referred to this variety", stating "very near *E. corderoyi* Baker" although there was not the slightest evidence of *E. agavoides* var. *corderoyi* occurring anywhere in Mexico. Obviously the previous assertion should be declared invalid at this point. (See comment to 14. *E. parrasensis*.)

Comment :

The partly gross inaccuracies and contradictions make Walther's text about *E. agavoides* var. *corderoyi* and also the statements in the Key to Series *Urceolatae* utterly useless.

8d. *Echeveria agavoides* var. *multifida* E. Walther, new. (p. 85-87)

Walther made his description from a plant cultivated at the University of California Botanical Garden:

Rosettes usually solitary even when old; leaves numerous, as many as 50 in each rosette, crowded, broadly ovate, shortly acuminate, to 8 cm. long or more, 3 to 4 cm. broad or more, shallowly concave above, beneath rounded and faintly keeled, sessile, difficult to detach without breaking; inflorescences to 25 cm. tall; peduncle slender, erect-ascending, bracts appressed, racemes two to five on each peduncle, secund-racemose, strongly nodding before anthesis, with about 12 flowers each; pedicels slender, to 9 mm. long or more, turbinate below calyx; sepals unequal, longest 3 to 4 mm. long, deltoid, acute, ascending to appressed, connate and decurrent at base; corolla conoid-cylindroid, scarcely pentagonal, 9 mm. long, 6 mm. in diameter near base; petals somewhat spreading at tips, scarcely hollowed, not keeled, thin, bluntly mucronate; carpels 8 mm. long; nectaries thin, very oblique, scarcely over 1 mm. wide. Flowers March and April.

Color. Leaves amber-colored, with margins near apex deep pompeian-red; peduncle carmine; pedicels brazil-red; sepals pompeian-red to Hays-maroon; corolla scarlet-red to rose-doree below, light orange-yellow at tips and inside; styles apple-green; nectaries nearly white.

The type specimen is CAS 413922 :

TYPE. Collected at the University of California Botanical Garden, *E. Walther*, April 8, 1959 (CAS, no. 413922).

In 1937 Walther had visited the Hacienda de San Francisco. He had seen plants with deep crysolite-green leaves, but a large proportion of them were distinct in having bright red margins and tips. The latter he decided to call *E. agavoides* 'Red edge' – see text above. The following passage refers to the same visit and the same locality, the Hacienda de San Francisco :

OCCURRENCE. Mexico. San Luis Potosi: Hacienda de San Francisco.

REMARKS. Typical *E. agavoides* has leaves without any such red edges and its inflorescence is usually only 2-, rarely 3-branched. When I visited the locality cited above I knew nothing of its inflorescence and its frequent 4- or 5-branched habit. While this plant is sufficiently distinct to require definition,

While in chapter 8 (*E. agavoides*) the plants with red leaf margins (apparently not in flower at the time) were equipped with the cultivar name 'Red edge', this time the very same plants were classified as var. *multifida* because of their "frequent 4- or 5-branched habit" of the inflorescence. In other words : the description of *E. agavoides* var. *multifida* in fact is the description of *E. agavoides* 'Red edge'.

However : The plant Walther described as *E. agavoides* var. *multifida* was collected 8 Apr 1959 at the University of California Botanical Garden – not at the Hacienda de San Francisco - and the information regarding the type specimen reads : "Original collector and collection locality uncertain." That means it is highly unlikely, that the plant in flower described as *E. agavoides* var. *multifida* was a flowering *E. agavoides* 'Red edge'. So while formally *E. agavoides* var. *multifida* is a renaming of *E. agavoides* 'Red edge', in all likelihood the former is not identical with the latter. Anyhow - because both names were published simultaneously, neither is valid or established (ICN Art. 36.2 & ICNCP Art. 27.8). The correct name is ***E. agavoides* 'Red Edge' Dodson, 1973.**

<https://www.crassulaceae.ch/de/artikel?akID=48&aalID=4&ailID=A&aID=5226>.

And of course, one or two more branches of the inflorescence compared with the type plant in no way justify the rank of a variety.

As PARATYPE Walther indicated :

PARATYPE. *Parry and Palmer*, 1878/233, in part (mounted with type of *E. humilis*, (US)).

To refer to Parry & Palmer does not make sense. As can easily be verified online (US 0094059), this specimen with its few and short inflorescence branches has no resemblance at all with the holotype of *E. agavoides* var. *multifida*.

Comment :

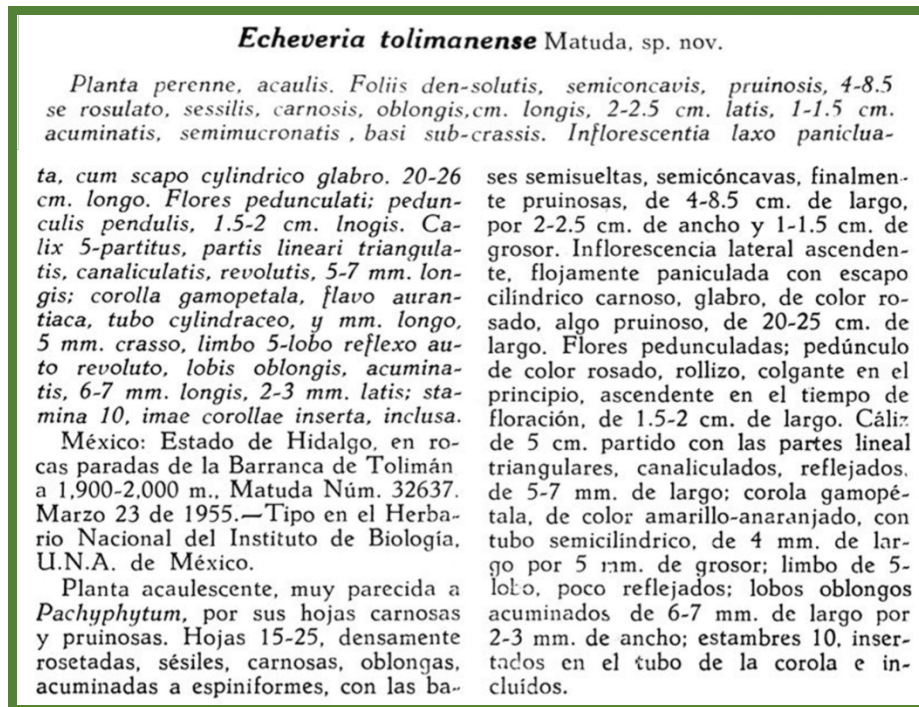
Echeveria agavoides var. *multifida* was described from a plant of unknown origin, it has never been found in the wild. The description therefore is of no use. Formally, *E. agavoides* var. *multifida* is a renaming of *E. agavoides* 'Red edge', however the plants used for the respective descriptions are not identical. Both names are invalid because simultaneously published.

Comment to *Echeveria agavoides* as a whole :

1. Walther's treatment of *E. agavoides* is extremely poor. Indications in the Key to Series *Urceolatae* are for the most part wrong.
2. The descriptions of var. *multifida* and var. *prolifera* are of no use because the respective plants are of unknown / uncertain origin, have never been found in the wild and are suspected to have been hybrids.
3. To classify *corderoyi*, *multifida* and *prolifera* as varieties because either their inflorescences have one or two more branches (compared with the type) or plants are offsetting is in no way justified. They deserve at most the status of a forma.
4. Moreover *E. agavoides* 'Red edge' and *E. agavoides* var. *multifida* are invalid names.

9. *Echeveria tolimanensis* Matuda (p. 86-88)

Matuda's description of *E. tolimanensis* was published in *Cactaceas y Suculentas Mexicanas* 2: 31, 1958 (in Spanish) :



Walther's text

Errors:

Walther had no unambiguously identified *E. tolimanensis*, nevertheless he failed to quote or translate Matuda's description and made a new one "from plants cultivated locally":

more or less evident nectar-cavity within; nectaries oblique, trapezoid-reniform. Flowers March to July. Description from plants cultivated locally long before discovery of definite habitat in Mexico.

Stem short but ultimately evident, usually simple and unbranched; leaves numerous, crowded, thick and turgid, semiterete, narrowly lanceolate to linear-oblong, rounded beneath, above slightly flattened, upcurved to the usually long-aristate apex, 5 to 12 cm. long, 15 to 20 mm. broad, to 13 mm. thick, more or less pruinose; inflorescences 2- or 3- branched; peduncle slender, flexuose, spreading to ascending; bracts fugacious, linear-subulate, subtriquetrous, acute, to 13 mm. long; branches secund, with five to seven nodding flowers each; pedicels slender, to 6 mm. long or more, scarcely turbinate below calyx; sepals unequal, longest to 5 mm. long, deltoid, acute, spreading to reflexed at anthesis; corolla narrowly cylindroid-urceolate, 11 to 12 mm. long, 7 mm. in basal

1. The differences between Walther's plants and the type species are evident and it is obvious that these "plants cultivated locally" did not correspond to the original species :

Leaves : Matuda : 4-8.5 cm long, 2-2.5 cm broad and 1-1.5 cm thick / Walther : 5-12 cm long, 1.5-2 cm broad and 1.3 cm thick.

Moreover in the Key to Series *Urceolatae* Walther even indicated "leaves nearly as thick as wide"- thus contradicting his own description :

B. Leaves **nearly as thick as wide**, subterete-clavate, aristate-tipped, gray-green, glaucous, occasionally amber-tinged; sepals spreading to reflexed. Barranca de Toliman, Hidalgo. 9. *E. tolimanensis*

Pedicels : Matuda : 1.5 – 2 cm long / Walther : to 0.6 cm long.

Petals : Matuda 7 x 2-3 mm / Walther : corolla 11 to 12 mm long.

2. Under COLLECTIONS Walther listed :

on dry rocky slopes of the Barranca de Toliman, somewhat above mines on road from Zimapan to Mina Loma del Toro and Balcones, 5,000 feet, **Moore and Wood**, 48/4399 (BH). *Cultivated*: Golden Gate Park, San Francisco, *E. Walther*, 1943 (CAS).

Two different plants are mounted on this sheet and neither corresponds to *E. tolimanensis*. To cite this sheet is completely devious.

Under REMARKS Walther wrote :

several years and am grateful to Professor Matuda for placing it on record with a definite locality. With its turgid leaves, **3-branched**, secund racemes, and small sepals, it clearly belongs in the series *Urceolatae*, even if therein it

Figure 33. 9. *Echeveria tolimanensis* Matuda. Inflorescence, $\times 1.7$. Plant flowering in San Diego 9 March 1963; collected in the Barranca de Toliman, Hidalgo, Mexico, the **type locality** (Moran 10044).

3. Reid Moran described *E. tolimanensis* three times : M 13369, M 3187 and M 10044, the latter is shown in figs. 32 & 33 (photos again not credited to Moran). The three descriptions speak in unison of a **two-branched** inflorescence, and the photos of M 10044 testify to this. Also the illustration in *Monatsschr. Kakteenkunde*, 1907, wrongly captioned *E. cuspidata* but in fact representing *E. tolimanensis*, shows a **two-branched** inflorescence.

In its **long slender corolla**, this species resembles *E. chihuahuensis*, but the latter has much flatter, broader, and shorter leaves and ascending sepals.

4. Regarding a petal size of - according to Matuda - 7 x 2-3 mm or - according to Walther himself - a corolla of 11-12 mm one cannot speak of a "long" corolla.

My original plants came to me from the late Dr. M. Morgan of Richmond, California, who presumably had them from F. Schmoll, Cadereyta, Queretaro. The chromosome number is recorded by Dr. Uhl of Cornell to be $n = 30$.

5. "My original plants" most likely refers to the "plants cultivated locally", which evidently did not correspond to Matuda's plant. In any case – as they can only be traced back to Schmoll, Cadereyta, if at all – their Mexican origin remains unknown.

Comment :

Instead of citing / translating Matuda's description Walther wrote a description of his own, obviously omitting to consult the protologue and to question his for a longtime cultivated plants - with the result that his own description is of course of no use and moreover misleading. This is a particularly sloppy chapter.

10. *Echeveria chihuahuensis* Poellnitz (p. 88-90)

Echeveria chihuahuensis was described by Karl von Poellnitz 1935 from a herbarium specimen deposited at Berlin-Dahlem and published in *Repert. Spec. Nov. Regni Veg.* 38: 29, 1935. The plant had been collected by Rudolf Endlich already in 1906 in the valley of the Rio Urique, the exact locality is not known :

1. *Echeveria chihuahuensis* von Poellnitz spec. nov.
Glabra, acaulis. Folia numerosa, dense rosulata, obovato-spatulata, acuminata, mucronata, rubro-marginata, sicca non vel vix glauca, usque 4 cm longa, 2 cm lata. Caulis floriferus usque 20 cm longus vel longior, folia caulina pauca, oblongo-linearum vel late linearum, acuta, usque 13 mm longa. Inflorescentia cymosa, e ramis paucis (ca. 3—5), brevibus, paucifloris composita. Pedicelli validi, 4—6 mm longi. Bractee quam pedicelli plerumque vel semper longiores. Calycis tubus brevissimus, lobi ovati, acuti, inaequales, adscendentes, usque 4 mm longi. Corolla ex sicca rubra et apice marginibusque loborum lutea, ca. 11 mm longa, tubus 3 mm longus, lobi lanceolati, apice extrorsum curvati. Stamina episeptala apici corollae tubi inserta, 4 mm longa, epipetala lobis ca. 4 mm de basi corollae adnata, 3 mm longa. Antherae anguste oblongae, (1 —) 1½ mm longae. Carpella basi subjuncta, erecta, 4 mm longa, stili subulati, erecti, 3 mm longi.

Walther's text

In 1939, while plant hunting in the Tarahumara Mountains of Chihuahua, Robert Craig and George Lindsay came across an "attractive *Echeveria* from tall 'picachos', or rocky crags, nearby [near Ceracaqui – today Cerocahui]. The leaves were a beautiful blue-green tinged in pink and the plants were in full flower, each bearing several delicate coral blossom-stalks" (*Cact. Succ. J. (Los Angeles)* 15(5): 71ff, 1943). Reid Moran's Notes concerning *E. lindsayana* and Myron Kimnach's article *A revision of Echeveria colorata* Walther (same Journal, vol. 52(2): 55-63, 1980), both reveal that there was much confusion about the plant Craig & Lindsay brought back and which was first thought to be *E. cuspidata* or *E. corderoyi*. In 1959 Walther even felt sure that Craig & Lindsay had brought back two different plants, one very gray, almost pure white, with red edges and mucro, the other much paler and with quite distinct flowers - what Lindsay strictly denied. At what time Walther came to the conclusion that in fact it was *E. chihuahuensis* Poelln. is not known, and - according to Moran - it is also not known whether what he then considered to be *E. chihuahuensis* really was Craig's and Lindsay's original collection.

In any case instead of quoting / translating von Poellnitz's Latin text, Walther made a description of his own from plants cultivated in his collection at Strybing Arboretum :

scarcely keeled, within with shallow basal hollow, slightly spreading at tips; nectaries thin, oblique, 1.5 mm. wide. Flowers from March on. Description from living plants received from Craig and Lindsay, grown at Strybing Arboretum, Golden Gate Park, San Francisco.

Errors :

1. Quite obviously however the plant he described as *E. chihuahuensis* did not agree with *E. chihuahuensis* Poelln. It differs

Leaves : Walther : only "sometimes" red margined / von Poellnitz : "rubro-marginata".

Bracts : Walther : to 3 cm long / von Poellnitz : 13 mm long.

Pedicels : Walther : to 14 mm long / von Poellnitz : 4-6 mm long.

Inflorescence : Walther : simple or two-branched / von Poellnitz : 3-5-branched.

Sepals : Walther : 8 mm / von Poellnitz : 4 mm.

Corolla : Walther : to 14 mm long / von Poellnitz : ca 11 mm long.

Incidentally a corolla with a basal diameter of 7 mm and 5 mm wide at mouth is **urceolate**, not cylindroid :

to eight flowers each; pedicels slender, to 14 mm. long, slightly thickened below calyx; sepals very unequal, longest to 8 mm. long, deltoid to lanceolate-oblong, acute, appressed or ascending; corolla narrowly cylindroid, about twice as long as thick, to 14 mm. long, 7 mm. in basal diameter, 5 mm. wide at mouth; petals

2. Under TYPE and OCCURRENCE Walther indicated :

TYPE. *R. Endlich*, 1232, in the valley of the Rio Colorado, 2,300 m. elevation, 16 April 1906, Chihuahua (B).
OCCURRENCE. Mexico. Chihuahua: valley of the Rio Colorado at confluence of Rio Fuertes; east of Ceracaqui up canyon from El Cajon.

Fact is that the Rio Colorado is a US river, flowing into the Gulf of California, never passing through the Mexican state of Chihuahua. That the collector R. Endlich erred, is understandable, however it is not understandable that Walther - having lived since decades in California - did not notice the error and cited the wrong indication. The type locality of *E. chihuahuensis* Poelln. is in the valley of the Rio Urique. This is clearly not the same place as "near Ceracaqui", where Craig's and Lindsay's plant was collected.

Under REMARKS Walther wrote :

REMARKS. The original type specimen was very scanty and immature, and was matched with the Craig and Lindsay plants with some hesitation. Other species from this part of Mexico are *E. paniculata*, which would differ in having

3. If "the original type specimen [...] very scanty and immature" refers to the sheet at Berlin-Dahlem which von Poellnitz had used for his description (and which is no longer extant) - in view of his quite detailed description this remark is simply wrong.

each bearing several delicate coral blossom-stalks. These plants may be *E. cuspidata* or possibly *E. corderoyi*, but in either case would mean a decided extension of range."

4. The suggestion of *E. corderoyi* is out of place as there was not the slightest evidence of its occurrence in Mexico at all.

In the series *Urceolatae*, *E. chihuahuensis* is anomalous in its cylindroid corolla, but foliage and nectaries are quite typical of the series. Of the numerous locally raised seedlings, all were substantially uniform. However, some

This is simply wrong. The shape of the corolla of *E. chihuahuensis* is **urceolate**, not cylindroid. But even if it were cylindroid, it would not be anomalous as is stated in the diagnosis of Series *Urceolatae*:

equal, acute, appressed to spreading or more rarely reflexed; corolla globose-urceolate to cylindroid or conoid; petals mostly thin, with shallow basal nectar cavity, scarcely keeled, color pale to bright rose, sometimes tipped green in bud; nectaries small, thin; styles greenish; ripe follicles widely spreading.

plants of the original collection differed in having rather narrower leaves. According to the original collector, R. Endlich, this is called "Siempreviva" by local residents, while the Tarahumare Indians know it as "Mec."

5. "Plants of the original collection"- obviously Walther refers to the Craig & Lindsay collection, but this is not the "original collection"- this is the **Endlich collection**, described by von Poellnitz.

Comment :

Walther's text about *E. chihuahuensis* is full of misleading inaccuracies and errors and therefore of no use at all. Of course this applies also to the respective indications in the Key to Series *Urceolatae*.

11. Echeveria lindsayana E. Walther (p. 90-91)

The backstory :

When Walther set to work on producing the protologue of *Echeveria lindsayana* in March 1959 the plant in question was growing in Strybing Arboretum, Golden Gate Park, San Francisco.

TYPE. *E. Walther*, 8 April 1959, cultivated in Strybing Arboretum, Golden Gate Park, San Francisco (CAS, no. 413947).

Walther was sure that he originally had received it from Robert Craig and George Lindsay, collected in Chihuahua in 1939 while plant hunting in the Tarahumara Mountains, together with *E. chihuahuensis*, the latter first being considered *E. cuspidata* or *E. corderoyi* (see text 10. *E. chihuahuensis*). In 1954 Walther had passed two plants to UCBG (54.168), adding the following information : "Source : Dr. Robert Craig and Dr. George Lindsay, the collectors. Field collection data : Mexico, state of Chihuahua." However March 24, 1959, according to Reid Moran, Walther wrote to Lindsay "asking for further information, saying that there seemed to be two distinct plants, one very gray, almost pure white, with red edges and mucro, the other much paler and with quite distinct flowers" – but this Lindsay strictly denied : "I do not recall noticing more than one kind." So obviously the former information was wrong and there was nothing left for Walther but to confess that the origin of *E. lindsayana* is unknown and as Lindsay clearly was not the co-collector of it, Walther had to justified the naming for him :

While the source of the present item is as yet unknown, I feel certain that ultimately its Mexican habitat will be discovered. In naming it for Dr. George Lindsay, I acknowledge the many services towards a better knowledge of cacti and succulents performed by him.

Walther's description :

Plant glabrous, acaulescent; rosettes simple when young, but ultimately becoming cespitose; leaves numerous, crowded, obovate to oblong, at apex from shortly acuminate and mucronate to truncate, quite thick, 5 to 9 cm. long, 3 to 4 cm. broad, obscurely keeled beneath near apex; inflorescences three or more, to 50 cm. tall, often 2-branched at middle, sometimes fasciated; peduncle slender, to 4 mm. thick at base; bracts few, distant, appressed, ovate-lanceolate, acute to acuminate, to 13 mm. long, caducous; branches usually two, secund-racemose, with seven flowers each, strongly nodding before anthesis; pedicels slender, to 13 mm. long, slightly turbinate below calyx; sepals very short, ovate-deltoid, acute, subequal, to 3 mm. long, appressed, strongly connate at base; corolla to 10 mm. long, 5 mm. in basal diameter, 7 mm. wide at mouth, cylindroid; petals thin, spreading at their tips, neither keeled nor deeply hollowed; nectaries oblique, subreniform, 3 mm. wide. Flowers from April on.

Color. Leaves water-green, tinged light purplish vinaceous near apex, only the mucro brazil-red; peduncle light pinkish cinnamon; bracts apple-green, to nopal-red at apex; sepals cource-green; corolla grenadine-pink; petals at tips and inside light orange-yellow; carpels above mineral-green; nectaries clear dull yellow.

On the holotype sheet (CAS 413947) two plants are mounted, both with two inflorescences. One of them seems to be the "sometimes fasciated" form. The inflorescences are up to 4-branched, the branches for their part often have short side branches with two or even three flowers each, and with pedicels up to 2 cm; in short - the inflorescences are **cymose** (somewhat reminding those of *E. affinis*), but there is no mention of this in the description – actually the description is only partially consistent with the herbarium specimen :

long, 3 to 4 cm. broad, obscurely keeled beneath near apex; inflorescences three or more, to 50 cm. tall, often 2-branched at middle, sometimes fasciated; peduncle slender, to 4 mm. thick at base; bracts few, distant, appressed, ovate-lanceolate, acute to acuminate, to 13 mm. long, caducous; branches usually two, secund-racemose, with seven flowers each, strongly nodding before anthesis; pedicels slender, to 13 mm. long, slightly turbinate below calyx; sepals

connate at base; corolla to 10 mm. long, 5 mm. in basal diameter, 7 mm. wide at mouth, cylindroid; petals thin, spreading at their tips, neither keeled nor deeply hollowed; nectaries oblique, subreniform, 3 mm. wide. Flowers from April on.

A corolla whose diameter at base is different from that at mouth is clearly not "cylindroid" ! But the measures are wrongly indicated anyway – of course the diameter at base is larger than that at mouth, i.e. the shape of the corolla is **urceolate** – what is to be expected of a species of Series *Urceolatae*.

Under REMARKS Walther wrote :

REMARKS. In leaf form, and to some extent in color, this new species does resemble *E. chihuahuensis*, with which it has so long been confused. How-

The only one who had mixed them up was **Walther himself**, as is clear from the Notes by Moran on UCBG 54.168 (*E. lindsayana*) and the respective UCBG Accession Report : at one time Walther considered the future *E. lindsayana* to be *E. chihuahuensis* Poelln.

ever, the plants of that species, brought from near Ceracaqui by Dr. Lindsay in 1939, are clearly distinct in their much whiter leaves, with more prominent red margins and mucro; the flowers have much longer unequal sepals; the corolla is cylindrical and up to 15 mm. long. *Echeveria cuspidata* is another species with which our present novelty has been confused, but in that the

However according to Walther's own description, the leaf margins and mucro of *E. chihuahuensis* are only "sometimes red" and the corolla is **14 mm** long , i.e. Walther does not even manage to quote himself correctly.

The holotype of *E. lindsayana* was designated by Walther April 4, 1959 - two days previously he had designated the holotype of *E. colorata*. This suggests that the protologues of the two new species were produced more or less simultaneously. A comparison of the two descriptions reveals that the differences between the two plants are so insignificant that it is incomprehensible why Walther considered them two distinct species.

Comment :

The description made from a plant of unknown origin, never again found in the wild, is of course good for nothing.

12. *Echeveria colorata* E. Walther, new species (p. 91-92)

Walther made his description of *E. colorata* from a plant in cultivation at UCBG, which in turn descended from a plant in cultivation in Guadalajara, i.e. from a garden plant with unknown wild origin :

TYPE. *E. Walther*, 2 April 1959, from plant cultivated at the University of California Botanical Garden (57.794) (CAS, no. 413924). This plant had been received from Señor Zabaleta from cultivated plants at Guadalajara, Jalisco, Mexico.

Glabrous, stemless, rosettes simple when young, giving out offsets belatedly; leaves crowded, about 25 in number, elliptic-oblong, acute or shortly acuminate, to 10 cm. long and 3 cm. broad, thick, evenly upcurved, nearly flat above, beneath rounded and keeled, with an obscure ridge above near one edge; inflorescence to 30 cm. tall, 2-branched; peduncle flexuose, to 4 mm. thick at base; bracts appressed, linear-lanceolate, acuminate, rounded beneath, concave above; branches secund-racemose; pedicels to 14 mm. long, strongly turbinate below calyx; sepals unequal, very thin, longest 5 mm. long, deltoid to ovate-deltoid, acute, appressed, connate at base and decurrent to petiole; corolla cylindroid, to 12 mm. long, 7 mm. in diameter near base, 5 mm. at mouth; petals neither keeled nor hollowed, but strongly connate with sepals and pedicels at base; carpels 8 mm. long, slender; nectaries narrow, oblique, to 2 mm. wide. Flowers from April on.

Color. Leaves yellowish oil-green to whitish, strongly tinged carmine above; peduncle oxblood-red; pedicels pompeian-red; sepals kildare-green; corolla peach-red to coral-red; petals orange inside; carpels whitish below, above apple-green; nectaries mustard-yellow.

Errors :

ovate-deltoid, acute, appressed, connate at base and decurrent to petiole; corolla cylindroid, to 12 mm. long, 7 mm. in diameter near base, 5 mm. at mouth; petals neither keeled nor hollowed, but strongly connate with sepals and pedi-

1. With a diameter of 7 mm at base and 5 mm at mouth, this corolla is urceolate, not cylindroid.

Under REMARKS Walther wrote :

pals much less connate, and pedicels only slightly turbinate. Both *E. chihuahuensis* and *E. lindsayana* have broader, relatively shorter leaves with red mucros, but are otherwise clear whitish green, and their sepals are scarcely decurrent.

2. The leaves of *E. lindsayana* are 5 – 9 x 3 – 4 cm, those of *E. colorata* are 10 x 3 cm – the difference clearly is insignificant.

Until the lost *E. tobarensis* is recollected from its type-locality, no certainty exists that our concept of this is correct, and that *E. colorata* might not have to be reduced to a synonym.

3. To suggest that *E. colorata* could be a synonym of the imperfectly known *E. tobarensis* instead of noticing its obvious resemblance with the almost simultaneously described *E. lindsayana* is not comprehensible.

In the Key to Series *Urceolatae* Walther stated that *E. colorata* is from Jalisco and Michoacán :

F. Leaves narrowly oblong, heavily tinged carmine on whitish ground; sepals deltoid, appressed, decurrent into turbinate pedicel. Cultivated at Guadalajara, Jalisco; Michoacan. 12. <i>E. colorata</i>

4. This is wrong : *E. colorata* is only known from **gardens** in Guadalajara, and the indication of Michoacán is fiction.

Comment :

The plant Walther described as *Echeveria colorata* was - like *E. lindsayana* - a plant from cultivation. While the origin of the latter was completely unknown, the former had been cultivated in a garden in Guadalajara. The descriptions of *E. colorata* and *E. lindsayana* were produced more or less simultaneously as can be deduced from the designation dates of the respective holotypes : April 2, 1959 for *E. colorata*, April 8, 1959 for *E. lindsayana*. The differences between the two plants are so insignificant that it is incomprehensible why Walther considered them two distinct species. Again a text that leaves much to be desired in terms of accuracy.

13. Echeveria tobarensis Berger (p. 92)

This plant was first described by Rose in *Contrib. U.S.Nat. Herb.* 13: 301, 1911 as *Urbinia lurida* :

Urbinia lurida Rose, sp. nov.

Leaves clustered in a dense rosette, very thick, ovate, acuminate, glabrous, purple or lurid in color, 3 to 4 cm. long, 1.5 to 2.5 cm. broad at widest point; flowering stem 25 cm. long, two-branched in only specimen seen; stem leaves small, bract-like, scattered; sepals small, ovate, acute; corolla 6 to 7 mm. long; petals acute, erect except the small outturned tip; carpels distinct to the base.

and reclassified as *E. tobarensis* by Berger in *Engler, Nat. Pflanzenfam.* ed. 2, 18a: 476, 1930.

In the absence of any useful plant, Walther had to content himself with quoting Rose's description.

No comment.

32. Echeveria cuspidata Rose (p. 143-145) and Echeveria parrasensis E. Walther (p. 93-96)

The description of *E. cuspidata* was published in *Bull. New York Bot. Gard.*, 3: 9, 1903 :

Echeveria cuspidata Rose, sp. nov.

Acaulescent; leaves in a dense rosette, sometimes a hundred or more, very glaucous on both sides, somewhat tinged with red, obovate in outline, about 6 cm. long, often 3.5 cm. broad at widest point, cuspidate; flowering stalk 2–4 dm. long, glabrous and pale, sometimes rose-colored, bearing throughout its length scattered small ovate leaves free at base and acute at each end; inflorescence a simple secund raceme, at first strongly nodding, about 15-flowered; buds arranged in two rows, obtusish; lower pedicels elongated, 10 mm. long or less; sepals unequal, all much shorter than the corolla, ovate, acute; corolla 1 cm. long, purplish with yellowish slightly spreading acute tips, the lobes united for about one fourth their length; stamens 10, all inserted on the corolla-tube, the 5 opposite the sepals inserted at the top of the tube, the other 5 inserted a little lower down on the tube; carpels erect, free to the base.

It was made from plants collected by **Dr. E. Palmer in 1902 at Saltillo, Coahuila (Rose 509)**, i.e. the **type locality of *E. cuspidata* Rose is Saltillo**. *E. cuspidata* has also been found S and SE of Saltillo and at Parras (ca 100 miles W of Saltillo) as the respective herbarium specimens attest.

Herbarium specimens of *E. cuspidata* from the Saltillo region :

1. Collected by Dr. E. Palmer, also in 1902 and also as Rose 509, at Concepcion del Oro, Zacatecas (CAS 147128). The determination label indicates "***Echeveria cuspidata* Rose sp. nov.**, flowered June 1905." The specimen consists of a very small, little developed inflorescence and 4 small leaves not corresponding to those of *E. cuspidata*.

Another specimen of Rose 509 from Saltillo at NY (16714), consisting of a simple inflorescence and 2 rather fragmentary leaves, determined as ***E. cuspidata***, was commented by Walther thus : "This appears to be *E. parrasensis* sp. nov."

2. Collected by Dr. E. Palmer, again in 1902 at **Saltillo** (Rose 570) (F 599260), flowered in Washington May 1905, determined as "***Echeveria cuspidata* Rose**", annotated by Walther as "very near *E. corderoyi* Baker". The specimen consists of 3 simple inflorescences of variable length and a part of a flower stalk with numerous bracts. A specimen of the same gathering at Kew has in addition 3 single leaves and corresponds to that at F. [*E. corderoyi* Baker] is of course wrong, it should read either "*Cotyledon corderoyi* Baker" or "*Echeveria corderoyi* (Baker) Morren".]

3. Collected by Dr. E. Palmer in 1904 in the Cañon of the Big Waterfall, Chayo Grande, 24 miles **SE of Saltillo**, (CAS 411333). The specimen consists of two tall inflorescences, one bifurcate, the other trifurcate, and 4 incomplete leaves. It was determined as ***E. cuspidata* Rose**, however by Walther redetermined as **paratype of *E. parrasensis***.

4. Collected by C.G. Pringle 11 April 1906 in the San Lazaro Cañon, mountains **near Saltillo** (Pringle 13874) (GH, US), consisting of rosettes and several simple inflorescences, determined as "***Echeveria cuspidata* Rose**", annotated by Walther "OK".

5. Collected by Reid Moran in 1957 at a mountainside above Puerto Flores, 22 miles **± SE of Saltillo** (M 6294), determined by Moran as ***E. cuspidata***, redetermined by Walther as "*Echeveria parrasensis* E. Walther". There are several specimens of M 6294, showing rather long inflorescences, most of them bifurcate.

Herbarium specimens of *E. cuspidata* from Parras :

1. Collected by C.A. Purpus 17 March 1904 (Rose 965), **Parras**, (US 431439), determined as "*Echeveria cuspidata*", redetermined by Walther as "*Echeveria parrasensis* E.W. Isotype". The sheet consists of two very small bifurcate inflorescences and 6 single leaves.

2. Collected by C.A. Purpus 1905 **at Parras**. Three specimens are available online, two of them, namely US 74114 (Rose 433) and US 74115 (Rose 433) belong together : Purpus had sent 1905 the respective plant not only to Rose but also to A. Berger, La Mortola.

- US 74114 (Rose 433) consists of an envelope with a letter and a drawing by Berger showing a rosette with a simple inflorescence and a few flowers, with short indications regarding size and colour etc, clearly representing *E. cuspidata*. Berger however – failing to consult Rose's description of the then newly published *E. turgida* - erroneously considered it to be the latter and annotated his sketch as "*Echeveria turgida* Rose". Walther redetermined it as "*E. parrasensis* sp. nov." in 1959.

- US 74115 (Rose 433), determined as "*Echeveria*", designated by Walther as "*E. parrasensis* E.W. isotype". The specimen consists of a very small simple inflorescence and 5 fragmentary leaves.

- US 74116 (Rose 434), with a tag reading "*Echeveria turgida* ? Parras", determined as "*Echeveria*". Obviously the plant had also been collected in the region of Parras, but it is undoubtedly *E. cuspidata*, not *E. turgida*. Walther designated it as "*Echeveria parrasensis* E.W. Holotype". The specimen consists of a long bifurcate inflorescence and 5 single leaves.

3. Collected by C.A. Purpus 1332, March 1905, **rocks in cañon, Parras**, three specimens are available online :

- MO 574, consisting of a rather small bifurcate inflorescence, a short part of a flower stalk and 3 single leaves, determined as "*Echeveria cuspidata* Rose", was redetermined in 1933 by "Eric Walther" as "*Echeveria cuspidata* C.A. Purpus, not Rose = *Echeveria simularis* Rose".

- F 192896, consisting of a small bifurcate and a simple inflorescence, determined as "*Echeveria cuspidata* Rose", was redetermined by Walther 8/15/58 as "*Echeveria parrasensis* sp. nov. ined., paratype".

- the third one at the Herbarium of Rancho Santa Ana Botanic Garden, consisting of two small bifurcate inflorescences, designated as *E. cuspidata* Rose – was not found by Walther and therefore escaped his redetermination !

In a nutshell : While Rose indicated the inflorescence of *E. cuspidata* as "a simple secund raceme", the specimen Palmer US 399881 from the region of Saltillo shows 1 bifurcate and 4 simple inflorescences, Palmer CAS 411333 from the Big Waterfall shows two tall inflorescences, one bifurcate and one trifurcate, and specimens of M 6294 have 2- to 3-branched inflorescences. Specimens of *E. cuspidata* at Parras have simple or more often bifurcate inflorescences. So it is fair to say that *E. cuspidata* inflorescences vary from simple to 3-branched. Specimens of both localities agree regarding shape and size of flowers. Several specimens are lacking leaves or rosettes, when leaves are present it is obvious that plants from the Saltillo region have somewhat blunter leaves than those from Parras.

In any case there is no reason at all to treat *E. cuspidata* from Parras as a species entirely separate / different from *E. cuspidata* from Saltillo as Walther did.

Walther by his own admission did not have a living plant from the type locality of *E. cuspidata* at Saltillo. As usual this did not prompt him to quote Rose's description, i.e. could not dissuade him to make a description of his own. For this purpose he used a plant he himself had collected at El Tunal – according to Reid Moran a doubtful locality because it cannot be traced back.

oblique, 1.5 mm. wide. Flowers from February on. Description of living material collected near San Juan, not far from El Tunal, Mexico, flowered at Golden Gate Park, San Francisco.

As type he indicted :

TYPE. Vicinity of Saltillo, Coahuila, Mexico, Palmer, 1902/R-509 (US, no. 397916).

However very obviously Walther had forgotten that he had also listed this type specimen in the protologue of *E. parrasensis* (published 1959) as paratype of the latter ! In the monograph the term "paratype" was replaced by "collection" – but the statement remains the same : The collection locality of the type of *E. cuspidata* is also the collection locality of *E. parrasensis* – what simply means that *E. cuspidata* and *E. parrasensis* are one and the same plant !

Likewise Walther did not have a living plant from Parras :

When in Parras in 1937, I failed to locate any trace of this, and only the rediscovery by Dr. Reid Moran enables me to settle the matter finally.

So for his description of *E. parrasensis* he resorted to Moran's collection of *E. cuspidata* from 22 km SE of Saltillo (M 6294) – overlooking that it was from the region of Saltillo, i.e. the region of the type of *E. cuspidata*, not from Parras :

subapical mucro; carpels 7 mm. long; nectaries oblique, narrowly elliptic, to 1.75 mm. broad. Flowers from March on, based largely on R. Moran, 58/6294 (UCBG).

In short : Walther's basis was a plant from El Tunal (somewhere in the Saltillo region) which he considered to be *E. cuspidata*, and M 6294, a plant also from the Saltillo region, identified by Moran as *E. cuspidata*, which he erroneously thought to have originated at Parras and therefore described as *E. parrasensis*. In other words, his basis were two plants from more or less the same region which he tried to present in a manner that they should look as two clearly different species what he further endeavoured to substantiate by classifying them into two different series. Walther's description of *E. parrasensis* is in parts literally identical with Moran's own description of M 6294 as *E. cuspidata*, i.e. it is nothing else than a redescription of *E. cuspidata*. This he could easily have noticed if he had not been obsessed with the fixed idea to prove with all possible means that *E. cuspidata* and *E. parrasensis* were two completely different species.

REMARKS. This species has long remained unrecognized because of its superficial similarity to *E. cuspidata* which is from the same part of Mexico. The latter differs in having relatively thinner, broader, blunter leaves, an inflorescence that is always a simple secund raceme, and larger sepals and larger corolla. My concept of *E. cuspidata* is based on living plants I collected near El Tunal, which agreed perfectly with the very clear watercolor of the type-

As main differences between *E. parrasensis* and *E. cuspidata* Walther indicated that

- *E. cuspidata* always has a simple inflorescence, what according to the above listed specimens is not correct,

- sepals and corolla are larger, what according to the above listed specimens likewise is not correct and

- leaves are thinner, broader and blunter. The latter is correct, whether they are thinner is impossible to verify by means of herbarium specimens.

Incidentally Walther's comparison is of course not based on Rose's description of *E. cuspidata* but solely on the plant from El Tunal he had used for his description of *E. cuspidata*.

Errors in Walther's text about *E. parrasensis* :

subapical mucro; carpels 7 mm. long; nectaries oblique, narrowly elliptic, to 1.75 mm. broad. Flowers from March on, based largely on R. Moran, 58/6294 (UCBG).

1. The collection date is not correct, it is **1957**, not 1958.

TYPE. *C. A. Purpus*, 04/R: 965, collected near Parras, Coahuila, Mexico (US, no. 431439).

2. This specimen was originally determined - presumably by Rose himself - as *Echeveria cuspidata* Rose. At an unknown date the very same specimen was redesignated by Walther as isotype of *E. parrasensis* to finally become the holotype of *E. parrasensis* in the protologue published in 1959. And Walther seems to have completely forgotten that he had - again at an unknown date - already Purpus 05 / Rose 434 (US 74116) - a specimen annotated as "*E. turgida* ?" - determined as holotype of *E. parrasensis* (explained above). That means this type indication is complete nonsense and it is incomprehensible why Walther didn't designate a type that belonged to the same gathering as that on which he based his description, namely M 6294, which he erroneously thought to originate at Parras.

Under COLLECTIONS the following indications are published :

COLLECTIONS. Mexico. Coahuila: Saltillo, Palmer, 02/R-509 (MEXU);

3. This is the **type specimen** of *E. cuspidata* Rose and its listing by Walther under COLLECTIONS of *E. parrasensis* is downright nonsense. Of course it is deposited in **US**, not in MEXU.

Patagalana, on limestone rocks southeast of Parras, Purpus, 05/1332 (F,GH,MO,UC,US); Cañon of the big waterfall, Chayo Grande, 24 miles southeast

4. On the respective herbarium sheet no such locality is indicated, only "Parras, rocks in cañon" and the sheet is determined as *E. cuspidata* Rose. In 1933 it was redetermined by Walther as "*E. cuspidata* Purpus not Rose = *E. simularis* Rose" and 1958 it was designated as **paratype** of *E. parrasensis* sp. nov. (explained above).

MO,UC,US); Cañon of the big waterfall, Chayo Grande, 24 miles southeast of Saltillo, Palmer, 04/42 (CAS,GH,US). Cultivated: Puerto Flores, Coa-

5. "Palmer 04/42" is a specimen which originally was also determined as *E. cuspidata* Rose and in 1958 redetermined by Walther as "very near *E. corderoyi* Baker" (see comment on 8c. *E. agavoides* var. *corderoyi*).

of Saltillo, Palmer, 04/42 (CAS,GH,US). Cultivated: Puerto Flores, Coahuila, 22 miles from Saltillo, on new route 75, R. Moran, 57/6294 (CAS,CU,SD,UCBG).

6. "Cultivated" is not correct. Puerto Flores is the **collection** locality of M 6294, not a cultivation locality.

In short :

- 3 of the 4 collections listed by Walther regarding *E. parrasensis* are from Saltillo or SE of Saltillo, i.e. from the region of the type locality of *E. cuspidata*, only Purpus 1332 is from Parras.

- Palmer 1902 & Palmer 1904 as well as Purpus 1332 had been determined as *E. cuspidata* Rose, and Moran considered M 6294 also as *E. cuspidata*, i.e. all 4 specimens were designated as *E. cuspidata*.

In other words : Walther had redetermined unquestionably identified *E. cuspidata* specimens as *E. parrasensis*. But that's not all, in the protologue he had even listed these 4 collections as **paratypes** of his newly described *E. parrasensis*. Obviously the editor of the book shied away from publishing this nonsense and replaced "Paratypes" with "Collections"- although he was strictly forbidden to make any change in Walther's text.

7. The Key to Series *Urceolatae* states :

D. Leaves gray- to whitish-green; corolla 11 to 14 mm. long.
E. Leaves thinnish, long-acuminate, pulverulent. Parras, etc., Coahuila. 14. *E. parrasensis*

Thinnish and long-acuminate leaves do not figure in Walther's description of *E. parrasensis*.

8. Under REMARKS Walther wrote :

C. A. Purpus sent living plants to Dr. Rose, to A. Berger at La Mortola (of which last a sketch by his hand is in the U. S. National Herbarium), and also to his brother, then director of the botanic garden at Darmstadt. A picture and

The sketch is US 74114, erroneously annotated by Berger as *E. turgida* - in fact undoubtedly representing *E. cuspidata* – redetermined by Walther 1959 as "*E. parrasensis* sp. nov. " (see list of specimens above).

which last a sketch by his hand is in the U. S. National Herbarium), and also to his brother, then director of the botanic garden at Darmstadt. A picture and description of the last, as *E. cuspidata*, appeared in *Kakteenkunde*, loc. cit.

9. It is correct that Purpus also sent plants to his brother J.A. Purpus at the Botanical Garden at Darmstadt, and this for many years and in large quantities, but this indication by Walther is simply wrong : The plant in question, received at Darmstadt 1905 and photographed by J.A. Purpus, originated at **Ixmiquilpan, Hidalgo**, not in Coahuila, so could not possibly be *E. cuspidata*. Rather it is the only much later (in 1958) by Matuda described *E. tolimanensis* – for someone not familiar with the then newly published *E. cuspidata* and its geography like J.A. Purpus somehow resembling the

latter. So he captioned his photo as "*Echeveria cuspidata* Rose" and completed the publication with a German translation of Rose's description, 'correcting' Rose's text however insofar as the inflorescence is no longer simple but bifurcate (correct for the plant on his photo, i.e. *E. tolimanensis*).

Back to Walther :

Unlike J.A. Purpus he was aware that the plant on the photo was not *E. cuspidata* Rose. His conclusion : This clearly represented his new species *E. parrasensis* ! (p. 56 he wrote : "My new *E. parrasensis* was grown here [in Darmstadt] too and published as *E. cuspidata*.") That it did not correspond to M 6294, the plant he had used for his description, he evidently ignored completely. The unbridled ambition to bring another new species into the world blinded him to the obvious. And in accordance with this misinterpretation he indicated it as synonym of *E. parrasensis*, calling it "*Echeveria cuspidata* J.A.Purpus; not *E. cuspidata* Rose " – overlooking that the German description was a the translation of Rose's English description of *E. cuspidata*. So the later *E. tolimanensis* Matuda mutated to *E. parrasensis* Walther and the correct description of *E. cuspidata* Rose became the description of *E. parrasensis* Walther – what nonsense ! ! ! And an "*Echeveria cuspidata* J.A.Purpus; not *E. cuspidata* Rose" is of course also complete nonsense.

Errors in Walther's text about *E. cuspidata* :

TYPE. Vicinity of Saltillo, Coahuila, Mexico, *Palmer*, 1902/R-509 (US, no. 397916).
OCCURRENCE. Mexico. Coahuila: Canyon southeast of Saltillo (variously known as San Lazaro Canyon, Arteaga Canyon, or the Canyon of the Big Waterfall); Chayo Grande; near El Charro; near San Juan, not far from El Tunal.
COLLECTIONS. Mexico. Coahuila: vicinity of Saltillo, *Palmer*, 02/R-509 (US, type); near Saltillo, *Palmer*, 02/R-570 (R-509?), (GH,US); Canyon

1. "Cañon of the Big Waterfall", "Chayo Grande" and "vicinity of Saltillo, Palmer, 02/R-509" are all also listed as collection localities of *E. parrasensis*.
2. According to Palmer, the Cañon of the Big waterfall and Chayo Grande are one and the same locality.
3. "Palmer, 02/R-570": This specimen Walther had redetermined as "very near *E. corderoyi* Baker" and on p. 85 of the monograph announced to treat it as *E. parrasensis* ! (see list of specimens above).

Mexico. My own concept is based largely on Walpole's excellent watercolor of what undoubtedly was Rose's type, and US photograph number 170.

4. The leaves of *E. cuspidata* on the photo evidently are not thinner than those of *E. parrasensis*.

The illustration in Kakteenk., 1907, figure 185, is of *E. parrasensis*, while J. A. Purpus' description is a compromise.

5. As already explained above fig. 185 in *Monatsschr. Kakteenkunde* is *E. tolimanensis*, not *E. parrasensis* and J.A. Purpus' description is the literal German translation of Rose's English description of *E. cuspidata*, not a compromise.

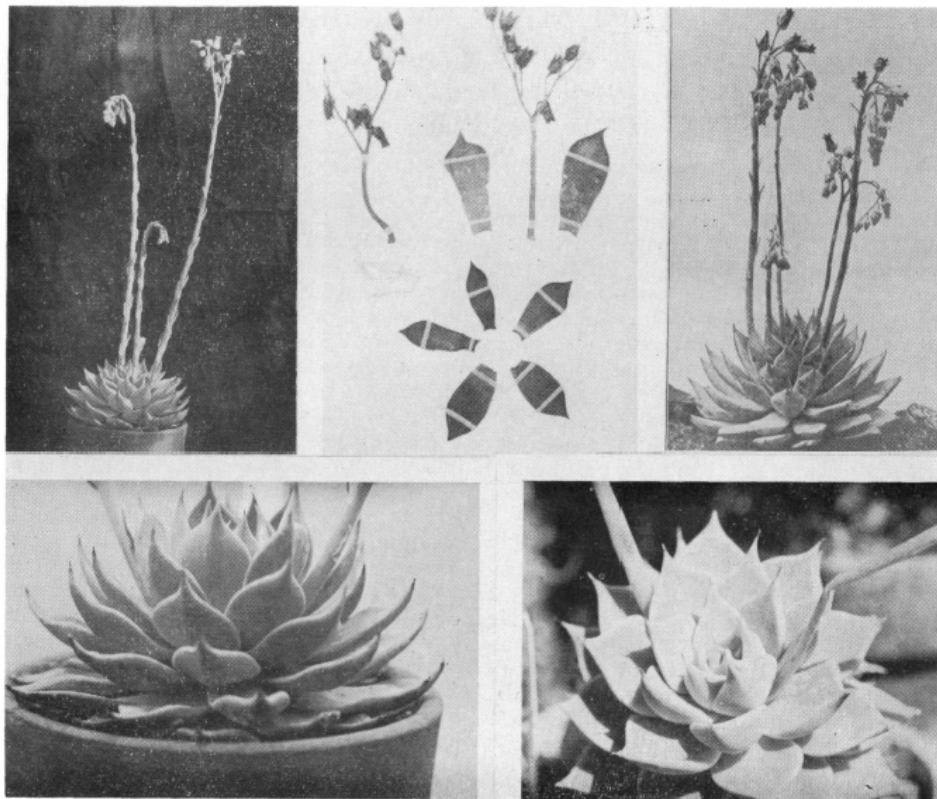
The species here contrasted all belong in the series *Urceolatae*, while *E. cuspidata* is much better placed in the series *Secundae*, in which it would come near *E. turgida*.

6. Unfortunately Walther refrains from explaining why *E. cuspidata* – in spite of its urceolate corolla and the resemblance to many species of Series *Urceolatae* - "is much better placed in the Series *Secundae*".

Again the photos figs. 34, 36 – 38 are not credited to Reid Moran.

Comment to the photos illustrating the protologue (*Cact. Succ. J. (Los Angeles)* 31, fig. 33, 1959) representing 3 different plants :

100 CACTUS AND SUCCULENT JOURNAL OF THE



- Upper left, centre left, bottom left & right show M 6294.

- Upper middle shows the specimen US 431439, originally determined as *E. cuspidata*, however this original label as well as Walther's own label stating the specimen US 431439 to be the **isotype** of *E. parrasensis* are completely suppressed.

- Middle right a plant from Cornell University, no data, very likely this is also M 6294 as Moran had also given a plant to Charles Uhl for a chromosome count.

- Upper right shows the photo of the plant from *Monatsschr. Kakteenkunde* 1907, listed as synonym of *E. parrasensis*, in fact representing *E. tolimanensis*.

In short : M 6294 is the plant from Puerto Flores (not from Parras) Walther had used for his description ignoring that it was not from the type locality. US 431439 is *E. cuspidata* Rose and the photo in *Monatsschr. Kakteenkunde* shows *E. tolimanensis*.

Comment :

E. cuspidata / *parrasensis* is a showpiece of Walther's not only absolutely negligent but actually criminal way of working : To justify *E. parrasensis* as a species distinct from *E. cuspidata* Rose, Walther was ready to use any means possible, not stopping to redesignate specimen clearly identified by authorities like Rose. However by indicating the same herbarium specimens and the same collection localities for both, he - without noticing it – fell for his own ways by giving the counter-evidence for his claim : plants which are based on the same herbarium specimens and occur at the same localities are one and the same and not two different species and as a matter of course belong in the same series. The texts about *E. cuspidata* and *E. parrasensis* are of course of no use at all.

15. *Echeveria elegans* Rose (p. 97-99)

E. elegans was described by Rose in *N. Amer. Fl.* 22: 22, 1905 from a plant collected by Rose himself in the mountains above Pachuca in 1901 and at the same locality again in 1903 :

37. *Echeveria elegans* Rose, sp. nov.

Leaves numerous, in cultivated specimens 80–100, in wild specimens fewer and smaller, in both forming a very compact rosette, very glaucous, of a pale bluish-green color, very turgid, the margins translucent or in wild specimens reddish, 3 cm. long in wild specimens to 5–6 cm. in cultivated specimens, 2.5 cm. broad near the apex, rounded at apex, except the central ones, and these mucronate-tipped. Flowering branches 10–20 cm. long, pinkish, with 8–12 pinkish leaves; flowers 5–7 in a secund raceme; sepals bright-colored, very unequal, often toothed near the base, ascending, not appressed to the corolla; buds broadly oblong in outline, acutish; corolla 10 mm. long, its segments distinct nearly to the base, pinkish with yellow spreading tips, but connivent in age; stamens all borne on the corolla, attached just above its base, $\frac{2}{3}$ its length; scales broad; carpels distinct, tapering into slender styles.

Collected by J. N. Rose in the mountains above Pachuca in 1901 and flowered in Washington, February, 1904 (no. 960, type); collected again in 1903 at the same locality (no. 737).

Walther's text

Though Walther did not have a plant that was unambiguously identified as *E. elegans*, he preferred not to quote Rose's description and to make one of his own :

scarcely keeled, erect but slightly spreading at tips, with shallow basal hollow; nectaries thin, very oblique. Flowers from March on. Description of material long cultivated in California gardens.

... using "material long cultivated in California gardens", i.e. plants of unknown origin and therefore of doubtful identity. So it is no surprise that it deviates from Rose's description : Walther's plants have shorter inflorescences, a longer corolla and are not only caespitose but also soboliferous – not mentioned at all by Rose. "Soboliferous" means offsetting by **underground** runners – this is clearly not true for *E. elegans*. And Walther's statement (p. 58) that what he considered to be *E. elegans* was "traceable to Dr. Rose's introductions" is obviously not true.

Errors :

1. Under REMARKS Walther wrote :

Under *E. elegans*, Poellnitz publishes the var. *kesselringiana*, which appears identical with a plant received from Mexico, without any definite locality, which herein is treated as a valid species, i.e., *E. albicans*. The latter differs from *E. elegans* as stated under no. 18.

Walther erred. The var. *kesselringiana* is not identical with *E. albicans*.

Dr. Rose's type material may have come from cultivated plants, for *E. elegans* is much cultivated in Mexico, as in Pachuca in front of my hotel, in various parks and squares, where it is often planted in fancy designs of alligators, tortoises, etc., a practice that may antedate the Conquest. One such famous planting is the spectacular "fence of conchas" near Omitlan (Cactus and Succ. Jour. Amer., vol. 6, p. 138, fig. A6, 1935), where I was informed that the real home of *E. elegans* was near a prominent peak known as "Penas de Jacal."

2. The fact that Walther did not find *E. elegans* in the mountains above Pachuca - the type locality according to Rose - some 30 years after Rose had collected it there, is no reason to imply that Rose's

material came from cultivated plants and that the correct type locality is "Penas de Jacal" – an information Walther obviously omitted to verify. Moreover "mountains above Pachuca" is a broad term, not an exact location. And while he insinuates that Rose's type plant may have come from cultivation, i.e. not a plant from the type locality, on p. 58 he claims that his *E. elegans* "long cultivated in Californian gardens", is "traceable to Dr. Rose's introductions" – what obviously is not true in view of the differences between the plants from Californian gardens and the type. Because he himself could not find the plant at the type locality, he belittles Rose by insinuating that he himself also had not found anything there, but when it comes to enhancing his own plants of unknown origin, Rose is good enough to serve as a source of supply.

3. The indications in the Key to Series *Urceolatae* do not agree with the description of the type by Rose :

F. Leaves thickest towards middle, thinner towards apex, acute; corolla cylindroid-urceolate; pedicels mostly slender, not turbinate; nectaries narrow. 15. *E. elegans*

Comment :

Instead of citing the original description by Rose Walther made a new description from plants of unknown origin, long in cultivation in California and not well corresponding to *E. elegans* Rose - again a useless description.

15b. *Echeveria elegans* var. *hernandonis* E. Walther, new. (p. 99-101)

The backstory :

When visiting the Hacienda del Carmen near Omitlan, Hidalgo, Walther collected plants which he considered not to be "the typical *E. elegans* of Dr. Rose" but rather *E. simulans*. "It had much in common with var. *simulans*, previously known only from its type locality near Monterrey, but distant nearly 400 miles" wrote Walther. Subsequently the plants were cultivated in his collection at Golden Gate Park and in Victor Reiter's nursery. Several specimens were prepared:

- **3/31/59** (CAS 414605) determined by Walther as "***E. simulans*** Rose, Hidalgo, Hda del Carmen, flowered at V. Reiter, 1959," consisting of 3 rosette leaves and an inflorescence with 7 flowers.

- **4/14/59** (CAS 413920) also determined by Walther as "***E. simulans*** Rose, V. Reiter coll. (from Hda del Carmen, Hidalgo, 1957) / *E. elegans* var. *simulans* (Rose) Poellnitz, in Fedde; 39: 239, 1936." It consists of 2 inflorescences, each with 2 rosette leaves. One of the inflorescences however does not agree.

Walther also sent a plant to Charles Uhl labelled *E. simulans*.

- **5/1/59** a new specimen was prepared, clearly from the same plants, annotated as "***E. elegans* var. *hernandonis***, var. nov. Type. cult. by V. Reiter, SF, from Hda del Carmen, Hidalgo" and on a second label, twice as big, is repeated : "*E. elegans* var. *hernandonis* var. nov. Type. Park Nursery" (CAS 411551). It consists of 5 rosette leaves and an inflorescence with 6 flowers.

So within half a month *E. simulans* Rose from V. Reiter's garden became the type of Walther's new *E. elegans* var. *hernandonis*.

Walther's description :

Freely soboliferous even when young; rosettes subglobose, with few (12) to many (25) leaves, these with crystalline epidermis and hyaline margins, glaucous-pulverulent, obovate-oblong, to 75 mm. long and 30 mm. broad, thickest just above middle, noticeably upcurved to apex, this finely mucronate, shallowly concave above, convex beneath, not keeled; inflorescences one to three, secund-racemose, 12 cm. tall or less; peduncle laxly spreading-ascending; bracts about eight, recurved, narrowly-oblongate, acuminate, aristate-apiculate, at base spurred, to 20 mm. long; raceme rarely with more than eight flowers; pedicels to 10 mm. long, slightly turbinate; sepals very unequal, smaller 4 mm. long and oblong, the larger to 10 mm. long, elliptic-oblong to oblanceolate, acute, the base of the largest with distinct sutures at junction with the adjoining smaller sepals; nectaries narrowly-lunate, oblique, 2 mm. wide. Flowers from April on.

Color. Leaves light cress-green, greenish glaucous; peduncle corydalis-green; bracts mytho-green, glaucous; pedicels light vinaceous fawn; sepals as bracts; corolla eosine-pink below; petals at tips and inside chalcedony-yellow; carpels whitish; nectaries and styles apple-green.

Errors :

to many (25) leaves, these with crystalline epidermis and hyaline margins, glaucous-pulverulent, obovate-oblong, to 75 mm. long and 30 mm. broad, thickest just above middle, noticeably upcurved to apex, this finely mucronate,

1. In the Key to Series *Urceolatae* the leaves are only "to 7 cm long".

Under REMARKS Walther wrote :

much in common with var. *simulans*, previously known only from its type locality near Monterrey, but distant nearly 400 miles. Since von Poellnitz had seen fit to reduce *E. simulans* to a synonym of *E. elegans*, I feel that a more adequate concept of these forms would follow their treatment as varieties.

2. This is wrong, von Poellnitz had reduced *E. simulans* to a **variety** of *E. elegans*, not to a synonym.

3. The plant described by Walther as *E. elegans* var. *hernandonis* was recollected at the type locality by Reid Moran 3 Dec 1962 and his photographs are used to illustrate this variety – again without indicating that Moran was the photographer (figs 40 & 41) :

Figure 40. 15b. *Echeveria elegans* Rose var. *hernandonis* E. Walther. Inflorescence, $\times 2$. Plant flowering in San Diego 6 June 1964; collected at El Carmen, Hidalgo, Mexico, the type locality (Moran 10076B).

Figure 41. 15b. *Echeveria elegans* Rose var. *hernandonis* E. Walther. Flowering plant, $\times 0.75$. Plant photographed in San Diego 16 May 1964; collected at El Carmen, Hidalgo, Mexico, the type locality (Moran 10076).

While the editor captioned them as var. *hernandonis*, in Moran's Notes the plant from El Carmen, Hidalgo is nothing else than plain *E. elegans*. In his Review of Walther's monograph 1972 Moran wrote : "The new *E. elegans* var. *hernandonis* does not appear to differ from the typical variety." And the "sutures" highlighted by Walther are not even mentioned in Moran's very detailed description.

Comment :

As Walther's text concerning *E. elegans* reveals, he did not know the true species but only plants of unknown origin, for a longtime cultivated in Californian gardens, with the result that he was not able to identify the plants at the Hacienda del Carmen correctly as *E. elegans* Rose but considered them to be *E. simulans*. Why he did not classify them with the latter but - completely unexpectedly - renamed them as *E. elegans* var. *hernandonis* we are not told.

E. elegans var. *hernandonis* Walther is nothing else than plain *E. elegans*. Needless to mention that it deserves no further attention.

15c. Echeveria elegans var. tuxpanensis E. Walther, new. (p. 101-102)

Walther had never seen a living plant of this variety but described it from a herbarium specimen :

Leaves oblong-ob lanceolate, cuneate, acute to shortly acuminate, 30 to 35 mm. long, 10 to 12 mm. broad; inflorescence simply racemose, 15 cm. tall, with 10 to 12 flowers; pedicels slender, to 10 mm. long, turbinate beneath calyx; sepals unequal, the longest to 8 mm. long and with distinct sutures at base, deltoid to ovate-lanceolate, acute to acuminate; corolla 12 to 14 mm. long; petals apparently thin, neither keeled nor much hollowed within at base; at tips erect or scarcely spreading.

As its type he indicated :

TYPE. *G. Hart Schiff and Purpus*, Rose 04/961 on rocks in cañon near Tuxpan, Jalisco, Mexico. (US, type; NY, isotype.)

Errors :

This information is in two respects defective :

1. It should read "Rose 04/ 962" not 04/961 and
2. it is not "G. Hart Schiff", but "Geo. Hart Schiff".

However much more important is the following :

The type is US 399652. The determination label reads : "*Echeveria turgida* Rose, sp. nov. (flowered January, 1905) Viesca **Coahuila**. C.A. Purpus (**Rose 962**) **1904**."

The isotype is NY 04107091, its determination label reads : "*Echeveria turgida* Rose sp. nov. / Rocks in Cañon at Tuxpan, **Jalisco** / Geo. Hart Schiff & Purpus (**Rose 962**) **1904**." And in another hand, probably added later : "Co-Type", i.e. this specimen is doubtlessly the co-type of **Rose 962**.

That means : US 399652 and NY 04107091 concern *E. turgida*.

Walther discovered this specimen 5/15/58.

Under REMARKS Walther wrote :

The original material was misfiled under *E. turgida*, as "cotype," but that is quite another species, belonging to a different series, with much longer spreading sepals, different, truncate, and mucronate leaves, and an angular corolla. The

To write that *E. turgida* has "much longer spreading sepals" and "truncate" leaves is clearly wrong : Rose's description indicates "sepals ... the larger ones 6 mm long, the two smaller minute" and the leaves are spatulate-oblong and not truncate.

Much more interesting however is the question : Why did Walther come up with the idea that "the original material was misfiled" ?

Of course Walther knew that *E. turgida* originated from **Coahuila**, not from Jalisco and that it was collected by C.A. Purpus (not by Geo. Hart Schiff & Purpus). So there was something wrong with the label – either it was the name of the pressed plant or the collectors names and the collection locality. To find out whether the name is correct, that is, whether the Geo. Hart Schiff & Purpus specimen was rightly called co-type of *E. turgida* and rightly had the same number as the type of *E. turgida*, it would have been sufficient to compare it with the type of *E. turgida*. Doing this Walther would have noticed that the co-type specimen is a perfect match for the type specimen, i.e. that the **name is correct**. From this it follows that it is the information regarding the **collection locality and the names of the collectors** which is **not correct**. But such a realisation was deeply not in Walther's interest : Declaring the **name invalid** enabled him to make the specimen Geo. Hart Schiff & Purpus the type of a new species that he was to create. That was much more to his liking, although he had to admit that he had not seen any living material. And he ended up by designating the cotype of *E. turgida* Rose (R 962) as type of his newly created *E. elegans* var. *tuxpanensis* – a veritable stroke of genius

And still under REMARKS Walther stated :

This variety occurs so close to Guadalajara, it may even be in cultivation there.

And in the Key to Series *Urceolatae* Walther indicated :

I. Leaves shorter, narrower, probably nearly straight. Tuxpan, Jalisco. 15c. *E. elegans* var. *tuxpanensis*

Both statements refer to the wrong locality information on the specimen from NY and are of course pointless.

Comment :

The specimens Walther is referring to represent *E. turgida*. There exists no *E. elegans* var. *tuxpanensis* – the latter is an invention of Walther, a phantom, but has been handed down in literature since Walther's publication. Why has nobody ever thought it necessary to question and verify Walther's claim that the specimen he indicated was "misfiled" ? ? ?

15d. *Echeveria elegans* var. *simulans* (Rose) Poelln. (p. 102-103)

When describing *E. simulans* Rose first mentioned its similarity with the previously described *E. elegans*. He noted that *E. simulans* has more open rosettes than *E. elegans*, somewhat thinner leaves, a narrower corolla and narrower, more appressed sepals. These are no major differences, but evidently they were important enough for Rose to classify *E. simulans* as a distinct species, not in a direct relationship to *E. elegans*, and rightly so - everyone who knows these plants will agree with him :

38. *Echeveria simulans* Rose, sp. nov.

Very similar to *E. elegans*, but rosettes flatter, the leaves at most spreading, never reflexed, thinner especially in the upper half; numerous, somewhat mucronate. Flowering branches at first nodding, becoming erect, pale below, pinkish above; stem-leaves linear, small and bract-like; sepals pinkish, unequal, narrow, acute, appressed to the corolla; corolla narrow, the base rose-colored, the tips of the lobes and inner surface yellow; carpels more or less spreading when mature.

Collected by C. G. Pringle in a cañon near Monterey, Mexico, in 1903; flowered in Washington in 1904 and 1905 (Rose no. 768).

It differs from *E. elegans* in habit and leaves, as mentioned above, has a narrower corolla, and narrower and more appressed sepals.

Walther's text

Walther apparently was of the same opinion because in the protologue of *E. hyalina* (*Cact. Succ. J. (Los Angeles)* 30: 43-44, **1958**) he indicated *E. simulans* as a **species**, not as a variety of *E. elegans*. However – as the text in the monograph shows - he subsequently changed his mind without explaining why, and published *E. simulans* as a variety of *E. elegans*, herewith adopting von Poellnitz's new combination which the latter had made based on the respective herbarium specimen, not on a comparison of living plants.

Again Walther had no unambiguously identified *E. simulans* but instead of contenting himself with citing Rose's description, he made one of his own "from material cultivated locally, presumably a clonotype":

Plant glabrous, stemless; rosettes scarcely globose, to over 10 cm. in diameter, belatedly cespitose; leaves many, crowded, ascending turgid, but thinish near the acute, mucronate apex, to 7 cm. long and 4 cm. broad, whitish; inflorescences to seven, usually simply racemose, rarely 2-branched; scape 20 to 40 cm. tall; lower bracts 15 to 20 mm. long, appressed, oblanceolate, acute; flowers 12 to 14; pedicels to 10 mm. long or more, turbinate thickened below calyx; sepals very unequal, longest to one-third the length of corolla, deltoid-ovate to lanceolate, more or less appressed, connate at base, but often with distinct sutures evident, largest sepal occasionally spurred and decurrent at base; corolla conoid-urceolate, to 15 mm. long and 10 mm. in diameter at base, obscurely or not angled; petals thin, with shallow basal hollow and slightly spreading tips; nectaries thin, very oblique. Flowers from April on. Description from material cultivated locally, presumably a clonotype.

Color. Leaves biscay-green to greenish glaucous; peduncle and pedicels coral-pink; bracts and sepals vetiver-green; corolla rose-pink, mustard-yellow at apex, inside light cadmium above, pale vinaceous below; styles pale greenish yellow.

scurely or not angled; petals thin, with shallow basal hollow and slightly spreading tips; nectaries thin, very oblique. Flowers from April on. Description from material cultivated locally, presumably a clonotype.

We are not told what "material cultivated locally" refers to, and whether it was "presumably a clonotype" could not be verified, so the description as such is of course of no use. However it is noteworthy in that it is almost identical, often even literally identical with Walther's description of *E. hyalina*! The two descriptions only differ concerning the leaf margins which regarding the latter are said to be "sharply hyaline" while they are not mentioned at all in the text of *E. simulans*, and in the colour of the petal tips which are greenish in *E. hyalina* and yellow in *E. simulans*. It can be assumed that Walther himself also noticed this at some point and that in order to conceal this he reclassified *E. simulans* as a variety of *E. elegans* to give the appearance that the two species are further apart. However Moran (Notes about *E. simulans*) as well as Uhl (letter to Moran 3.19.71) did not agree with Walther's combining of *E. simulans* with *E. elegans* but rather stressed the similarity of *E. simulans* and *E. hyalina*. Uhl wrote: "I can't see that this [*E. simulans*] is really different from *E. hyalina*."

Errors :

1. Under TYPE Walther indicated :

TYPE. Pringle, 03/R-767, from near Monterrey, flowered in Washington, D.C., 1904–1905 (US, no. 399882).

According to the protologue the correct number is R-768, not R-767. It seems that all sheets at US are wrongly labelled as "767".

2. Under COLLECTIONS Walther listed :

06/10168 (G,GH,MEXU,NY,P,PH,UC,W); Cañon de los Charcos, above Alamar, 15 miles southwest of Galeana, C. H. and M. T. Mueller, 34/318 (FM,GH); S. F. Cañon, southwest of Pueblo Galeana, Mueller, 34/318 (GH);

The correct number is 34/735, not 34/318, which is the number of the next listing, i.e. "318" was indicated for two different gatherings.

3. In the Key to Series Urceolatae Walther wrote :

H. Inflorescence to over 20 cm. (to 40 cm.) tall, erect, with 12 to 14 flowers. Nuevo Leon. 15d. *E. elegans* var. *simulans*

This refers to the "material cultivated locally", not to *E. simulans* Rose.

Comment :

Walther's description of *E. elegans* var. *simulans* is – because made from plants of unknown origin – good for nothing, and in view of the distinctly different appearance of *E. elegans* and *E. simulans* there is no plausible reason to classify the latter as a variety of the former.

16. *Echeveria potosina* E. Walther (p. 104-107)

Walther made his description from a plant received from Romeo and Posselt of San Luis Potosí, what means that it was a plant of unknown origin, and published it in *Cact. Succ. J. (Los Angeles)* 7: 61, 1935. The description in the monograph is somewhat modified :

Rosettes stemless, dense, ultimately cespitose; leaves narrowly obovate-cuneate, to 6 cm. long and 2 to 3 cm. broad, very turgid, thickest near apex, shortly mucronate, with hyaline margins, nearly flat above, beneath rounded or subcarinate towards tip, margins hyaline; inflorescence 30 to 40 cm. tall, usually a simple raceme; peduncle stout, erect; lower bracts appressed, obovate, acute to acuminate, to 2 cm. long; raceme strongly nodding in bud, with 6 to 16 or more flowers; pedicels 6 mm. long, conspicuously turbinate-thickened below calyx; sepals ovate-deltoid, very short, longest to 5 mm. long, scarcely extending beyond corolla, appressed; corolla urceolate, scarcely pentagonal, 12 to 13 mm. long, 9 mm. in basal diameter; petals erect, only slightly spreading at tips, thin, with basal hollow ill defined; nectaries oblique, thinnish, narrowly reniform. Flowers from March to June. Description from the living type plant.

Color. Leaves olive-gray to sage-green, often tinged vinaceous-drab, especially towards apex; bracts as the leaves, but tinged benzo-brown; pedicels hermosa-pink; sepals as the bracts; corolla begonia-rose, with petal tips turtle-green; styles deep turtle-green; nectaries pinard-yellow.

Errors :

TYPE. Living plant received from Romeo and Posselt, San Luis Potosí (CAS, no. 234167).
OCCURRENCE. Mexico; without any definite locality.
COLLECTIONS. *Cultivated*: Golden Gate Park, San Francisco, Walther in 1957 (CAS).

1. The protologue of 1935 erroneously indicated the type as **CAS 223896**, in the monograph this was corrected to **CAS 2341767**. However the determination label on the type sheet indicates the year **1936**, not 1957. In any case it is interesting to note that the type specimen had been prepared only a year after the publication of the protologue.

2. Under REMARKS Walther wrote :

REMARKS. Closest to *E. potosina*, both geographically and otherwise, is no doubt *E. elegans*. *Echeveria potosina* would appear to be amply distinct in its

No type locality being known of *E. potosina* – how then can it be "geographically" closest to *E. elegans* ???

In the Key to Series *Urceolatae* Walther wrote :

G. Leaves more or less purple-tinged, with rounded apex and hyaline margins. San Luis Potosí. 16. *E. potosina*

3. While the description says that the leaves are "olive-gray to sage-green, often tinged vinaceous-drab", in the Key the leaves are stated to be "more or less purple-tinged".

G. Leaves more or less purple-tinged, with rounded apex and hyaline margins. San Luis Potosí. 16. *E. potosina*

4. This is wrong and even misleading as it suggests that *E. potosina* is native to San Luis Potosí while it was only sent from that state.

Figure 43. 16. *Echeveria potosina* E. Walther. Flowering plant, $\times 0.6$. Plant photographed in San Diego 4 June 1964; part of the type collection (UCBG 51.1356).

5. This is wrong : UCBG received this plant in 1951, collector and locality unknown, i.e. not from Walther, therefore it cannot possibly have been part of the type collection he had been cultivating at Golden Gate Park, SF.

Comment :

The plant which Walther described as *Echeveria potosina* was provided by Romeo & Posselt of San Luis Potosí City, SLP, presumably 1933, as a plant from cultivation, wild origin unknown. The description was published in 1935 (CSJ US 7: 61, ill. 71). The type was indicated as CAS 223896.

The type sheet however was prepared not until the following year, and it has a different number : CAS 234167. The determination label (bottom right) - not in Walther's hand - reads : "*Echeveria potosina* E. Walther / Golden Gate Park / Coll. Eric Walther / May 25, 1936", i.e. the plant used for the specimen obviously originated in Walther's collection at Golden Gate Park.

Another - typed - label in the middle of the sheet reads : "This [CAS 234167] is the type of *Echeveria potosina* Walther although herbarium number 223896 is published for the type in *Cact. & Succ. Journ. Amer.* VII, 4: 61, Oct. 1935" - signed "E. Walther, Nov. 7, 1941" - i.e. not until 6 years after the publication of the protologue of *E. potosina* and 5 years after the specimen had been prepared Walther designated it as type !!!

The protologue is illustrated with two photos, one showing a single rosette, the other a rosette and a tall inflorescence with a few flowers at its apex, obviously corresponding to the description which mentions a single inflorescence with 6 - 7 flowers. The herbarium sheet of 1936 consists of three inflorescences of different sizes, the biggest of them with ca 15 flowers, several of them spent, and with an odd flower on a 3 cm long pedicel. Unfortunately the sheet is lacking a rosette, only two leaves have been pressed. However they are a sufficient proof that the plant used for this CAS specimen cannot possibly have been the plant used for the description because they are neither "obovate-cuneate" nor are they "2 to 3 cm broad near apex". This means CAS 234167 represents an unknown *Echeveria* species or hybrid and not *E. potosina*.

All this is very confusing : The protologue of 1935 indicates a type number while apparently no type has been pressed. A year later a specimen was prepared, said to be *E. potosina* Walther, but representing a plant not corresponding to the description of *E. potosina* Walther. However 5 years later Walther designates this very same specimen as holotype of his *E. potosina* – a plant which can be anything but not the one he had used for his description, i.e. not *E. potosina*.

Conclusion : It is best to forget about the *E. potosina* chapter altogether. This is not a loss anyway, because the plant described as *E. potosina* is nothing else than a non-offsetting form of *E. elegans*.

Comment to the *E. elegans* complex as a whole :

The basic problem is the fact that Walther evidently did not know *E. elegans* Rose. Had he gone back to Rose's description, i.e. got a correct idea of *E. elegans*, he would have noticed that his "material long cultivated in Californian gardens" couldn't be correct. As he failed to do this he

- first considered the plants at Hacienda del Carmen as *E. simulans* and later as *E. elegans* var. *hernandonis*, stating that they did not correspond to typical *E. elegans* Rose,
- didn't realize that *E. potosina* is simply a not offsetting form of *E. elegans*,
- failed to notice that the so-called *E. elegans* var. *tuxpanensis* had nothing to do at all with *E. elegans*,
- wouldn't have classified *E. simulans* as a variety of *E. elegans*, and
- would have noticed that what he described as *E. albicans* is simply *E. elegans*.

17. Echeveria sanchez-mejoradae E. Walther, new species (p. 108-110, 213)

Walther prepared the description of *Echeveria sanchez-mejoradae* in early spring 1959.

Plants glabrous, stemless, **caespitose**, with even small, young plants consisting of two or more rosettes; leaves numerous, crowded, linear-oblongate to obovate-cuneate, long-attenuate to base, at apex aristate-apiculate, slightly recurved, obscurely keeled beneath, to 6 cm. long and 15 mm. broad; inflorescences three to five, sometimes to 50 cm. tall, simply secund-racemose; peduncle slender, flexuose; bracts distant, oblongate, aristate-acute, subtriquetrous, to 20 mm. long; flowers 10, spreading; pedicels to 9 mm. long; sepals very unequal, longest to 11 mm. long, acute, spreading to ascending, deltoid to lanceolate; corolla urceolate, 11 mm. long, 8 mm. in basal diameter, 5 mm. at mouth; petals not at all keeled, nor hollowed; carpels 7 mm. long; nectaries narrowly lunate, oblique, 2 mm. wide. Flowers from March on. Description from greenhouse plant.

Color. **Leaves spinach-green, not glaucous;** peduncle light yellowish olive;

The new species was a freely offsetting plant with **spinach-green not glaucous leaves**, which he had collected along the road from Venados to Zacualtipan in the Mexican state of Hidalgo. 2 April 1959 he gave plants to UCBG indicating that they are a topotype of the latter (UCBG 59.403). Walther died 1 July 1959, and as is well known the publication of the description of this (and other) new species was delayed for 13 years. But contemporaries already knew that he had collected a new plant along the road from Venados to Zacualtipan and had decided to name it for Sr. Hernando Sanchez-Mejorada; how it looked like, this they did not know.

In early 1960 Kimnach sent Moran a plant with the accession n° UCBG 59.403, "as part of the type collection of this ined Waltherian species. According to Kimnach (20 Jan 1960), the type locality is on the road from Venados to Zacualtipan, Hidalgo" wrote Moran in his Notes on UCBG 59.403. When it flowered in the following year, Moran described it, indicating that it had a sessile, solitary rosette and **dark green but glaucous leaves** with hyaline margins, fairly similar to his M 7798 which he had collected in autumn 1959 in the same area and which had also solitary rosettes, leaves dark green but glaucous and thus appearing greyish or towards apex a little purplish.

In short : Walther's UCBG 59.403 and M 7798 , both from the region of Venados / Zacualtipan, were plants with solitary whitish rosettes. Thus – long before the publication of its description - it was perfectly clear how the plant, destined to be named *E. sanchez-mejoradae*, looked like. And when - finally - in 1972 Walther's monograph was published, *E. sanchez-mejoradae* as a plant with solitary rosettes and glaucous leaves was so well established that apparently nobody checked the protologue and the false identification remained undetected.

To summarise the facts :

1. Walther clearly had collected white-leaved plants in the region Venados/Zacualtipan, otherwise he could not have passed them to UCBG.
2. However what he described and named as *E. sanchez-mejoradae* was a quite different plant : caespitose and green-leaved, and according to CAS 414603 cultivated in Victor Reiter's garden, origin unknown, i.e. Walther had confused his plants. (This is not surprising : Uhl remembered a visit he had paid to Walther – the mess he encountered left him stunned.)

And of course this means that the name belongs to this green-leaved plant to which - due to the circumstances mentioned above - no one has paid further attention. Whether it still exists somewhere is not known.

TYPE. Cultivated by Victor Reiter and collected by E. Walther on 31 March and 5 May 1959, from plants originally collected by E. Walther along road from Venados to Zacualtipán, Hidalgo, Mexico (CAS, nos. 414603 and 414549).

Because Walther based this taxon on two separate gatherings, made on 31 Mar 1959 & 5 May 1959, represented by the two CAS sheets 414603 & 414549, both labelled as "holotype", the name was not validly published. This was corrected in *CRASSULACEA* 5, p. 15, 2017 :

Echeveria sanchez-mejoradae E. Walther ex Bischofberger sp. nov. Holotype: CAS 414603. Bar-code: CAS 0002668. Gathered on 31 Mar 1959, along the road from Venados to Zacualtipán. The sheet CAS 414549 (0002669) is a syntype as it was given equal status by Walther, and is certainly the same taxon, but it represents a different gathering.

(Note : The text accompanying the validation is obsolete.)

Errors :

Figure 48. 17. *Echeveria sanchez-mejoradae* E. Walther. Flowering plant, $\times 0.9$. Plant photographed in San Diego 16 April 1961; part of the type collection (UCBG 59.403).

1. The type collection is the green, offsetting plant, not the solitary plant with hyaline margins. The two photos represent a by Walther not described nameless plant, mistakenly thought to be the correct *E. sanchez-mejoradae*.

2. The same applies to Plate one, upper, p. 213 :

PLATE ONE, UPPER

17. *Echeveria sanchez-mejoradae* E. Walther. Flowers, $\times 1.35$ Plant flowering in San Diego 13 April 1960; collected at Tajo de Caballeros, near the type locality, on the road from Venados to Zacualtipán, Hidalgo, Mexico (Moran & Kinnach 7798).
[See page 108]

The caption is erroneous insofar as this is **M 10061**, not Moran & Kinnach 7798. Of course all photos are by Moran, again not credited to him. And of course the reference to the type collection is again not correct.

3. The Key to Series *Urceolatae* states :

F. Leaves narrowly oblong-oblancheolate, rarely over 15 mm. broad; rosettes freely cespitose even in young plants; pedicels scarcely turbinate.
Hidalgo. 17. *E. sanchez-mejoradae*

This is not mentioned in the description. And the indication "Hidalgo" – in view of the completely unknown origin of the green-leaved plants used for the description – lacks any basis and is of course misleading.

Comment :

The true *E. sanchez-mejoradae* is a plant of unknown origin, most likely no longer extant. And the white-leaved plant, wrongly considered *E. sanchez-mejoradae*, has turned out to be the Hidalgo form of the fairly widespread and regarding leaf margins somewhat variable *E. simulans*, so finally is correctly identified.

Needless to say that the chapter "*E. sanchez-mejoradae* E. Walther new species" is of no relevance.

18. *Echeveria albicans* E. Walther (p. 110-113)

Walther's description of *E. albicans* was first published in *Cact. Succ. J. (Los Angeles)* 30: 147, 1958. The description in the monograph is for the most part identical :

Plants glabrous, conspicuously pruinose; rosettes stemless, ultimately cespitose; leaves closely imbricated, crowded, obovate-oblong, 3 to 5 cm. long, 15 to 25 mm. broad, thick and turgid, thickest just below apex, upcurved, obtuse to truncate, with small, slender, whitish apiculus, not purple-tinged but wholly white, margins scarcely pellucid; inflorescence mostly simple, rarely 2-branched, to 25 cm. tall; peduncle erect or ascending; lower bracts numerous, 8 to 15 mm. long, appressed, occasionally enlarged and aggregated into an aerial rosette, normally lanceolate, acute, with upcurved apiculus; pedicels slender, to 14 mm. long, conspicuously turbinate-thickened below calyx; sepals unequal, strongly connate at base, longest to 10 mm. long, deltoid to linear-oblong, acute to cuspidate, scarcely spreading; corolla broadly conoid to urceolate, 14 to 18 mm. long, 10 to 12 mm. in basal diameter; petals erect or slightly spreading at tips; basal nectar cavity shallow; nectaries narrowly oblong-trapezoid, somewhat obliquely truncate. Flowers from May to August.

Color. Leaves kildare-green, glaucous-pruinose and hence pale olivine; peduncle grape-green and pruinose; corolla begonia-rose or alizarine-pink, to old-rose at base, viridine-yellow to light yellow-green at apex, inside at top oil-yellow; carpels viridine-yellow; styles apple-green; nectaries strontium-yellow.

TYPE. Plants grown in Golden Gate Park, originally received from F. Schmoll, Cadereyta, Mexico (CAS, no. 408987).

The type plant, from which Walther wrote the description, is of unknown origin – "originally received from F. Schmoll, Cadereyta, Mexico" who - acc. to Roy Mottram (pers. com.) - had simply listed it as *E. elegans*.

Errors :

1. As synonym Walther indicated :

Echeveria elegans var. *kesselringiana* POELLNITZ, in *Fedde Repert.*, vol. 39, p. 239, 1936.

and under REMARKS he wrote :

REMARKS. This novelty has been cultivated in California collections for some time, and appears identical with those grown in European botanic gardens as *E. elegans* var. *kesselringiana*. Poellnitz' name is of uncertain status, for no

But then he added :

as *E. elegans* var. *kesselringiana*. Poellnitz' name is of uncertain status, for no type was preserved, and application to our local material seems inadvisable. Plants of *E. elegans* var. *kesselringiana* were raised from seeds sold by H. Win-

We learn : On the one hand, *E. elegans* var. *kesselringiana* Poelln. is listed as a synonym of *E. albicans* Walther and "appears identical" with the latter, and on the other hand to apply the former name to the latter "seems inadvisable" because it is "of uncertain status". The latter is not at all correct : The type of *E. elegans* var. *kesselringiana* Poelln. is Ritter 532 (most probably destroyed in World War II), so Poellnitz's name is definitely not of uncertain status ! The exact wild origin of Ritter 532 is not known, however there is no doubt that it **has** a wild origin. Why then did Walther devalue von Poellnitz's name ? This can easily be explained : At some point it must have dawned on him that if *E. elegans* var. *kesselringiana* Poelln. were "identical with our material", von Poellnitz' name - published

already in 1936 and of a plant of certain Mexican origin - would have priority and he would have to list his *E. albicans* of uncertain origin as a synonym of *E. elegans* var. *kesselringiana* Poelln. ! This it seems could only be avoided by disqualifying the latter.

However the disqualification of von Poellnitz's name was pointless because *E. elegans* var. *kesselringiana* and *E. albicans* are not identical at all. The two plants differ in several respects :

- **leaves** : var. *kesselringiana* : only up to 3 x 1.5 cm / *albicans* : 3-5 x 1.5-2.5 cm and with a distinct slender apiculus, lacking in var. *kesselringiana*,
- **pedicels** : var. *kesselringiana* : only 7 - 8 mm long / *albicans* 14 mm long and
- **sepals** : var. *kesselringiana* : to only 4 mm long / *albicans* to 10 mm long.

In short, it is evident that *E. elegans* var. *kesselringiana* Poelln. is not a synonym of *E. albicans* Walther.

And still under REMARKS we read :

differs from *E. elegans* in its broader, blunter, thicker leaves that are **thickest just above the middle** and have a more slender apiculus with less pellucid mar-

2. This is wrong because - according to the description - the leaves are **thickest below the apex**.

Echeveria elegans var. *simulans* has narrower **acuminate** leaves with a stouter mucro, a **cylindroid** corolla to 15 mm. long, yellowish at apex, and nar-

3. However Walther's description of *E. elegans* var. *simulans* does not mention "acuminate" leaves and the latter has a "**conoid-urceolate**" corolla, not a cylindroid one.

Comment :

While *E. elegans* var. *kesselringiana* is clearly different from *E. albicans*, the latter is not distinctly different from *E. elegans* and therefore does not deserve specific status. Uhl wrote : "[*E. albicans*] closely resembles *E. elegans* and *E. potosina*. [.....] These three species seem not very distinct from each other, and probably some or all of them, possibly along with several others, are better considered variations of the same species (Kimnach and Moran, 1980)" (*Haseltonia* 4, 1996).

19. *Echeveria hyalina* E. Walther (p. 114-115)

While botanising in Mexico in 1934 Walther visited the garden of Christian Halbinger in Mexico City and received an *Echeveria* which he considered to be *E. cuspidata*. Back home he cultivated it in Golden Gate Park, San Francisco. In 1936 a specimen was prepared and labelled accordingly (CAS 234168).

24 years later, in 1958, Walther finally made a description of this plant, meanwhile considering it a new species and calling it *E. hyalina*, indicating that it was a plant from cultivation the origin of which Sr Halbinger was unable to recall. The CAS 234168 specimen of 1936 was redetermined as *E. hyalina* and designated as holotype. The protologue was published in *Cact. Succ. J. (Los Angeles)* 30: 43-44, 1958.

The description reads as follows :

Echeveria hyalina spec. nov.

Pertinens Ser. URBINIAS; *affinis* E. SIMULANTI, *sed differt foliis obovato-cuneatis, valde cuspidatis; corollis apice viridibus; rosulis parce soboliferis; foliis tenuibus, albidis, margine et apice hyalinis, 6 cm. longis; inflorescentiis simplicibus, racemosis, ad 30 cm. altis; pedicellis turbinatis; sepalis valde inaequalibus, ad 1/3 longitudinem corollae; corollis urceolatis, apice viridibus, basi roseo-carneis; petalis tenuibus, non carinatis vel excavatis; squamis minutis, tenuibus.*

Holotype: CAS:234168, cultivated at Golden Gate Park, San Francisco.

Occurrence: So far as known only in cultivation, first seen in garden of Sr. Christian Halbinger, Mexico City, well-known collector.

Illustration: Cactus & Succulent Journal, 7:1:A:2, March 1936 (as *E. cuspidata*).

Description: (from living plant received from Sr. Halbinger in 1934.)

Rosettes stemless, belatedly cespitose; leaves

numerous, densely crowded, obovate-cuneate, cuspidate, to 6 cm. long and 35 mm. broad, whitish-crystalline, rather thin, with thin, hyaline margins; inflorescence a simple raceme; scape to 30 cm. tall or more, slender, flexuous, erect; lower bracts linear-oblongate, acuminate, to 14 mm. long, appressed; flowers 14 to 20; pedicels to 10 mm. long, turbinate thickened below calyx, becoming erect after anthesis; sepals very unequal, deltoid, spreading, longest to 5 mm. long, much connate below; corolla urceolate, 11 mm. long, 8 mm. in diameter at base, scarcely pentagonal; petals slightly spreading at tips; nectaries obliquely reniform. Flowers January-February.

Color: Leaves pale-turtle-green, but somewhat glaucous and hence pale-medici-blue, at tips usually tinged dark-vinaceous-grey; peduncle laelium-pink; sepals buffy-olive; corolla old-rose below, above pale-flesh-color, light-paris-green at apex, inside bice-green above, to pale-pinkish below; carpels pale-chalcedony-yellow; styles apple-green; nectaries as the carpels.

In the same year (1958) Walther discovered the specimen Wiggins 13225, collected in 1955 near Santa Rosa de Limon, on road between Guanajuato and Dolores Hidalgo, in the Mexican state of Guanajuato. Without further ado he identified it as *E. hyalina* and went on to produce a slightly modified description of *E. hyalina* for the planned monograph. However by citing the chromosome number of $n = 32$ he inadvertently produced proof of the contrary : **$n = 32$ is correct for *E. secunda***, not for *E. hyalina* – the latter has $n = 34$. That means **Wiggins 13225 is *E. secunda*** and the slight modifications in the description in the book do not refer to *E. hyalina* but are due to *E. secunda*.

Errors:

OCCURRENCE. Guanajuato, Mexico.

COLLECTIONS. Mexico. Guanajuato: Santa Rosa de Limon, on road between Guanajuato Gto. and Dolores Hidalgo, Wiggins, 55/13225 (DS). *Cultivated*: Golden Gate Park, Walther, in 1936, type (CAS); University of California Botanical Garden, UCBG:55.364-1, grown from Wiggins no. 13225 (CAS). Wiggins material, as flowered in the University of California Botanical Garden, has a rather smaller corolla, agrees otherwise. In this material $n = 32$.

1. And this also means that it is not *E. hyalina* that occurs in Guanajuato but it is *E. secunda*. Accordingly also the indication of Guanajuato under GEOGRAPHICAL OCCURRENCE (p. 36) is wrong.

So once again the need to clear a new species from the flaw 'wild origin unknown' prompted Walther to abuse a nameless specimen – to no avail however.

2. Under REMARKS Walther wrote :

to the apex. Actually, *E. hyalina* appears to be closest to *E. elegans* var. *simulans*, but differs from the latter in its broader leaves more strongly cuspidate at apex, its more spreading sepals, and its corolla greenish at the apex.

This is wrong : The description of *E. hyalina* indicates leaves 35 mm broad, while those of *E. simulans* are 4 cm broad, so quite the contrary is true, moreover there is also no mention of "strongly cuspidate".

3. And in the Key to Series *Urceolatae* he stated :

F. Leaves broadly obovate, to 35 mm. wide, only slightly narrowed to base; rosettes belatedly cespitose; pedicels strongly turbinate. Guanajuato.
19. *E. hyalina*

Neither "slightly narrowed at base" nor "strongly turbinate" are mentioned in the description.

Comment :

As already said, Walther's description of *E. hyalina* is made from plants of unknown wild origin and therefore of course of no use. However it is noteworthy in that it is almost identical, often even literally identical with his description of *E. simulans* [*E. elegans* var. *simulans*] ! The two descriptions only differ concerning the leaf margins which regarding the former are said to be "sharply hyaline" while they are not mentioned at all in the text of *E. simulans*, and in the colour of the petal tips which are greenish in *E. hyalina* and yellow in *E. simulans*. In other words : Walther's description of *E. hyalina* is in fact a redescription of *E. simulans* – the somewhat different leaf margins and petal apices of course do not justify the classification of *E. hyalina* as a distinct species. It can be assumed that Walther himself also noticed this at some point and instead of uniting *E. hyalina* with *E. simulans* he tried to disguise the facts. And while the protologue of *E. hyalina* 1958 still indicated *E. simulans* as a separate species, for the text in the monograph Walther reduced *E. simulans* to a variety of *E. elegans* in order to give the appearance that the two species are further apart. However, this does not eliminate the fact that the two descriptions are almost identical, i.e. that *E. simulans* and *E. hyalina* are not two completely different species but one and the same somewhat variable species. Everyone who knows these plants will agree with this. In a letter to Moran (3.19.71) Uhl wrote : "I can't see that this [*E. simulans*] is really different from *E. hyalina*." (See text 15d. *E. elegans* var. *simulans*)

E. hyalina therefore is merely a synonym of *E. simulans*, not a distinct species.

20. *Echeveria gilva* E. Walther (p. 116-117)

This is Walther's description in *Cact. Succ. J. (Los Angeles)* 7: 61, 1935, it was made from "locally grown plants", i.e. plants with unknown origin :

11. *Echeveria gilva* EW., new species.

Acaulescens, cepitosa; foliis pluribus, turgidis, obovato-oblongis, acutis, 5 - 8 cm. longis, 20 - 25 mm. latis, colore gilvis (non glaucis); racemae secundae, simplices vel bifidae; bractae minores; pedicella 5 - 7 mm. longa, tenua; sepala inequalia, majora usque ad 4 mm. longa; corolla 9 mm. longa, 7 mm. crassa, urceolata, colore rubescens apicibus flavo-virentibus.

Rosettes dense, stemless, with numerous offsets in age; leaves many, thick and turgid, obovate-oblong, acute, 5 to 8 cm. long, 20 to 25 mm. broad, concave above, kildare-green tinged flesh-pink at edges and apex, not at all glaucous, of cristalline texture due to translucent epidermis; inflorescence secund-racemose, simple or occ. bifid, to 25 cm. tall; bracts few to many, appressed, to 20 mm. long, acute; raceme 10 cm. long, with 12 flowers; pedicels 5 to 7 mm. long, slightly thickened below calyx; sepals unequal, longest to 4 mm. long, deltoid-ovate, acute, color eugenia-red; corolla conoid-urceolate, app. 9 mm. long, 7 mm. in diameter at base, 4 mm. at mouth, scarcely angled, geranium-pink with keel spectrum-red and tips viridine-yellow; segments thin, scarcely hollowed at base; carpels gradually narrowed into the peacock-green styles; nectaries thin, oblique, nearly white.

Walther's text in the monograph is a revised version of the protologue.

While in the protologue Walther stated that "the writer personally feels that this is not a hybrid, showing as it does so clearly the distinguishing characteristics of the Series *Urbinae* [*Urceolatae*] without admixture of any foreign features," in the book we read :

nia gardens. Since no Mexican locality is on record, this may be suspected to be of hybrid origin, a theory supported by information I have from Dr. Uhl of Cornell that meiosis is irregular. As far as I know, no attempt has been made

In any case it is interesting that it did not occur to him that it could be a hybrid of two members of Series *Urceolatae*

Errors :

1. Further under REMARKS Walther wrote :

In leaf color, *E. gilva* resembles *E. agavoides*, but the latter has a branched inflorescence with smaller flowers, more acuminate, broader leaves, and is very slowly *soboliferous*. If *E. agavoides* should prove to be one parent of this gar-

"soboliferous" is misleading, as it suggests underground runners. Some forms of *E. agavoides* can be caespitose.

2. Further discussing the possibility of *E. gilva* being a hybrid, Walther added :

In the 1870's a French horticulturist, M. Deleuil of Marseilles, raised and named a large number of *Echeveria* hybrids. From his list I selected two, representing crosses with *E. agavoides* as one parent, i.e., *E. × aciphylla* (*E. agavoides* × *E. globosa*) and *E. × laetivirens* (*E. agavoides* × *E. glauca*). He

Deleuil has characterised *E. x aciphylla* as "assez grand" – this does not apply to *E. gilva*.

Walther erred, the parentage of *E. x laetivirens* is *E. gibbiflora* × *E. agavoides*, not *E. agavoides* × *E. glauca*. Moreover this is a plant with leaves 15 – 18 cm long, therefore can certainly not be taken into consideration.

3. In the Key to Series *Urceolatae* Walther stated :

D. Leaves amber-colored , oblong-obovate, to 8 cm. long, acute. At present known only in cultivation. 20. <i>E. gilva</i>
--

"amber-colored" is not mentioned in the description, there they are kildare-green.

Comment :

Meanwhile the hybrid status of *E. 'Gilva'* is no longer in doubt and Walther's description is at the most of historical interest.

21. *Echeveria goldiana* E. Walther (p. 117-119)

Walther's description was first published in Spanish in *Cactaceas y Suculentas Mexicanas* 4: 27, 1959 and translated to English for the monograph :

Plant glabrous, stemless, with offsets none or produced belatedly; rosettes densely leafy; leaves to 40 or more, broadly obovate-cuneate, very turgid, beneath rounded and not keeled, above shallowly convex and only slightly flattened near apex, the latter truncate and minutely mucronate, to 4 cm. long, 25 mm. wide near apex, less than 15 mm. broad at base; inflorescences two or three, each a simple, secund raceme; peduncle to 40 cm. tall, slender, erect, with 10 to 12 bracts, these linear-lanceolate, acuminate, flat above, beneath rounded, slightly spreading to recurved, to 14 mm. long; flowers 8 to 10, strongly nodding in bud; pedicels slender, to 15 mm. long, somewhat turbinate below calyx; sepals very unequal, longest to 10 mm. long and lanceolate, the others much shorter, deltoid, acute; corolla conoid-urceolate, 13 mm. long and to 9 mm. broad near base, only 4 mm. in diameter at mouth; petals not keeled and only slightly hollowed within at base, with small, subulate apiculus below tips; carpels 7 mm. long; nectaries to 2 mm. broad, reniform, oblique. Flowers from March on. Description from plants flowering in garden of Victor Reiter, San Francisco.

Color. Leaves lettuce-green, shining, not at all glaucous; peduncle smoke-gray; bracts lettuce-green to light brownish drab, as are the sepals; corolla begonia-rose, near apex viridine-yellow; carpels white; styles cosse-green; nectaries pinard-yellow.

Errors :

1. Under TYPE and OCCURRENCE Walther wrote :

TYPE. From flowering plant collected 11 March 1959, in garden of Victor Reiter in San Francisco, originally found near Valle de Bravo, Estado de Mexico, Mexico, and received from Sr. Dudley B. Gold of Mexico City (CAS, no. 413601, not "413901").

OCCURRENCE. Mexico. Valle de Bravo, Edo. de Mexico.

And this is Reid Moran's comment in his Notes on *Echeveria goldiana* : "The type is said to have been received from Dudley Gold, collected originally near the Valle de Bravo. I asked Dudley about this today (19 July 1963). He disclaims any knowledge of the plant, saying that it probably was collected by someone else and that the locality very likely is wrong. He says that some of the Society members have looked for it about Valle de Bravo, with no success."

2. In the Key to Series *Urceolatae* is stated :

D. Leaves lettuce-green, truncate, shortly mucronate, slightly or not flattened above near apex, 4 cm. long, to 3 cm. broad. Valle de Bravo, Estado de Mexico.
21. *E. goldiana*

However Walther's description has only 2.5 cm wide leaves, not 3 cm. Moreover "Valle de Bravo" obviously is not correct.

Comment :

This is another unusable publication by Walther because the plant lacks any data regarding its origin. In a letter 1 July 1963 to Reid Moran, Myron Kimnach "called attention to the similarity of this plant to *E. sanchez-mejoradae* [currently a synonym of *E. simulans*]. He found one green and so did I", wrote Moran. This comparison is quite appropriate. The description of *E. goldiana* and the black-and-white photos are - apart from the green (not glaucous) colour of the leaves - a good match for *E. simulans*. So in all likelihood *E. goldiana* is best placed in the synonymy of *E. simulans* together with *E. hyalina* and the wrongly called *E. sanchez-mejoradae*.

22. Echeveria halbingeri E. Walther (p. 120-122, 213)

The protologue of *E. halbingeri* was published in *Cact. Succ. J. (Los Angeles)* 30: 89, 1958. The description in the monograph is almost identical :

Plants glabrous, rather small; rosettes stemless, belatedly cespitose; leaves about 30, densely crowded, thick and turgid, obovate, to 25 mm. long and 13 mm. broad, subtriquetrous in upper half, at apex obtuse but minutely aristate-apiculate; inflorescences two or more, simply racemose; scape to 12 cm. tall, slender, erect or weakly spreading; bracts linear-lanceolate, to 10 mm. long, ascending, triquetrous, sharply keeled, shortly acuminate; flowers six to nine; pedicels 6 mm. long, somewhat turbinate below calyx; sepals unequal, longest 6 mm. long, ascending to rotately spreading at anthesis; corolla about 12 mm. long if one discounts the strongly recurved petal-tips, more or less urceolate-campanulate; petals conspicuously subulate-apiculate at apex, with distinct basal hollow within; nectaries 0.7 mm. wide, narrowly elliptic, very oblique. Flowers from July on. Description from living plants grown at the Strybing Arboretum, Golden Gate Park, San Francisco.

Color. Leaves biscay-green but somewhat glaucous and hence asphodel-green; sepals bice-green to asphodel-green; corolla orange-rufous to deep chrome, inside pale orange; carpels light greenish-yellow; styles oil-yellow; nectaries sulphur-yellow.

Some background information :

The type specimen **CAS 289374** was prepared already **1941**. The determination label (bottom right) reads : "*Echeveria halbingeri* sp. nov. / The Arboretum, Golden Gate Park / From Hidalgo, Mexico / July 24, 1941."

A handwritten note bottom left, apparently added some time later by an unknown person, reads : "A plant sent from Hidalgo to Eric Walther by C. Halbinger." And again some time later Walther added: "Locale : Hidalgo, **near Actopan**" and designated the sheet as "**Type**". And bottom middle is indicated : "ined."

And another label, just above the determination label, obviously written after the publication of *E. halbingeri* in *Cact. + Succ. Journ. Am.* **30**: 89. 1958, refers to this.

The **protologue** stated :

Type : CAS 289374, received from C. Halbinger of Mexico City, said to have come from **Paila**, Hidalgo.

Occurrence : Mexico, with only a doubtful locality on record.

That means, at the time Walther worked on the protologue of *E. halbingeri* – presumably early in 1958 - the only information regarding its origin was "said to have come from Paila".

The **text in the monograph** however reads :

Type : Plant cultivated in the Strybing Arboretum in Golden Gate Park, San Francisco, and collected 24 July 1941, originally from Hidalgo, Mexico (CAS 289374)."

Occurrence : Mexico, Hidalgo : South of Actopan near kilo 104.

So all of a sudden the "doubtful locality" was replaced by a precise locality information ! How did Walther get this information ? The explanation is simple :

Shortly after the publication in the US Journal in 1958, Walther discovered two herbarium specimens of plants collected by H.E. Moore 1946 & 1947, **both determined as *E. secunda***. One of them (Moore 1542) shows three small plants found "south of Actopan, west of highway at kilo 104, El Arenal, summit of red sandstone peak, Cerro de las Canteras", the other (Moore 2806), extremely poor, from below Parque Nacional El Chico. Without further ado Walther reclassified the former as *E. halbingeri* so that the text in the book could be supplemented by "South of Actopan near kilo 104."

To summarise : The plant 1941 mounted on the type sheet originated from the Arboretum in Golden Gate Park (i.e. Walther's own collection), originally from Hidalgo, wild origin unknown. And the protologue (1958) stated that the plant used for the description came from Paila, Hidalgo – "a doubtful locality". And it was only the two subsequently found Moore specimens that provided the more precise locality information "km 104 south of Actopan" – an information which however referred to collection localities of *E. secunda*

In any case the description of *E. halbingeri* was made from plants of unknown wild origin and thus it is of course of no use.

Errors :

1. Under COLLECTIONS Walther listed the two Moore gatherings, the first one of 1946 :

E. Moore, 46/1542 (GH). Perhaps also: Dist. Pachuca; open meadow in fir

"Moore 1542": the number is wrong, it is **1524** !

2. The second one of 1947 from El Chico which - as already mentioned above - is a very poor specimen but according to Walther could "perhaps" also represent *E. halbingeri*.

E. Moore, 46/1542 (GH). Perhaps also: Dist. Pachuca; open meadow in fir forest near Zerezo, below Parque Nacional El Chico, altitude 3,000 m.; *H. E. Moore, 47/2806 (BH).*

However :

Fact is that **of Moore 2806 two specimens are extant**, one at MICH and the other at GH, both of course determined as *E. secunda*. The - of course identical - information on their determination labels reads : "Open meadow in fir forest near Zerezo and below Parque Nacional El Chico, alt. 3000 m. Leaves bright green red-tipped and margined. Flower stalk red, flowers orange with yellow tip." While the specimen at MICH is extremely poor and not identifiable (but according to Walther nevertheless "**perhaps**" *E. halbingeri* – in spite of the red flower stalk, not applicable to the latter), the specimen at GH - consisting of 3 rosettes, two of them with a very rudimentary inflorescence each – is fine and is cited in Walther's monograph **as collection of *E. elatior***. In other words : One and the same Moore gathering of *E. secunda* was used / indicated by Walther for two quite different species : *E. halbingeri* and *E. elatior*.

BTW : **El Chico is actually the type locality of *E. elatior* !**

PLATE ONE, LOWER
22. *Echeveria halbingeri* E. Walther. Flowers, \times 2.7. Plant flowering in San Diego 24 April 1960; part of the type collection (UCBG 57.796). [See page 120]

3. The photo is by Reid Moran (again not credited) of UCBG 57.796 - "part of the type collection". The latter is completely wrong. UCBG 57.796 is neither the type collection nor part of it, all UCBG accessions are from various sources and of unknown origin.

Comment :

As *E. halbingeri* was described from a plant of unknown wild origin and as the colour photo by Reid Moran was also made from a plant of unknown origin, we are faced with the question : What is *E. halbingeri* really ? In addition : Plants commonly encountered with this name do not correspond well to the original description. While their flowers are quite similar, they are far from being stemless and are offsetting right away and not only belatedly. And Walther's redetermination of differently identified specimen has not made things any better.

In any case, Walther's description is unusable. It could be replaced by Reid Moran's description of Uhl 2125, collected on limestone cliffs in side canyon, Puente Tepozan, 10.9 miles NE of Vizarrón on road to San Joaquín, Querétaro, 2250 m, 16 July 1972 :

<https://www.crassulaceae.ch/de/artikel?akID=48&aaID=2&aiID=H&aID=5363>

23. Echeveria pulidonis E. Walther, new species. (p. 122-124)

Walther made the description of this new species from a "single plant received from Sr. Miguel Pulido of Mexico City, 1959" who had collected it "in Hidalgo, Mexico, at Beristain, 30 kilos from Necaxa on lateral road leading to Zacatlan" – annoyingly on p.3 of the monograph this gentleman is indicated as "M. Polido" :

Plants glabrous; rosettes stemless, solitary at least when young, 8 cm. or more in diameter; leaves numerous, to 25 or more, spreading to ascending, narrowly obovate-oblong to oblong-ob lanceolate, long-attenuate to base, turgid, nearly flat above, beneath convex and obscurely keeled, at apex minutely mucronate, to 5 cm. long and 15 mm. broad; inflorescences ascending-spreading to decumbent, to 18 cm. tall; peduncle slender, 3 mm. thick near base, with about six appressed, linear-lanceolate, acute bracts to 15 mm. long; racemes simple, secund, strongly nodding in bud, with 10 or more flowers; pedicels to 6 mm. long, slender but decidedly turbinate below calyx; sepals unequal, longest to 6 mm. long, spreading, deltoid or ovate-deltoid, acute; corolla bluntly pentagonal, strongly urceolate, conical in bud, to 10 mm. long, 8 mm. in diameter near base, 8 mm. at mouth; petals gibbose at base, the apex strongly out- and recurved, bluntly mucronate, scarcely hollowed within at base; carpels 6 mm. long; nectaries to 2.5 mm. wide, thin, strongly oblique. Flowers from April on. Description from single plant received from Sr. Miguel Pulido of Mexico City, 1959.

Color. Leaves bice-green, with edges and mucro morocco-red, not puberulent or glaucous; peduncle dark olive-buff; bracts olivine; corolla lemon-yellow, both inside and out; carpels chalcedony-yellow below, primrose-yellow above, as are the nectaries.

Errors :

est to 6 mm. long, spreading, deltoid or ovate-deltoid, acute; corolla bluntly pentagonal, strongly urceolate, conical in bud, to 10 mm. long, 8 mm. in diameter near base, 8 mm. at mouth; petals gibbose at base, the apex strongly

1. A strongly urceolate flower cannot possibly have the same diameter at base and at mouth.

TYPE. *E. Walther*, 29 April 1959, from plant in Victor Reiter's collection (CAS, no. 414555). This plant had been received from Sr. Miguel Pulido of Mexico City in 1959. Sr. Pulido collected it in Hidalgo, Mexico, at Beristain, 30 kilos from Necaxa on lateral road leading to Zacatlan.

2. Obviously Walther failed to verify Beristain – the locality is in **Puebla**, not in Hidalgo, therefore also the following remark is wrong :

and *E. maculata*. Its closest relation would appear to be *E. halbingeri*, also from Hidalgo, which differs in its shorter, broader, more turgid leaves devoid

Accordingly also the indication in the Key to Series *Urceolatae* and under GEOGRAPHICAL OCCURRENCE is wrong.

Comment :

According to the determination label on the type sheet the specimen was prepared 4/29/59. While Walther's description is quite detailed, the pressed specimen is extremely poor showing only an immature inflorescence and four leaves, no rosette.

24. *Echeveria purpusorum* Berger (p. 124-127)

E. purpusorum was first described as *Urbinia purpusii* by Rose in *Contr. U.S. Natl. Herb.* 13: 302, 1911 :

***Urbinia purpusii* Rose, sp. nov.**

Acaulescent; leaves forming a very compact rosette, resembling in a most remarkable way certain species of *Haworthia*, broadly ovate, acuminate, 3 cm. long, nearly as broad at base, glabrous, the surface peculiarly mottled with brown; flowering stem more or less reddish, 30 cm. long, slender, bearing numerous small, ovate, acute, appressed leaves; inflorescence a few-flowered (6-flowered in the only one examined) raceme; pedicels of lowermost flower 6 mm. long, the upper ones shorter still; sepals small, ovate, acute, green, appressed to the flower; corolla somewhat urn-shaped, 10 to 12 mm. long, pinkish without, except toward the tip, this and the inner surface pale yellow; mouth of corolla small; petals acute, each bearing a large pocket at the base; stamens 10, the alternating ones nearly or quite distant; the other 5 borne on the adjoining petals just above the pocket; ovaries short, stigmas green.

Type U. S. National Herbarium no. 615402, collected by the Purpus brothers (C. A. and J. A.) in southern Mexico in 1909.

It was transferred to genus *Echeveria* by Berger in *Nat. Pflanzenfam. ed. 2*, 18a: 47, 1930.

Though Walther had no unambiguously identified *E. purpusorum*, he did not consider it important to quote Rose's accurate description, but preferred to make a new one of his own "from plants cultivated locally":

taries large and thick for the series, truncate-reniform, 2 mm. wide. Flowers May and June. **Description from plants cultivated locally.**

Errors :

1. The differences between the two descriptions are as follows :

Bracts : Rose : the flower stem "bearing **numerous small**, ovate, acute, appressed **leaves**" / Walther : "lower bracts **few**".

Inflorescence : Rose : flower stem a raceme / Walther : "**occasionally forked** below middle".

Pedicels : Rose : "of lowermost flowers **6 mm** long, the upper ones shorter still" / Walther : to **12 mm** long.

Corolla : Rose : "**somewhat urn-shaped**" / Walther : "**globose-urceolate**" or "**globose**".

Corolla colour : Rose : "**pinkish** without, except towards the tip, this and the inner surface **pale yellow**" / Walther : "**corolla rose-doree at base, to scarlet-red above**, on outside of tips and within **empire-yellow**" or "**scarlet** corolla".

The respective passages read :

scape to 20 cm. tall, erect; **lower bracts few**, ovate, acute, appressed, thick, to 15 mm. long, with hyaline basal spur; flowers six to nine; **pedicels to 12 mm.** long; sepals appressed, ovate-deltoid, subequal, acute, their free portion about 2 mm. long; corolla **globose-urceolate**, to 12 mm. long, greatest diameter 9 mm.,

elm-green; **corolla rose-doree at base, to scarlet-red above, on outside of tips and within empire-yellow**; styles apple-green; stigmas Hays-maroon; nectaries buff-yellow, as is also the corresponding basal portion of the carpels.

No comparisons are required here, for this species stands quite alone in its curiously mottled leaves, very small sepals, **quite globose, scarlet corolla**, and large nectaries.

B. Petals thick, with deep basal nectar cavity within, scarlet tipped yellow; nectaries broad, truncate; corolla globose; leaves dark green mottled brown; inflorescence occasionally forked below middle. Puebla-Oaxaca border. . . . 24. *E. purpusorum*

These differences clearly indicate that Walther's "plants cultivated locally" were not the true species. And it is obvious that Walther failed to compare the plants he used for his description with the description by Rose and the respective type specimen (which he duly cites), otherwise he would have noticed that they did not well correspond.

Cultivated plants are quite uniform, no doubt owing to vegetative propagation from a single original import. Any evident departures from the typical material, as described above, may be suspected to be due to garden hybridiza-

2. And his statement that they were "typical material" is simply wrong – but evidences that he had never seen / had the true *E. purpusorum*, and that he did not know that *E. purpusorum* hybrids do not differ conspicuously i.e. are not of "evident departures from the typical material" as he stated.

Figure 63. 24. *Echeveria purpusorum* Berger. Inflorescence, × 2. Plant flowering in San Diego 20 April 1967; of unknown origin (Moran 12283).

3. As far as pedicel length is concerned, Moran's plant of unknown origin corresponds to Walther's description, differs however regarding the bracts which are regularly arranged along the flower stem and not "lower bracts few". Walther's and Moran's plants illustrate what was circulating as "*E. purpusorum*" in California at that time – evidently not the plant of the Purpus brothers of 1909, i.e. not the true species but *E. purpusorum* hybrids.

Comment :

Apart from the fact that Rose's description is sufficient and that there was no need for a new one at all, Walther's description made from *E. purpusorum* hybrids is not only obsolete but downright misleading.

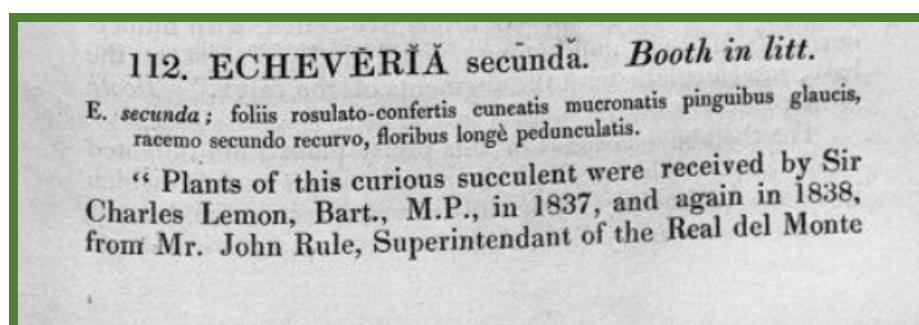
Series 3. Secundae (Baker) Berger

25. Echeveria secunda Booth (p. 129-131)

In his book review of Walther's *Echeveria*, 1972, Reid Moran wrote : "Walther's narrow species concept is well shown in his treatment of *E. secunda* and its near relatives. Fortunately, *E. secunda*, the first of this series to be named, is the best documented of the early ones : it was well described; the area of origin was at least strongly implied, the plant coming from the superintendent of the Real del Monte Mines, east of Pachuca; and, shortly after, it was well illustrated from a plant from the same cultivated source as the first collection. Similar plants occur in the mountains about Real del Monte and rather widely in the mountains elsewhere in central Mexico. These plants vary in many respects, not only from place to place but also at any one place. My conclusion from studying them in the field and in cultivation is that they represent one variable species, which is to be called *E. secunda*. Walther names the original plate of *E. secunda*, reproduced in his book as fig. 65, as neotype; and he cites specimens from about Pachuca, but he reports being unable to match *E. secunda* near Real del Monte. However, he cites specimens of *E. elatior* Walther, *E. alpina* Walther, and the new *E. reglensis* all from this vicinity and several others from slightly farther away. (Although collections are from various altitudes, these are not stated.) In the light of variation observed in the field and garden, the alleged differences among these species appear to be individual differences among specimens; and the key, descriptions, and illustrations are inconsistent as to details. For example, he says that *E. elatior* differs from *E. secunda* in its shorter pedicels; yet the type collection of *E. elatior* is shown (fig. 66) with longer pedicels than the neotype of *E. secunda* (fig. 65). He cites the wild-collected specimen of Purpus 206 under *E. secunda* and a cultivated plant of the same collection under *E. elatior*. It appears that he is assorting the specimens by trivial differences while showing no sound basis for recognizing more than one species of this group in the mountains east of Pachuca. However, he remarks (p. 128) that field studies may yet yield intermediate forms making possible the reduction of some of these species to varieties."

There is nothing to add to Moran's scathing assessment. And as a matter of course, Walther's texts about *E. secunda*, *E. elatior*, *E. reglensis*, *E. cornuta*, *E. pumila*, *E. pumila* var. *glauca* and *E. alpina* are of no use.

The description of *E. secunda* was published in *Edwards's Bot. Reg.* 1838. It was made from a plant sent from Real del Monte, Hidalgo :



Mines in Mexico, of which country it is believed to be a native. Treated like other succulents, in a pot of coarse gravelly soil, and subjected to a high temperature, with very little water, it has been found to thrive very well, and flowered in the stove at Carclew in June, 1838.

“*Stem* very short, creeping. *Leaves* numerous, concave, spatulate, and spreading, sessile, thick and fleshy, crowded, and loosely arranged round the stem as a common axis. With the exception of a few in the centre, which are much smaller than the others, the whole are similar in size and form, varying from two to two and a half inches in length, and rather more than an inch in breadth, at the widest part near the apex, from which they gradually taper towards the base, and end at the point in a small mucro. Their colour is a glaucous green, covered with a fine bloom, which easily rubs off on being touched. The outer edges and mucro have a brownish tinge. *Flower stem* round, about a foot high, glaucous pink, rising from one side of the mass of leaves, and terminating in a unilateral, deflexed, raceme, of about ten or a dozen flowers. *Bracteas* small and fleshy, ovate-acuminate, tinged with pink at the point. *Pedicels* of the earlier flowers about an inch long, diminishing gradually both in size and length towards the extremity of the raceme. Taking the point where they join the stem as a centre, it will be found that each pedicel forms, as near as possible, an angle of about 33° with the stem. *Calyx* 5-leaved, rotate, spreading, the segments thick and fleshy, lanceolate, acute. *Tube* upwards of half an inch in length, gibbous at the base, which is a bright yellowish red, narrowing upwards to the mouth, which is acutely five-toothed, a little recurved, and of a deep yellow. *Filaments* 10, five attached half way down the petals, and the other five at the base opposite each division of the calyx, but all of the same length. *Anthers* erect, deep yellow. *Styles* 5, short, and compressed together, pale, shining green. *Ovarium* five-celled, with numerous seeds in each, and having a small fleshy process at the base, intermediate with the segments of the calyx.” *Booth in litt.*

For the above account of this pretty plant I am indebted to Mr. Booth. The species is nearest *E. caespitosa*, from which it differs in having a one-sided gyrate raceme, and long-stalked scarlet, not yellow, flowers.

Walther's text :

Walther cited the above description to the full extent.

Errors :

1. Under COLLECTIONS he indicated :

COLLECTIONS. Mexico. Hidalgo: Pachuca, Purpus, 05/206 (NY); Sierra de Pachuca, Rose, 01/626-260 (US). Cultivated: Berger Herb., 1931/50 (NY); A. Berger (drawing, NY); Herb. C. Bumps no. 82 (BR).

Walther apparently forgot that he had Purpus 05/206 and Rose 01/626-260 also listed for *E. elatior* !

2. The indications in the Key to Series Secundae are futile because Walther's concept of *E. secunda* is deficient.

26. *Echeveria elatior* E. Walther (p. 131-133)

The protologue was published in *Cact. Succ. J. (Los Angeles)* 7: 72, 1935. The description was made from a plant Walther himself had collected 1934 at El Chico, near Pachuca (Hidalgo), i.e. from a single gathering.

The slightly modified description in the monograph reads :

Rosettes cespitose, densely leafy; leaves upcurved, oblanceolate to obovate-cuneate, distinctly acuminate with hornlike apex, rounded beneath and somewhat keeled, concave above, thick and fleshy, to 5 cm. long and 22 mm. broad, scarcely glaucous; inflorescences to five or more, simple, secund-racemose, to 30 cm. tall; bracts obovate-oblong, subtriquetrous, keeled, apex with hooked mucro, to 2 cm. long; racemes with 12 or more flowers; pedicels about 6 mm. long; sepals unequal, longest 6 mm. long, ovate-deltoid, acute, widely spreading or even somewhat reflexed in cultivated plants; corolla conoid-urceolate, to 13 mm. long and 9 mm. in basal diameter; petals slightly spreading at tips; nectaries truncate, transversely reniform. Flowers from June on.

Color. Leaves above light cress-green, slightly glaucous, beneath kildare-green; peduncle deep corinthian-red; bracts as the leaves, but tinged pompeian-red; sepals as the bracts, but even more deeply brownish vinaceous; corolla coral- to jasper-red; petals at edges apricot-yellow; styles cosse-green; nectaries buff-yellow.

Errors :

flowers 9 to 12; pedicels relatively short, often only 4 mm. long, more rarely to over 10 mm. long; sepals ascending, less than half as long as corolla, subequal, longest 6 mm. long, deltoid-ovate, acute; corolla straight, cylindroid-

1. As fig. 66 (p. 132) shows, this is not correct : flowers at anthesis have very long pedicels.

2. It might have occurred to Walther that the creation of a new species based only on a single gathering could be questionable, so while the protologue mentioned only a single collection locality : "El Chico near Pachuca, Hidalgo, Mexico", namely that of Walther's own collection, in the book he listed 7 collections :

COLLECTIONS. Mexico. Hidalgo: Sierra de Pachuca, Pringle 98/2256

- Pringle 2256, originally **determined as *E. glauca* Baker**, was redetermined by Walther as *E. elatior* in 1958, i.e. more than 20 years after the publication of the protologue.

(MEXU), Rose and Haugh, 99/4458 (US), Rose and Painter, 03/737 (US);

- "Rose and Haugh" : the correct name is **Hough**.

The determination label on US 346430 indicates that Rose & Hough 4458 was collected in the mountains near Pachuca. The specimen, consisting of only 4 relatively small/short inflorescences and lacking a rosette or leaves, was **not determined** and rightly so because the inflorescences do not allow a clear identification at all. Because it is cited in the book as a voucher for *E. elatior*, after its publication in 1972 the staff of the US National Herbarium added Walther's determination on the sheet. In other words : Because Walther listed Rose & Hough 4458 in his monograph under

COLLECTIONS, the doubtful US 346430 specimen became *E. elatior* - thanks to the curator of the US National Herbarium who very obviously failed to verify Walther's informations.

National Park, eight miles east of Pachuca, Hitchcock and Stanford, 40/7234

- Hitchcock and Stanford, 40/7234 is a wrong listing. It does not represent an *E. secunda*-like plant, the racemes are equilateral. Originally it was **determined as *E. platyphylla*** Rose. Moreover as the determination label explicitly states, the collection locality of Hitchcock and Stanford 7234 is "eight miles east of Toluca" – not Pachuca – i.e. in Estado de México, not in Hidalgo.

(US), Rose, 01/626-260 (US); fir forest near Zereyo, Parque Nacional El

- Rose, 01/626-260 was originally **determined as *E. secunda***. Because it is cited in the book as voucher for *E. elatior*, after its publication 1972 the curator of the US National Herbarium - redetermined the specimen as *E. elatior*, again without making more detailed enquiries — notwithstanding the fact that Walther had also listed it for *E. secunda* (see above).

(US), Rose, 01/626-260 (US); fir forest near Zereyo, Parque Nacional El Chico, Moore, 47/2806 (GH); southwest of Pachuca, southeast of Epazoyu-

- Moore 2806 is an interesting case :

Fact is that **of Moore 2806 two specimens are extant**, one at the MICH and the other at the GH, both of course determined as *E. secunda*. The information on their determination labels reads : "Open meadow in fir forest near Zerezo and below Parque Nacional El Chico, alt. 3000 m. Leaves bright green red-tipped and margined. Flower stalk red, flowers orange with yellow tip." While the specimen at MICH is extremely poor and not identifiable (but according to Walther nevertheless "**perhaps**" *E. halbingeri*), the specimen at GH - consisting of 3 rosettes, two of them with a very rudimentary inflorescence each – is cited in Walther's monograph **as collection of *E. elatior***. In other words : One and the same Moore gathering was cited by Walther for two quite different species : *E. halbingeri* and *E. elatior*.

Chico, Moore, 47/2806 (GH); southwest of Pachuca, southeast of Epazoyu-
can, Moore, 47/3061 (GH). Cultivated: Golden Gate Park, San Francisco,

- Moore, 47/3061 was originally **determined as *E. secunda***. After the publication of Walther's monograph the curator of GH noted on the sheet that it represents Walther's *E. elatior*, very obviously he also did not consider it necessary to verify Walther's data.

1906 from a plant from Pachuca, Purpus, 05/206, cultivated at La Mortola.

- Purpus, 05/206, originally determined as *E. secunda*, is cited by Walther for *E. secunda* as well as for *E. elatior*.

Walther's indications in the Key to Serie *Secundae* do not agree at all with his description :

F. Peduncle strict, erect, at times to over 30 cm. tall; pedicels often short; sepals ascending; corolla straight, cylindroid-pentagonal, the petals erect. 26. <i>E. elatior</i>

Comment :

In order to give his newly created *E. elatior* more weight, Walther resorted to his tried and tested method of reclassifying already determined specimens, most of them originally and correctly determined as *E. secunda*. And his indications in the Key obviously refer to a different plant.

See Reid Moran's comment to 25. *Echeveria secunda*.

27. Echeveria reglensis E. Walther, new species (p. 133)

Walther made his description from plants grown in Golden Gate Park, San Francisco :

Rosettes stemless, freely soboliferous, densely leafy; leaves 25 or more, upcurved, thick, concave above, rounded beneath and faintly keeled, obovate-cuneate, abruptly rounded to the cuspidate-mucronate apex, 35 to 50 mm. long, 18 to 22 mm. broad, more or less glaucous; inflorescences two to three, simple, secund-racemose; peduncle slender, often laxly ascending, to 20 cm. tall; bracts few, often only three, oblong-obovate, acute, appressed, 15 mm. long or less; flowers 6 to 12; pedicels 8 to 10 mm. long or more; sepals widely spreading, subequal, longest to 8 mm. long, ovate-deltoid to lanceolate, acute; corolla conoid-urceolate, bluntly pentagonal, 12 to 13 mm. long, 8 to 9 mm. in basal diameter, but often only 4 to 7 mm. in diameter at mouth; petals erect or slightly connivent, somewhat spreading at tips; nectaries transversely elliptic, 2 mm. wide. Flowers from June on. Description from plants grown in Golden Gate Park, San Francisco.

Color. Leaves bice-green, with bloom deep glaucous-green, mucro deep hellebore-red; peduncle testaceous; bracts mignonette-green tinged vinaceous-fawn; sepals as leaves; corolla scarlet, rose-doree at base, petal tips apricot-yellow, inside ochraceous-orange to apricot-yellow; styles chrysolite-green.

As type he indicated CAS 234663, made from a plant he himself had collected at Santa Maria Regla, Hidalgo, in October 1934.

Comment :

See Reid Moran's comment to 25. *Echeveria secunda*.

28. Echeveria cornuta E. Walther, new species (p. 133-134)

The plant described as *E. cornuta* had been collected by Walther himself in 1935 between north of Zimapan and Encarnación, however it died before a specimen had been prepared, explained Walther unter REMARKS. This is his description :

Rosettes cespitose, densely leafy; leaves upcurved, oblanceolate to obovate-cuneate, distinctly acuminate with hornlike apex, rounded beneath and somewhat keeled, concave above, thick and fleshy, to 5 cm. long and 22 mm. broad, scarcely glaucous; inflorescences to five or more, simple, secund-racemose, to 30 cm. tall; bracts obovate-oblong, subtriquetrous, keeled, apex with hooked mucro, to 2 cm. long; racemes with 12 or more flowers; pedicels about 6 mm. long; sepals unequal, longest 6 mm. long, ovate-deltoid, acute, widely spreading or even somewhat reflexed in cultivated plants; corolla conoid-urceolate, to 13 mm. long and 9 mm. in basal diameter; petals slightly spreading at tips; nectaries truncate, transversely reniform. Flowers from June on.

Color. Leaves above light cress-green, slightly glaucous, beneath kildare-green; peduncle deep corinthian-red; bracts as the leaves, but tinged pompeian-red; sepals as the bracts, but even more deeply brownish vinaceous; corolla coral- to jasper-red; petals at edges apricot-yellow; styles cosse-green; nectaries buff-yellow.

As type he indicated :

TYPE. Collected 15 miles southwest of Jacala, Hidalgo, Mexico, *Hitchcock and Stanford*, 40/6983 (US, no. 1820940).

However Hitchcock & Stanford 6983 is from SW of Jacala, not from between N of Zimapan and Encarnación, and – more important – was originally determined as *E. platyphylla* ! Redetermined by Walther as "*E. secunda* forma" and later as holotype of "*Echeveria cornuta* E.W.". While Hitchcock & Stanford 6983 clearly does not represent *E. platyphylla*, it is just as little correct for *E. elatior* : the inflorescences are far too short and not secund-racemose, as indicated by Walther in his description, i.e. cannot possible serve as type of *E. cornuta*.

As paratype he indicated :

PARATYPE. Dist. Zimapan, between Encarnación and Mt. Cagandho, *Moore and Wood*, 48/4356 (BH).

What Moore & Wood 4356 represents is impossible to know because it cannot be found at BH, i.e. it is impossible to know whether it can be considered a paratype of *E. cornuta*.

Comment :

Of course this "new species" has the same great deficiency as the previous ones : it is created on the basis of a single gathering, and the differences compared with *E. secunda* ("strongly hooked tips of the rather narrower thicker leaves, uncinat bracts, shorter pedicels, and the more widely spreading sepals") are far too insignificant as to justify the classification as a separate species. And the citation of Hitchcock & Stanford 6983 in order to compensate the lacking type specimen – a specimen NOT representing an *E. secunda*-like plant - does certainly not remedy the situation.

See Reid Moran's comment to 25. *Echeveria secunda*.

29. Echeveria meyranaiana E. Walther (p. 134-136)

The plant Walther described as *E. meyranaiana* he himself collected on "limestone hill across road from Laguna de Alchichica" 4 January 1959, it flowered in Victor Reiter's garden. The protologue of *E. meyranaiana* was published 1959 in *Cactaceas y Suculentas Mexicanas* 4: 29, in Spanish. The English translation in Walther's monograph reads as follows :

Plant glabrous, stemless, cespitose; leaves numerous, densely rosulate, variable in shape, broadly obovate to oblong-oblongate, to 65 mm. long, 20 mm. broad or more, acuminate at the upcurved apex, above nearly flat, below rounded and distinctly keeled; inflorescences several, to 15 cm. tall, usually 2-branched; branches secund-racemose, each with about 11 flowers; peduncle slender, erect; its bracts seven or eight, readily detached, appressed, ovate, subtriangular, uncinately mucronate, keeled beneath, to 14 mm. long; pedicels very slender, to 7 mm. long and 1 mm. in diameter; sepals ascending-spreading, subequal, longest to 5 mm. long, deltoid to linear, shortly acuminate; corolla bluntly pentagonal, cylindroid-urceolate, about 10 mm. long, 8 mm. in basal diameter, 6 mm. wide at mouth; petals narrow, with distinct basal hollow and acute, outcurved apex; carpels 8 mm. long; nectaries small, 1 mm. broad, transversely reniform, obliquely truncate. Flowers from February on.

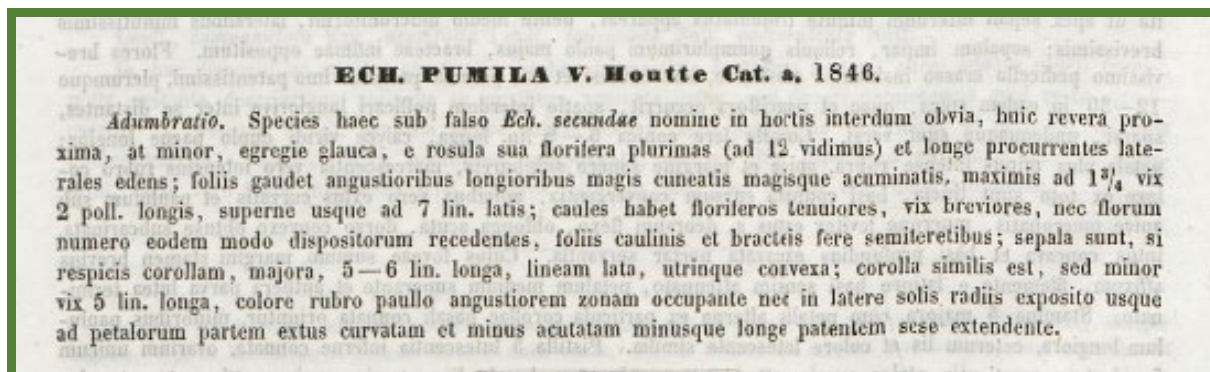
Color. Leaves grass-green to Rinneman's-green, but more or less glaucous; peduncle terracotta; bracts as the leaves; sepals pois-green; corolla begonia-rose to peach-red, inside deep-chrome; carpels neva-green above.

Comment :

Uhl wrote : "Walther (1972) separated his new *E. meyranaiana* primarily on the basis of its supposedly bifid inflorescence (cincinnus) and its shorter, broader leaves. However, these characters seem inconsistent, and I believe, regretfully, that *E. meyranaiana* does not warrant separate specific status" (*Haseltonia* 3 : 37. 1995).

30. *Echeveria pumila* Van Houtte (p. 136-138)

E. pumila was mentioned for the first time in Van Houtte's catalogue of 1846 and described 7 years later by Schlechtendal in *Hort. Hal.* III: 20, 1853 :



This is an excellently glaucous plant with very long sepals (10 – 12 mm) and a short corolla (10 mm). It had been selected from an enormous number of cultivated *E. secunda* plantlets in Van Houtte's nursery in Belgium – obviously being a mutation - and was what currently is called a cultivar although it was published as a species at the time. How widely it was distributed in Europe and how long it survived there is not known.

Walther's text

from June to August. Description based upon material long cultivated locally.

In spite of the fact that Walther could not possibly be in possession of Van Houtte's *E. pumila*, he did not find it necessary to present the original description to his readers by translating Schlechtendal's text but preferred to make a new one from "material long cultivated locally". Needless to say that this "material" was in no way related to the selection Van Houtte in **Belgium** had offered more than 110 years ago in his 1846 catalogue as *E. pumila*, and not surprisingly it did not correspond to Van Houtte's plant because it was lacking the characteristic features stressed by Schlechtendal, namely the unusually long sepals and the short corolla. So of course Walther's description is of no use at all.

The history of the wrong *E. pumila* :

TYPE. None designated. Neotype: Saunders Refugium Botanicum, volume 1, plate 62, 1869.

The illustration referred to by Walther (fig. 69 in the monograph) accompanies the description of *Cotyledon [Echeveria] pumila* by Baker, published 1869. Regarding calyx and corolla Baker wrote : "of the two preceding". The two preceding are *E. secunda* and *E. glauca*. Baker's description of *E. secunda* reads : "Sepals lanceolate, equal, two lines long, at first spreading, finally ascending. Corolla three-eighths of an inch deep, hardly at all pentagonal, bright red downwards, bright yellow upwards and within". Regarding *E. glauca* Baker wrote : "Pedicels, sepals and corolla just as in *E. secunda*". That means *E. secunda*, *E. glauca* and *E. pumila* – according to Baker – share the same flowers, and the respective illustrations (pl. 61 & 62 in *Saunders' Refugium Botanicum*) leave no doubt. However : The plant Baker described as *E. pumila*, provided by W.W. Saunders, said to have been received "from Mons. Van Houtte, of Ghent, many years since" obviously was not the correct *E. pumila* because it was lacking the above mentioned characteristic features of very long sepals and a short corolla ! Why didn't Baker notice the misidentification ? The explanation is simple : Baker prefaced his description with a short text in Latin annotated as "Schlecht. Hort. Hal, p.20", i.e. Baker conscientiously intended to quote the original description – however what he quoted is **not Schlechtendal's text at all** ! Obviously Baker mixed some Latin descriptions. While it is not clear to what plant the Latin text cited by Baker belongs, it is obvious that this wrong citation is the reason

why Baker's description does not match that of Schlechtendal. And because subsequent authors relied on Baker instead of going back to Schlechtendal, Baker's mistake has lived on to the present day.

And as apparently also Walther failed to check the original description he didn't notice that Baker's text on *E. pumila* was not correct and that therefore the illustration in *Refugium Botanicum* could not serve as a neotype.

Errors :

1. The neotype does not match the original description by Schlechtendal. It lacks the unusually long sepals and the short corolla.

Under OCCURRENCE Walther indicated :

OCCURRENCE. Mexico.

2. *E. pumila* is a mutation selected by Van Houtte – it cannot possibly have a Mexican origin.

3. Under COLLECTIONS Walther listed :

COLLECTIONS. *Cultivated*: New York Bot. Gard., Rose, 04/11036 (UC);

The specimen Rose 11036 consists of a rosette, 8 leaves and 3 inflorescences. The rosette diameter is at most 3 cm, the leaves are at most 2.5 cm long and less than 1 cm wide, and the flowers have very small ascending sepals and a at least 4 times as long corolla – very clearly anything but a match with *E. pumila* Van Houtte. Very obviously – but not surprisingly - the latter has never arrived in the US and the plants to which this name was applied were misidentified. Moreover Rose 11036 does also not correspond to Baker's description.

As synonyms of *E. pumila* Walther listed :

Echeveria pumila VAN HOUTTE, Catalogue, 1846; SCHLECHTENDAL, Hort. Hal., vol. 3, p. 20, 1853; BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 21, 1905.

4. Britten and Rose made things very easy for themselves : instead of referring to Schlechtendal, they limited themselves to giving a short summary of Baker's description in English and thus adopted and perpetuated his false identification. Moreover in *N. Amer. Fl.* they indicated Mexico as type locality of *E. pumila* !

Echeveria secunda var. *pumila* (Van Houtte) OTTO, Hamb. Gartenztg., vol. 29, p. 9, 1873.

5. This refers to the following passage :

E. pumila Van Houtte. Die Einführung dieser Art verdanken wir van Houtte in Gent. Sie treibt ziemlich große, aber nicht zahlreiche Blätter von 4 Zoll Länge und blaugrüner Farbe.

The English translation of the German description reads : "The plant has fairly big but not numerous leaves 10 cm long and bluish-green" – to cite this plant as a synonym of what Walther considered to be *E. pumila* is pretty absurd.

6. Under REMARKS Walther noted :

REMARKS. It should be noted that the differences cited are retained in cultivated plants, grown under identical conditions, whether propagated from seeds

However there are no differences cited

D. Leaves thinnish, sharp-edged, scarcely keeled, flat or nearly so, at apex acute or mucronate. 30. *E. pumila*
E. Leaves oblanceolate-cuneate, acute, rarely over 15 mm. broad.
30a. *E. pumila* var. *pumila*

The indications in the Key to Series Secundae refer of course to Walther's locally cultivated plants and not to *E. pumila* Van Houtte.

Comment :

Walther's ignorance of the historical facts and his carelessness are obvious. The plants he described are of unknown origin. The name he applied to them belongs to Van Houtte's selection of 1846, i.e. is a cultivar name and cannot possibly be used more than 110 years later for plants of unknown origin lacking the decisive features. Result : His text is of absolutely no use.

30b. *Echeveria pumila* var. *glauca* (Baker) E. Walther, new combination (p. 138-141)

Baker's description of *Cotyledon* [*Echeveria*] *glauca* was made from a plant in cultivation, provided by W.W. Saunders, who stated : "The plant originally came to me from Mons. Houtte's nursery at Ghent."

Glabrous, not at all or very shortly caulescent, densely stoloniferous from the crown of the root. The leaves forty to fifty in a very dense rosette, the outer ones almost horizontal, quite two inches long by three-fourths to seven-eighths of an inch broad five-sixths of the way up, the point more or less rounded to a decided mucro, the lower three-quarters cuneately narrowed, both sides extremely glaucous, only the edges of the fading leaves a little tinged with red. Flowering branches a foot high, slender, terete, pinkish glaucous, with only a few distant small bract-like leaves. Flowers twelve to twenty in a secund raceme which is finally four to six inches long. Bracts ovate-oblong, two lines long. Pedicels, sepals and corolla just as in *C. secunda*. —J. G. B.

A very pretty compact dwarf-growing species, requiring a dry and light situation in the greenhouse during the winter, and during the summer it does very well in the open air, growing freely on rock-work, or as an edging, in which situation, from its glaucous appearance, it produces a very pleasing effect. It is easily increased by offsets and seeds. The plant originally came to me from Mons. Van Houtte's nursery at Ghent.—W. W. S.

Like *E. pumila* also *E. glauca* had been selected from a huge number of *E. secunda* plantlets in the said nursery because of its unusually bluish colour and though it was published as a species at the time it was what currently is called a cultivar, i.e. was certainly not a species. *E. secunda* clearly has a Mexican origin, the selection however occurred in Van Houtte's nursery and not in Mexico, i.e. the cultivar has no Mexican origin.

Walther's text

Just as Walther did not take note of the historical facts for *E. pumila*, he did not do so for *E. glauca* either. *E. pumila* and *E. glauca* are both selections of *E. secunda* plantlets, originating in Van Houtte's nursery, the former a mutation selected because of its excellently glaucous appearance, the other selected because of its unusual bluish colour, both of course have no Mexican origin. To classify the latter as a variety of the former is utterly stupid.

But it gets even better, or rather worse : Instead of quoting Baker's description Walther again preferred to make a new one by himself from "living material grown in Golden Gate Park, San Francisco, originally from Peñas Cosas, Mexico, D.F.", in other words : He "redescribed" *E. glauca* Hort., originated in a Belgium nursery, from plants collected in the Federal District of Mexico - a completely incomprehensible practice and totally absurd.

Errors :

1. The first entry on the list of synonyms reads :

Echeveria pumila var. *glauca* (Baker) E. WALTHER, comb. nov.

that means the newly published combination is simultaneously its own synonym

Cotyledon glauca BAKER, in Saunders Refug. Bot., vol. 1, pl. 64, 1869.
Echeveria secunda var. *glauca* (Baker) OTTO, Hamb. Gartenztg., vol. 29, p. 9, 1873.
Echeveria glauca (Baker) ED. MORREN, La Belg. Hort., vol. 24, p. 161, 1874; BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 21, 1905; POELLNITZ, in Fedde Repert., vol. 39, p. 246, 1936.

2. All these publications mentioned in the list of synonyms refer to the selection by Van Houtte, i.e. to a cultivar and cannot possibly be synonyms of Walther's new combination.

TYPE. K ex Hooker Herb. no. 101, 1856.

3. The respective sheet is annotated as "Hort. Kew, 1856". There is no further information regarding the origin of the pressed plant. The specimen consists of only a smaller and a larger leaf and an inflorescence. Walther apparently had taken leave of his senses to indicate this more than 100 years old specimen of an unknown plant of unknown origin as type of his new combination "*E. pumila* var. *glauca*" referring to plants occurring in Distrito Federal, Estado de México and Puebla.

OCCURRENCE. Mexico. Valley of Mexico, Federal District, etc. Serranía de Ajusco, Peñas Cosas, Zempoala Lakes, Popocatepetl. Puebla: Hda. Moria.

4. Baker's *E. glauca* Hort. has no Mexican origin.

5. Under COLLECTIONS Walther listed :

- Moulin de Belem, Bourgeau 1865/48 – correct name is "Belem" – originally not determined, later annotated as "***Cotyledon mucronata***" or "***Echeveria secunda* Lindl.**", 1957 redetermined by Walther as ***Echeveria glauca* (Baker) Morren**. There are several Bourgeau specimens, they show small to medium sized plants with short inflorescences.
- Serrania de Ajusco, Pringle, 98/6865, 3000 m – originally determined as "***Cotyledon secundiflora* Baker**" [should of course read *Cotyledon secunda* Baker], 1958 redetermined by Walther as ***Echeveria glauca* (Baker)**. There are numerous Pringle 6865 specimens, the majority showing rather small plants, but some also medium sized to large rosettes.
- Matuda, 50/1921, 2900 m, consisting of two big rosettes with 4 inflorescences of different sizes – originally determined as "***Echiveria (!) glauca* (Bak.) Ott.**" - of course wrongly because the leaves are huge and the inflorescences are not secund.
- Santa Fe, Rose, 01/624, consisting of three long, many-flowered inflorescences and three rather small leaves – originally determined as "***Cotyledon glauca* (*Echeveria glauca*) Baker**".
- Rose, 920, consisting of a medium sized rosette and three long elongated inflorescences – originally determined as "***Echeveria glauca***".
- Rose & Painter, 03/6546, consisting of a big rosette and three long, many-flowered inflorescences – originally determined as "***Echeveria glauca* Baker**".
- Carlos Reiche, 1914, consisting of one small rosette and two very small ones, all with poorly developed inflorescences – originally determined as "***Cotyledon glauca*, Baker**", redetermined by Walther as "***Echeveria glauca* (Bak.) Otto**" at an unknown date.
- Valley of Mexico, Guadalupe, Rose and Haugh, 99/44537 – correct name is Hough –, consisting of two many-flowered inflorescences and two rather small leaves - originally determined as "***Cotyledon***", 1958 redetermined by Walther as "***Echeveria glauca***".
- Ixtacchiuatl, Purpus, 03/R: 607, consisting of two very small leaves and a three-flowered rudimentary inflorescence – originally determined as "***Echeveria*, Ixtacchiuatl**". **This is *E. alpina*.**
- near timberline, Purpus, 03/R: 605, consisting of one very small rosette, two small leaves with a rudimentary two-flowered inflorescence, another rudimentary inflorescence & one tiny leaf with a two-flowered rudimentary inflorescence – originally determined as "***Echeveria* near timberline Ixtacchiuatl**". **This is *E. alpina*.**
- Purpus, 03/R: 604, consisting of 5 small leaves and a poor three-flowered inflorescence & two even smaller leaves with a one-flowered rudimentary inflorescence – originally determined as "***Echeveria*, near timberline Ixtacchiuatl**". **This is *E. alpina* and as such indicated by Walther in the protologue of *E. alpina* Cact. Succ. J. (Los Angeles) 7: 70, 1935.**
- Rose, 05/857 : The indication is not correct, this is a **Purpus** not a Rose collection, should read **Purpus / Rose 05/857**. It consists of 4 small leaves and a rudimentary two-flowered inflorescence – originally determined as "***Echeveria alpina*, rocks above timberline Ixtacchiuatl**". This is of course ***E. alpina* and as such indicated by Walther in the protologue of *E. alpina* Cact. Succ. J. (Los Angeles) 7: 70, 1935.**
- Puebla: Hda. Moria, Br. Nicolas, 1910 /, consisting of a medium sized plant with inflorescence, a plant with poor rosette and inflorescence, an inflorescence with not secund flower arrangement and an immature inflorescence – originally determined as "***Echeveria secunda* Benth.**" – 1957 redetermined by Walther as "***Echeveria glauca* (Baker) Morren**.....".

- Guadalupe, Br. Nicolas, 1917/ - correct date probably 1904, not 1917 - originally determined as "***Echeveria desmetiana* Hemsley**", consisting of 4 very small rosettes and 3 small inflorescences, one of them bifurcate – 1957 redetermined by Walther as "*Echeveria glauca* (Baker) Morren".

- Without locality : Hooker, 1856/101 – "Hooker" is not indicated on this sheet, only "Hort. Kew, 1856" (see comment on Type above).

While for his *E. pumila* Walther did not list any one collection in Mexico, for *E. pumila* var. *glauca* he indicated very many, and notwithstanding their quite different sizes, partly highly poorly developed inflorescences, collection localities of very different altitudes and the inconsistency of the original determination, he obviously considered them all and sundry suitable to support his new combination *E. pumila* var. *glauca*. How can a species (as such he considered *E. pumila*) with **no** wild origin have a variety **with** wild origin ? ? ? Of course none of the listed collections has anything to do with *E. glauca* (Baker) Morren, i.e. *Echeveria glauca* Hort.

Those of the above listed specimens, originally determined as *E. glauca*, demonstrate that the correct identity of *E. glauca* was ignored by US botanists. They misunderstood Baker's description as that of a species with Mexican origin – which it is in no way. However this still does not explain why plants with leaves of different sizes – some much bigger than indicated by Baker – unanimously were determined *E. glauca*. And in *N. Amer. Fl.* 1905 Rose even went so far as to specify Mexico as type locality of *E. glauca* and the State of Mexico as its distribution area. [The same happened to *E. pumila* (in the same publication) : "Type locality Mexico, Distribution Mexico" – sheer nonsense.]

And concerning the specimens collected by Purpus on Mt. Ixtaccihuatl : Walther seems to have completely forgotten that Mt. Ixtaccihuatl is the type locality of *E. alpina* and that two of the specimens he had indicated as collection localities of *E. alpina* in the respective protologue 1935.

REMARKS. *Echeveria pumila* var. *glauca* differs clearly from *E. secunda* in its thinner, more glaucous, distinctly flaccid leaves; from *E. alpina* and *E. tolu-*

5. The differences indicated are trivial and do not justify the classification of an independent species.

Of numerous reported hybrids having this for one parent, the best known is undoubtedly *E. 'Imbricata'*, raised by Deleuil of Marseilles in the 1870's, and probably the most widely cultivated *Echeveria*. It is often misnamed either

6. The parentage of *E. 'Imbricata'* Deleuil is indicated as "Hybride du glauca par le metallica". It is impossible to know to which plant "glauca" refers, because the name "glauca" had been in use for various plants with a particularly pronounced glaucous look, already before Baker applied the name to a plant from Van Houtte's nursery. Walther's suggestion that Deleuil had used what he, Walther, had described as *E. pumila* var. *glauca*, is totally absurd.

E. Leaves obovate-cuneate, apex rounded or truncate and mucronate, to 2 cm. broad. 30b. E. pumila var. glauca

7. The indications in the Key to Series *Secundae* of course are of no use at all as they do not refer to Van Houtte's cultivar *E. glauca*.

8. The listing of *E. pumila* var. *glauca* in GEOGRAPHICAL OCCURRENCE under Mexico is of course absurd.

Comment :

The name "glauc" as well as the name "pumila" – although at the time published as species – were cultivar names, selected in a nursery in the 1840s, and as a matter of course the respective plants did not have a Mexican origin. Accordingly the names "glauc" and "pumila" cannot possibly be used for plants collected in Mexico in the first half of the 20th century. *E. pumila* var. *glauc* in every respect is an invalid name and Walther's text is only misleading and of course of no use at all. *E. pumila* is a prime example of Walther's nonsensical combining and recombining.

31. *Echeveria turgida* Rose (p. 141-143)

Rose published his description of *E. turgida* in *N. Amer. Fl.* 22: 21, 1905. The plant had been collected by C.A. Purpus in Coahuila in 1904 :

32. *Echeveria turgida* Rose, sp. nov.

Acaulescent. Leaves very numerous, forming very compact rosettes, very turgid, spatulate-oblong, mucronate-tipped, grayish-green, somewhat glaucous, the tips and margin more or less tinged with red; flowering stems about 10 cm. long, red above, paler below; leaves 6-8 cm. long, acute, narrow, semiterete; flowers 4-6, in a secund raceme; lower pedicels 6-8 mm. long, the upper ones gradually shorter; sepals spreading at right angles to the corolla-tube, the larger ones 6 mm. long, the two smaller minute; corolla rose-colored, 5-angled, 10 mm. long, its lobes pointed.

Collected by C. A. Purpus on limestone rock near Viesca, Coahuila, Mexico, February 20, 1904; flowered in Washington, January, 1905 (Rose no. 962).

Walther's text

As usual, Walther preferred not to cite the original description by Rose but to write one of his own, this time from "material long cultivated in Californian Gardens" of which he stated that it "undoubtedly" represented "clonotypes". However he was thoroughly wrong :

Rosettes stemless, becoming cespitose; leaves numerous, crowded, upcurved to apex, flat, evenly turgid to the edges, slightly convex beneath but only faintly keeled just below apex, oblong-cuneate, at apex truncate and mucronate, to 5 cm. long and 25 mm. broad; inflorescences two to four, simply secund-racemose; peduncle erect-ascending, to 20 cm. tall, 2 to 3 mm. thick below; bracts few, appressed, oblong-ovate, acute, to 10 mm. long; flowers to 10 or more; pedicels slender, to 12 mm. long; sepals unequal, longest to 10 mm. long, widely spreading, deltoid- to linear-lanceolate, acute; corolla cylindroid-conical, to 12 mm. long, 7 mm. in basal diameter; petals slightly spreading at tips; nectaries lunate, to 2 mm. wide. Flowers from April on. Description from material long cultivated in California gardens.

- **Leaves** : Walther : flat, evenly turgid to the edges / Rose : very turgid
- **Inflorescence** : Walther : to 20 cm tall / Rose : 10 cm tall.
- **Pedicels** : Walther : to 12 mm long / Rose : 6-8 mm long.
- **Sepals** : Walther : to 10 mm long / Rose : 6 mm long.
- **Corolla** : Walther : 12 mm long / Rose : 10 mm long.

Errors :

Under TYPE Walther indicated :

TYPE. Collected near Viesca, Coahuila, Mexico, C. A. Purpus, 04/R-05.962 (US, no. 399652); Walpole nos. 107, 108, unpublished.

1. The indication is not correct, and this in several respects :

- It should read "C.A. Purpus s.n. 04/Rose 962", not "04/R-05.962", and
- Walpole 107 & 108 is **NOT** *E. turgida*. The plant that Walpole used for his watercolours is mounted on US 399859. The determination label reads : "Plants of the District of Columbia and vicinity. *Echeveria*. Botanical Garden (source unknown) Rose 381, March 1902", i.e. the pressed plant had no specific name. Later, most likely by Walther himself, was added "*turgida*, Rose". However the specimen quite obviously does not represent *E. turgida*.
- Most important however is the fact that Walther had forgotten that he had listed "04/Rose 962" [erroneously as "04/961"] as type for his *E. elegans* var. *tuxpanensis* (see 15c. comment on *E. elegans*

var. *tuxpanensis*). In other words : Rose 962 is the type of *E. turgida* as well as of *E. elegans* var. *tuxpanensis* – how can one and the same specimen represent the type of two different species ? ? ?

Under REMARKS Walther wrote :

REMARKS. Plants grown in California agree perfectly with Walpole's water-color, and undoubtedly are clonotypes. *Echeveria turgida* is readily distin-

2. As just explained, Walpole's watercolour does not represent *E. turgida* and if it does "agree perfectly" with "plants grown in California" this is the best proof that the latter are not *E. turgida*.

color, and undoubtedly are clonotypes. *Echeveria turgida* is readily distin-

3. As the plants from Californian gardens do not correspond to Rose's description, they cannot possibly be clonotypes.

color, and undoubtedly are clonotypes. *Echeveria turgida* is readily distinguished in its flattish but thick-edged, pruinose, obtuse, and mucronate leaves,

4. The leaves of *E. turgida* Rose are "very turgid" not "flattish but thick-edged" like those of Walther's plants cultivated in Californian gardens.

long pedicels, and long widely spreading sepals. It somewhat resembles *E.*

5. Neither fig. 72 nor the type specimen of *E. turgida* show such long pedicels and long widely spreading sepals.

long pedicels, and long widely spreading sepals. It somewhat resembles *E. pumila* var. *glauca*, but is much more pruinose, its leaves have thick edges, and both pedicels and sepals are relatively longer.

6. An interesting remark : While fig. 70, p. 139 – copied by Walther from *Saunders' Refugium Botanicum* in order to illustrate his text about *E. pumila* var. *glauca* - shows that the pedicels of the latter are 2 to 3 times as long as those of *E. turgida*, in Walther's description of *E. pumila* var. *glauca* they are only 6 mm long

C. Pedicels to 12 mm. long; sepals to more than half as long as corolla, widely spreading; leaves turgid to edges. Viesca, Coahuila. 31. *E. turgida*

7. The indications in the Key to Series *Secundae* of course refer to Walther's wrongly identified plants, not to *E. turgida* Rose.

Comment :

The description is again of no use, because not made from plants with known wild origin, i.e. from the type locality, the only place *E. turgida* was known from at Walther's time. If Walther had taken the trouble to compare his description with that by Rose he would instantly have noticed that his "material" was neither a clonotype nor otherwise identical to Rose's plant. Accordingly his listing of *E. turgida* under species "traceable to Dr. Rose's introduction"(p. 58) is clearly wrong.

Of course *E. turgida*, along with *E. cuspidata*, belongs in Series *Urceolatae*, not in Series *Secundae*.

32. Echeveria cuspidata Rose

see Series *Urceolatae*.

33. Echeveria tolucensis Rose (p. 145-146)

E. tolucensis was collected by Rose and his assistant Painter near Toluca, Estado de México, 1903. Rose's description was published in *N. Amer. Fl.* 22: 22, 1905 :

36. *Echeveria tolucensis* Rose, sp. nov.

Acaulescent or in age shortly caulescent. Leaves forming rather open rosettes, usually ascending, pale, glaucous, oblanceolate, 4-6 cm. long, 15-22 mm. broad at widest point, strongly mucronate; inflorescence a secund raceme; flowers 7-12; sepals broadly ovate, obtuse; corolla about 12 mm. long.

Collected by J. N. Rose and Jos. H. Painter near Toluca, Mexico, September 4, 1903 (no. 6818).

Walther's text

Again Walther did not cite Rose's description but made one of his own from a plant he himself had collected also near Toluca in 1934. In 1936 a herbarium specimen was prepared (CAS 291345), and it corresponds quite well to Rose's description of *E. tolucensis*.

Rosettes stemless, becoming cespitose, laxly to densely leafy; leaves decidedly glaucous, thinnish and flaccid, scarcely keeled, to 10 cm. long and 3 cm. broad or more, oblanceolate-oblong, at apex deltoid-acute to shortly acuminate, not red-edged; inflorescences one to three, usually simple, in cultivated plants often 2-branched, secund-racemose, to 15 cm. tall or more; peduncle stout, erect; bracts often numerous, obovate-oblong, shortly acuminate, strongly keeled to subtriquetrous, 15 to 25 mm. long, appressed; flowers to 12 or more; pedicels to 10 mm. long; sepals unequal, longest 10 to 12 mm. long, more than half the length of corolla, ovate-deltoid, acute, ascending; corolla distinctly pentagonal, to 15 mm. long, 9 mm. in basal diameter; petals bluntly keeled, gibbose at base, spreading at tips; nectaries transversely elliptic, truncate, 2 mm. wide. Flowers May and June. Description from plant collected near Toluca on Cerro Teresano, Mexico, and grown in the Strybing Arboretum, Golden Gate Park, San Francisco.

COLLECTIONS. Mexico. Toluca, *Rose and Painter*, 03/6818 (type). *Cultivated*: Golden Gate Park, San Francisco, *E. Walther* in 1934, in 1936 (CAS).

However this description, allegedly made from the plant collected near Toluca, is neither a good match for the description by Rose nor for CAS 291345 :

Leaves : Rose : 4-6 x 1.5-2 cm, mucronate / Walther : 10 x 3+ cm, i.e. are far too long and too broad and not strongly mucronate, i.e. the leaf shape is different.

Corolla : Rose : 12 mm / Walther : 15 mm

Obviously Walther had again mixed up plants in his collection and described an unknown plant instead of the correct *E. tolucensis*. Of course he could easily have noticed this if he had compared his description with that by Rose.

Toluca, as at the railroad station and on the Plaza. I could discover only a few plants actually wild, on the Cerro Teresano just outside the town. The species bears a strong resemblance to *E. alpina*, but occurs at much lower elevations,

This comparison in itself is of no use because – as explained in the text about *E. alpina* – the plant Walther described as *E. alpina* was not that species but rather *E. secunda*. However it is interesting in so far as it points to the similarity of *E. tolucensis* and *E. secunda* what corresponds to Uhl's statement : "*E. tolucensis* Rose is generally larger than *E. secunda* but otherwise very similar."

Comment :

Again Walther's description is useless because made from a plant of unknown identity, clearly not corresponding to *E. tolucensis* Rose.

34. *Echeveria alpina* E. Walther (p. 146-147)

The protologue

In the early 1930s Walther visited the United States National Herbarium. There he came across the herbarium sheet US 62394. It consists of only a very short inflorescence with ca 7 densely arranged sessile flowers and two leaf fragments, completely insufficient for a reasonably reliable identification. On the same sheet mounted is the much reduced photograph of another specimen showing a fairly big densely leaved rosette with 2 inflorescences, three additional fragments of inflorescences and three separate leaves, unfortunately very blurred because of the small size of the photo, suggesting that the three fragments on US 62394 referred to the plant on the photo. The determination label provides the following information : "Ixtacihuatl, 14200 ft / Heilprin & Baker / ex Phil. Acad. Science". In other words, this represented a non determined plant. Of course Walther couldn't let that rest – the specimen had to be given an appropriate name and in view of the extreme altitude of the collection locality the name *E. alpina* was a natural choice. Walther made a short description based on the much reduced and blurred photograph of the original specimen and published the new species in *Cact. Succ. J. (Los Angeles)* 7: 70, 1935 :

16. *Echeveria alpina* EW., new species.

Acaulescens, cespitosa, foliis oblongo-spatulatis, 7 cm. longis, 3 cm. latis, truncatis, mucronatis, perglaucis (non rubrimarginatis); scapus ad 12 cm. altus; bractae latae, obovato-cuneatae; pedicella 3-5 mm. longa; sepala subaequalia, patentia, 7-9 mm. longa; corolla 15 mm. longa, rubro-aurantiaca, glauca, segmentis erectis.

Leaves many, thinnish, glaucous, to 73 mm. long, 30 mm. broad, oblong-spatulate, at apex truncate and mucronate; scape to 12 cm. tall, erect; bracts few, broad, obovate-cuneate, to 15 mm. long; raceme simple, with 10 or more flowers; pedicels 3 to 9 mm. long; sepals somewhat unequal, longest to 10 mm. long, widely spreading at anthesis; corolla to 15 mm. long by 9 mm. in diameter near base, reddish-orange, its segments nearly straight, erect.

Type specimen: Philadelphia Acad. of Sciences, Heilprin & Baker's collection from 14,200 ft. on Mt. Ixtacihuatl, Mexico.

Material seen: Type, Purpus 03/R:604, Purpus R:05/857; Ixtacihuatl near timberline. Living plants from Penas de Tomaxco, 3500 m., near Rio Frio, Puebla, Mexico. (EW. 1934/14).

Remarks: The thinnish, glaucous leaves with their truncate apex quite devoid of any reddish tinge, the spreading sepals and large corolla seem distinctive. Related species are *E. tolucensis* Rose, with its leaves acute; *E. glauca* (Baker) with smaller flowers; and *E. secunda* Booth, with leaves more turgid and strongly tinged with red at edges and mucro.

As **type** he indicated : "Philadelphia Acad. of Sciences, Heilprin & Baker's collection from 14,200 ft. on Mt. Ixtacihuatl, Mexico".

Errors :

1. The blurred photograph not permitting a precise description, Walther resorted to his imagination for help and invented details impossible to recognise on the photograph of the pressed specimen, for ex. it is impossible to know whether the leaf margins were red or not and how thin the leaves of a living plant really were. Equally impossible is a statement regarding the colour of the flowers. Clearly recognisable however is the total lack of bracts which Walther described to 15 mm long and broadly obovate-cuneate. And the original specimen clearly reveals that sepals are not spreading at anthesis and that at least two of the inflorescences are bifurcate. In conclusion : **Walther's description is mostly an invention !**

2. Under "**Material seen**" he listed

- "**Type, Purpus 03/R: 604**"- why this should also be a **type** is incomprehensible. This specimen he had also listed for his "*E. pumila* var. *glauca*". It consists of 5 leaves 3-5 cm long and 1.2-1.8 cm wide

at widest part, a small inflorescence with a flower stalk 5 cm long and ca 3 flowers, two more leaves hardly 3 cm long and 1.2 cm wide, and an even smaller inflorescence with only a single flower. Collection locality "Near timber line, Ixtaccihuatl".

- "**Purpus R:05/857**" – should read "C.A. Purpus (Rose 05/857) - again also listed for his "*E. pumila* var. *glauca*". It consists of 4 leaves 2.8-3.3 cm long and 1.2-1.6 cm wide at widest part and the fragment of an inflorescence with two flowers. Collection locality "rocks above timber line Ixtaccihuatl".

- "**Living plants from Peñas de Tomasco*, 3500 m, near Rio Frio, Puebla**". Rio Frio is in Estado de Mexico, not in Puebla, and 3500 m is not an alpine region. The respective specimen is CAS 291169 and it was prepared in 1936. It consists of 4 leaves, the longest 5 cm long and 3 cm wide at widest part and two inflorescences, ca 20 cm long, flowers only partly preserved.

In summary : None of the three "materials seen" corresponds to the above description. Moreover the collection from Peñas de Tomasco has the great disadvantage that it originated from a much lower altitude and not from above the timber line on Mt. Ixtaccihuatl. Why then they are listed here is inexplicable.

Walther's text in the monograph

Interestingly, for the monograph Walther produced a new description from the "living plants collected at Peñas de Tomasco, 1934, grown at Golden Gate Park, San Francisco", already mentioned in the protologue under "materials seen" and, as already explained, plants of much lower altitudes and therefore not representing an alpine *Echeveria*. Why he discarded the first description we are not told.

Rosettes cespitose, ultimately with numerous offsets; leaves numerous, crowded, to 6 cm. long and 4 cm. broad, obovate-cuneate, at apex broadly rounded to truncate and mucronate, flat, relatively thin and flaccid, beneath faintly or not keeled, very glaucous; inflorescences to three or more, simple, secund-racemose, to 18 cm. tall; peduncle ascending; bracts few, oblanceolate, subtriquetrous, acute, to 2 cm. long; flowers to 12 or more; pedicels to 8 mm. long; sepals unequal, longest to 12 mm. long, deltoid-oblong, thick, acute, ascending; corolla broad, 14 mm. long by 10 mm. in basal diameter, conoid-urceolate; petals spreading at tips; nectaries thick, truncate, lunate-reniform, to 2.75 mm. broad. Flowers from May on. **Description from living plants collected at Peñas de Tomasco, 1934, grown at Golden Gate Park, San Francisco.**

Color. Leaves light grape-green, but somewhat pulverulent and so deep greenish glaucous; peduncle avellanous; bracts kildare-green; pedicels glass-green; sepals light cress-green; corolla light coral-red to apricot-yellow; inside of petals empire-yellow above, pinkish vinaceous below; carpels dull green-yellow; styles lumiere-green; nectaries barium-yellow.

Errors :

1. Not surprisingly the new description, made from a plant of much lower altitude, differs remarkably from the protologue :

- Leaves are shorter and broader and the shape is different,
- inflorescence is longer, bracts are longer and have a different shape,

- sepals are longer and ascending instead of widely spreading,
- corolla is shorter and conoid urceolate instead of petals nearly straight.

2. However, this new description differs not only from the protologue but it also does not correspond to the specimen CAS 291169 (already mentioned above), prepared 1936 from the Peñas de Tomasco plants. It is therefore reasonable to suspect that in the more than 20 years of cultivation of these plants in Walther's collection, a mix-up had taken place, a not uncommon occurrence given his notorious mess, with the result that the plant Walther used for the new description was anything but not from Peñas de Tomasco.

3. Under TYPE Walther indicated :

TYPE. Heilprin and Baker, Ixtaccihuatl, elevation 14,200 feet (PH). Iso-type: US, no. 62394, photograph and fragments.

In 1958 Walther finally visited the herbarium of the Academy of Natural Sciences Philadelphia and found the original specimen he until then had only known from the blurred photo mounted on US 62394. He designated it as holotype of "*Echeveria alpina* E. Walther", and consequently US 62394 became the isotype.

Under OCCURRENCE and COLLECTIONS Walther indicated :

OCCURRENCE. Mexico. Estado de Mexico: Ixtaccihuatl. Hidalgo: near Real del Monte, Peñas Cargadores. Puebla: Peñas de Tomasco, etc.

(GH). Cultivated: Golden Gate Park, San Francisco, from Peñas de Tomasco, E. Walther in 1934, from Peñas Cargadores, E. Walther in 1934.

4. These localities are of much lower altitude and completely out of place here.

Moore, 46/1247 (BH); Cueva del Negro, Popocatepetl, E. K. Balls, 38B-4191

5.. "E.K.Balls, 38B-4191" should read "**38/B4191**".

(UC). Hidalgo: 55 miles southeast of Mexico City, J. N. Weaver, 42/745

6. This is wrong : The collection locality is in Estado de México, not in Hidalgo.

E. Walther in 1934, from Peñas Cargadores, E. Walther in 1934.

7. "Peñas Cargadores" should read "Peñas **Cargadas**" and is less than 2800 m asl.

Under REMARKS Walther wrote :

REMARKS. My specific name was based upon a note by Dr. Rose, attached to the type at Philadelphia, and would seem quite appropriate in view of the

8. The determination history of what is now indicated as holotype of *E. alpina* does not give the slightest evidence that the note attached in the top right corner of the sheet was written by Rose. Moreover Walther could read this label only 1958 when he saw the specimen at Philadelphia – more

than 20 years after he had published the name *E. alpina* - it could not possibly be deciphered in the blurred photo. The "note by Dr. Rose" is simply a lie.

Except for the lack of any purplish tinge and the simple inflorescence, *E. alpina* might well be mistaken for *E. 'Imbricata'*, our most commonly cultivated *Echeveria*, a hybrid of French origin.

9. To which of the two descriptions should this refer ? ? The protologue has leaves to 7.3 cm, the description in the book has leaves to 6 cm – and such plants should be mistaken for *E. 'Imbricata'* ? ? It looks as if his "*E. 'Imbricata'*" was not correctly identified either

Comment :

The name *E. alpina* belongs to the holotype sheet PH 01031608. Its description, published 1935, is mostly an invention. The second description in the book, published 1972, stated to be made from plants of much lower altitudes, is of no relevance in two respects : 1. due to a mix of labels it was made from an unknown plant of unknown origin and 2. it is invalid anyway as Walther nowhere indicated that it was meant to replace the first description.

E. alpina is a further evidence of Walther's negligence and unscrupulousness in dealing with facts.

35. *Echeveria byrnesii* Rose (p. 147)

The description of *E. byrnesii* was first published in *N. Amer. Fl.* 22: 20, 1905 :

28. *Echeveria Byrnesi* Rose, sp. nov.

Acaulescent, forming dense rosettes of leaves. Leaves bright-green or tinged with red, not at all glaucous, obovate to oblanceolate, 4-5 cm. long, about 2 cm. broad at widest part, mucronate; inflorescence a secund raceme; leaves of flowering stem narrow; sepals narrowly ovate, acute; corolla about 1 cm. long, the lobes acute, winged on the back (at least in herbarium specimens).

Collected by J. N. Rose and Jos. H. Painter on the Volcano of Toluca, Mexico, October 15, 1903 (no. 7991). Living specimens (no. 918) were also sent home which show clearly that the species, while of the *E. secunda* and *E. glauca* type, is very distinct from them. This species, on account of its dense rosettes of green leaves, ought to become a useful bedding plant: it is named for Mr. E. M. Byrnes, for many years an expert grower of Echeverias, now Superintendent of Gardens and Grounds in the U. S. Department of Agriculture.

The type of *Echeveria byrnesii* is from Nevado de Toluca, "just below the timberline", i.e. at a comparatively high altitude.

Walther's text

Under REMARKS Walther wrote :

When in Toluca in 1934 I found this cultivated in the Plaza, and later just below timberline at what presumably was the type locality. Here it grew in shady pine-woods, on outcropping rocks in dripping-wet moss, at about 11,800 feet. The plants did not survive to flower, so that the above description is based on the subsequent collection, at the same locality, by E. K. Balls.

Notwithstanding the fact that the plants Walther himself had collected "presumably" near the type locality, had not survived, he could not be content with citing Rose's description but preferred to write a new one, relying on plants collected by Balls in 1938 :

Flowers from June on. Description from living plants collected by E. K. Balls in 1938.

Under COLLECTIONS "E.K. BALLS in 1938" is rendered more precisely : "Ojo del Agua, Balls & Gourlay in 1938 :

COLLECTIONS. Mexico, Estado de Mexico: Nevado de Toluca *Rose and Painter*, 03/7991 (US, type), 03/6818 (MEXU); Ojo del Agua, *Balls and Gourlay* in 1938; Tultenango Canyon, *Rose*, 03/918 (US). *Cultivated*: Gold-

However "at the same locality" is clearly wrong. Balls & Gourlay's plants were not collected on Nevado de Toluca, they rather originated from Ojo del Agua, a locality in the northeastern part of the Estado de México, quite distant from Toluca and only ca 2400 m asl. Quite obviously Walther overlooked that Ojo del Agua is not situated on the Nevado de Toluca.

A specimen was prepared (CAS 413921) and annotated by Walther thus : "*Echeveria byrnesii* Rose. Strybing Arboretum (from Ojo del Agua, Nevado de Toluca, coll by E.K. Balls) E. Walther, 4/8/59". It consists of 4 rosettes with several inflorescences and 3 single leaves.

It is no surprise that Walther's description, based on the plants from Ojo del Agua, differs from that by Rose, rather surprising however is the fact that it also does not correspond to the pressed plants of CAS 413921 said to represent the plants from Ojo del Agua :

- **Leaves** : Walther : 9 x 3.5 cm acc. to the description, but only at most 4.5 x 2 cm acc. to CAS 413921 / Rose : 4 – 5 x 2 cm.

- **Inflorescence** (incl. raceme) : Walther : to 13 cm long or more acc. to the description, but more than 20 cm long acc. to CAS 413921 / Rose : ca 11 cm.

- **Bracts** : Walther : to 25 mm long acc. to the description, but only at most 15 mm long acc. to CAS 413921 / Rose : ca 17 mm long.

- **Pedicels** : Walther : ca 5 mm long acc. to the description, but up to 25 mm long acc. to CAS 413921 / Rose : flowers sessile.

- **Corolla** : Walther : 14 x 12 mm / Rose 1 cm long.

Conclusion : The plant prepared for CAS 413921 and the plant Walther used for his description are not identical. Which of the two represents the Balls & Gourlay collection from Ojo del Agua is impossible to know.

Under OCCURRENCE Walther indicated :

OCCURRENCE. Mexico, Estado de Mexico: Nevado de Toluca, Ojo del Agua, etc.
--

This is wrong : The plants from Ojo del Agua are not *E. byrnesii* Rose.

Comment :

Walther's description – superfluous anyway– is of no use as it does not concern *E. byrnesii* Rose. If he had taken the effort to compare the plants from Ojo del Agua with the protologue he could have noticed that they were not identical. In view of the fact that the plant of Walther's description and the plant on the CAS specimen however are not identical, it is not even possible to know which of the two was/is the plant from Ojo del Agua.

36. *Echeveria subalpina* Rose and Purpus (p. 148-149)

The type of *E. subalpina* was collected by Purpus in 1907 in the subalpine regions of Orizaba and the plant was described by Rose & Purpus 1910 in *Contr. U.S. Natl. Herb.* 13: 45, 1910 :

Echeveria subalpina Rose & Purpus, sp. nov.

PLATE 11.

Acaulescent; leaves arranged in open rosettes (20 to 25 cm. in diameter), linear-lanceolate, with reddish attenuate tips, 7 to 10 cm. long, 1.5 to 2 cm. broad, very glaucous; flowering stem simple, rarely 2-branched, bearing few bract-like leaves; inflorescence a secund raceme, 8 to 20-flowered; pedicels very short, hardly elongating in age; sepals ascending; corolla 12 mm. long, cinnabar red without, yellowish within; petals blunt, yellowish-margined; stamens yellow; stigmas bright green.

Collected by Dr. C. A. Purpus in the subalpine regions of Orizaba in 1907.

Type U. S. National Herbarium no. 592489.

Walther's text

Once again, Walther did not have any clearly correctly identified plants, but – as always – this did not prompt him to quote the First Description by Rose & Purpus. He wrote one of his own "from cultivated plants": :

quetrous, concave above, to 2 cm. long; racemes 12- to 20-flowered; pedicels 6 to 8 or even 22 mm. long; sepals subequal, widely spreading, longest to 7 mm. long, deltoid-lanceolate, acuminate; corolla 10 to 12 mm. long, 8 mm. in basal diameter, bluntly pentagonal; petals often more or less widely spreading to recurved at tips; nectaries transversely-ellipsoid, to 2 mm. wide. Flowers from June to August. Description from cultivated plants.

Not surprisingly it differs from that by Rose & Purpus :

Pedicels : Walther : up to 22 mm / Rose & Purpus : pedicels very short.

Sepals : Walther : widely spreading" / Rose & Purpus : sepals ascending.

Conclusion : Walther's material was not correct. Again he could have easily noticed this by consulting the protologue.

Errors :

TYPE. Mexico: subalpine regions of Mt. Orizaba, C. A. Purpus (US, no. 592489).

1. This is not correct. The type locality is "the subalpine regions of Orizaba", not Mt. Orizaba. The town Orizaba is surrounded by several mountains, one of them is Pico de Orizaba. However as the protologue does not indicate either **Pico de** Orizaba or **Mt.** Orizaba, the type locality may not have been there.

Under OCCURRENCE Walther indicated :

OCCURRENCE. Puebla: vicinity of Esperanza, San Antonio Atzitzatlan, Vera Cruz: near Fortin.

2. "San Antonio Atzitzatlan" – correct name is **Atzitzintla**.

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Puebla. Esperanza, *Purpus* (US, type), *Purpus*, 11/5366 (F,NY,UC,US); Pico de Orizaba, *E. K. Balls*, 38/B-5325 (K,UC,

3. This is definitely wrong, the type is from the "subalpine regions of Orizaba", not from Esperanza.

COLLECTIONS. Mexico. Puebla. Esperanza, *Purpus* (US, type), *Purpus*, 11/5366 (F,NY,UC,US); Pico de Orizaba, *E. K. Balls*, 38/B-5325 (K,UC,

4. This is also definitely wrong : "*Purpus* 11/5366" is *E. heterosepala*, originally determined as that species, but redetermined by Walther as *E. subalpina* 5/2/58 !

US); San Antonio, *Balls and Gourlay*, 38/B-4511 (K,UC). Vera Cruz: Zama-pan, Fortin, *Purpus*, 06/500 (US). Cultivated: Golden Gate Park, San Francisco, from Esperanza, *E. Walther* in 1934, in 1957 (CAS).

5. This is clearly wrong, the specimen does not represent *E. subalpina* : two 10 cm long pieces of stem are mounted – however *E. subalpina* is a stemless plant

Under REMARKS Walther wrote :

REMARKS. Normally, *E. subalpina* is too distinct to be confused with any other species, but some dried material has been mislabeled *E. heterosepala*.

6. This refers to *Purpus* 11/5366 (MO 131693, US 463902, CAS 157276 etc) – see above - originally determined as *E. heterosepala* Rose, Esperanza, Puebla, redetermined by Walther as *E. subalpina* (5/2/58) - that means it was Walther himself who mislabelled it !

Figure 74. 36. *Echeveria subalpina* Rose and *Purpus*. Plants grown in Washington; collected by C. A. *Purpus* in 1908 at Esperanza, Puebla, Mexico, the type locality. Photographs from the U.S. National Herbarium, no. 523 and no. 612.

7. This information is wrong : Esperanza, Puebla, is not the type locality, this is "the subalpine regions of Orizaba".

Under ILLUSTRATIONS Walther listed :

ILLUSTRATIONS. Contrib. U.S. Nat. Herb., vol. 13, pl. 11, 1910; photograph no. 612 (US) [See figure 74.]; *Cactus and Succ. Jour. Amer.*, vol. 6, p. 187, 1935.

8. This is Walther's travelogue of 1934. On p. 187 there are two photos, one captioned "Edge of lavaflow near Esperanza, the home of *E. rubromarginata* and *E. akontiophylla*", the other "*E. akontiophylla* Werdermann in its native habitat." The latter however had been described by Werdermann from a **plant of unknown origin**, cultivated in the Botanical Garden of Berlin-Dahlem. So Walther's claim to have seen *E. akontiophylla* in its habitat is simply absurd.

Comment :

Walther's description of a plant not from the type locality and not well corresponding to the protologue is of no use. The listed collections show that he was confusing *E. subalpina* and *E. heterosepala*.

Series 4. Retusae E. Walther

To include two species of Series *Gibbiflorae* in the Key of Series *Retusae* makes no sense at all :

- | | |
|---|------------------------------|
| B. Stem usually evident and simple; rosettes mostly solitary. | |
| C. Pedicels rather short, 1 to 2 mm. long (species in Ser. 5, <i>Gibbiflorae</i>). | |
| D. Leaves cuneate-attenuate to base. | 51. <i>E. rubromarginata</i> |
| D. Leaves long-petioled. | 56. <i>E. acutifolia</i> |

37. Echeveria lozani Rose (p. 151)

E. lozanoi (correct name) was collected by C.G. Pringle and his assistant Lozano in the Mexican state Jalisco and its description was published in *N. Amer. Fl.* 22: 23, 1905 :

43. *Echeveria Lozani* Rose, sp. nov.

Acaulescent. Leaves forming a dense rosette, lying flat upon the ground, lanceolate or strap-shaped, 10 cm. long or more, 2-4 cm. broad at widest point, flattened and rather thickish except at the base, but here very thick and somewhat channeled, acute, glabrous, the central ones copper-colored; flowering stems 3-4 dm. long; inflorescence a short panicle; sepals unequal, ovate, acute; corolla light copper-colored, the lobes acute.

Collected by C. G. Pringle and his assistant Filamon L. Lozano in mountains near Etzatlan, Jalisco, Mexico, October 27, 1903 (*no. 11890*).

Walther's text

Though lacking a living plant of this species Walther was not willing to cite the description by Rose and instead produced his own.

Walther's description :

acute, only slightly spreading at tips. Description based on the type collection and original description.
--

Glabrous; stemless or nearly so, in old plants stem may reach a length of 5 cm.; leaves few, 8 "forming a dense rosette, lying flat upon the ground . . ."
--

- Working on the basis of the type sheet, i.e. a plant collected 1903, and the protologue, written 1904
- how could he know what an old plant would look like ? ? ?

channeled petiole 10 mm. broad, acute, the central ones copper-colored; inflo-
--

- Rose does not mention a petiole, and the type sheet shows leaves tapering gradually to the base without a distinct petiole. Incidentally Walther's mention of a petiole contradicts the diagnosis of his Series *Retusae* (p.150) :

not over 15 cm. long nor over 7 cm. broad, obtuse, retuse to acute, somewhat narrowed to base but scarcely petiolate, entire or lacerate, sometimes ciliate

rescence 30 to 45 cm. tall, a short panicle; bracts few, linear to oblong or oblanceolate, to 35 mm. long; panicle mostly rather short, with three to seven short,

- "a short panicle" / "panicle mostly rather short" – rather sloppy.

ceolate, to 35 mm. long; panicle mostly rather short, with three to seven short, several-flowered branches (two to four flowers each), pedicels stout, to 10 mm.

- It is not possible to discern "seven short branches" of the panicle or "four flowers" per branch on the type sheet. Moreover this is in contradiction to the Key to Series *Retusae* where only 1 – 3 branches are indicated :

B. Leaves glabrous, at first copper-colored; rosettes stemless or nearly so; inflorescence with 1 to 3 branches. Etzatlán, Jalisco. 37. *E. lozani*

long; sepals unequal, ovate, acute, spreading, longest to 11 mm. long, nearly as long as corolla; corolla 10 to 15 mm. long, light copper-colored, petals acute, only slightly spreading at tips. Description based on the type collection

- Moreover according to the type sheet, the sepals are huge and clearly often longer than the corolla, not "nearly as long as corolla". The corolla is no longer than 10 mm, and it is impossible to know how petals would look like at anthesis because almost all flowers were pressed at bud stage.

Comment :

While the type sheet shows a rosette with only 8 big leaves, Rose's description calls for a plant with a dense rosette, so there is no doubt that Rose described *E. lozanoi* from living plants. Walther admits that he did not know the true species and that he had to content himself with describing it on the basis of the type specimen and Rose's text. This is a truly telling example of Walther's hubris : He who has never seen a living plant felt called to give a better description than Rose who had the living plant at his disposal. The mention of old plants and the addition of specifications regarding the panicle he could not possibly have gained from the type sheet are pure inventions, i.e. lies – the contrary of trustworthy working. Needless to say that Walther's description is completely pointless.

38. *Echeveria sayulensis* E. Walther, new species (p. 151-152)

Walther described *E. sayulensis* "from plants cultivated in the Strybing Arboretum, Golden Gate Park, San Francisco. These plants were received through Sr. C. Halbinger of Mexico City from Sayula, near Guadalajara, Jalisco, Mexico" :

Glabrous, stem short, freely soboliferous; rosettes to over 25 cm. in diameter; leaves numerous, crowded, obovate-spathulate, obtuse and mucronate, nearly flat, thinnish, obscurely keeled beneath, to 14 cm. long and 7 cm. broad, narrowed to 2 cm. at base; inflorescences numerous, to 36 cm. tall, usually 2-branched; peduncle slender, ascending; bracts oblong-oblancheolate, to 5 cm. long and 15 mm. broad, shortly aristate-mucronate at tips; each secund-racemose branch with 12 to 15 flowers; pedicels to 12 mm. long; sepals unequal, longest to 12 mm. long, narrowly deltoid-lanceolate, acute, widely spreading; corolla to 17 mm. long, about 10 mm. in basal diameter; petals bluntly keeled, with small but deep nectar-cavity within at base; carpels 10 mm. long, nectaries transversely reniform, to 3 mm. wide. Flowers from December on.

Color. Leaves bice-green, more or less glaucous; lower bracts pea-green with bloom, shamrock-green without; peduncle above cinnamon-rufous, to avellaneous with bloom intact; sepals deep lichen-green; corolla geranium-pink; petals inside and at exposed edges buff-yellow; carpels seafoam-yellow; styles turtle-green; nectaries pale grass-green.

He added that it seemed to be of garden origin as no wild origin was known and that it probably is a hybrid what the chromosome count by Uhl seems to confirm.

Errors :

C. Leaves larger, to 10 cm. long and to over 6 cm. broad; flowers numerous on elongated branches. Jalisco. 38. *E. sayulensis*

1. While Walther's description indicates the leaves "to 14 cm long", in the Key to Series *Retusae* they are only 10 cm long. And the indication of Jalisco for a plant of which no wild origin was know is absolute nonsense. This applies of course also to GEOGRAPHICAL OCCURRENCE (p. 36), where *E. sayulensis* is also listed under Jalisco.

Freely offsetting species in the series *Retusae* are *E. stolonifera*, which has very much smaller leaves and flowers, and *E. lozani*, which has narrower, pointed, red-edged leaves, fewer offsets, and few flowers.

2. To say that *E. lozanoi* (correct name) is freely offsetting is pure nonsense. Neither did the description by Rose indicate this nor did Walther in his own description mention this. And of course *E. lozanoi* also does not have red-edged leaves. He seems to have completely forgotten what he had written concerning *E. lozanoi*.

Comment :

It does not make any sense at all to publish a garden plant of unknown origin, supposed to be a hybrid, as a species.

39. *Echeveria stolonifera* (Baker) Otto (p. 152-154)

Echeveria stolonifera was described by Baker as *Cotyledon stolonifera* in *Saunders' Refugium Botanicum* 1: 63, 1869. The plant was cultivated in the collection of W.W. Saunders who stated to have received it from Mexico.

Glabrous, shortly caulescent, very copiously stoloniferous. *Leaves* thirty to forty in a dense rosette, obovate-spathulate, the largest two to two and a half inches long by about half as broad five-sixths of the way up, the apex rounded and decidedly apiculate, the lower three-quarters spathulately narrowed to a broad base, both sides a pale bright green with a very slight glaucous tinge, the centre of the blade one-eighth of an inch thick. *Flowering branches* six to eight inches long, with a few oblong-spathulate leaves under an inch long. *Flowers* four to six in a close *cyme*, the *bracts* that subtend the main branches half an inch long. *Ultimate pedicels* a line and a half to two lines long. *Sepals* thick, linear, very unequal, usually shorter than the yellowish-red decidedly pentagonal *corolla*, which is half an inch long.—*J. G. B.*

The illustration published with Baker's description has found its way into Walther's monograph as fig. 75.

Walther's text

Again Walther had no unambiguously correctly identified *E. stolonifera*, nevertheless he preferred to make a description of his own from locally cultivated plants instead of quoting that by Baker.

Flowers from June on. Description from plants cultivated locally, apparently distributed by Dr. Rose.

"Apparently distributed by Dr. Rose" suggests that Walther considered them as progeny of the plants sent by A. Berger, mentioned under COLLECTIONS :

04/498 (CAS); flowered at New York Botanical Garden, from A. Berger, La Mortola, Rose, 991 (photo. no. 2093).

Rose received *E. stolonifera* from Berger, La Mortola, in 1904 (R 991, NYBG nr. 20468). Four specimens are accessible online, two at NY (Bar-code 04107113 & 03562866) and two at US (US 574935 & US 1319925). The former two are extremely fragmentary, not permitting any reliable identification, the latter two consist of rosettes, single leaves and several inflorescences. All of them are **equilateral racemes**. There is another specimen of R 991 (US 1285630), prepared much later (1926), that consists of a dense rosette and several inflorescences, two of them with an odd rosette at the tip of the raceme, and of a photo of the living plant, again with flowers arranged in an **equilateral raceme** – NOT as Baker wrote "flowers four to six in a **close cyme**" and as the illustration accompanying his description demonstrates. In other words : The plants Berger sent to Rose were wrongly identified, they were not *E. stolonifera* (Baker) Otto. Quite obviously neither Berger nor Rose bothered to check if the name of their plant was correct. This is all the more surprising as in *N. Amer. Fl.* 1905 Britton and Rose included a summary of Baker's description of *E. stolonifera*, stating flowers "in a close cyme".

TYPE. None designated. *Lectotype*: Saunders Refugium Botanicum volume 1, plate 63, 1869.

Because Baker had failed to designate a type, Walther selected plate 63, accompanying Baker's description, as lectotype.

Errors :

Under COLLECTIONS Walther indicated :

COLLECTIONS. *Cultivated*: flowered at New York Botanical Garden, *Rose*, 04/498 (CAS); flowered at New York Botanical Garden, from A. Berger,

1. This indication is completely wrong. R 498 is a plant received from Kew 15 Nov 1904 as "*Cotyledon stoloniferum*" and the respective specimen is US 574909 and not CAS. It consists of only three small leaves what means that it is absolutely impossible to know what it represents. To list it under COLLECTIONS is totally pointless.

COLLECTIONS. *Cultivated*: flowered at New York Botanical Garden, *Rose*, 04/498 (CAS); flowered at New York Botanical Garden, from A. Berger, La Mortola, *Rose*, 991 (photo. no. 2093).

2. This refers to the above mentioned specimen prepared 1926. Walther's information is again wrong: The plant **flowered in Washington**, not at the New York Botanical Garden !

3. Though it was Walther himself who designated the lectotype of *E. stolonifera*, he failed to notice that the specimen he cited did not agree with it at all.

4. In the Key to Series *Retusae* Walther stated :

C. Leaves small, 5 cm. long or less; flowers few, on short branches. Possibly a garden hybrid. 39. *E. stolonifera*

This indication refers of course to the wrongly named US plant, not to *E. stolonifera* (Baker) Otto and is therefore unfounded.

5. Under REMARKS Walter wrote :

REMARKS. Among the numerous species of *Echeveria* planted in the Strybing Arboretum, Golden Gate Park, San Francisco, *E. stolonifera* was definitely absent, and yet, after some years, several plants that were clearly identical with Baker's species made their appearance. These volunteers undoubtedly were hybrids, from parents growing close by. Of these putative parents, I nominate *E. glauca* and *E. grandifolia* as having been most likely responsible.

The "appearance" of plants "clearly identical with Baker's species" can be doubted and justifiably so – in view of the fact that Walther very obviously was not able to perceive that the American "*E. stolonifera*" was by far not identical with *E. stolonifera* (Baker) Otto. And logically his speculations concerning a hybrid origin also do not apply to the latter. While in the above passage the supposed parentage is stated to be "*E. glauca* and *E. grandifolia*", on p. 53 it is indicated as "*E. glauca* and *E. grandiflora* " ! In view of the really not impressive size of his plant to consider *E. grandifolia* as one of its possible parents is in no way plausible. And it is just as incomprehensible with regard to *E. stolonifera* (Baker) Otto.

Both of these were grown in England prior to 1869, so that this supposed origin of *E. stolonifera* is at least not impossible. For the present I follow the

6. W.W. Saunders explicitly stated that he had received the plant from Mexico. There is no reason to doubt this information. Walther's know-it-all speculation concerning an English origin of the putative hybrid is therefore without any foundation.

7. Under Synonyms of *E. stolonifera* Walther listed :

Cotyledon stolonifera BAKER, in Saunders Refug. Bot., vol. 1, pl. 63, 1869.
Echeveria pfersdorffii Hort. ex ED. MORREN, La Belg. Hort., vol. 24, p. 163, 1874.
Echeveria mutabilis Hort., in part.
ILLUSTRATIONS. Saunders Refug. Bot., vol. 1, pl. 63, 1869.

Morren's description of *E. pfersdorffii* reads thus : "Petit; feuilles vertes. Quid ?" To consider this a synonym of *E. stolonifera* is rather absurd.

Comment :

The only correct item of Walther's text about *E. stolonifera* is the copy of plate 63 from vol. 1 of *Saunders' Refugium Botanicum*. The rest concerns the "plants cultivated locally, apparently distributed by Dr. Rose" and erroneously named *E. stolonifera*, but not corresponding to *E. stolonifera* (Baker) Otto. Quite possible that the correct *E. stolonifera* never arrived in the USA. Needless to say that this chapter is completely unusable if not misleading.

40. *Echeveria scheeri* Lindley (p. 154-157)

Echeveria scheeri was described by Lindley in *Edwards's Botanical Register* 31, pl. 27, 1845. The description is very short, however the illustration showing a leaf and a trifid inflorescence is very impressive and enabled Baker to write a more detailed description in *Saunders' Refugium Botanicum* 1, n° 19, 1869.

Lindley wrote that for the introduction of this plant "the public is indebted to Fredrick Scheer, Esq. of Kew, a zealous collector of succulent plants, and whose name it will henceforward bear. It is a native of Mexico, whence seeds were received by that gentleman and presented to the Horticultural Society in September, 1842." It is unknown where from exactly Mr Scheer got the seeds.

Lindley's description :

E. Scheerii; caulescens, foliis ovalibus acutis in petiolum planum elongatis, floribus racemoso-paniculatis, racemis nutantibus, sepalis linearibus acutis corollâ brevioribus altero sæpius majore.

Although this is by no means so handsome a species as some of those already published in this work, it is far from being unworthy of cultivation. Its leaves are large and glaucous, and its flowers, notwithstanding their dingy colour, are abundant, tolerably large, and gracefully arranged.

Baker's description :

19. *C. SCHEERII* (Baker). Caulescens, glabra, foliis rosulatis, magnis, oblongo-spathulatis, triplo longioribus quam latis, acutis, utrinque glauco-viridibus, ramorum floriferorum numerosis, valde reductis, floribus 30—40 in racemis tribus secundis nutantibus dispositis, bracteis oblanceolatis pedicellis erecto-patentibus multo excedentibus, sepalis patulis, linearibus, inæqualibus, corollâ saturate rubro-aurantiacâ brevioribus. — *Echeveria Scheerii*, Lindl. Bot. Reg. 31, t. 27.

Mexico.

Caulescent, glabrous. *Leaves* rosulate, oblongo-spathulate, the largest six to seven inches long by more than two inches broad three-quarters of the way up, the point acute, the lower two-thirds spathulately narrowed, both sides glaucous-green. *Leaves of the flowering branch* numerous, but much reduced. *Flowers* in a trifid *raceme* with secund drooping branches six to eight inches long, with ten to twelve flowers each. *Bracts* half an inch to an inch long, the upper ones imbricated. *Pedicels* erecto-patent, the lowest a quarter of an inch long. *Sepals* linear, spreading, very unequal, a quarter to three-eighths of an inch long. *Corolla* five-eighths to three-fourths of an inch long, red and yellow, decidedly pentagonal.

We have not seen this, and have compiled the description from Lindley's figure and notes.—*J. G. B.*

It is not clear how Baker came to describe the leaves as rosulate, as neither Lindley's description nor the illustration give any indication to this effect.

Walther's text

Under References Walther listed :

Echeveria scheerii LINDLEY, Bot. Reg., vol. 31, (new ser., vol. 8.) pl. 27, 1845; BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 25, 1905; POELLNITZ, in Fedde Repert., vol. 39, p. 257, 1936.

When Rose published *E. scheeri* in *N. Amer. Fl.* p. 25, 1905, he referred to Lindley and to Baker. However he did not cite their descriptions but wrote a new one, presumably from a living plant, also only known from cultivation. His description deviates in several respects from that of the two English authors, i.e. the plant Rose called *E. scheeri* was not *E. scheeri* Lindley.

Echeveria scheerii LINDLEY, Bot. Reg., vol. 31, (new ser., vol. 8.) pl. 27, 1845; BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 25, 1905; POELLNITZ, in Fedde Repert., vol. 39, p. 257, 1936.

Von Poellnitz' description apparently is based on Baker, but "his" *E. scheeri* is taller in several respects, and its leaves are long petiolate ! Wherefrom he had got this information we are not told.

Of course Walther did not have *E. scheeri* Lindley. However instead of quoting Lindley's (or Baker's) description, he again preferred to make one of his own from a "living plant grown in the Strybing Arboretum, Golden Gate Park, San Francisco, originally collected by Thomas MacDougall from the Chontal District, Mexico":

November. Description from living plant grown in the Strybing Arboretum, Golden Gate Park, San Francisco, originally collected by Thomas MacDougall from the Chontal District, Mexico.

OCCURRENCE. Mexico: Chontal District, southeastern Oaxaca.
COLLECTIONS. *Cultivated*: Horticultural Society, London (CGE, type);

Imagine – what a sensation : Eric Walther has succeeded in identifying a MacDougall plant from the Chontal District of Oaxaca as Lindley's *Echeveria scheeri* of 1845 of unknown origin ! Fit to further enhance his reputation as an *Echeveria* expert ! ! Unfortunately the information is in no way correct because MacDougall does not mention such a plant at all in his published as well as in his unpublished fieldnotes. That means the MacDougall plant from the Chontal District is an invention of Walther. And he could be pretty sure that nobody would notice this, his reputation as THE authority regarding echeverias was well established. And very obviously contemporaries and posterity alike have been taken by the lie.

Anyway Walther's claim that a plant from Oaxaca, collected in the 1940s, should be identical with the plant described by Lindley in 1845, is more than absurd. In short, the plant he used for his description is of unknown origin regarding collector as well as geography and the description is fundamentally useless.

Errors :

Glabrous; stem evident, to 10 cm. tall, sparingly or not branching; leaves closely rosulate, obovate-cuneate, 9 cm. long by 4 cm. broad, narrowed into a

Echeveria scheerii is well characterized by its evident, short, simple caudex, rather small, acute, concave leaves, 3-branched inflorescence with large flowers,

1. The leaves are described as 9 cm long and 4 cm broad, to speak of "rather small leaves" is definitely not appropriate, however they are clearly rather small compared with the huge leaf shown in fig. 76 stated to be "probably natural size".

In the Key to Series *Retusae* Walther stated :

E. Leaves with undulate margins; corolla to 25 mm. long. Oaxaca, Chontal District. 40. <i>E. scheerii</i>

2. Neither has the leaf fig. 76 undulate margins nor did *E. scheeri* Lindley originate in the Chontal District. This is pure invention, i.e. a lie.

3. *E. scheeri* Lindley has never been found in the wild in Mexico. Needless to say that its listing by Walther under "GEOGRAPHICAL OCCURRENCE : Oaxaca" (p. 36) is completely devious.

Moreover it is completely incomprehensible how Walther could equate the plant fig. 76 with that of fig. 77 and it is even more incomprehensible that none of the users of Walther's book were taken aback by such an obvious inconsistency and found it necessary to scrutinise Walther's texts.

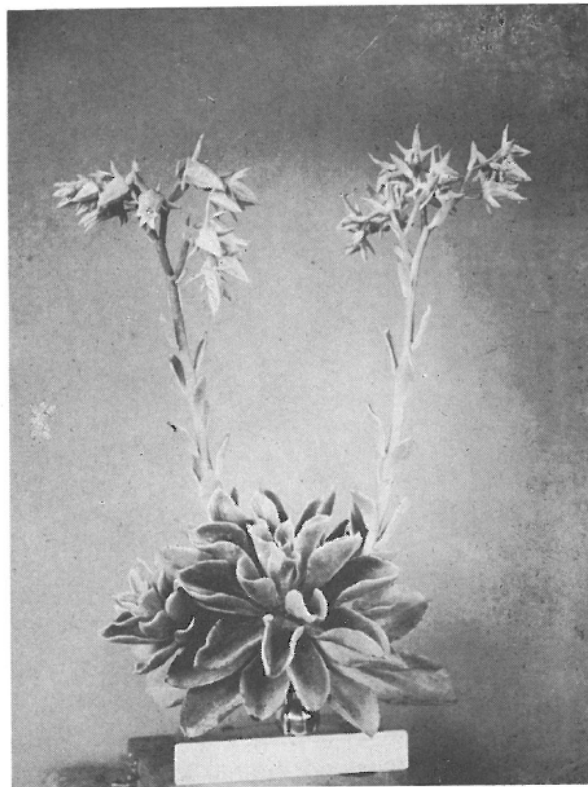


Figure 77. 40. *Echeveria scheerii* Lindley. From an article by Eric Walther (Cactus and Succulent Journal, volume 31, page 53, part of figure 28).



Figure 76. 40. *Echeveria scheerii* Lindley. Leaf and inflorescence, probably natural size. From the original publication (Edwards's Botanical Register, volume 31, plate 27).

A sidenote : Specimens at NY 19302 / Rose 831, of 1903, tentatively determined as *E. scheeri* Lindley were redetermined by Walther as *E. campanulata* Kunze and later as *E. grandifolia* Haworth. They consist of paniculate inflorescences with short few-flowered side-branches and obtusely-rounded, long petiolate leaves 11 x 4 cm – obviously not an *E. gibbiflora*-like plant with which Kunze had compared his *E. campanulata*. Also NY 19304, originally determined as *E. scheeri* Lindley he redetermined as *E. grandifolia* Haworth though its inflorescence is a very narrow few-flowered panicle and its leaves are short, only 9 – 13 cm long and not petiolate – all specimens of course of unknown origin. No herbarium specimen, no matter how dissimilar, was immune to being misused by Walther for his own purposes.

Comment :

So whatever plant Walther described - in any case it had nothing to do with *E. scheeri* Lindley, that means the name is misapplied and his description is completely useless. Besides : A plant without known origin, received in 1941 in California, cannot possibly be equated with a plant grown in a garden in London in the 1840s, almost a century ago. It is not known how long *E. scheeri* was alive in Europe, in any case it is completely lost to cultivation since a very long time. Very likely *E. scheeri* was a hybrid.

41. *Echeveria juarezensis* E. Walther (p. 157-158)

The backstory

Sometime in 1958 Thomas MacDougall picked up an *Echeveria* in an **Oaxaca market, said to be from Ixtepeji**. He sent the plant to the University of California Botanical Garden (UCBG 56.791) supplying also the information regarding its origin. But "it appears [....] that someplace along the line the information was lost that the plant came from a market in Oaxaca and was said to be from Ixtepeji", wrote MacDougall in a letter to Reid Moran (15. Sept. 1963) – with the consequence that UCBG noted as Field collection data : "Mexico, Oaxaca, Ixtepeji, Sierra de Juarez, or more specifically, Ixtlán de Juarez." "Source : T. MacDougall #B-172".

Walther's description :

Description: (Of living plant cultivated at UCBG, 1958.)

Plant glabrous; caulescent with stem to 8 cm. tall, usually simple; leaves to 20 or more, crowded in terminal rosettes, obovate-cuneate, acute and mucronate, thick and rigid, deeply concave above, beneath rounded and somewhat keeled, 5 cm. long and 3 cm. broad; inflorescences 2, axillary, of 3 secund racemes, to 20 cm. tall; peduncle erect or ascending, to 5 mm. thick near base; lower bracts ascending, oblong-obovate, upcurved, concave above, rounded beneath, at the upcurved apex mucronate, to 25 mm. long and 11 mm. broad; racemes 10 to 12 cm. long, ascending-spreading, with about 12 flowers each; upper bracts as the lower, but 15 mm. long; pedicels slender, to 14 mm. long; sepals ascending to widely spreading at anthesis, subequal, longest 11 mm. long, linear-oblancoate,

acute, convex on both surfaces; corolla pentagonal, conoid-urceolate, to 12 mm. long, 8 mm. in basal diameter; petals apiculate, with distinct basal nectar-cavity; carpels 7 mm. long; nectaries oblique, reniform, to 2 mm. wide. Fls. VI-VIII.

Color: Leaves cource-green to lettuce-green, somewhat glaucous; peduncle eugenia-red, as are the pedicels; bracts as leaves but above eugenia-red, glaucous, with edges pomegranate-purple, upper bracts buffy-citrine; sepals light-hellebore-green tinged corinthian-red; corolla scarlet; petals light-orange-yellow inside; carpels white below, viridine-yellow above; styles ox-blood-red.

The protologue was published in *Cact. Succ. J. (Los Angeles)* 31: 52, 1959, not surprisingly with this same information, additionally Walther erred regarding the MacDougall nr and wrote "#B-72". The text in Walther's book is literally the same except that the latter was corrected to B-172, instead of that the UCBG n° was wrongly cited :

TYPE. Plant cultivated in the University of California Botanical Garden (no. 56. 7911), received from Mr. Thomas MacDougall, his no. B-172, said to have been from Ixtepeji, Sierra de Juarez, Oaxaca, Mexico (CAS, no.

The correct number of the type is 56.791, not 56.7911.

Errors :

Under REMARKS Walther wrote :

organization of the genus as a whole and its probable evolutionary lines. *Echeveria scheerii*, for instance, only quite recently rediscovered in Oaxaca by Mr. MacDougall, formerly was quite isolated without any close relations being known. However, the present plant and it constitute a clear-cut pair. Culti-

1. This is wrong. The plant Walther considered *E. scheerii* Lindley and which he used for his description was not "quite recently rediscovered in Oaxaca by Mr. MacDougall", i.e. it was by no means a MacDougall collection – in fact it was a plant of unknown origin. Therefore his comments regarding a relationship of *E. juarezensis* – a plant of unknown origin, probably a hybrid - and *E. scheerii* - also a plant of unknown origin and probably also a hybrid - are pointless.

In the Key to Series *Retusae* Walther indicated :

E. Leaf-margins not undulate; corolla 12 mm. long. Oaxaca, Sierra de Juarez. 41. <i>E. juarezensis</i>

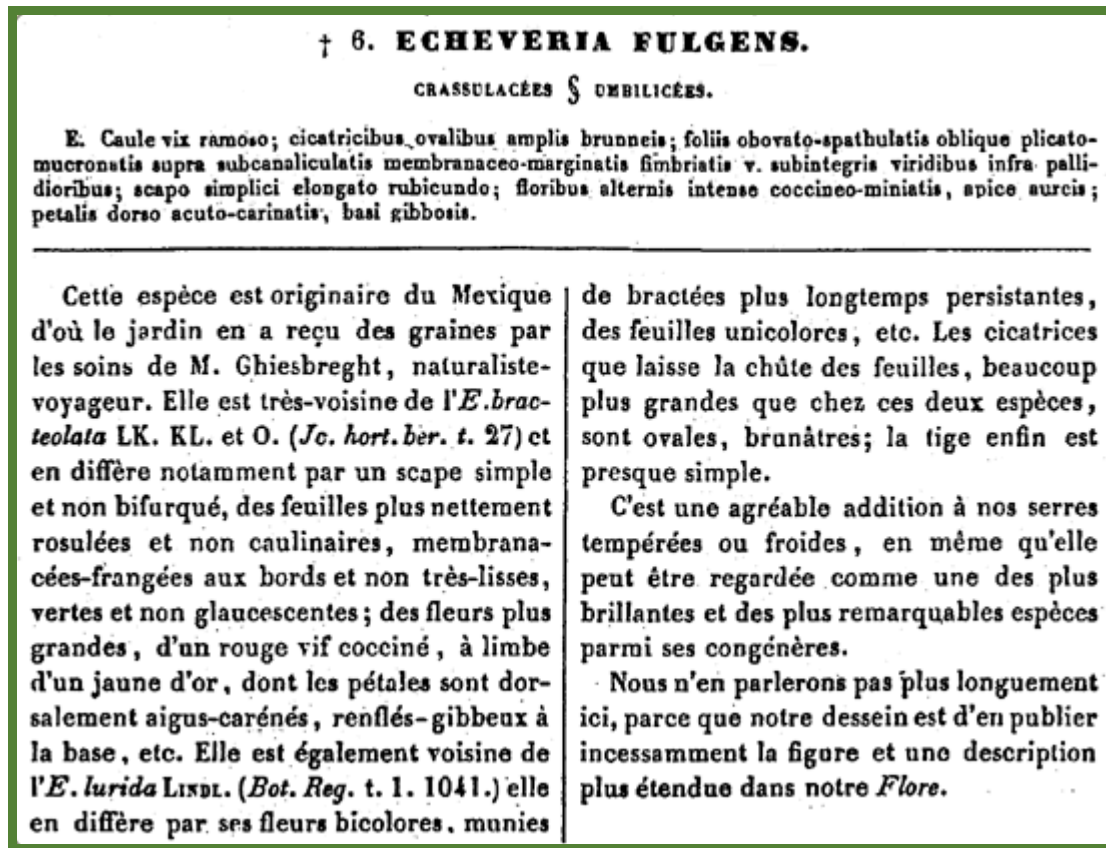
2. Geography is wrong, *E. juarezensis* has no wild origin.

Comment :

The plant "said to have been from Ixtepeji" has never been found neither there nor anywhere else in the wild in Mexico. Its listing under "GEOGRAPHICAL OCCURRENCE : Oaxaca" (p. 36) is of course wrong. In short : *E. juarezensis* Walther has no origin in the wild and most probably has been a hybrid. And as the plant Walther had used for his description is no longer extant, the whole chapter is not even of historical interest.

42. *Echeveria fulgens* Lemaire (p. 159-163)

E. fulgens was described by Lemaire in *Hortus Vanhoutteanus* 1: 8, 1845.



Walther's text

Once again, instead of quoting / translating Lemaire's description Walther made a new one however without stating which plants he used, so his description is worth nothing from the outset.

Errors :

Under References Walther indicated :

Echeveria retusa LINDLEY, Jour. Hort. Soc. London, vol. 2, p. 306, 1847.

1. The date of publication of the protologue of *E. retusa* Lindley is **Oct** 1847, in *Edwards's Botanical Register* **33** (New Ser. 10) t.57, not in *Journal of the Royal Horticultural Society* **2**: 306, which is **Dec** 1847.

vol. 10) pl. 57, 1847; Saunders Refug. Bot., vol. 1, pl. 64, 1869; Paxton Flower Garden, vol. 3, pl. 73, 1853 Revue Hort., 1876, p. 250; 1882, p. 528; Cactus and

2. The illustration in *Paxton's Flower Garden* was published in **1852**, not 1853.

Under TYPE Walther indicated :

TYPE. None designated. Neotype: Illustration in Le Jardin Fleur. volume 3, plate 244, 1855.

3. The illustration in *Le Jardin Fleuriste* is from **1852**, not 1855. The text should read : "Neotype : Illustration in *Le Jardin Fleur.* volume 3, plate 244, **1 June 1852**".

Under COLLECTIONS Walther cited the following specimens :

COLLECTIONS. Mexico, Mexico: Temascaltepec, Casitas, *Hinton*, 33/5363

4. Hinton 33/5363 is *E. obtusifolia*, not *E. fulgens*.

(GH,NY); Cumbre de Tejupilco, *Hinton*, 32/2300 (GH).

5. Hinton 32/2300 is *E. obtusifolia*, not *E. fulgens*.

(GH,NY); Cumbre de Tejupilco, *Hinton*, 32/2300 (GH). Durango: Palmer, 06/635–812 (NY), the same flowered at New York, 09/25951 (US). Jal-

6. Palmer 25951 from Durango in all probability is **not** *E. fulgens* ; according to Uhl (*Haseltonia* 9, 2002), *E. fulgens* "ranges across central Mexico from Michoacán to Veracruz and perhaps south into Oaxaca", an occurrence in Durango therefore is very unlikely.

Michoacan: Morelia, Campanario, *Arsene*, 10/5148 (GH), *Arsene*, 12/9932

7. "Campanario, Arsène, 10/5148" is wrong, the correct nr is 10/**6640**.

(F,GH,MO), Jardin de College, *Arsene*, 11/6099 (G,GH,MO,P,US); Cumbre Cruz, *Hinton*, 36/8985 (US); Rincon del Carmen, *Hinton*, 32/2695 (GH,

8. Cumbre Cruz is in Estado de México, not in Michoacán.

NY); Pantoya, *Hinton*, 32/2858 (GH); Coalcoman, S. Torricellos, *Hinton*,

9. "Pantoya, Hinton, 32/2858" : The correct name is "**Pantoja**" and this locality is in Estado de México, not in Michoacán.

bre Cruz, *Hinton*, 36/8985 (US); Rincon del Carmen, *Hinton*, 32/2695 (GH, NY); Pantoya, *Hinton*, 32/2858 (GH); Coalcoman, S. Torricellos, *Hinton*, 32/2695 (GH,K,NY); Barrelosa, *Hinton*, 41/5748 (F); Zitacuaro, Zirahaute,

10. For "Ricon del Carmen, Hinton **32/2695**" from Estado de México, and "Coalcoman, S. Torricellos **32/2695**" from Michoacán the same number is indicated. The correct number for "Coalcoman, S. Torricellos" is **38/12754** and (according to the respective determination label) the correct name of the locality is "**Torricell**as". And both specimen represent *E. obtusifolia*, not *E. fulgens*.

32/2695 (GH,K,NY); Barrelosa, *Hinton*, 41/5748 (F); Zitacuaro, Zirahaute,

11. "Barrelosa, Hinton 41/5748" – the number is wrong, it should read 41/**15748**, and – according to the respective sheet - the correct name is "**Barrolosa**"; and it represents also *E. obtusifolia*.

32/2695 (GH,K,NY); Barrelosa, *Hinton*, 41/5748 (F); Zitacuaro, Zirahaute, *Hinton*, 38/13502 (GH,K,US). Oaxaca: Sierra de San Felipe, *Pringle*, 06/

12. Zitacuaro, Zirahaute Hinton 38/13502 is *E. obtusifolia*, not *E. fulgens*, and the correct name is **Zirahuato**.

Hinton, 38/13502 (GH,K,US). Oaxaca: Sierra de San Felipe, *Pringle*, 06/13865 (US), *Conzatti*, /1385 (US). Cultivated: Strybing Arboretum, Golden

13. *Pringle* 06/13865 and *Conzatti* /1385 are one and the same collection – a *Pringle* collection, not a *Conzatti* collection. The specimens consist of a two-branched inflorescence and a single leaf and were first determined as *E. montana* Rose, redetermined by Walther as *E. fulgens* Lemaire. A reliable identification is not possible.

13865 (US), *Conzatti*, /1385 (US). Cultivated: Strybing Arboretum, Golden Gate Park, San Francisco, *E. Walther*, 58/CAS (from Sierra de San Felipe);

14. This is *E. obtusifolia*.

Conclusion : Most of the listed specimens are wrongly determined, mostly by Walther himself, and the list is of extreme carelessness.

Under REMARKS Walther wrote :

observations go. I found *E. fulgens* to be quite variable in nature, with young plants of course taking time to develop an evident caudex. Both Berger and Poellnitz reduce *E. retusa* to synonymy.
Echeveria fulgens varies in habit of growth, with the peduncle often becom-

15. These remarks are of no value as we cannot know to which plants Walther is referring.

In the Key to Series Retusae Walther indicated :

D. Stem usually very short or none, or leaves longer, or flat, or obtuse; inflorescence occasionally simple, or with 2 or 3 branches.
E. Leaves more or less glaucous, obtuse or retuse, often lacerate-margined.
Michoacan to Oaxaca. 42. *E. fulgens*

16. Only someone who doesn't really know *E. fulgens* can categorise it as 'stem usually very short or none'. Moreover this contradicts to the above passage where Walther said that for young plants it takes time to develop an evident caudex.

Comment :

Walther's description is useless because he does not indicate from which plant(s) it was made. And the fact that Walther wrongly considered so many specimens as *E. fulgens* while they clearly represent *E. obtusifolia* shows that he did not have a sound concept of the former or rather of both of them – with the consequence that he included them in Series *Retusae* instead of in Series *Gibbiflorae*.

43. *Echeveria steyermarkii* Standley (p. 163-164)

The Latin diagnosis of *E. steyermarkii* was published in *Publ. Field Mus. Nat. Hist., Bot. Ser.* 23(4): 160, 1944. An English translation was published a year later in *Fieldiana, Botany*, 24: 409, 1946.

Echeveria Steyermarkii Standl., sp. nov.—Plantae acaules glabrae solitariae vel interdum caespitosae, radicibus fibrosis; folia vulgo numerosissima rosulata patentia vel adscendentia viridia interdum purpureo vel roseo tincta sessilia, anguste vel latissime oblongo-spathulata, 2.5–6.5 cm. longa 1–2 cm. lata, apice rotundata vel obtusissima et breviter obtuse apiculata, carnosae sed non crassa, basi latissime cuneata; scapi solitarii vel plures 5–20 cm. alti, floribus breviter racemosis vel subcorymbosis paucis, foliis caulinis interdum fere omnibus prope basin insertis, interdum fere ad apicem sparsis linearibus usque oblongis, majoribus usque 2 cm. longis obtusis adscendentibus; flores 3–10 mm. longe pedicellati, pedicellis subgracilibus plerumque 8–15 mm. longis, bracteis oblongis vel fere linearibus pedicellis vulgo multo brevioribus; sepala fere ad basin libera inaequalia viridia carnosae 5–8 mm. longa oblonga vel ovato-oblonga obtusa adpressa vel subpatentia; petala basi connata rubra vel roseo-rubra 8–11 mm. longa lanceolata vel anguste lanceolata erecta sed apice paullo excurva dorso carinata, apicem versus sensim attenuato-acuminata; antherae petalis bene breviores ca. 1.5 mm. longae ova-les; follicula 7–8 mm. longa suberecta longirostrata brunneo-rubra.—

Instead of citing Standley's detailed description Walther again preferred to make a new one :

back, slightly spreading at the acuminate apex. Description compiled from all available specimens.

REMARKS. The above description covers all available material which was collected at several distinct stations in Guatemala, often at considerably different elevations. The specimens from lower levels appear to be larger, with

"compiled from all available specimens / all available material which was collected at several distinct stations in Guatemala, often at considerably different elevations"- of course his description is of no use at all.

Under COLLECTIONS Walter listed :

mol and San Lorenzo, *Steyermark*, 42/43145 (F, type; US, isotype, with inflorescence paniculate, 10-branched, branches 3- to 5-flowered, and with leaves 8x4 cm., acutish). Dept. Solola: Volcan Santa Clara, *Steyermark*, 42/46910 (F); Volcan Toliman, slopes above San Lucas, *Steyermark*, 42/47603 (F). Dept. San Marcos: between Sibinal and Ichiguan, *Steyermark*, 36507 (F). Dept. Huehuetenango: below La Libertad, above Cañon of Paso del Boqueron, *Steyermark*, 51204 (F). Dept. Quetzaltenango, at 8,300 feet altitude, *Skutch*, 34/798 (US).

4 collections by Steyermark of the species named for him, they give a good idea of the appearance / habit of this plant (43145 / 46910 / 47603 / 36507).

Errors :

1. Steyermark 51204 does not represent at all the species in question (it has turned out to be identical with *E. gudeliana* Véliz & Garcia-Mendoza).
2. Skutch 34/798 US is a specimen of *E. guatemalensis*.

3. the "isotype" deviates so blatantly from the type that it **cannot possibly be the isotype of *E. steyermarkii*.**

In short : Only the first 4 Steyermark specimens are correct, the rest has nothing to do with *E. steyermarkii* Standley. No surprise that Walther's own description does not agree at all with that by Standley.

4. Accordingly also the indications in the Key to Series *Retusae* are completely wrong :

F. Leaves mostly less than 8 cm. long, acute, entire; inflorescence often reduced to a single branch; pedicels slender. Guatemala. 43. <i>E. steyermarkii</i>
--

hybrid. <i>Echeveria scheerii</i> comes perhaps nearest to <i>E. steyermarkii</i> , but differs in having broader deeply concave leaves and much larger flowers in 3-branched racemes.
--

5. In view of Walther's misconception of *E. scheeri*, this observation does not make any sense.

Comment :

As a matter of course, Walther's description based on a hodgepodge of plants is of no use whatsoever, and superfluous anyway in view of Standley's detailed protologue. It is obvious that Walther did not make any effort to get an idea of *E. steyermarkii* for which he would simply have had to take note of Standley's description. What an arrogant know-it-all to make a new description on the basis of partially misidentified herbarium specimens.

44. *Echeveria obtusifolia* Rose (p. 164-166, 216)

E. obtusifolia was described by Rose in *Bull. New York Bot. Gard.* 3: 8, 1903 from a herbarium specimen. The plant had originally been collected by C.G. Pringle on bluffs of mountain cañon near Cuernavaca, Morelos, at 3150 m, Sept 17, 1899 (Pringle 7734) :

***Echeveria obtusifolia* Rose, sp. nov.**

Acaulescent or perhaps sometimes shortly caulescent, glabrous throughout; leaves forming a spreading rosette 2 dm. broad, oblanceolate, rounded at apex, 3.5 cm. broad at widest part, narrowed to 5 mm. at base, thinnish (at least in herbarium specimens); flowering branches 2–3 dm. long (naked in herbarium specimens seen); inflorescence a one-sided (?) raceme, erect or at least becoming so, 12–20-flowered; lower pedicels 10 mm. long, ascending; sepals unequal, ovate; corolla reddish, 10–12 mm. long, rather broad, not strongly angled (as far as indicated by dried specimens).

Two years later, in *N. Amer. Fl.* 22: 24, 1905, Rose published the description of *E. scopulorum*, collected also in the mountains of Morelos, near Cuernavaca, at 2700 m by E.A. Goldman, this time obviously made from a living plant – apparently without noticing that this new description was partly literally identical with that of his *E. obtusifolia* :

51. *Echeveria scopulorum* Rose, sp. nov.

Short-caulescent, glabrous throughout. Stems crowned by rosettes of obovate leaves; leaves 5–8 cm. long, somewhat concave, rounded at apex; flowering stem about 20 cm. long, red, not glaucous, few-flowered; stem-leaves 2 or 3, thickish, short, rather stiff, hardly if at all glaucous; pedicels short and stout; sepals ovate, spreading, extending only a short distance beyond the base of the corolla; corolla short (10 mm. long) and broad, when in bud obtuse, dark-red.

Collected by E. A. Goldman near Tres Marias, Morelos, Mexico, altitude about 2,700 meters; flowered in Washington in 1903 and 1904 (Rose no. 653).

Somewhat resembling *E. obtusifolia*, but stems less glaucous, sepals much shorter and corolla much broader; it occurs at much higher elevations.

There is no doubt that *E. scopulorum* is a renaming of *E. obtusifolia* and its description a redescription of the latter.

Walther's text

Walther's own description "takes into account the several forms, from several sources, that have been grown locally":

available for maintaining *E. scopulorum* even as a variety. The description takes into account the several forms, from several sources, that have been grown locally.

... and therefore is of course useless and without any value. As the *E. fulgens* chapter has evidenced, Walther had no clear concept of either the latter or of *E. obtusifolia* Rose, otherwise he would not have listed so many wrongly determined specimens.

Under COLLECTIONS Walther listed only 3 items – if he had not misidentified so many *E. fulgens* specimens the list would be considerably longer :

COLLECTIONS. Mexico. Morelos: bluffs of mountain cañon above Cuernavaca, *Pringle*, 99/7734 (US, type; MEXU, isotype), *Pringle*, 04/11061 (BH, CAS, MEXU, NY, US); Tres Marias, *Goldman* 03/R-633 (US, type of *E. scopulorum*).

Not surprisingly, Pringle 10129, determined as *E. obtusifolia* Rose, is missing from the list of COLLECTIONS. Pringle had found this plant in Uruapan, Michoacán. The respective specimens are deposited in several herbaria (MEXU, CAS, US, MO, GH, F, E, P etc.). It is missing because Walther had seen fit to reclassify all those he could get hold of as *E. grisea* in order to substantiate the latter which he had described from a single gathering from Iguala, Guerrero. A comparison of the type specimen of *E. grisea* Walther from Iguala, Guerrero, and several Pringle 10129 specimens shows that the plants are somewhat similar, however the sepals of *E. obtusifolia* are widely spreading and neither turgid nor terete, the inflorescence as a whole consists of fewer flowers, is not a well developed panicle like that of *E. grisea*, is obviously not "angularly-divaricate" and its leaves do not look greyish pruinose at all. In short, there is not doubt that Pringle 10129 represents *E. obtusifolia* and as most of the herbarium specimens are of very good quality they would have allowed Walther to get a correct idea of *E. obtusifolia*. By renaming them, he has robbed himself of this opportunity.

F. Leaves to 10 cm. long or more, obtuse to retuse; inflorescence mostly with 2 or 3 branches. Morelos. 44. *E. obtusifolia*

Of course *E. obtusifolia* is by no means limited to Morelos.

Comment :

As already mentioned, Walther's description made from "several forms from several sources" is of no use at all. His redetermining of *E. obtusifolia* specimen as *E. grisea* had the consequence that he did not recognise the correct *E. obtusifolia*.

45. *Echeveria semivestita* Moran (p. 166-169) and

45b. *Echeveria semivestita* var. *floresiana* E. Walther (p. 170-174)

Moran's description :

Echeveria semivestita, sp. nov.

Caulis elongatus; folia subremoto, oblanceolata, acuta, supra canaliculata, pubescentia, 11-14 cm. longa, $1\frac{1}{2}$ -3 cm. lata; inflorescentia paniculata, glabra, glauca, cincinnis 6-9; sepala inaequalia, ascendunt, purpurea; corolla rubella, 11-13 mm. longa. Ab aliis speciebus foliis pubescentibus in inflorescentia glabra glaucae differt.

Stems to 2 dm. or more tall, 1-2 cm. thick, green, puberulent, producing roots and branches from the lower leaf scars. *Rosette* of about 15 leaves, covering about 5 cm. of the stem, the upper leaves close-set, the lower more scattered. *Rosette leaves* dark green, often purple-margined, puberulent with simple hairs about $\frac{1}{4}$ mm. long and sometimes enlarged at the tip, oblanceolate, acute, fairly keeled dorsally, channelled ventrally to within 1 cm. of the base, 11-14 cm. long, $1\frac{1}{2}$ -3 cm. wide, the blade 3-4 mm. thick, the base subterete, 10-12 mm. wide, about 1 cm. thick, with a triangular spur 1-2 mm. long but appearing longer as the leaf withers. Old leaf scars subcircular, about 12 mm. wide, faint, the area of attachment and abscission subelliptic, 3-6 mm. high, 9-12 mm. wide, brown, conspicuous, the bundle scar solitary, subcircular, 2-3 mm. wide. *Floral stems* axillary, 3- $5\frac{1}{2}$ dm. tall, about 1 cm. thick near the base but flaring somewhat to merge with the stem, grading from puberulent below through papillose at the base of the inflorescence to glabrous above, with 15-25 leaves below the inflorescence. *Cauline leaves* green, puberulent, the lowest similar to the basal, $3\frac{1}{2}$ - $5\frac{1}{2}$ cm. long, 2- $2\frac{1}{2}$ cm. wide; diminishing upward, those below the inflorescence elliptic, 2 cm. long, 1 cm. wide; intergrading with the bracts, which are glaucous, the upper essentially glabrous. *Inflorescence* about 1 dm. high and wide, of 6-9 cincinni, each about 5 cm. long, with 6-9 flowers; all parts except the main axis and its bracts glabrous and glaucous. *Bracts* of the cincinni one per flower, at first imbricated on the under side of the sympodial axis, elliptic, acute, purple, glaucous, the lowest about 12 mm. long and 5 mm. wide. Lower *pedicels* 1-5 mm. long, 2-3 mm. thick, flaring upward. *Sepals* free, ascending, elliptic-oblong, acute, not or scarcely narrowed at the base, purple, glaucous, unequal, the lower two smallest, nearly equal, 5-7 mm. long, 2- $2\frac{1}{2}$ mm. wide, the two lateral nearly equal, 11-13 mm. long, 4-5 mm. wide, the upper 9-12 mm. long, 3-4 mm. wide. *Corolla* conic, 12-13 mm. long, 7-8 mm. wide at the base, 3-5 mm. wide at the mouth, coral pink. *Petals* imbricate, connate 3-4 mm., lanceolate,

acute, pink on keel and at tips, yellowish on edges and within, glaucous, about $3\frac{1}{2}$ mm. wide, thick and strongly keeled, the inner surface flattish except for a hemispheric hollow at the base and a longitudinal furrow in which lies the stamen. *Filaments* yellowish white, the free part about 4 mm. long; epipetalous attached at upper edge of hollow, hence about 3 mm. above base of petal; antesealous attached at about the same level but more clearly distinguishable below. *Anthems* yellow, 2- $2\frac{1}{2}$ mm. long. *Scales* white, about 1 mm. wide. *Pistils* about 8 mm. high; ovary white, 5 mm. high, with numerous ovules on intruded placentae; styles green, 3 mm. long.

The facts :

1. In the first half of the 1940s, Walther (acc. to the protologue) was "furnished" a plant "by Mr R. Flores, now of Salinas, who found it during one of his various collection trips to Mexico", more precisely "along International highway, near border of San Luis Potosí and Tamaulipas, at rather low elevation". He cultivated it "at the Strybing Arboretum in Golden Gate Park, S.F." In 1946 a specimen was prepared, consisting only of a paniculate inflorescence and two leaves (CAS 332306). The label on the herbarium sheet reads : "Type. *Echeveria fallax* E. Walther. Cultivated from plants collected in San Luis Potosí, Mexico." At a later date '*fallax*' was crossed out and replaced by '*floresiana*'. However there was no description made at that time. [Many years later Walther used the name '*floresiana*' again for the plant he subsequently published as *E. affinis* – see comment on 6. *E. affinis*.]

2. In 1954 Reid Moran described *E. semivestita* from a seedling of a plant collected in 1948 by Robert J. Taylor about 25 miles north of Zimapan, Hidalgo. The protologue was published in *Cact. Succ. J. (Los Angeles)* 26: 60, 1954. The same plant was also found northeast of Jacala and between Jacala and Santa Ana in northern Hidalgo, not far from the border between Hidalgo and Querétaro. Moran's description refers to a plant with a stem of 20 cm and more, puberulent in all parts except of inflorescence and flowers, and with uniquely blue-coloured floral bracts and sepals.

3. Reading Moran's publication Walther noticed that his still undescribed *E. floresiana* was very similar and in *Cact. Succ. J. (Los Angeles)* 30: 109, 1958 he published it as *E. semivestita* var. *floresiana* var. nov.:

Description: Similar to var. *semivestita* except that plants are wholly glabrous in all their parts; caudex evident with age, usually simple; leaves often minutely undulate at lower margins; lower bracts straight, ascending, 30 to 35 mm. long; nectaries to 2 mm. wide.

In the protologue he commented : "While elsewhere the presence, or absence, of hairs is sufficiently important to lead to the creation of a distinct section of the genus, here it is a very minor matter. The two forms of *E. semivestita* agree in practically every detail, except the sole character of hairiness." Anyone reading this concludes that the absence of hairiness being only "a very minor matter" the two forms quite simply are representing the variability of *E. semivestita* Moran. But of course that wasn't Walther's opinion at all, he couldn't possibly let the opportunity to create at least a new variety pass by unused

Why however for his monograph he wrote a new description - 'amended by the author' - of *E. semivestita* Moran by adding "or glabrous" each time when Moran had written "puberulent" so that it included also his *E. floresiana*, is completely illogical – this would only made have sense if he had abstained from classifying the glabrous plant as variety.

Description as amended by the author. Plants puberulent or glabrous; stem evident but short, usually simple; leaves rosulate, narrow, oblanceolate, acute, 10 to 14 cm. long, 15 to 30 mm. broad, concave above, faintly keeled beneath, narrowed to subterete base, dark green, usually edged red or purplish, puberulent or glabrous; inflorescence paniculate, with three to nine secund-racemose, often short branches, to 55 cm. tall, each branch with six to nine flowers or fewer; peduncle puberulent below, above papillose, or quite glabrous; lower bracts 30 to 55 mm. long, puberulent or glabrous obovate-oblong, straight or recurved; pedicels 1 to 7 mm. long, often very short; sepals gla-

And as his plant was almost stemless he simply suppressed the "to 20 cm and more tall" stem of the *E. semivestita* description by Moran. In the Key to Series *Retusae* he at least wrote "stem evident".

He wrote : "We (!) [= I] had hoped to publish this as a species, but were anticipated by Dr. R. Moran" (*Cact. Succ. J. (Los Angeles)* **30** : 109. 1958). Obviously he could not come to terms with the fact that Moran had beaten him to the publication of *E. semivestita*. So if he was not the author of *E. semivestita*, he was at least the author of the variety *E. semivestita* Moran var. *floresiana* Walther.

Errors :

1. While the protologue of the var. *floresiana* indicated type and occurrence as follows :

Type: CAS: 332306. Cultivated at the Strybing Arboretum in Golden Gate Park, S. F.
Occurrence: Type collected by R. Flores along International highway, near border of San Luis Potosi and Tamaulipas, at rather low elevation.

the text in the monograph reads :

TYPE. Cultivated in Strybing Arboretum, Golden Gate Park, San Francisco (CAS, no. 332306). Originally collected by R. Flores along road from Antigua Morelos to San Luis Potosi, about 10 miles from Antigua Morelos in the eastern or semitropical side of the mountains, on moss-covered rocks in company with *Agave attenuata*. *Echeveria rosea* grew here too, on trees.

The source of this new information is a mystery, the type sheet does not provide it at all.

Under COLLECTIONS of var. *floresiana* Walther listed :

Tamaulipas: near border of Nuevo Leon, Dulces Nombres, Meyer and Rogers, 48/2872 (MO); Sierra del Tigre, above Gomez Farias, Rancho del Cielo,

2. The citation is wrong. The information on the determination label reads thus :

"Dulces Nombres, Nuevo Leon and just east of border into Tamaulipas"- i.e. these are two different collection localities, however both are within Nuevo León, not in Tamaulipas – and both represent *E. semivestita* var. *semivestita*, not var. *floresiana* !

48/2872 (MO); Sierra del Tigre, above Gomez Farias, Rancho del Cielo, Dressler, 57/1837 (MO).

3. What Dressler found near Gomez Farias is *E. semivestita* var. *semivestita*, not var. *floresiana*.

Of the three specimens listed under COLLECTIONS of var. *floresiana* only the type specimen is correct, the remaining two specimens represent var. *semivestita*.

Under COLLECTIONS of var. *semivestita* Walther indicated :

296, Moore and Wood, 48/3953 (BH). Nuevo Leon: Sierra Madre Oriental, Puerto de Santa Ana, C. H. and F. T. Mueller in 1929 (GH).

4. The specimen C.H. and F.T. Mueller is not extant at GH, so it is impossible to know what it represents.

Under REMARKS Walther wrote :

upper pseudopedicels. It should be noted here that the airline distance between the respective type localities is less than 100 miles.

5. This is not correct, the distance is almost 200 km.

6. In the Key to Series *Retusae* Walther indicated :

B. Leaves green with red edges, sometimes puberulent; stem evident; inflorescence with 3 to 9 branches. Hidalgo, San Luis Potosi and Tamaulipas. . . . 45. *E. semivestita*
C. Leaves puberulent with appressed hairs; inflorescence glabrous.
45a. *E. semivestita* var. *semivestita*

This is not correct – not only the leaves are puberulent, it is the whole plant except the inflorescence.

Comment :

It seems that the plant Walther described as var. *floresiana* was somewhat smaller than Moran's plant. However the much more interesting difference is the fact that its "leaves often [are] minutely undulate at lower margins". Unfortunately neither the protologue nor the monograph include a photo showing this feature and Walther's sketch also lacks it.

To classify the glabrous plant as a variety is questionable anyway, and even more so as Charles Uhl has found hairy as well as glabrous plants growing at the same place in the region of the type collection of *E. semivestita* Moran (letter to Moran 29 December 1970).

UCBG 49.1667 – according to the accession card – was annotated by Walther as isotype of *E. semivestita* var. *floresiana* (US 2301192 & US 2301193). However this is pure nonsense. The specimens consist mainly of multi-branched inflorescences, with fairly long many-flowered branches, completely different from those of *E. semivestita* var. *floresiana*. Moreover the only information regarding the plant in question is that UCBG had received it from Robert Flores in 1949, without a name and without an indication of origin. It can as well have been a hybrid.

Series 5. Gibbiflorae (Baker) Berger

46. Echeveria subrigida (Robinson and Seaton) Rose (p. 176-178)

This species was described as *Cotyledon subrigida* by Robinson & Seaton in *Proc. Amer. Acad. Arts* 28: 105, 1893 from a plant collected by C.G. Pringle in 1892 in the Tultenango Canyon, State of Mexico (Pringle 4326) and published as *Echeveria subrigida* by Rose in *Bull. New York Bot. Gard.*, 3: 10, 1903.

COTYLEDON SUBRIGIDA. Glabrous, 1½–2 feet in height: leaves radical, sessile, ovate, acute, 3–4 inches long, two thirds as broad: stem and branches covered with a light bluish bloom: bracts of the stem 5–10 lines long, of the branches minute: inflorescence about a foot long, with about 8 spreading somewhat rigid racemosely 5–7-flowered branches: flowers large ($\frac{2}{3}$ inch), approximate, borne on the upper side of the branches: pedicels a line or two in length: sepals lanceolate-acuminate, half the length of the petals; the latter lanceolate-acuminate, acutely keeled, somewhat gibbous at the base, red, internally tinged with yellow: stamens nearly equalling the corolla. — Ledges and cliffs, Tultenango Cañon, State of Mexico, October, 1892 (n. 4326). Near *C. gibbiflora*, Moq. & Sess., but with the branches of the inflorescence shorter and more rigid, leaves shorter, etc.

Walther's text

Again Walther did not find necessary to quote Robinson's & Seaton's description but preferred to write a new one "from plants collected at the type locality by the author in 1934" :

within; carpels to 18 mm. long; stamens 16 to 18 mm. long; nectaries truncate, reniform, to 4 mm. broad, red. Flowers from August to October. Description from plants collected at the type locality by the author in 1934.

The plant Walther had collected at the type locality Tultenango Cañon, State of Mexico in 1934 was the correct *E. subrigida* – the specimen CAS 478851 is the proof. However the plant he used for his description many years later was no longer this plant but an impostor wrongly labelled as *E. subrigida* – in fact *E. cante*, described only many years after his death. Walther was known for the mess in his collection at Golden Gate Park, San Francisco, so the mistake in name is not a surprise, especially in view of the fact that morphologically *E. subrigida* and *E. cante* are quite similar, the main difference being the heavily pruinose leaves of the latter – much more pruinose than *E. subrigida* ever can be. So Walther's description of *E. subrigida* is in fact the first description of *E. cante* !

Errors :

Under REMARKS Walther wrote :

REMARKS. *Echeveria subrigida* is one of the most distinct of all *Echeveria* species, because of its silvery, narrow, acute subsessile leaves, tall inflorescences with numerous, few-flowered branches, its very large corolla, and last but not least, its unique scarlet nectaries. In most of these points it is very close to *E. palmeri* Rose, from San Luis Potosi, Hidalgo, Durango, and Jalisco, but its silvery foliage serves to distinguish *E. subrigida* from *E. palmeri*. For further discussion, see *E. palmeri*.

And in the Key to Series *Gibbiflorae* he indicated :

C. Leaves silvery-pruinose. Tultenango Cañon. 46. *E. subrigida*

1. The description by Robinson & Seaton is not very detailed but it can be assumed with certainty that extreme pruinosity would have been mentioned. If Walther had taken this into account he would have noticed that **this silvery white plant could not be *E. subrigida*.**

p. 139, fig. 4, 1935; vol. 8, p. 19, figs. 22, 23, 1936; vol. 17, p. 83, fig. 54, 1945;
vol. 31, p. 42, fig. 18, 1959.

2. The same applies to Kimnach who also did not consult Robinson & Seaton and published an article about *E. subrigida*, actually dealing with *E. cante*.

3. Accordingly Walther also distinguished *E. palmeri* and *E. subrigida* based on its bright green vs very pruinose leaves, what means that in fact he distinguished *E. palmeri* and *E. cante* ! (That his concept of *E. palmeri*, however, was not correct either is explained in the following chapter.)

4. A further evidence for Walther's mistaken concept of *E. subrigida* is the herbarium sheet M 0881288 of the University of California representing *E. cante* – not, as determined by Walther himself in 1958, *E. subrigida* !

Figure 93. 46. *Echeveria subrigida* (Robinson and Seaton) Rose. Plant grown at Kew; received in 1905 from Dr. J. N. Rose as *E. palmeri* Rose. From an article by N. E. Brown (Curtis's Botanical Magazine, volume 138, plate 8445).

5. Why on the other hand he illustrated his text on *E. subrigida* with plate 8445 from *Curtis's Botanical Magazine* representing *E. palmeri*, i.e. why he identified *E. palmeri* as *E. subrigida* he did not explain and is not comprehensible. There is no doubt regarding the identity of plate 8445 because the plant that had served as a template for the drawing was received from Rose who only had *E. palmeri* and never had had *E. subrigida*.

Under Synonyms of *E. subrigida* Walther listed :

Echeveria subrigida (Robinson and Seaton) ROSE, in Britton and Rose, Bull New York Bot. Gard., vol. 3, p. 10, 1903; BRITTON and ROSE, N. Amer. Fl., vol. 22, p. 23, 1905; POELLNITZ, in Fedde Repert., vol. 39, p. 250, 1936, in part.

6. The reason why Walther considered von Poellnitz' text as valid only "in part" is the fact that the latter had treated *E. palmeri* Rose as a synonym of *E. subrigida* and not as a distinct species as he did.

Again under REMARKS Walther wrote :

Echeveria angusta Poellnitz clearly belongs here; apparently Poellnitz knew *E. subrigida* only from herbarium specimens. His citation of Ehrenberg's material from the barrancas near Regla, Hidalgo, probably represents confusion with *E. mucronata* or one of its allies.

7. *E. mucronata* has a type of inflorescence clearly different from that of *E. subrigida*. To imply that von Poellnitz could confuse *E. mucronata* and *E. subrigida* is absurd.

Echeveria subrigida appears to be frequently cultivated in European collections; I saw it in numerous botanic gardens in 1957.

8. Of course this refers to *E. cante*, not to *E. subrigida*.

Comment :

Because Walther's text about *E. subrigida* is based on an incorrectly labelled plant that in fact was *E. cante* it is of course completely worthless.

47. *Echeveria palmeri* Rose (p. 179)

Rose's description of *E. palmeri* was made from a plant Dr. E. Palmer had sent from the high mountains about Alvarez near the city of San Luis Potosí and published in *Bull. New York Bot. Gard.* 3: 10, 1903 :

***Echeveria Palmeri* Rose, sp. nov.**

Acaulescent; leaves numerous, erect or slightly spreading, pale green, at first somewhat glaucous, with reddish margins, rhomboid or oblanceolate, the largest ones 2 dm. long, 1 dm. broad at widest point, narrowed at base and there 2–4 cm. broad, flat and fleshy, but not very thick except at base, acute; flowering branches thick and stout, 6–8 dm. high, green and slightly glaucous below, reddish or rose-colored above, bearing a few scattered oblong leaves 4–5 cm. long; inflorescence a rather compact panicle 1–2 dm. long, its branches somewhat glaucous, short, 3–4-flowered; pedicels stout, 3–6 mm. long; calyx deeply 5-parted, its lobes very unequal, linear to narrowly ovate, acute, the longer ones 10 mm. long; corolla-buds sharply 5-angled, acute, broadly ovate in outline, somewhat glaucous; corolla 2 cm. long, 12 mm. broad at base, reddish-yellow, deeply parted into 5 lobes, the tube proper only 3 mm. long, lobes oblong, thickish, somewhat spreading at tip but connivent in age, gibbous at base; stamens 10, all inserted at top of corolla-tube, those opposite the petals broad at base; appendages lunate, deep purple, depressed in the center; carpels erect, distinct or nearly so, tapering into the slender purple styles; ovules many.

Walther's text

As synonym Walther listed :

Echeveria subrigida (Robinson and Seaton) POELLNITZ, in Fedde Repert., vol. 39, p. 250, 1936, in part.

Of course there is no "*Echeveria subrigida* (Robinson & Seton) Poellnitz" ! "in part" refers to the fact that von Poellnitz had treated *E. palmeri* as a synonym of *E. subrigida* with which Walther did not agree.

Walther again did not quote the First Description by Rose but wrote a new one "from plants collected by the author in 1935 near Encarnacion and grown in Golden Gate Park, San Francisco":

red. Flowers in December and January. Description from plants collected by the author in 1935 near Encarnacion and grown in Golden Gate Park, San Francisco.

Encarnación, where Walther stated to have collected the plant he used for his description is very distant from the type locality of *E. palmeri* near San Luis Potosí. His description of what he thought to be *E. palmeri* differs clearly from Rose's description both what concerns habit and leaves which are much smaller and what concerns flowers and pedicels which are much bigger. In short, the plant from Encarnación, Hidalgo is not *E. palmeri* Rose. Had he consulted Rose's description he would have noticed that he had not correctly identified his plant from Encarnación.

Errors :

1. In the description Walther wrote :

acute; corolla urceolate to cylindroid-pentagonal, 22 to 27 mm. long or more, about 16 mm. thick near base, 16 mm. wide at open mouth; petals keeled, hollowed at base within; nectaries truncate, reniform, to 4 mm. wide, scarlet

A corolla that has the same diameter at base and at mouth is not urceolate.

2. The type of *E. palmeri* is US 397548. The specimen consists of one huge leaf, two small leaves (probably bracts) and two inflorescences, one fully developed, the other not yet. On a piece of paper, inserted on the type sheet under the stem of the undeveloped inflorescence, Walther stated : "near *E. subrigida* Robinson and Seaton, but leaves usually green, not puberulent, nectaries scarlet, rim of nectar-cavity not appendaged"- Rose however had indicated : "**appendages** lunate, deep purple, depressed in the center". That means nothing other than that Rose was wrong. It obviously didn't occur to him that **he** might have been wrong, he who had never seen Rose's plant

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. San Luis Potosi: *Palmer* (US, type); *Sierra de Alvarez, Orcutt, 25/1770* (US). Hidalgo: Encarnacion, flowered in Golden Gate Park, San Francisco, *E. Walther* in 1935 (CAS).

3. The determination label does not indicate "Sierra de Alvarez", rather it is "near San Luis Potosi".

Under REMARKS Walther wrote :

REMARKS. That *E. palmeri* is closely related to *E. subrigida* is certain, but the extremely silvery pruinose coating of the leaves, sepals, and bracts, char-

4. This refers to *E. cante*, erroneously used by Walther for his description of *E. subrigida* (see there).

Comment :

Because Walther's concept of *E. palmeri* was based on a plant obviously not corresponding to *E. palmeri* Rose his description is not only definitely wrong but above all misleading – as is that of *E. subrigida* (see above).

48. *Echeveria dactylifera* E. Walther, new species (p. 179-182)

Walther's description was made from a "greenhouse-grown plant", "cultivated by Victor Reiter, San Francisco" and its exact origin is unknown : somewhere near the Sinaloa-Durango boundary.

obliquely truncate; nectaries narrowly lunate, to 4 mm. wide. Flowers from December on. Description from greenhouse-grown plant.

TYPE. From plant cultivated by Victor Reiter, San Francisco, originally received from Sr. Dudley B. Gold, Mexico City. Native along road from Mazatlan to Durango, near Sinaloa-Durango boundary (CAS, no. 412759).

Glabrous, stemless or nearly so; rosettes mostly simple, with rather few, crowded, sessile leaves, these elliptic-oblong, acute, somewhat cuneate towards the thick, keeled base but not petiolate, blade folded upwards from the midrib, to 25 cm. long or more, to 9 cm. broad; inflorescence solitary, to 100 cm. tall, strict, erect, paniculate, with many short, secund, few-flowered branches; lower bracts narrowly oblong-elliptic, flat, acute, to 7 cm. long and 2 cm. broad; pedicels slender, to 20 mm. long, somewhat thickened below calyx; sepals unequal, longest to 20 mm. long, deltoid to oblong-ovate, acute, flattish, connate at base, the largest sometimes pseudocarinate at base, ascending; corolla narrowly urceolate, pentagonal, to 30 mm. long, 17 mm. in basal diameter, 15 mm. at mouth; petals bluntly keeled, their tips hooded and apiculate, the basal hollow short, its upper rim produced into two fingerlike processes at base of epipetalous filaments, these fingers recurved in front of filament base, and there bearing three or more bright red dots; anthers to 6 mm. long; carpels 25 mm. long; styles long and slender, somewhat outcurved above; stigmas obliquely truncate; nectaries narrowly lunate, to 4 mm. wide. Flowers from December on. Description from greenhouse-grown plant.

Color. Leaves hazel above, with edges pompeian-red, lower surface rainette-green tinged alizarine-pink; lower bracts japan-rose, peduncle and pedicels old-rose with bloom; sepals deep vinaceous-lavender; corolla alizarine-pink with bloom; petals inside buff-yellow above, edges minutely dotted coral-red; styles oxblood-red, to brazil-red towards base; carpels whitish; nectaries maize-yellow, never scarlet.

This plant had leaves to only 25 cm long while – according to Reid Moran - plants in nature can reach a rosette diameter of 80 – 100 (!) cm.

Errors :

Under COLLECTIONS Walther indicated :

COLLECTIONS. Mexico. Jalisco: Bolaños, Rose, in 1897 (US). Sinaloa: Balboa, Ortega, 23/5040 (UC); 55 miles east of Villa Union, Lindsay, 55/

B. Nectaries yellow; leaves hazel-brown, more or less red-edged; upper rim of petal cavity with two fingerlike projections spreading horizontally. Sinaloa, Durango, Jalisco, etc. 48. *E. dactylifera*

1. The respective herbarium specimen consists of only two quite small leaf fragments which do not permit identification. That means the occurrence of *E. dactylifera* in Jalisco is completely uncertain.

Under REMARKS Walther wrote :

lated to *E. subrigida* and *E. palmeri*, both of which have a more eastern range, have bright scarlet nectaries, differently colored foliage, and lack the remarkable fingerlike appendages on the upper rim of the nectar-cavity. These pro-

2. This is wrong. Rose's description of *E. palmeri* clearly indicates : "**appendages** lunate, deep purple, depressed in the center". Because the plant Walther considered to be *E. palmeri* was wrongly identified, he concluded that the latter was lacking appendages, i.e. that Rose had erred – instead of noticing that **he** had the wrong plant

Comment :

The big blemish of this chapter is the fact that the description was made from a "greenhouse-grown plant", obviously not in best shape, exact origin unknown.

49. *Echeveria grisea* E. Walther (p. 182-186)

Walther described *Echeveria grisea* from plants he himself had collected 1935 in the Cañon de la Mano, near Iguala, Guerrero, and published the description in *Cact. Succ. J. (Los Angeles)* 9: 165, 1938 :

Plant with evident, usually short and simple caudex 2-3 cm. thick; leaves few, laxly-rosulate, 10-15 cm. long, 5-8 cm. broad, broadly-obovate-spatulate, rounded at apex, minutely mucronate, long-attenuate to base, often conspicuously-undulate at edges, color corydalis-green to asphodel-green, sometimes spotted deep-purplish-vinaceous, pruinose, petiole 2 cm. wide or less, blade concave above and upcurved; inflorescence paniculate, to 50 cm. tall or more, scape stout, strict, lower bracts numerous, ascending, to 5 cm. long, 2 cm. broad, oblong-obovate, thick, subterete at base, colored as the leaves; panicle narrow, its branches 3-5, rather short, angularly divaricate; pedicels stout, 4-5 mm. long; sepals turgid, terete, obtusish, longest 7 mm. long, color light-celandine-green; corolla 13 mm. long, 9 mm. thick at base, 6 mm. in diameter at mouth, occasionally 6-merous; petals fairly thick, nearly straight, shrimp-pink outside at base, at edges and tips strawberry-pink, inside pale-seashell-pink; stamens 7 mm. long; carpels 9 mm. long, white; styles victoria-lake to carmine; nectaries truncate, narrowly-lunate-reniform, to 2.5 mm. broad. Flowers in December and January.

The text in the monograph differs from the protologue as follows :

1. The description is slightly modified.
2. OCCURRENCE (Distribution) : Protologue : "Possibly extending to Uruapan in Michoacan", monograph : "on lava, Michoacan" – as an indisputable fact.
3. COLLECTIONS : The same modification : Protologue : "Uruapan [....] may belong here", monograph: "Uruapan, on lava field", however qualified by a sentence added at the end of the article : "Specimens from Uruapan are needed to determine whether they truly belong here":

hardy.
Specimens from Uruapan are needed to determine whether they truly belong here.

However under GEOGRAPHICAL OCCURRENCE (p. 36) *E. grisea* is stated to occur in Michoacan – again without any restriction.

4. Two new collections are listed : "Petatlan-Chilapa, Nelson, 94/2153", and "Pringle, 91/3766".
5. The text of REMARKS is changed considerably.

Errors :

Walther, having described *E. grisea* from a single gathering near Iguala, Guerrero, was badly in need of specimens / collections to substantiate his new species. The following specimens seemed fit to this purpose :

COLLECTIONS. Mexico. Guerrero: Cañon de la Mano (flowered in Golden Gate Park, San Francisco), *E. Walther*, 1935/1 (CAS, type); Petatlan-Chilapa, *Nelson*, 94/2153 (US); Iguala, *Holway*, 03/R:689 (US). Michoacan: Uruapan, on lava field, *Pringle*, 05/10129 (F,GH,MEXU,NY,P,PH,US,W), *Pringle*, 91/3766.

1. The assignment of this specimen to *E. grisea* is absurd : it only consists of a bifurcate, quite evidently not angularly-divaricate inflorescence with ca 9 sessile flowers, most of them as buds, i.e. a correct identification is impossible.

COLLECTIONS. Mexico. Guerrero: Cañon de la Mano (flowered in Golden Gate Park, San Francisco), *E. Walther*, 1935/1 (CAS, type); Petatlan-Chilapa, *Nelson*, 94/2153 (US); Iguala, *Holway*, 03/R:689 (US). Michoacan: Uruapan, on lava field, *Pringle*, 05/10129 (F,GH,MEXU,NY,P,PH,US,W), *Pringle*, 91/3766.

2. The type of *E. obtusifolia* is Pringle 7734, collected in Morelos. Pringle 10129, collected "in shade, lava fields near Uruapan, 5000 ft", was also determined as *E. obtusifolia*, well possible by Rose himself who had published the description of *E. obtusifolia* two years previously. Specimens of Pringle 10129 agree quite well with Pringle 7734, so there is absolutely no reason to doubt that Pringle 10129 had been correctly identified.

While – as cited above – the protologue of 1938 stated: "Pringle 05/10129 [...] may belong here", in 1958 Walther got down to business by visiting several herbaria and reclassifying as many Pringle 10129 *E. obtusifolia* specimen as he could get hold of as *E. grisea* with the result that in the monograph he could declare : "Uruapan, on lava field" - btw Uruapan is ca 280 km distant from Iguala.

REMARKS. Dried material of *E. grisea* is difficult to distinguish from that of either *E. fulgens* or *E. obtusifolia*. Both of these have thinner, often

A comparison of the type specimen of *E. grisea* Walther from Iguala, Guerrero, and several Pringle 10129 specimens shows that the plants are somewhat similar, however the sepals of *E. obtusifolia* are widely spreading and neither turgid nor terete, the inflorescence as a whole consists of fewer flowers, is not a well developed panicle like that of *E. grisea*, is obviously not "angularly-divaricate" and its leaves do not look greyish pruinose at all. In other words, the above statement may very well apply to Walther himself, who did not really know either *E. fulgens* or *E. obtusifolia*, but otherwise it is not true. On the other hand, if *E. grisea*, *E. obtusifolia* and *E. fulgens* are so easy to confuse, it would have been obvious to unite *E. grisea* with either *E. fulgens* or *E. obtusifolia*. But that would have meant doing without a new description, and of course Walther couldn't think of anything like that. [Uhl's much later comment reads : This species is similar to *E. fulgens* but differs in its thicker leaves", i.e. it is debatable whether *E. grisea* should be classified as a distinct species at all – *Haseltonia* 9, 2002.]

COLLECTIONS. Mexico. Guerrero: Cañon de la Mano (flowered in Golden Gate Park, San Francisco), *E. Walther*, 1935/1 (CAS, type); Petatlan-Chilapa, *Nelson*, 94/2153 (US); Iguala, *Holway*, 03/R:689 (US). Michoacan: Uruapan, on lava field, *Pringle*, 05/10129 (F,GH,MEXU,NY,P,PH,US,W), *Pringle*, 91/3766.

3. This is a totally wrong listing, it refers to a Pringle collection from SLP, originally determined as *Cotyledon grayi*, redetermined by A. Gray as *E. paniculata* and again redetermined by Walther in 1958 as *E. maculata*.

COLLECTIONS. Mexico. Guerrero: Cañon de la Mano (flowered in Golden Gate Park, San Francisco), *E. Walther*, 1935/1 (CAS, type); Petatlan-Chilapa, *Nelson*, 94/2153 (US); Iguala, *Holway*, 03/R:689 (US). Michoacan: Uruapan, on lava field, *Pringle*, 05/10129 (F,GH,MEXU,NY,P,PH,US,W), *Pringle*, 91/3766.

4. As it happens, in 1903 E.D. Holway had also collected a plant at Iguala. It has Rose's nr. 689, and was simply classified as "*Echeveria*" (US 398536). Von Poellnitz (1936) considered this collection representing *E. campanulata* Kunze.

Echeveria campanulata POELLNITZ, in Fedde Repert., vol. 39, p. 256, 1936; not Kunze, which is *E. grandifolia*.

[Von Poellnitz clearly referred to Kunze and t. 1247 showing *E. gibbiflora* DC and illustrating Lindley's description of the latter. Walther's indication "*Echeveria campanulata* Poellnitz" is absurd.]

Walther rejected von Poellnitz' classification and claimed Holway's collection for his *E. grisea*. For him it obviously could not be other than that a plant from approximately the same locality as the latter could not but agree with his own material. It is correct that Holway / Rose 689 is somewhat resembling *E. grisea* Walther. However it is difficult to decide whether Walther was right in identifying it as *E. grisea*, i.e. von Poellnitz was wrong in considering it as *E. campanulata* Kunze. In any case Walther used the photograph nr 210 of Holway's plant as illustration of his *E. grisea* and captioned it accordingly (fig. 98) – without any reservation.

In short : 3 of the 4 listed collections are definitely wrong. The effort to substantiate *E. grisea* has clearly failed.

What is interesting is Walther's change of mind in the years after the publication of the first description : While in the protologue the connection of *E. campanulata* Kunze and t. 1247 of the *Botanical Register* (representing *E. gibbiflora* DC) is taken for granted, in the monograph he assigned *E. campanulata* Kunze to *E. grandifolia* Haworth – which is of course wrong : Kunze stated that *E. campanulata* is "proxima species *Echeveria gibbiflora* DC". His "change of mind" is due to his decision to classify *E. grandifolia* Haworth as a species distinct from *E. gibbiflora* DC at which he must have arrived some time later and which forced him to adapt earlier texts.

In the Key to Series *Gibbiflorae* Walther indicated :

F. Upper bracts and sepals turgid, subterete; leaves thick, obtuse. Guerrero, Iguala, etc. 49. *E. grisea*

There is no "**etc.**" ! Under GEOGRAPHICAL OCCURRENCE Walther listed *E. grisea* also for Michoacán. This is wrong because it refers to the incorrectly redetermined *E. obtusifolia* Pringle specimens and of course applies to the latter and not to *E. grisea*.

Comment :

Walther stated that specimens of *E. grisea*, *E. fulgens* and *E. obtusifolia* are difficult to distinguish, nevertheless he had no hesitation in reclassifying Pringle 10129 specimens clearly identified as *E. obtusifolia* as *E. grisea*, although they just do not show the characteristic feature of *E. grisea*, namely the angularly-divaricate inflorescence. As a matter of course, this reclassification had an impact on Walther's treatment of *E. obtusifolia* : by depriving himself of the many excellent Pringle specimens, he also deprived himself of a secure basis for a proper understanding of *E. obtusifolia* and thus also of *E. fulgens* (see comment to 42. *E. fulgens* and 44. *E. obtusifolia*).

The wrongly cited specimens Nelson 94/2153, Petatlan-Chilapa, and Pringle 91/3766 and the arbitrary redetermination of Pringle 10129 evidence Walther's unscrupulous conversion of existing material to suit his purposes, in this case to back up his new *E. grisea* by disguising the fact that he again had described a new species from a single gathering – but to no avail.

50. Echeveria fimbriata C.H. Thompson (p. 186-188)

E. fimbriata was described by C.H. Thompson in *Trans. Acad. Sci. St. Louis* 20(2): 20-21, 1911, from a plant collected by Dr. Trelease at El Parque, Morelos, Mexico, in 1905 :

***Echeveria fimbriata* n. sp.**

Caulescent, stem 4.5 dm. to the rosette, 2 cm. in diameter. Rosette open, comparatively few leaves; leaves oblanceolate, 12 cm. long, 6.2 cm. wide,—3.5 cm. from the rounded obtuse apex, tapering to a very thick base, 2 cm. wide by 1 cm. thick, valiculate concave in the expanded blade portion, groove-channeled down the upper face of the basal portion, where the margin is thin, narrow, and sharp wing-like, and the under surface convex with a prominent obtuse keel, which ends in a decurrent obtuse spur below the transversely oblong attachment.

Smaller young leaves decidedly purple, tinted on both surfaces, except a thin, hyaline, finely fimbriated margin; older larger (as described above), of light green color and no purple tint, with a thin narrow, nearly transparent, fimbriated margin. Neither leaves nor stem show any indication of glaucousness.

Flowering stalk arising from below the rosette, obliquely ascending, rather scattered leafy throughout, the lower portion of the same pale green as the main stem, but the upper portion tinted with brownish-red and only in the inflorescence becoming glaucous; lower bracts differing from the mature leaves of the rosette in size, 5.5 cm. long by 2.5 cm. broad, and in being finely denticulate instead of fimbriate. These bract-leaves become smaller toward the inflorescence where they are only 1.8 cm. long and lanceolate in outline, somewhat purple-tinted and glaucous. Inflorescence of two secund racemes; lower pedicels 1.5 cm. long, curved by the weight of the flower, neither articulate nor bracted; calyx lobes decidedly unequal, lanceolate, and, like the pedicels, pale green slightly tinted with purple and quite glaucous, nearly horizontally spreading. Corolla 5-angled, 1.5 cm. long, 1 cm. in diameter at the base, slightly tapering to the recurved obliquely spreading tips; petals separate to the base, lanceolate, gradually tapering from the middle to a long acute apex, somewhat gibbous at the base and obtusely angled on the back, outer surface rose pink, strongly glaucous, tips recurved so the apex points at right angle from the axis of the flower, inner surface light orange yellow, tinted with red at the very apex and part way down the median line by short, straight, longitudinal, red pencilings; gland large, lunate. Stamens inserted alternately in two planes, tapering from the base upward, pale yellow, anthers of the same color. Ovary white, three-fifths the pistil length; style dark red-purple, tapering upward to the green stigma which is somewhat recurved at maturity; anthers and stigmas in one plane.—Plates VIII-IX.

Walther's text

Walther again did not quote Thompson's description but wrote a new one from a plant he himself in 1934 had collected at the type locality and grown in his collection at Golden Gate Park, San Francisco.

Errors :

TYPE. *Trelease* 1905, MO:674 (3/3), from the Sierra de Tepoxtlán near San Juanico, Tlacotenco, Morelos, Mexico. *Clonotype*: US, no. 149472. *Topotype*: *E. Walther* in 1959, garden of V. Reiter (CAS).

1. The correct number is US 1490472.

erías as follows: *Echeveria obtusifolia* has a shorter caudex, smaller leaves, more numerous bracts, shorter pedicels, and a broader, often erect corolla; *E.*

2. The comparison with *E. obtusifolia* is not relevant because Walther's concept of that species was deficient (see comment to 44. *E. obtusifolia*).

crenulata from Cuernavaca is much larger, its leaves have a prominent red margin, its panicle is larger, with more numerous and shorter branches, bearing fewer flowers and a larger corolla.

3. The citation of *E. crenulata* refers to the plant Walther erroneously considered to be *E. crenulata* Rose but which by far not agreed with the latter, i.e. was an impostor, therefore the comparison is also of no relevance (see comment to 54. *Echeveria crenulata*).

No comment.

51. *Echeveria rubromarginata* Rose (p. 188-191)

The plant described by Rose in 1905 as *E. rubromarginata* was collected by C. A. Purpus on rocks near Orizaba, **Veracruz**, 1903; it has the Rose n° 930 :

42. *Echeveria rubromarginata* Rose, sp. nov.

Acaulescent or short-caulescent. Leaves few, about 12, stiff, ascending, oblanceolate, 6-12 cm. long, narrowed to a short thick petiole, obtuse, mucronate, glabrous, glaucous, with somewhat crenulate margins; flowering stems 5-12 dm. high, the lower leaves spatulate and obtuse, the upper ones ovate and acute; inflorescence paniculate, 1-2 dm. long; pedicels very short; sepals very unequal, the longer ones 8-9 mm. long, spreading, glaucous; corolla pale rose-colored, 12 mm. long, a little paler within, the lobes acute, thick.

Collected by C. A. Purpus on rock near Orizaba, Mexico, December, 1903 (Rose no. 930, type) and also near Orizaba by Frank M. Meyer, June, 1904 (Rose no. 1015). This species seems nearest *E. retusa* but it has different leaves, sepals, and corolla.

Main features of *E. rubromarginata* :

- acaulescent (or shortly caulescent),
- leaves 6 - 12 cm long, mucronate, glaucous, margins somewhat crenulate.
- inflorescence 50 - 120 cm tall, paniculate,
- pedicels short,
- sepals spreading,
- corolla pale rose-coloured.

Rose does not indicate the number of side-branches of the inflorescence nor the number of flowers of the side-branches. But the photo on the type sheet fills this gap :



Fig. 100

Walther's text

Walther did not cite Rose's description but wrote a new one "from cultivated plants collected at Esperanza in 1934" – i.e. from a plant not from the type locality near Orizaba :

within at base; nectaries reniform truncate, to 4 mm. wide; occasionally red-dotted. Flowers September and October. Description from cultivated plants collected at Esperanza in 1934.

The respective specimen is CAS 178818. It consists only of two inflorescences. One of them with about 15 short, robust side-branches, the other with fewer and shorter side-branches with fewer flowers each. We are not told whether the two inflorescences belong to one and the same plant. It differs considerably from the type specimen of Orizaba, representing - so Walther - a "more luxuriant specimen" :

pany with *E. subalpina*, but not a single specimen was to be found in 1957. In such a wide-ranging species some variation must be expected, as the more luxuriant specimens seen on the edge of the lava flow near Esperanza. Careful

The determination label bottom right reads : "231. California Academy of Sciences, Flora of Mexico, *Echeveria*. Near Esperanza. Coll. Eric Walther, 1934". That means when the specimen was prepared in 1934, the respective plant was not yet identified. A label bottom left, in Walther's hand, apparently added later at an unknown date, reads : "with *E. akontiophylla* x *rubromarginata* near Esperanza". However *E. akontiophylla* Werdermann was described from a plant of unknown origin, cultivated in the Botanical Garden of Berlin-Dahlem, so Walther's statement to have seen it "near Esperanza" is absurd.

Errors :

Under Synonyms Walther listed :

Echeveria gloriosa ROSE, Contrib. U.S. Nat. Herb., vol. 13, p. 295, 1911; N. Amer. Fl., vol. 22, p. 538, 1918.
Echeveria nuda BOTTERI Ms., no. 390.
Echeveria palmeri Hort. Calif. in part (?).
ILLUSTRATIONS. Contrib. U.S. Nat. Herb., vol. 13, pls. 50, 51, 1911 (as *E. gloriosa*).

1. *E. gloriosa* was also collected by C. A. Purpus, however in **Puebla**, not in Veracruz and described by Rose in 1911 :

***Echeveria gloriosa* Rose, sp. nov.**

PLATES 50, 51.

Stems about 30 cm. tall, crowned with a compact cluster of highly colored leaves, from which arise several erect or spreading flowering stems sometimes a meter long; leaves 10 to 15 cm. long, 7 to 10 cm. broad, rounded at apex, deep purple, thickish; flowering stem stout, glaucous; stem leaves narrow, thickish, very glaucous; inflorescence an open panicle; lateral branches bearing numerous sessile flowers; sepals ascending; corolla 12 mm. long, dark red, in bud broadly ovate, but when fully open showing a wide mouth.

Type U. S. National Herbarium no. 615398, derived from a specimen collected on rocks of Cerro de Santa Lucia, Puebla, altitude 1,500 to 1,800 meters, 1907 by C. A. Purpus (no. 423), which flowered in Washington in 1909 and 1910.



Fig. 102

Main features of *E. gloriosa* :

- distinctly caulescent, stem 30 cm tall,
- leaves 10 - 15 x 7 - 10 cm, highly coloured deep purple,
- inflorescence an open panicle, lateral branches bearing numerous sessile flowers,
- sepals ascending,
- corolla 12 mm long, dark red, when fully open showing a wide mouth.

Rose does not indicate the number of side-branches – the photo on the type sheet shows a plant with 5 of them. Very obviously *E. gloriosa* differs considerably from *E. rubromarginata*. And the photos fig. 100 of *E. rubromarginata* and fig. 102 of *E. gloriosa* illustrate these differences and clearly evidence that the latter is not identical with the former, therefore cannot be a synonym of it. Therefore the following remark is simply wrong :

luxuriant specimens seen on the edge of the lava flow near Esperanza. Careful comparison of these plants with the type of Rose's *E. gloriosa* leaves as sole difference the rather shorter pedicels of the latter, scarcely adequate for maintenance of a distinct species.

Walther's "careful comparison" completely omits the fact that *E. gloriosa* is not acaulescent but has a tall stem and that the side branches of its inflorescence are much longer and much more floriferous than those of *E. rubromarginata*. There is no doubt whatsoever that *E. rubromarginata* and *E. gloriosa* are two different species and it is not understandable why at all costs *E. gloriosa* has to lose its status as a separate species. To synonymise it with the former is simply wrong.

To comply with his listing of *E. gloriosa* as a synonym of *E. rubromarginata* Walther modifies his description of the latter - regarding measures and colours it is a combination of the original descriptions by Rose of *E. gloriosa* and *E. rubromarginata*, with the result that the originally glaucous *E. rubromarginata* ends up with "leaves light elm-green tinged vinaceous-purple, edged oxblood-red, glaucous"

Color. Leaves light elm-green, tinged vinaceous-purple, edged oxblood-red, glaucous; peduncle pinkish vinaceous with bloom; bracts light hellebore to

... and the fact that according to Rose *E. gloriosa* has a stem of 30 cm length is simply omitted. To what extent the plant of Esperanza, from which Walther claims to have made the description, is really taken into account is not clear, for ex. the fact that it has 15+ side-branches is not mentioned. And unfortunately CAS 178818 shows neither a rosette nor at least some single leaves.

Under COLLECTIONS Walther listed under **Veracruz** :

OCCURRENCE. Mexico. Veracruz: near Orizaba, Arroyo Seco, Alta Luz,

2. Alta Luz is in **Puebla**, not in Veracruz.

930 (US, type; BH,GH), *Purpus*, 07/25214 (NY); Orizaba, *Botteri*, 390

3. *Purpus*, 07/25214 : correct date is **1906**, not 1907.

(GH,US,photo; as *E. nuda*); on road to Veracruz, *Arsene*, 07/1844 (P,US);

4. "on road to Veracruz, Arsène, 07/1844". There are three specimens of Arsène 1844, US 1032584, MO 846296 and P 04438735. Their determination labels read : "*Echeveria gibbiflora* DC, Barranca près l'Hacienda Alamos, route de Veracruz, alt. 2170 m, vicinity of Puebla, State of Puebla, Nr. 1844, Bro. G. Arsène, collector, N° 5, 1907", that means Veracruz is wrong, the collection locality is in **Puebla**.

While the specimen MO 846296 was redetermined by Walther in 1933 as "*E. gigantea* Rose & Purpus?" and 5/2/58 as *E. rubromarginata* Rose, and P 04438735 was redetermined by Walther May 29, 1957 as *E. rubromarginata* Rose, US 1032584 was only redetermined by the curator of the US Herbarium as *E. rubromarginata* after the publication of Walther's monograph because it was indicated there.

Cerro Borrego, near Orizaba, *Bourgeau*, 1866/3027 (P); Orizaba, *F. Meyer*, 04/11015 (US). Puebla: on rocks, Rio de Santa Lucia, *Purpus*, 07/423 (US,

5. "Orizaba, F. Meyer, 04/11015" is not correct, "11015 is Rose's nr ! It should read "**04/ R 11015**".

Under **Puebla** Walter listed :

04/11015 (US). Puebla: on rocks, Rio de Santa Lucia, *Purpus*, 07/423 (US, no. 615398, type of *E. gloriosa*); near Esperanza, *Rose*, 04/937 (BH); near

6. "on rocks, **Rio** de Santa Lucia, *Purpus*, 07/423 (US, no. 615398, type of *E. gloriosa*)" : However the determination label on US 615398 reads : "On rocks, **Cerro** de Santa Lucia", not "Rio de Santa Lucia". And the pressed plant undoubtedly is *E. gloriosa* with its characteristic long many-flowered side-branches of the inflorescence - **not** *E. rubromarginata*, and – as explained above – not a synonym of *E. rubromarginata*, therefore cannot possibly be listed as a collection of the latter.

Puebla, *P. Maury*, 1884/1103 (NY); Mayorazgo, *Arsene*, 07/10056 (US),

7. There is no specimen of P. Maury 1103 at NY.

Puebla, *P. Maury*, 1884/1103 (NY); *Mayorazgo, Arsene*, 07/10056 (US).

8. "Mayorazgo, **Arsène, 07/10056** (US)". This is US 1032577. Its determination label (bottom right) is completely lacking an identification of the pressed plant. It is a prefab Bro. G. Arsène label, where is only indicated "Vicinity of Puebla, State of Puebla" and the latter as collector with his nr 10056. A handwritten label bottom left reads : "Plantes de Mexique, N° 10056, Fleurs jaunes, Mexique, E. de Puebla, **Mayorazgo**, 10/9 1907, alt. 2130 m", signed Br. G. Arsène.

After the publication of Walther's monograph the curator of the US National Herbarium added on the determination label the name *E. rubromarginata* Rose. However the identification of this specimen as *E. rubromarginata* is clearly wrong : The pressed plant is **not *E. rubromarginata***, its leaves are 18 cm long, i.e. far too long for the latter, they are neither obtuse nor mucronate, and above all, the **flowers are yellow** – impossible for *E. rubromarginata*. Obviously the curator failed to check the indications in Walther's monograph.

Arsene and Nicholas, 11/6177 (GH,NY,US); Hacienda Batan, *Arsene*, 07/

9. Arsène and **Nicholas, 11/6177** (GH, NY, US). The respective sheet is MO 843081, and the determination label reads : "*Echeveria gibbiflora* DC, vicinity of Puebla, State of Puebla, **Mayorazgo**, 2190 m, Bro. G. Arsène, collector Bro. Nicholas, 6177, Dec 20, 1911", i.e. the collector is clearly Nicolas.

1933 Walther redetermined also this specimen as *E. gigantea* Rose & Purpus, this time without " ? " and again 5/2/58 as *E. rubromarginata*. The sheet consists of a huge inflorescence, compared with that of *E. rubromarginata* its branches are far too long and have twice as many flowers, i.e. **does not correspond** to the latter.

>>> **Arsène 07/10056 and Nicola 11/6177** are both from **Mayorazgo**, the former indicated to have yellow flowers and with big acute leaves – i.e. **clearly not *E. rubromarginata*** -, the latter consisting only of a robust inflorescence with at least 14 side-branches, unfortunately lacking leaves and an indication of the colour of the flowers, that means it is not clear whether the two Mayorazgo specimen represents the same species, in any case also **not corresponding to *E. rubromarginata***.

Arsene and Nicholas, 11/6177 (GH,NY,US); Hacienda Batan, *Arsene*, 07/
1881 (US); Acatzingo, *Arsene and Amable*, 07/10057 (GH,US); Hacienda

10. "Hacienda Batan, Arsène 07/1881" : There are two specimens of Arsène 1881 available online, US 1032119 and MO 846298. Their determination labels read : "*Echeveria gibbiflora* DC, Hacienda Batan près de Totimehuacan, 2120 m, N° 1881 Bro. G. Arsène, collector, Août 8, 1907". MO 846298 was redetermined by Walther in 1933 as *E. gigantea* Rose & Purpus and 5/9/58 as *E. rubromarginata* Rose. US 1032119 was redetermined by the curator of the US National Herbarium after the publication of Walther's monograph as *E. rubromarginata* Rose. However the specimen does not well correspond to either *E. gloriosa* or *E. rubromarginata* and it is **doubtful** whether Walther's identification is correct.

1881 (US); Acatzingo, *Arsene and Amable*, 07/10057 (GH,US); Hacienda

11. "Acatzingo, Arsène and Amable", not correct, the **collector is Amable**.

There are two specimens extant of Amable 10057 : MO 346281 and US 1032591. Their determination labels read : "*Echeveria*, Acatzinco, Distrito de Tepeaca, alt. 2110 m, N° 10057 Bro. Amable, collector, Oct 1907". In 1933 MO 346281 was determined by Walther as *E. gigantea* Rose & Purpus and 5/2/58 as *E. rubromarginata* Rose, US 1032591 was determined by the curator of the US National Herbarium after the publication of Walther's monograph as *E. rubromarginata* Rose.

1881 (US); Acatzingo, *Arsene and Amable*, 07/10057 (GH,US); Hacienda Moria, *Nicholas* in 1908 (P); Manzanillo, *Nicholas* in 1911 (P); Necaxa,

12. "Hacienda Moria, Nicholas in 1908 (P)" was originally determined as *E. gibbiflora* and redetermined as *E. rubromarginata* Rose by Walther. However the side-branches of the inflorescence are far too long for *E. rubromarginata*, i.e. Walther's **identification is wrong**.

Moria, *Nicholas* in 1908 (P); Manzanillo, *Nicholas* in 1911 (P); Necaxa,

13. **Manzanillo**, Nicholas in **1911** : The correct name is Manzanilla and the correct date is 1901. The specimen consists of a single leaf and a huge inflorescence with 6 long side-branches with up to 10 flowers on 10-12 mm long pedicels. It was determined as *E. gibbiflora* DC and redetermined – wrongly - by Walther May 29, 1957 as "*Echeveria rubromarginata* Rose". This is *E. gibbiflora*, not *E. rubromarginata* - the inflorescence branches are far too long and too many-flowered and the pedicels are also far too long for *E. rubromarginata*.

Moria, *Nicholas* in 1908 (P); Manzanillo, *Nicholas* in 1911 (P); Necaxa, *Brockway* in 1905 (US). Cultivated: *E. Walther* in 1934 (CAS).

14. Brockway in 1905 (US) : This is a completely different plant ; it is small, has short inflorescences with only few flowers with big, widely spreading sepals, i.e. the **identification is completely wrong** and it is incomprehensible why this is listed as *E. rubromarginata*.

Brockway in 1905 (US). Cultivated: *E. Walther* in 1934 (CAS).

15. The respective specimen is CAS 478848, determined as "*Echeveria*, near Esperanza, coll. Eric Walther, 1934". The specimen consists only of two - very different - inflorescences, at right *E. rubromarginata*, at left a much more robust inflorescence with 15+ very strong side-branches, annotated by Walther "with *E. akontiophylla* x *E. rubromarginata*, near Esperanza". This suggests that it is a hybrid of *E. rubromarginata* and *E. subalpina*. This is nonsense in two respects :

- *E. akontiophylla* (a synonym of *E. subalpina*) was described from a plant at the Botanical Garden of Berlin-Dahlem, origin unknown, so Walther cannot possibly have seen it in the wild. What he could have seen is *E. subalpina*.

- The inflorescence of a hybrid of *E. subalpina* x *E. rubromarginata* would of course be smaller, not bigger than that of *E. rubromarginata*, i.e. this suggestion is completely absurd.

Interestingly when preparing the monograph Walther obviously had forgotten that he had considered the robust inflorescence a hybrid of "*E. akontiophylla* x *E. rubromarginata*" and under REMARKS he called it the "more luxuriant specimen seen on the edge of the lava flow near Esperanza":

pany with *E. subalpina*, but not a single specimen was to be found in 1957. In such a wide-ranging species some variation must be expected, as the more luxuriant specimens seen on the edge of the lava flow near Esperanza. Careful

Because both a rosette and leaves are missing and because it is not known whether the plant was caulescent or acaulescent it is impossible to identify the robust inflorescence. In any case it is **not** *E. rubromarginata*.

Comment to the list of COLLECTIONS :

The specimens collected by Bros Arsène, Nicola and Amable in places which today lie within the urban area of Puebla City do not correspond to the types of either *E. gloriosa* or *E. rubromarginata*, (Nicola 6177, Mayorazgo ; Nicola Hacienda Moria ; Arsène 1844, Hacienda Alamos ; possibly also Arsène 1881, Hacienda Batan). These plants are much more robust. Lacking any indication regarding a possible stem and colour of leaves and flowers, it is impossible to identify them correctly, i.e. to know whether they represent a much stronger variant of either of them or a separate species.

Under REMARKS Walther wrote :

lower inflorescence with fewer branches and longer pedicels. *Echeveria grisea* E. Walther, from near Iguala, differs in its lead-colored leaves, smaller inflorescence with at most three branches, its turgid terete bracts and sepals, and a

16. Walther seems to have forgotten that he had described the inflorescence of *E. grisea* "with 3 to 5 branches" – not "at most 3 branches" - and the colour of the leaves as corydalis-green or asphodel-green, pruinose, occasionally spotted deep purplish vinaceous – not "lead colored".

Under ILLUSTRATIONS Walther listed :

op. cit., pl. 12 only (as *E. gigantea*) 1910; *Cactus and Succ. Jour. Amer.*, vol. 6,

1. The illustration pl. 12 in *Contr. U.S. Nat. Herb.* 1911 obviously does not show *E. gigantea* but whether it really shows *E. rubromarginata*, as Walther suggested, is doubtful : compared with the type of *E. rubromarginata* the plant on the photo pl. 12 has far too many leaves and an inflorescence with far too many and too short side-branches.

op. cit., pl. 12 only (as *E. gigantea*) 1910; *Cactus and Succ. Jour. Amer.*, vol. 6, pp. 186, 187, 1935; *Nat. Hort. Mag.*, vol. 15, no. 1, pp. 94, 95, 1936; photograph

2. This refers to Walther's article "*Collecting Succulents in Mexico*, part IV", i.e. the travelogue of his trip 1934. On p. 186 he published a photo of "*Echeveria rubromarginata* growing in Plaza at Puebla". However as the plants are lacking inflorescences they cannot be reliably identified. And in view of Walther's obvious misinterpretation of this species - as the long list of wrongly determined species shows – his identification is all the more dubious.

Comment :

This is a highly unsatisfactory chapter, not worth the paper it is printed on. The completely unfounded, arbitrary and know-it-all equalisation of *E. gloriosa* Rose and *E. rubromarginata* Rose, two indisputably different plants, allegedly based on a "careful comparison of these plants", shows once again Walther's unscrupulous manner of working. The chapter about *E. rubromarginata* is not only completely useless but a huge nuisance.

52. *Echeveria longiflora* E. Walther (p. 192-194)

E. longiflora was published in *Cact. Succ. J. (Los Angeles)* 31: 101, 102. 1959. According to the protologue the description was made from "living plant grown at Strybing Arboretum, Golden Gate Park, S.F., originally received from Sr. C. Halbinger, Mexico City":

Description: Plant glabrous, with evident, stout, normally simple stem; leaves few, large, to over 15 cm. long and over 8 cm. broad, obovate-orbicular, at apex obliquely obtuse, apiculate to acutish, at base narrowed into broad, channelled, keeled and narrowly winged petiole; inflorescences one or two, to 75 cm. tall or more, paniculate, with nearly always three elongated, horizontally spreading branches; peduncle stout, erect; lower bracts oblong, to 6 cm. long, mucronate; pedicels short, or to 15 mm. long; sepals very unequal, shortly deltoid to linear-lanceolate, acute, longest to 12 mm. long, widely spreading to slightly recurved; corolla long and relatively narrow, about 2:1, to 22 mm. long, 13 mm. broad near base, 10 mm. in diameter at mouth; petals bluntly keeled, obtuse; carpels to 17 mm. long; styles long and slender; nectaries oblique, transverse-rhomboid, 3 mm. wide. Fls. I-

Color: Leaves vetiver-green, more or less glaucous, tinged light-vinaceous-drab; bracts as the leaves but mineral-gray with bloom, tinged light-cinnamon-drab; pedicels bluish-glaucous; sepals grayish-lavender with bloom intact, to light-vinaceous-lilac; corolla pale-vinaceous-lilac at base, to old-rose above with bloom, *never* yellow-orange, inside and at edges above pale-flesh-color; carpels seafoam-yellow; styles indian-lake; nectaries straw-yellow.

It was a plant of unknown origin and unknown collector, said to have come from Guerrero. The type specimen was prepared Jan 25, **1950** and is CAS 351990. The determination label reads : "*Echeveria ex metalica* Hort. From a plant which originally came from Guerrero Mexico". After the description had been published in **1959**, the following amendment was added : "*Echeveria longiflora* Walther. Type [according to original description]". And a second label was added with more precise information : " Holotype Collection of *Echeveria longiflora* E. Walther. *Cactus and Succ. Jour. Amer.* 31: 101, 102. 1959". That means what initially was considered to be a garden plant nine years later ended up as a new species. We are not told why this plant without known origin in the wild should be considered a new species.

Errors :

yellow or orange coloration. A corolla, similar in shape and color, is found in *E. scheerii* Lindley from Oaxaca, which has only recently been rediscovered by Mr. Thomas MacDougall. Here too the inflorescence is usually 3-branched,

1. The comparison with *E. scheeri* Lindley is complete nonsense : The plant Walther considered *E. scheeri* Lindley was a plant without known origin, received 1941 in California, and by far not

corresponding with Lindley's plant, and the latter had also not been rediscovered by Thomas MacDougal in Oaxaca (see comment to 40. *E. scheeri*).

2. In the Key to Series *Gibbiflorae* Walther indicated :

E. Corolla long and narrow, to 22 mm. long, nearly twice as long as thick, pinkish, not at all yellowish; inflorescence 3-branched. Guerrero. 52. <i>E. longiflora</i>

and also under GEOGRAPHICAL OCCURRENCE (p. 36) *E. longiflora* is listed for Guerrero. To indicate Guerrero as distribution region for a plant with no known origin in the wild is wrong and misleading.

Comment :

***E. longiflora* has never been found in the wild, neither in Guerrero nor in any other Mexican state, i.e. with all probability it was a garden hybrid and should best be forgotten.**

53. *Echeveria pallida* E. Walther (p. 194-196)

Walther described *E. pallida* from a plant he had found in cultivation in a commercial nursery in Mexico City and grown in Golden Gate Park, San Francisco, i.e. a plant with unknown wild origin and unknown collector, and published it in *Cact. Succ. J. (Los Angeles)* 10: 14-15, 1938 :

Stem evident, simple, to 3 cm. thick; leaves laxly-rosulate, obovate-spatulate, to over 15 cm. long and 9 cm. broad, apex rounded and mucronate, narrowed at base into thick petiole, deeply channelled above near base, sharply keeled beneath at base and petiole, color unusually pale, corydalis-green when young, to asphodel- or deep-chrysolite-green, edges rarely vinaceous-russet; inflorescence paniculate, 50 cm. tall or more; peduncle stout, erect; lower bracts many, spreading, obovate, mucronate, thick at base, to 60 mm. long by 35 mm. broad, color light-elm-green, slightly glaucous; branches 8 or more, strongly nodding before anthesis, sometimes bifid, upper bracts exceptionally broad, to 12 mm. wide, ovate, not recurved, to 20 mm. long, acute; pedicels short, 6 mm. long, stout, stipitately thickened below calyx, color light-vinaceous-lilac while pulverulent, otherwise acajou-red; sepals much connate at base, covering base of corolla, very unequal, deltoid-ovate to oblong-ob lanceolate, longest to 14 mm. long, often keeled, color kildare-green in bud, later vinaceous-lilac, glaucous; corolla cylindric-campanulate, 16 mm. long, 12 mm. thick at base, to 16 mm. in diameter at the open mouth, color scarlet-red, alizarine-pink with bloom intact; segments ovate-oblong, deeply hollowed at base, the widely spreading tips subulate-acute, color within palest maize-yellow, finely lined with scarlet towards apex; carpels slender, 13 mm. long, tapering from base into the long and slender styles, color of carpels whitish, of styles amaranth-purple at base, dahlia-purple above; nectaries reniform, depressed, 2 mm. wide, whitish. Flowers in December.

The description in the monograph is somewhat altered.

Inconsistencies :

wide. Flowers December and January.
Color. Leaves asphodel-green, to corydalis-green, rarely or not tinged vinaceous-russet at edges; bracts light elm-green, slightly glaucous; pedicels of flowers whitish, without; sepals kildare-green in bud, later vinaceous-lilac, glaucous; corolla cylindric-campanulate, 16 mm. long, 12 mm. thick at base, to 16 mm. in diameter at the open mouth, color scarlet-red, alizarine-pink with bloom intact; segments ovate-oblong, deeply hollowed at base, the widely spreading tips subulate-acute, color within palest maize-yellow, finely lined with scarlet towards apex; carpels slender, 13 mm. long, tapering from base into the long and slender styles, color of carpels whitish, of styles amaranth-purple at base, dahlia-purple above; nectaries reniform, depressed, 2 mm. wide, whitish. Flowers in December.

1. The protologue indicates the leaf margins as "**rarely vinaceous-russet**", in the monograph the leaves are "**rarely or not tinged vinaceous-russet at edges**", while under REMARKS the leaves are "**without any trace of**" red.
2. The protologue described the petals as "deeply hollowed at base", but under REMARKS we read that the "broad sepals [...] prevent the base of the petals from ever being truly gibbose", and in the monograph Walther stated "petals [...] hollowed at base".

3. While the protologue stated : "Source : Cultivated at Mexico City, said to have come from near Cordoba", in the monograph Walther wrote (under REMARKS) that the plant "originally was found in a commercial nursery in Mexico City, without any information available as to its native habitat".

tinged or red edges. The exceptionally broad sepals are found in *E. gibbiflora* and *E. crenulata*. In *E. gigantea*, which too has rather broad sepals, the leaves are quite dark gray-green with red edges, the bracts are nar-

E. crenulata refers to the plant Walther erroneously considered to be *E. crenulata* Rose but which by far not agreed with the latter, i.e. was an impostor, therefore the comparison is of no relevance (see comment to 54. *E. crenulata*).

styles amaranth-purple, to dull purple. . . .
 TYPE. From plant found in cultivation in Mexico City and grown in Golden Gate Park, San Francisco (CAS, no. 251053).
 OCCURRENCE. Mexico. Chiapas: cultivated at Cintalapa, at Tuxtla Gutierrez and Ocozocoautla (as stated in letter from Mr. Thomas MacDougall).

D. Base of caudex emitting numerous spreading to decumbent offshoots; leaves very pale, yellowish green. Oaxaca. 53. *E. pallida*

The occurrence indication in the Key does not correspond to that in Walther's text.

On p. 60 *E. pallida* is listed among those species that "only rarely grow at elevations of more than 7,600 feet" – how could Walther know that in view of the fact that his plant was lacking a wild origin and was known only from cultivation in Mexico City and Chiapas ?

Comment :

Again a description of a new species on the basis of a single gathering from unknown locality and collector.

54. *Echeveria crenulata* Rose (p. 196-197)

In 1911 J. N. Rose described a plant he himself and J. H. Painter had collected 8 years ago, in 1903, near Cuernavaca, Morelos, as *E. crenulata* and published it in *Contr. U.S. Natl. Herb.* 13: 295, 1911 :

***Echeveria crenulata* Rose, sp. nov.**

Caulescent, the stem in cultivated specimens short but in wild specimens much elongated and enlarged; basal leaves in the wild plant broadly obovate, more than 30 cm. long, 15 cm. broad, rounded at apex, tapering at base into a very distinct petiole; stem leaves pale green, a little glaucous, the margin wavy and purplish red; leaves on flowering stems acute, ovate to spatulate, tapering into a stout, thick petiole; inflorescence a short panicle, the lateral branches short, few-flowered, the bract instead of subtending the branch usually carried up for some distance on the peduncle; sepals widely spreading, very unequal, acute; corolla 15 mm. long, strongly angled, yellowish red, its lobes acute.

Walther's text

Walther did not quote Rose's description but produced a new one from "living plants collected at Cuernavaca, 1934 :

mm. broad. Flowers from November on. Description based upon living plants collected at Cuernavaca, 1934.

Walther's description differs seriously from that by Rose :

Stem : Rose : in wild specimens much elongated and enlarged / Walther : to over 10 cm, sometimes budding near base.

Leaves : Rose : basal leaves more than **30 cm** long, **15 cm** broad, rounded at apex, with a distinct petiole, stem leaves margin wavy and purplish red / Walther : to over **10 cm** long, **7 cm** broad, strongly mucronate to acute, scarcely crenulate, not petiolate, margins flat or strongly and finely undulate, scarcely crenulate, **vinaceous-brown**.

Inflorescence : Rose : short panicle, lateral branches short, few-flowered / Walther : 9 or more short branches with 4 – 12 flowers.

Corolla : Rose : 15 mm long, strongly angled, yellowish red / Walther : to 18 mm long, pentagonal to campanulate, pale pink to salmon.

Obviously these are two completely different plants. i.e. what Walther had collected at Cuernavaca either was something else or he had subsequently labels confused.

Errors :

Under COLLECTIONS Walther listed :

Painter, 03/790–797 (US, type), *Rose*, 05/1348 (BH,NY), *Bourgeau*, 1865/1379 (P,UC). *Cultivated*: Washington, D. C., *Rose*, 03/19304, photograph;

1. The specimen Bourgeau 1379 has a 3-branched inflorescence whose side branches are in turn branched again and bear numerous flowers, i.e. neither a match for *E. crenulata* Rose nor for the plant Walther considered to be *E. crenulata*.

C. Leaves dark green, scarcely glaucous, margins often finely undulate. Morelos, Cuernavaca. 54. <i>E. crenulata</i>

2. In the Key to Series *Gibbiflorae* Walther indicated the colour of the leaves as "dark green", in the description in the monograph however the leaves are "elm-green tinged fawn-color"

Comment :

Walther obviously didn't take a single look at Rose's description otherwise he would not have been able to overlook the fact that his "*E. crenulata*" did not correspond at all to *E. crenulata* Rose. With a rosette diameter of 60 cm or more the latter must have been a giant plant while Walther's plant with ca 20 cm diam. was comparatively small ! The fact that his plant originated also from Cuernavaca unfortunately is not an automatic guarantee that it is the same as Rose's plant collected some 30 years previously and not even his observation that the leaf margin of his plant was only scarcely crenulate made him realise that the latter could not possibly be identical with *E. crenulata* Rose. And despite the obvious differences between his plant and *E. crenulata* Rose, on p. 58 he claims that his plant is "traceable to Dr. Rose's introduction" – obviously forgetting that he himself had collected it at Cuernavaca in 1934 - "traceable to Dr. Rose" is simply a lie.

There is no doubt that the plant Walther described as *E. crenulata* was anything but *E. crenulata* Rose. So this whole chapter is of no use at all and is to be ignored, and comparisons of *E. crenulata* with other species of course always refer to Walther's *E. crenulata* impostor and not to *E. crenulata* Rose plant and therefore are futile as well.

55. *Echeveria gigantea* Rose and Purpus (p. 197-202)

The description of *E. gigantea* was made from a plant C.A. Purpus had collected in the arroyos of the Cerro de la Yerba, near San Luis Tultitlanapa, Puebla, 1907, and published in *Contr. U.S. Natl. Herb.* 13: 46, 1910 :

Echeveria gigantea Rose & Purpus, sp. nov.

PLATES 12-14.

Main stem short and stocky, 20 to 30 cm. long, crowned by a rosette of leaves; leaves oblanceolate, sometimes 25 cm. long, 15 cm. broad at widest point, tapering below into a thick fleshy petiole, light green, only slightly glaucous, bordered by a bright red margin; flowering stems erect, sometimes nearly 2 meters long, somewhat pinkish, glaucous, the longer leaves 10 to 11 cm. long; inflorescence paniculate, with elongated ascending branches, often 15 to 30 cm. long; pedicels usually short (2 to 5 mm. long), but the earlier ones often longer; sepals very unequal, spreading and remaining so after the flower fades; corolla 12 to 14 mm. long, pinkish, the lobes slightly spreading at tip.

Walther's text

As usual Walther did not quote the original description but wrote a new one, "based on Clonotype cultivated at Huntington Botanical Gardens, San Marino, California":

December to February. Description based on clonotype cultivated at Huntington Botanical Gardens, San Marino, California.

Indicated under COLLECTIONS :

vated: La Mortola, Berger, /R-07/468 (NY,US); Huntington Botanical Gardens, San Marino, E. Walther in 1929 (CAS, clonotype).

Under REMARKS Walther wrote :

The original plant seen at the Huntington Botanical Gardens would appear to have been a clonotype, originally sent out by Dr. Rose. It suffered from some unidentified leaf fungus. Living plants imported more recently through Sr. Halbinger and Dr. Cox do not differ noticeably from the type. Numerous

The status as clonotype does not seem to be as safe as mentioned in the first statement moreover the said clonotype "suffered from some unidentified leaf fungus" nevertheless it was used for the description, i.e. to describe a plant clearly not in the best condition was in any case preferable to the quotation of Rose's rather succinct description.

Errors :

Stem to 50 cm. tall, simple, erect; leaves 15 to 20, broadly obovate-spathulate, 15 to 20 cm. long, 8 to 10 cm. broad, at apex rounded emarginate

1. Rose described the leaves as oblanceolate, sometimes 25 cm long, and 15 cm broad. Walther's leaves are only 15 – 20 cm long and 8 – 10 cm broad and obovate instead of oblanceolate and in the Key to Series *Gibbiflorae* they are even indicated as "orbicular" :

D. Leaves broadly obovate to orbicular, apex rounded, base petioled. Southern Puebla to Oaxaca. 55. *E. gigantea*

2. Obviously the plant Walther used for his description is highly doubtful ! Nevertheless on p. 58 he listed *E. gigantea* under plants "traceable to Dr. Rose's introductions" – rather non-credible regarding the HBG plant he used.

Under ILLUSTRATIONS Walther listed :

ILLUSTRATIONS. Contrib. U.S. Nat. Herb., *loc. cit.*, pls. 13, 14 (not pl. 12 which is *E. rubromarginata* Rose); Möller's *Deutsche Gärtenzt.*, vol. 26, pp. 73, 74, 1911, in part (?); Cactus and Succ. Jour. Amer., vol. 21, pp. 163, 164, figs. 105, 106, 1949 (habitat).

3. The correct name of this journal is : Möller's *Deutsche Gärtner-Zeitung*, not "Gärten-". Moreover the illustrations on p. 74 are definitely wrong.

Under COLLECTIONS Walther listed :

Zapotitlan, south of Tehuacan, Cox, 58, flowered in Golden Gate Park, San Francisco, *E. Walther* in 1958 (CAS). Oaxaca: barranca 14 miles southeast

4. CAS 413191 does not represent *E. gigantea* at all, the leaf is far too small and the side-branches of the inflorescence are far too short. This may refer to the remark at the end of Walther's text :

Sr. Halbinger and Dr. Cox do not differ noticeably from the type. Numerous seedlings have been raised locally, but few or none are true to name, in view of the readiness with which this crosses with any other nearby *Echeveria*.

vated: La Mortola, Berger, /R-07/468 (NY,US); Huntington Botanical Gar-

5. There is no specimen "R-07/468" either at NY or at US, the n° R 468 belongs to a plant in a totally different plant family.

Under REMARKS Walther wrote :

REMARKS. Unfortunately plate 12 (Cont. U. S. Nat. Herb. *loc. cit.*), was mislabeled and helped in confusing *E. gigantea* with *E. rubromarginata* Rose.

6. The illustration pl. 12 in Contr. U.S. Nat. Herb. 1911 obviously does not show *E. gigantea* but whether it really shows *E. rubromarginata*, as Walther suggested, is doubtful : compared with the type of *E. rubromarginata* the plant on the photo pl. 12 has far too many leaves and an inflorescence with far too many and too short side-branches.

and a smaller differently colored corolla. Of the several species with such broad, orbicular leaves, *E. crenulata* differs in these being deep green, as are the bracts, in its often shorter and fewer-flowered branches, in its sepals narrower at base and there only slightly connate, and in its red and yellow corolla.

7. The comparison with *E. crenulata* does not refer to *E. crenulata* Rose but only to the plant Walther erroneously considered to be that species, so is of course irrelevant.

Under ILLUSTRATIONS Walther indicated :

E. rubromarginata Rose), Möller's *Deutsche Gärtenzt.*, vol. 26, pp. 73, 74, 1911, in part (?); Cactus and Succ. Jour. Amer., vol. 21, pp. 163, 164, figs. 105, 106, 1949 (habitat).

This refers to an article by no other than Thomas Macdougall, proven connoisseur of the Mexican flora. By means of two impressive photographs he introduced *E. gigantea*, a plant he was very familiar with, and provided additional information regarding the shape of the leaves. While Walther used one of Macdougall's photos to illustrate his text (fig. 107. p.198), the interesting and useful observations concerning the leaves of a man with much more comprehensive knowledge than Walther could ever have had he obviously did not find worth considering.

Regarding figs 108, 109 & 110, photographs of M 6380 and M 6372, captioned as "a cited collection" – of course they could not possibly have been cited by Walther because the respective plants only flowered in October and December 1960, i.e. more than a year after Walther's death as always not credited to Reid Moran so as not to draw the reader's attention unnecessarily to the fact that they are not from Walther himself.

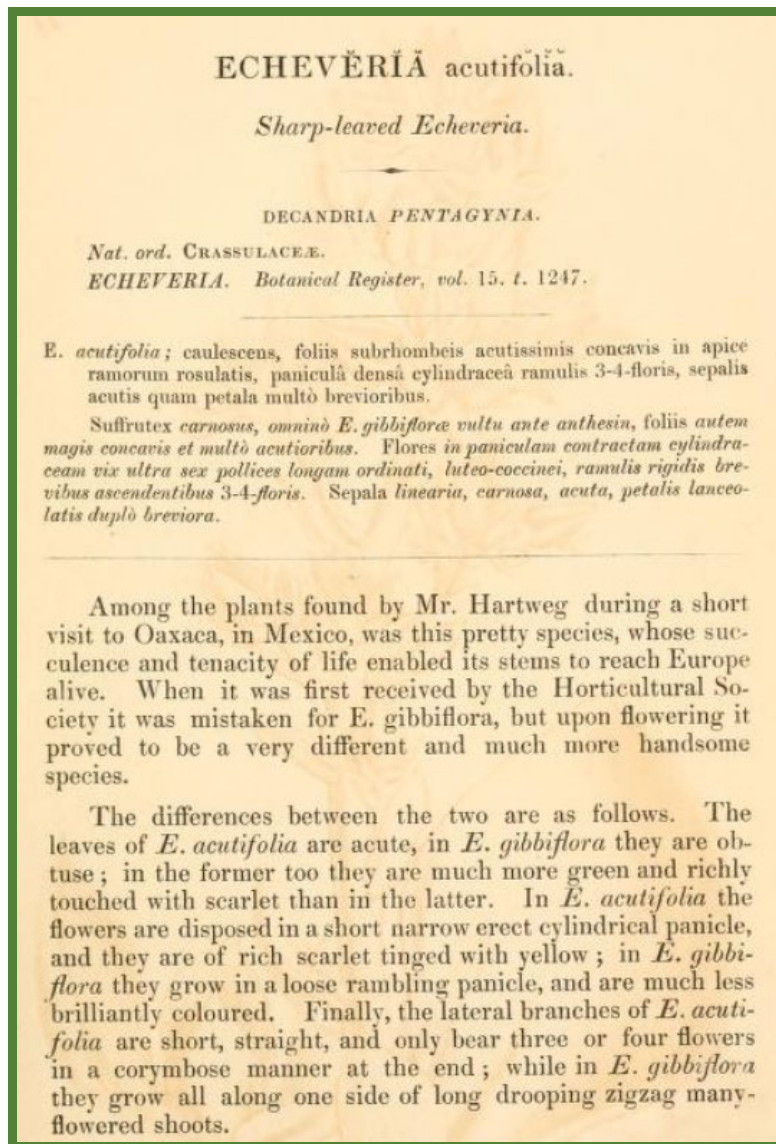
Comment :

Apart from the fact that Walther's "redescription" of *E. gigantea* is superfluous, it is unusable and misleading because of the doubtful plants he used.

56. *Echeveria acutifolia* Lindley (p. 203-204, 214, 215)

This is a complex issue.

E. acutifolia was described by John Lindley and published together with a superb illustration in *Edwards's Botanical Register* 5, pl. 29, 1842 :



Regarding the origin of his plant Lindley explained that during a short visit in Oaxaca, Mr. Hartweg had collected it there - whether in the wild or in a garden is unknown. No similar plant has since been found in Mexico, so it may well have been a hybrid. It is also not known how widely *E. acutifolia* Lindley was distributed in Europe and for how long it survived there. In any case there is no evidence that it ever reached the US. And when 1905 Rose published genus *Echeveria* in *North American Flora*, he simply summarized Lindley's publication what shows that the plant was completely unknown to him.

As the name implies, Lindley's plant has "very acute" leaves, and pl. 29 in the *Botanical Register* is an excellent illustration (see fig 113).

Walther's text

Errors :

1. In contrast to Rose, who obviously didn't know the plant, Walther was convinced that **he** had found it in the disguise of *E. holwayi* Rose. The latter was described from a plant collected by E.W.D. Holway near Oaxaca, Mexico, November 1903 and published by Rose in *Contr. U.S. Natl. Herb.* 13: 295, 1911:

***Echeveria holwayi* Rose, sp. nov.**

Cauliscent, in cultivated specimens the stem short and stout; leaves forming a dense rosette at top of stem, pale green, slightly glaucous, sometimes purplish, obovate, obtuse, mucronate, narrowed at base into a stout, short petiole, the margin somewhat wavy, 10 to 12 cm. long; flowering stem 90 to 120 cm. long, often deep red and glaucous, its leaves scattered; inflorescence a much-branched panicle; main branches axillary, 5 to 15-flowered; flowers arranged in a second raceme; pedicels short, often only 1 or 2 mm. long; sepals erect or ascending, linear, acute, very unequal; corolla 12 mm. long, rose-colored when fully open, its lobes acute, with spreading tips.

So Walther, instead of quoting Lindley's description as Rose had done, for his text about *E. acutifolia* Lindley made a description from a plant labelled *E. holwayi* Rose at Huntington Botanical Gardens which he considered "presumably a clonotype of Rose's" original plant – under REMARKS even stated "undoubtedly" :

January. Description based on plant from Huntington Botanical Gardens, San Marino, California, presumably a clonotype of Rose's *E. holwayi*.

Magazine. Incidentally, the type of *E. holwayi* Rose which is US, no. 399680, *E. W. D. Holway*, Oaxaca in 1903, flowered in Washington, D. C., 1905 and 1909 (Rose, p. 693). The plant I studied at the Huntington Gardens undoubtedly came from this material. Under his remarks on *C. devensis* in the

And accordingly he listed *E. holwayi* Rose under SYNONYMS of *E. acutifolia* :

Echeveria holwayi ROSE, Contrib. U.S. Nat. Herb., vol. 13, p. 295, 1911; BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 539, 1918.

That *E. holwayi* Rose was lacking the name-giving "very acute" leaves of *E. acutifolia* Lindley and that its inflorescence was also not "a short narrow cylindrical panicle" did not occur to Walther or he generously overlooked it, i.e. he overlooked that *E. holwayi* Rose and *E. acutifolia* Lindley were anything but identical. And he also did not pay any attention to the differences between **his** description of the alleged clonotype of *E. holwayi* at HBG and Rose's description of *E. holwayi*, i.e. that the former did not correspond at all to the latter what means that the HBG plant was misidentified. The main differences are :

Leaves : Rose : obovate, obtuse, mucronate", 10 – 12 cm long and with short petiole / Walther : oblong-obovate, apex obliquely-obtuse and mucronate, less often somewhat acute, to 30 cm long, to 8 cm broad or more and with long petiole.

Inflorescence : Rose : much-branched panicle, main branches axillary, 5 – 15 flowered, pedicels short, often only 1-2 mm long / Walther : 9 branches with 10 – 12 flowers, pedicels 3-5 mm long.

In short : The "presumable clonotype" of *E. holwayi* Rose at HBG that Walther described as "*E. acutifolia* Lindley" was neither a clonotype of nor otherwise in any relation to *E. holwayi* Rose and was of course not at all identical with *E. acutifolia* Lindley.

But : While Walther described the leaves of his "*E. acutifolia*" (the "presumable clonotype of *E. holwayi*" at HBG, in fact a misidentified unknown plant) as "oblong-obovate, at apex obliquely-obtuse", in the Key to Series *Gibbiflorae* he wrote :

G. Pedicels mostly short, 3 to 5 mm. long; sepals narrow, more or less ascending.
H. Leaves and lower bracts narrow, acute. Oaxaca. 56. *E. acutifolia*

2. Under Synonyms Walther also listed *Cotyledon devensis* N.E. Brown :

Cotyledon devensis N. E. BROWN, Bot. Mag., pl. 8104, 1906.

It was described and illustrated in 1906 as a plant with a ca 37 cm long stem, 20 – 25 cm long and 7.5 – 9 cm broad, oblanceolate to elongate-obovate light green leaves, a 1.5 – 2.1 m tall inflorescence and a ca 22 cm long panicle with several 5 – 11 cm long side branches. Its author stated that it looked like a giant *E. gibbiflora*, i.e. it has obviously nothing in common with *E. acutifolia* Lindley. Walther's listing it as a synonym of the latter is incomprehensible.

3. Under OCCURRENCE Walther indicated :

OCCURRENCE. Mexico. Oaxaca: Las Sedas; Sierra de Clavellina; San Sebastian los Fustes; Sierra de Juarez.

- "Las Sedas" refers to collection localities of either *E. holwayi* or *E. gibbiflora* by Conzatti,
- "Sierra de Clavellinas" refers to the collection locality of a sessile plant wrongly determined as *E. gibbiflora*,
- "San Sebastian Los Fustes" is MacDougall's collection locality of *E. aff gibbiflora*, and
- "Sierra de Juarez" is complete nonsense, see below under e).

In short, of course none of the listed localities have anything to do with *E. acutifolia* Lindley which has never been found in the wild anywhere in Mexico.

4. COLLECTIONS :

To substantiate his claim that *E. acutifolia* Lindley had long been present in the US Walther resorted to his tried and tested trick of searching herbarium specimens that were suitable for reclassification as *E. acutifolia*, the type of *E. holwayi* Rose not excluded – quite obviously it did not occur to him that Rose's introduction of *E. holwayi* as a new species documented that he clearly considered it something else than *E. acutifolia* Lindley.

COLLECTIONS. Mexico. Oaxaca: in garden, Oaxaca, Hartweg, 749 (CGE, type); Mixteca Alta, Galeotti, 1840/2813 (BR); Las Sedas, Conzatti, 07/

a) "in garden" is wrong, Lindley does not indicate this at all. Walther invented that.

type); Mixteca Alta, Galeotti, 1840/2813 (BR); Las Sedas, Conzatti, 07/

b) **Mixteca Alta, Galeotti, 1840/2813 (BR)**. The specimen, originally simply annotated as "*Echeveria*", consists only of a 4-branched inflorescence, each branch with one to at most 4 flowers which are stated to be "rouge vif", – very unlike that of *E. acutifolia* Lindley. (There exists another Galeotti specimen at BR, also with his number 2813, originally determined as "*Echeveria coccinea*", consisting only of a racemose inflorescence with 10 sessile flowers (not correct for *E. coccinea* because the subtending bracts are lacking) - absurdly this was also redesignated by Walther as *E. acutifolia* Lindley (1/30/57)).

type); Mixteca Alta, Galeotti, 1840/2813 (BR); Las Sedas, Conzatti, 07/2029 (F,GH,US); Sierra de Clavellinas, C. L. Smith, 94/861 (US); Sierra

c) **Las Sedas, Conzatti 07/2029 (F,GH,US)**. There are several specimens, all from the same locality but from different dates :

- May 1907, US 1490463, det. as "*Echeveria holwayi*, Las Sedas, Oaxaca", consisting of a huge inflorescence with very long side-branches with 8 – 10 flowers each and two huge leaves up to more than 20 cm long and 8 cm wide. Not seen by Walther, therefore escaped his redetermination.

- May 19, 1907, F 601450 & GH(07.350), det. as "*Echeveria*, Las Sedas, Oaxaca", annotated by Walther 1956 as *E. acutifolia* Lindley.

- Oct 20, 1907, F 225795, det. as "*Echeveria gibbiflora* DC, Las Sedas, 1900 mts, Dto de Ella", consisting of an inflorescence with ca 6 side-branches with up to 8 flowers each, redetermined by Walther as *E. acutifolia* Lindley.

2029 (F,GH,US); Sierra de Clavellinas, C. L. Smith, 94/861 (US); Sierra

d) **Sierra de Clavellinas, C. L. Smith, 94/861 (US)**, det. as *E. gibbiflora*. The specimen shows a sessile plant with one basal leaf, oblanceolate, acute, 11 cm long, 4 narrow very acute bracts and a ca 55 cm long flower stalk with a bifurcate inflorescence with an odd short side branch below, so cannot possibly be *E. gibbiflora*. Redetermined by Walther as "*Echeveria acutifolia* Lindley (Syn. *E. holwayi* Rose)" 5/5/58, but can also not possibly be the latter.

2029 (F,GH,US); Sierra de Clavellinas, C. L. Smith, 94/861 (US); Sierra de Juarez, Ixtlan, Ixtepeji, T. MacDougall B-161 (UCBG-56.800); San Sebastian

e) **Sierra de Juarez, Ixtlan, Ixtepeji, T. MacDougall B-161 (UCBG 56.800)**. According to MacDougall (Dec. 22, 1953) B-161 came from a "wild flower" street market in Oaxaca, with no data regarding collector and origin. It is *E. chiapensis* (synonym of *E. rosea*) ! (No herbarium specimen extant.)

de Juarez, Ixtlan, Ixtepeji, T. MacDougall B-161 (UCBG-56.800); San Sebastian las Fustes, T. MacDougall B-175 (UCBG-56.796); Oaxaca, Holway, 03/

f) **San Sebastian las Fustes, T. MacDougall B-175 (UCBG 56.796)**. The respective specimen is CAS 409875. A note bottom right in Walther's hand reads : "*E. acutifolia* Lindley, MacDougall B-175, Oaxaca, San Sebastian las Fustes , 6400 ft, UCBG 56/796". A determination label placed just above this note reads : "*Echeveria gigantea* Rose & Purpus, det. by Eric Walther, Dec. 1958". Both determinations are wrong, according to MacDougall B-175 is aff. *E. gibbiflora*, which obviously is correct.

tian las Fustes, *T. MacDougall* B-175 (UCBG-56.796); *Oaxaca, Holway, 03/693* (US, type of *E. holwayi*; CAS,GH,BH, clonotypes). *Cultivated*: Hunt-

g) **Oaxaca, Holway, 03/693 (US, type of *E. holwayi*)** : Walther has redetermined the type of *E. holwayi* Rose as *E. acutifolia* Lindley - see fig. 112, and see also fig. 113 How on earth could anyone come up with the idea of equating these two plants ? ? ?

693 (US, type of *E. holwayi*; CAS,GH,BH, clonotypes). *Cultivated*: Huntington Bot. Gard., San Marino, *E. Walther* in 1932 (US).

h) **Cultivated: Huntington Bot. Gard., San Marino, E. Walther in 1932 (US)**. The label bottom right reads : "*Echeveria holwayi*, Huntington Place, San Marino, coll. Eric Walther, Feb 1932", 5/5/58 redetermined by Walther as *E. acutifolia* Lindley. The specimen (US 1434940) consists of a folded inflorescence with tangled side-branches. It does not correspond to Walther's description of the presumable clonotype of *E. holwayi* at HBG, and it does not correspond either to the types of *E. holwayi* Rose or *E. acutifolia* Lindley.

To summarise : The specimens redetermined by Walther as "*E. acutifolia* Lindley" are very diverse but none of them has - even remotely - anything to do with *E. acutifolia* Lindley. The list of collections is sheer nonsense. Incidentally, the list is by no means a complete enumeration of all specimens Walther has redesignated as *E. acutifolia* Lindley while visiting American and European herbaria. Some of them undoubtedly represent *E. gibbiflora*. That Walther did not exempt these shows that he obviously had no correct idea of *E. gibbiflora* DC.

5. Under REMARKS Walther wrote :

synonyms cited, this undoubtedly was because of the poor condition of both the illustration in the Botanical Register and the type specimen. Only by careful comparison of the striking distinctive coloration did I manage to recognize *E. acutifolia* in Rose's *E. holwayi* and *Cotyledon devensis* of the Botanical Magazine. Incidentally, the type of *E. holwayi* Rose which is US, no. 399680,

The "striking distinctive coloration" probably refers to Lindey's statement that – compared with *E. gibbiflora* – the leaves of *E. acutifolia* are "**much more green and richly touched with scarlet**" – but how on earth can this be recognized in the "**pale green, slightly glaucous, sometimes purplish**" leaves of *E. holwayi* or in the "**light green, tinged with light rosy purple at the base**" of the leaves of *Cotyledon devensis* so that you can arrive at the conclusion that *E. holwayi* has to be considered a synonym of *E. acutifolia* ? A completely abstruse reasoning - not to speak of the above mentioned differences regarding leaf shape and inflorescence shape. And also not to speak of the fact that the illustration in *Edwards's Botanical Register* is anything but poor, giving a perfect idea of leaf shape, rosette and inflorescence of *E. acutifolia* Lindley.

doubtedly came from this material. Under his remarks on *C. devensis* in the Botanical Magazine, N. R. Brown casts doubt on the reputed origin of *C.*

Much more important and meaningful than N. E. Brown's remarks regarding the hybrid origin of *Cotyledon devensis* which he doubted, is his statement that *C. devensis* "much resembles the form figured as *Echeveria gibbiflora* in Lindley's *Botanical Register*, t. 1247" – again a clear indication that *C. devensis* does not belong in the synonymy of *E. acutifolia*. Btw the name reads "B. **E.** Brown", not "B.R. Brown".

1909 (Rose, p. 693). The plant I studied at the Huntington Gardens un-

"(Rose, p. 693)" - of course 693 is Rose's number for *E. holwayi*, not the number of a page

Echeveria acutifolia resembles *E. grandifolia*, but the latter has much less brightly colored leaves and flowers, its leaves are usually straight and nearly

The comparison with *E. grandifolia* is of no avail because – the latter and *E. gibbiflora* are one and the same species (see comment to 58. *E. gibbiflora* and 59. *E. grandifolia*).

On p. 58 *E. acutifolia* is listed under plants "traceable to Dr. Rose's introductions": Rose of all people, who had neither known nor had *E. acutifolia*, should have spread it, and if this should refer to *E. holwayi* which Walther erroneously considered to be *E. acutifolia*, the reference is equally wrong because the plant at HBG was misidentified, i.e. was not *E. holwayi*.

Comment :

Walther's text under the heading "*Echeveria acutifolia* Lindley" is totally corrupt. The description is made from a plant which had nothing in common with the latter and also did not correspond to *E. holwayi* Rose which he claimed to be identical with *E. acutifolia* Lindley, described more than 100 years ago. Walther's conclusion that *E. acutifolia* Lindley, *E. holwayi* Rose and *Cotyledon devensis* N.E. Brown are identical is more than absurd. It is the product of his boundless ambition to show off plants that no one else knew or had, or that had long since disappeared from cultivation, thereby outdoing botanists like Rose. His ambition, bordering on obsession, blinded him to the absurdity of his combinations, classifications and redeterminations. No forgery or fraud was too far-fetched for him to achieve this goal, and there is no denying that his readers were blind enough to be taken for fools. And because nobody ever has questioned Walther's posthumous book, i.e. has verified his conclusions, since that time a plant with obtusely rounded leaves and a completely different inflorescence is circulating as "*E. acutifolia* Lindley" – without ever being disputed seriously.

[Problems regarding *E. holwayi* Rose :

Figure 112. 56. *Echeveria acutifolia* Lindley. Plant grown in Washington; part of the type collection of *E. holwayi* Rose (Rose greenhouse plant 693). Photograph from the U. S. National Herbarium, no. 260. [See page 203]

The type is US 399680. The specimen consists of a pressed plant and a photo of the living plant. Both are in stark contrast to the description by Rose who states that the plant has a stature similar to that of *E. gigantea* but differs by much lighter and differently margined leaves, redder stems, longer flowering branches and different flowers. That means the plant on the type sheet and the plant Rose used for his description are clearly not identical. There are several specimens of Holways Nov 1903 / R 693 extant. Some of them correspond to the type, others correspond to Rose's description. However because the name belongs to the type – the name *E. holwayi* belongs to the plant of US 399680, and not to the plant of Rose's description. The former lacks a description.

REINSTATED AS A DISTINCT SPECIES in *Crassulacea* 5, 29. Sept. 2017.

https://www.crassulaceae.ch/docs/24ce97a908928a1874658e2bb182b218_Crassulacea%20No%20-%202029.%20September%202017%20-%20Corrections%20in%20Genus%20Echeveria%201.pdf]

57. *Echeveria violescens* E. Walther (p. 204-205, 218, 219 & 222)

Walther described *E. violescens* "from living plant obtained from E.O. Orpet, Santa Barbara, California" - "no definite locality is on record so far" he added under OCCURRENCE., i.e. a plant of unknown origin, and published it in *Cact. Succ. J. (Los Angeles)* 30: 40, 1958 (the description in the monograph is literally the same) :

OCCURRENCE. Mexico. No definite locality is on record so far.

COLLECTIONS. Cultivated: flowered in Washington, D. C., Palmer; 05/

Description: (from living plant obtained of E. O. Orpet, Santa Barbara, Calif.)

Stem to 60 cm. tall, in vigorous plants branched in age; leaves 10 to 15, laxly rosulate, obovate-spathulate, at apex rounded to emarginate, mucronate, at base narrowed into petiole to 20 mm. broad, blade with edges folded upwards and often undulate; inflorescence one or many, often branched below into several erect panicles, 50 to 90 cm. tall; peduncle erect or ascending; lower bracts many, obovate-cuneate, 2 to 5 cm. long, flat, at apex truncate, mucronate; ultimate branches often short, lowermost sometimes with only one or two flowers each, strongly nodding in bud; upper bracts oblong-obovate, cuneate, acute; pedicels 2 to 4 mm. long, stout; sepals ascending, very unequal, longest to 10 mm. long, ovate-deltoid to oblong-oblancheolate, acute or shortly acuminate; corolla broadly urceolate, pentagonal, 12 to 14 mm. long, 9 to 11 mm. thick at base, 8 to 10 mm. at mouth; petals ovate-lanceolate, acuminate, spreading above, thick and deeply hollowed within at base, upper rim of cavity prominently transverse; stamens shorter than carpels, the epipetalous ones scarcely dilated at base; carpels short; nectaries transversely rhomboid-reniform, to over 2 mm. wide. Flowers December to February.

Color: Leaves vetiver-green, glaucous, tinged vinaceous-lilac; peduncle oxblood-red; bracts and sepals vinaceous-drab; corolla geranium-pink with bloom, or rose-red to deep pink, inside rose-pink above; styles nopal-red, to maroon at tips; nectaries whitish. All color notes after Ridgway, "Color Standards and Nomenclature."

While the description indicates a plant with a to 60 cm tall stem :

Stem to 60 cm. tall, in vigorous plants branched in age; leaves 10 to 15, laxly rosulate, obovate-spathulate, at apex rounded to emarginate, mucronate, at base narrowed into petiole to 20 mm. broad, blade with edges folded upwards and often undulate; inflorescence one or many, often branched below

the photo fig. 22 in the protologue (fig. 115 in the monograph) shows an either stemless or only shortly caulescent plant :



wards and often undulate; inflorescence one or many, often branched below into several erect panicles, 50 to 90 cm. tall; peduncle erect or ascending;

And as there are no developed inflorescences to be seen on the above photo it is impossible to know whether Walther's description really refers to this plant. (Interestingly Walther forgot to indicate the measures of the leaves !)

Under Synonyms Walther indicated :

Echeveria gibbiflora var. *metallica* Hort.; neither Baker nor Lemaire.

E. gibbiflora var. *metallica* Hort. is an *E. gibbiflora* hybrid, that means the plant he described as a new species had been known up to then as *E. gibbiflora* var. *metallica* :

Smithsonian Scient. Ser., vol. 11, pl. 21 (as *E. gibbiflora* var. *metallica*), 1931.

or according to the list of "Horticultural, uncertain and excluded names of *Echeveria*" (p. 46) as *Echeveria amethystina* hortorum and *Echeveria campanulata* hortorum. And for anyone even slightly familiar with echeverias, the plant pictured is clearly a hybrid. Why this hybrid had to be published as a species, named *E. violescens*, Walther did not explain.

Under TYPE Walther indicated :

TYPE. From plant cultivated in Botanic Garden, Washington, D. C., supposedly from Saltillo, Coahuila, Mexico (US, no. 399949).

Instead of preparing a specimen of the plant he had used for the description and designating it as its type, Walther searched the United States National Herbarium for a specimen which could serve as type : US 399949 was suitable because it lacked any information of affiliation with a plant family or genus. The only annotation on the determination label reads : "cultivated in Washington DC. J.N. Rose, nr. 524, 1902". The specimen consists of 3 single long petiolate, truncate leaves 12 x 6 cm, a long piece of flower stem and a folded inflorescence with 3 ca 4 cm long oblanceolate, somewhat petiolate bracts and 4 short side-branches with ca 6 flowers and 2 odd flowers below. A small label attached to the inflorescence reads : "R.E. Kunze, Arizona, 1902" what suggests that Rose had received the plant from a person in Arizona. The flowers are small, the sepals are partly of considerable size and the corolla is hardly 10 mm long. A rosette is missing, what means it is impossible to know whether the plant is stemless or caulescent. However in any case with its distinctly petiolate leaves and bracts and small flowers the pressed plant does not correspond to

Walther's description. How could it, the specimen was made from an unknown plant sent from Arizona

Notwithstanding these discrepancies 1957 Walther designated US 399949 as **paratype** of *Echeveria violescens* sp. nov. and because he was still lacking a type when publishing the protologue of *E. violescens* in *Cact. Succ. J. (Los Angeles)* **30**: 40-42, 1958, he redetermined it as its **holotype**. In view of the photo of *E. violescens* (fig. 115) and his not corresponding description that is absurd.

And while the protologue reads : "Type : US : 399949, cultivated at Botanic Garden, Washington, D.C.", the corresponding passage in the monograph reads : "Type. From plant cultivated in Botanic Garden, Washington, D.C., **supposedly from Saltillo, Coahuila, Mexico** (US, no. 399949)". Wherefrom Walther had got this additional information, completely lacking on US 399949, we are told under COLLECTIONS :

COLLECTIONS. *Cultivated*: flowered in Washington, D. C., *Palmer*, 05/399,660, supposedly from Saltillo, Coahuila (US, type; UC), *Rose*, 04/606 (BH); garden of Victor Reiter, San Francisco, *M. S. Jussel*, in 1933 (CAS).

That means, Walther had found another unnamed specimen (US 399660), made from a plant Palmer had collected at an unknown date in Saltillo and which had "flowered in Washington, January, 1905", and deemed suitable to also be designated 5/5/58 as *E. violescens* – notwithstanding the fact that it differed conspicuously both in the shape and bigger size of the 2 oblanceolate, not petiolate leaves (19 x 7 cm) and also regarding the 2 short (at most 30 cm long) inflorescences from both, his own description and from US 399949 which he had determined as type and which he had described in the Key to Series *Gibbiflorae* thus :

H. Leaves and lower bracts broader, obovate, obtuse to truncate and mucronate, 57. *E. violescens*

Errors :

Under REMARKS Walther wrote :

with the illustration cited above. This watercolor was prepared by the late F. A. Walpole, (no. 524), one of a series Dr. Rose contemplated using for illustrating a monograph of the Crassulaceae.



Figure 114. 57. *Echeveria violescens* E. Walther. Plant grown in Washington. Watercolor by F. A. Walpole, titled *E. gibbiflora* var. *metallica* (Smithsonian Scientific Series, volume 11, plate 21). [See page 204]

1. However according to the Hunt Institute for Botanical Documentation, this plate - though attributed to F.A. Walpole - is merely titled "Echeveria" not "*E. gibbiflora* var. *metallica*" and is lacking not only a Walpole nr. but also the date of its execution. 524 is Rose's number of the specimen Walther had designated as holotype, not the number of the Walpole specimen.

its unblemished development. My living material of this new species is traceable to Dr. Rose's collection at Washington, D. C., and is clearly identical

2. This is an outright lie – how could the plant he had received from Orpet and which does **not** correspond to the specimen with the Rose n° 524 be traceable to Dr. Rose ? ?

3. On p. 60 *E. violescens* is listed among those species that "only rarely grow at elevations of more than 7,600 feet" – how could Walther know this about a plant with unknown Mexican origin, received from a Californian grower ? ?

4. But this is still not the end of the story : In a posthumously published article by Walther in the *American Horticultural Magazine* titled "Echeveria" (39: 73-91. 1960), a photo captioned "*Echeveria violescens*, as a pot plant" shows a very different plant, also certainly a hybrid : the stem is missing, the leaves are small and the inflorescences are extremely long, almost devoid of bracts and have a great many uniformly long very floriferous side branches ? ? ?



Comment :

So the pressed plant from R.E. Kunze, Arizona, not even identified as an *Echeveria*, some fifty years later became the holotype of *E. violescens* Walther and since – as is well known – the name belongs to the type, finally got a name ! Or in other words : The name *E. violescens* Walther belongs to US 399949, not to the plant Walther had described – whatever it had been. Walther made every conceivable effort to legitimise the publication of an obvious hybrid as a species, but they backfired and without noticing it he achieved just the opposite. The chapter on *E. violescens* is a masterpiece of fraudulent use of facts.

58. Echeveria gibbiflora DeCandolle (p. 205-207, 223, 226 & 227) and 59. Echeveria grandifolia Haworth (p. 207-208, 230 & 231)

Echeveria gibbiflora

The First description of *E. gibbiflora* DC appeared in *Prodromus* III, mid-March 1828. In fact De Candolle had intended to publish the First Description in *Mémoire sur la Famille des Crassulacées* - read to the Society already Feb. 15, 1827 - together with Echeverria's drawing, however for unknown reasons this publication did not take place until Sept 1828. The descriptions in the two publications are almost identical and far too scanty to give an idea of the plant in question :

3. *E. GIBBIFLORA*, foliis planis cuneiformibus acutè mucronatis ad apices ramorum confertis, paniculâ patente, floribus secùs ramos breviter pedicellatis. 5 in Mexico. *Cotyledon gibbiflora* icon. fl. mex. ined. Petala deorsùm inter lobos calycinos gibba recta acuta basi albida apice subcoccinea.

Walther's text

For his description he used "plants collected in Mexico at kilo 86, between Mexico City and Cuernavaca and grown in Golden Gate Park, San Francisco".

As synonym Walther listed only "*Cotyledon gibbiflora* (DeCandolle) Baker". He omitted *Cotyledon devensis* N.E. Brown, a plant which he had erroneously indicated for *E. acutifolia*, but of which its author stated that it "much resembles the form figured as *Echeveria gibbiflora* in Lindley's *Botanical Register*, t. 1247".

Errors :

Under TYPE Walther wrote :

TYPE. None designated. Neotype: DeCandolle, *Mémoire Sur la Famille des Crassulacees*, plate 5, 1828.

1. Walther's designation of a neotype for *E. gibbiflora* is superfluous : The protologue by DC in *Prodromus* clearly indicates the holotype of this plant : ***Cotyledon gibbiflora* icon. fl. mex. ined.** - so there is no necessity for a neotype. Accordingly this caption is wrong :

Figure 117. 58. *Echeveria gibbiflora* DeCandolle. Plate on which the original description was based, here three-quarters the original size (DeCandolle, *Mémoire sur la Famille des Crassulacées*, plate 5). This plate is designated lectotype for the species. [See page 205]

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Estado de Mexico: barranca between Tlacotepec and Zacoalpan, P. Maury, 1890/4977 (NY). Morelos: Cetela de Volcan,

2. "Estado de Mexico : barranca between Tlacotepec and Zacoalpan, P. Maury, 1890/4977" is not correct in two respects :

- the correct n° is **4955**, not **4977** and
- the barranca in question is in the state of **Morelos**.

3. "Morelos : El Parque, C.H.Thompson" is wrong, El Parque is in **Estado de Mexico**, not in Morelos.

Under REMARKS Walther wrote :

2. 'Decora.' Leaves variegated white, rose, and green. *Echeveria gibbiflora* var. *decora* Rodigas.

4. 'Decora' is not an "aberrant form of *E. gibbiflora*". It is a somatic mutant of *E. 'Metallica'* (not *E. gibbiflora* 'Metallica' !), easily recognizable by its inflorescence.

3. 'Wavy-leaf.' Leaves with finely undulate margins. *Echeveria gibbiflora* var. *crispata* Hort.

5. 'Wavy-leaf' as name of *E. gibbiflora* var. *crispata* Hort. is clearly wrong. Crispate leaves resemble those of parsley and are anything but curly or wavy.

Echeveria grandifolia

The plant Haworth described as *E. grandiflora* he had received from the nursery of Mr Tate, introduced from Mexico but lacking a precise origin :

grandifolia. E. (great-leaved) foliis orbiculato-cuneatis grossè
1. petiolatis, floribus paniculato-spicatis.
Habitat in Mexico.
Floret Aug. Sept. G. H. h.
Caudex in nostro exemplo, in caldario, apud Dom. Tate, in secundo anno triuncialis diametro subunciali, cylindricus carnosus-lignescens radiculos exiguos terram versus exerens. *Folia* numerosa conferta ambienter multifaria, seu in rosulam laxam digesta, patenti-recurvula dodrantalia plùsve incurvo-concavula, et in petiolum carnosum subsemunciam crassum obtusè canaliculatum attenuata, pruinosa glauca rufo marginata integra rariùsve minutim asperiuscula; *subtus*, basin versus præcipuè vivacitèr glauco-purpurascens: et denique morientia inania lorea persistentia. *Florum* paniculae sesquipediales, bracteatis foliolosæ, axillares teretes uti folia cæruleo-glaucæ; *bracteis* erectis lanceolatis mucronulatis (magis quàm vera folia) distantibus sensim sensimque minoribus, et *Sedi* more singulariter basi planè obtusèque solutis. *Calyx* sepalis 5 valdè inæqualibus bracteis brevioribus omninò foliiformibus (excepto basi non soluto) tribus cæteris duplò majoribus, quarto minore, quinto minuto. *Corolla* ferè semunciam longa, calyce brevior rubro-aurantiaca, rore roseo-glaucâ purpureave. *Stamina* 10, petalis humiliora alba, *antheris* erectis polline luteo. *Carpella* grossa, alba in *stylos* virides abeuntia. Cætera ferè ut in *E. coccineâ*, infra descripta, at non rectè vidi.

Walther's text

Errors :

Under REMARKS Walther wrote :

REMARKS. Both Haworth and Sweet would seem to have been well acquainted with the true *E. gibbiflora* when they published their description of *E. grandifolia*, in the same year in which DeCandolle published the genus *Echeveria*, as well as the drawing, by A. Echeverria, of *E. gibbiflora*. Kunze,

1. The facts : **August 10, 1828**, Haworth sent his description of *E. grandifolia* to *Taylor's Philosophical Magazin and Annals*, to be printed either on Sept 1 or Oct 1, 1828. That means concerning *E. gibbiflora* DC Haworth at most could have known the scarce description in *Prodromus* III from **March 1828**, and could not possibly have seen Echeverria's drawing in *Mémoire* published in **September 1828**. So Haworth simply could not know how *E. gibbiflora* DC looked like and that the plant he described as *E. grandifolia* in fact was the same. Or in other words, he did not use a different name for his plant because he considered it to be decidedly different, but because he could not know that it was similar to *E. gibbiflora*, i.e. that the plant had already been described. The same applies to Sweet whose publication date is also **1928** and not 1938 as Walther indicated – both of them couldn't possibly be well acquainted, Walther's statement therefore is totally unfounded.

So the basic problem of these texts is Walther's incorrect assessment of Haworth's and Sweet's state of knowledge concerning *E. gibbiflora* DC, which prompted him to claim that *E. grandifolia* is different from *E. gibbiflora*.

Walther made his description again from locally cultivated plants :

truncate, to 2 mm. wide. Flowers from October to December. Description from plants cultivated locally which agree with Mexican material seen.

2. The exact origin of *E. grandifolia* being unknown one wonders to which "Mexican material seen", representing *E. grandifolia*, Walther refers.

As Synonyms of *E. grandifolia* Walther listed :

Echeveria grandifolia HAWORTH, in Taylor's Phil. Mag., vol. 4, p. 262, 1828; SWEET, Brit. Fl. Gard., vol. 3, pl. 275, 1838; LEMAIRE, Ill. Hort., vol. 10, misc. p. 80, no. 16, 1863.

3. The correct date of Sweet's publication is 19**28**, not 1938.

Echeveria gibbiflora LINDLEY, Bot. Reg., vol. 15, pl. 1247, 1829; BRITTON AND ROSE,

4. Lindley referred to DC, i.e. considered his plant identical with *E. gibbiflora* DC, therefore cannot be cited in the synonymy of *E. grandifolia* Haworth.

Echeveria gibbiflora LINDLEY, Bot. Reg., vol. 15, pl. 1247, 1829; BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 25, 1905; BERGER (as var. *typica*) in Engler Nat. Pflan-

5. Britten & Rose indicated *E. grandifolia* Haworth as synonym of *E. gibbiflora* DC, therefore can also not be cited in the synonymy of *E. grandifolia* Haworth.

N. Amer. Fl., vol. 22, p. 25, 1905; BERGER (as var. *typica*) in Engler Nat. Pflanzenf., ed. 2, vol. 18a, p. 476, 1930; POELLNITZ, in Fedde Repert., vol. 39, p. 255,

6. Berger also synonymised *E. grandifolia* Haworth with *E. gibbiflora* DC therefore cannot be cited either.

zenf., ed. 2, vol. 18a, p. 476, 1930; POELLNITZ, in Fedde Repert., vol. 39, p. 255, 1936; not DeCandolle.

7. Von Poellnitz synonymised *E. grandifolia* Haworth with "?" with *E. gibbiflora* DC.

Echeveria gibbiflora LINDLEY, Bot. Reg., vol. 15, pl. 1247, 1829; BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 25, 1905; BERGER (as var. *typica*) in Engler Nat. Pflanzenf., ed. 2, vol. 18a, p. 476, 1930; POELLNITZ, in Fedde Repert., vol. 39, p. 255, 1936; not DeCandolle.

8. "*E. gibbiflora* not DeCandolle" – complete nonsense.

Echeveria campanulata KUNZE, Delect. Sem. Lips., 1842; Linnaea, vol. 17, p. 574, 1843.

9. Kunze declared his *E. campanulata* to be "proxima species *Echeveria gibbiflora* DC" and indicated t. 1247 which is Lindley's illustration of *E. gibbiflora*, i.e. *E. campanulata* Kunze cannot be cited in the synonymy of *E. grandifolia* Haworth.

Under REMARKS Walther wrote regarding Kunze :

Echeveria, as well as the drawing, by A. Echeverria, of *E. gibbiflora*. Kunze, too, knew the difference between these species, but appears to have overlooked *E. grandifolia* of Haworth and Sweet, and hence coined the superfluous name *E. campanulata*.

10. To insinuate that Kunze actually described *E. grandifolia*, although he declares *E. campanulata* to be very similar to *E. gibbiflora*, is simply wrong.

Cotyledon gibbiflora BAKER, in Saunders Refug. Bot., vol. 1, no. 23, 1869, in part only.

11. Baker synonymised *E. grandifolia* Haworth and also Sweet with *E. gibbiflora* DC.

Under ILLUSTRATIONS Walther indicated :

ILLUSTRATIONS. Sweet, Brit. Fl. Gard., vol. 3, pl. 275, 1878; Bot. Reg., vol. 15, pl. 1247, 1829; Cactus and Succ. Jour. Amer., vol. 6, no. 10 (cover), April, 1935; Cac-

12. This is the illustration of Lindley's article which – of course – represents *E. gibbiflora* DC. It is published as fig. 120, p. 230 :

Figure 120. 59. *Echeveria grandifolia* Haworth. Plant grown at the Royal Horticultural Society, London; collected by James McRae. From an article by J. Lindley (Edwards's Botanical Register, volume 15, plate 1247). [See page 207]

13. Accordingly this caption is wrong – the plant is *E. gibbiflora* DC, not *E. grandifolia* Haworth.

1247, 1829; Cactus and Succ. Jour. Amer., vol. 6, no. 10 (cover), April, 1935; Cac-

14. The photo on the cover is so corrupt that an identification of the plant it is supposed to show is impossible.

1247, 1829; Cactus and Succ. Jour. Amer., vol. 6, no. 10 (cover), April, 1935; Cactaceas y Suculentas Mexicanas, vol. 3, p. 33, fig. 20, 1958.

15. Again a photo that does not permit to identify the plant it shows – the latter seems to be sessile !

Under OCCURRENCE Walther indicated :

near Villa Obregon, State of Mexico: Toluca, on Cerro ~~Teresano~~, Morelos:

16. Toluca, on Cerro Teresano – correct name is Cerro **Teresona**.

Under COLLECTIONS he indicated :

COLLECTIONS. Mexico. Federal District: Pedregal lava fields, Bourgeau, 1378 (P), Pringle 99/8017 (BH,GH,NY,P,PH,UC,US); Santa Fe, Rose, 05/

17. "Bourgeau, 1378 (P)" – such a specimen is not extant at P.

1378 (P), Pringle 99/8017 (BH,GH,NY,P,PH,UC,US); Santa Fe, Rose, 05/

18. "Pringle 99/8017": There exists several specimens of plants collected by C.G. Pringle 1899 on lava field in the Valley of Mexico (Federal District), the majority of them consisting of large inflorescences, only rarely with an additional fragmentary leaf, **determined as *E. gibbiflora***, redetermined by Walther as *E. grandifolia* Haworth.

1378 (P), Pringle 99/8017 (BH,GH,NY,P,PH,UC,US); Santa Fe, Rose, 05/704 (GH); Eslava, Rose, 03/7155 (F,GH,NY,US). Cultivated: Cornell,

19. "Santa Fe, Rose 05/704" [not correct, this is 1903, not 1905] and "Eslava, Rose, 03/7155" (both also DF) and some additional Rose collections from 1903 – 1905, designated as "*Echeveria*" or as "*Echeveria scheeri* Lindley", all redetermined by Walther as *E. grandifolia* Haworth. Specimens at NY (19302 & 19304), tentatively determined as *E. scheeri* Lindley, were first redetermined by Walther as *E. campanulata* Kunze and later as *E. grandifolia* Haworth.

>>> No herbarium specimens of *E. grandifolia* being extant Walther resorted again to his tried and tested trick of searching herbarium specimens that were suitable for reclassification so that he was able to cite them as specimens of *E. grandifolia* !

Under REMARKS Walther stated :

The most notable difference between *E. gibbiflora* and *E. grandifolia* is the shape of leaves and bracts, both of which are distinctly narrower and more pointed in the latter species. This difference applies to cultivated plants as

20. However the majority of the redetermined specimens does not have any bracts at all, and the leaves, if present, are of far too different sizes to serve as evidence for his claim. Moreover, that the leaves of the two plants should be different is clearly disproved by the fact that the illustration of *E. gibbiflora* in *Edward's Botanical Register* and that of *E. grandifolia* in *The British Flower Garden* show exactly the same leaf shape. Besides one wonders, and rightly so, why the plants from the Distrito Federal of all places are supposed to be identical with *E. grandifolia* - in view of the fact that its Mexican origin is not known.

That means there is no justification for the redetermination of said specimens.

He continued :

pointed in the latter species. This difference applies to cultivated plants as well as to most plants I saw in their native habitat, and is retained when they are grown together in gardens.

21. If indeed the two plants are clearly different in culture, this can only mean that one or both of Walther's "cultivated plants" was / were not correct. And a photo published by Walther in the *American Horticultural Magazine* vol. 39, p.86, captioned *Echeveria grandifolia*, most likely shows an *E. gibbiflora* hybrid.

And again :

When cultivated locally together, *E. gibbiflora* and *E. grandifolia* retain their distinctive characters. Similar broad round leaves are found in *E. crenulata*, in which they are deep green with red edges; in *E. gigantea*, in which they are lead-colored with red margins; and in *E. pallida*, in which they are

22. While different leaf shapes are characteristic for *E. gibbiflora* and *E. grandifolia*, they all of a sudden have "similar broad round leaves" **and as if somewhat different leaf shapes would justify the status of two distinct species !**

23. The mention of *E. crenulata* does not refer to *E. crenulata* Rose but only to the plant Walther erroneously considered to be this species.

24. In his description of *E. gigantea* Walther indicated the colour of the leaves as "courage-green to grape-green", not "lead-coloured".-

25. Moreover it cannot be excluded that plants "cultivated locally" were no longer the true species but possibly hybrids , and whether fig. 121, p. 231 shows the true species is very uncertain, it may as well have been an *E. gibbiflora* hybrid.

Additional errors in the texts :

Occurrence (of *E. grandifolia*) :

26. On the basis of the afore mentioned redetermination of existing herbarium specimens from Pringle and Rose, Walther listed Federal District and Estado de Mexico, but also Morelos and Michoacan, however without indicating the source of the information regarding the latter : in any case there is no respective specimen traceable.

27. Walther's redetermination of all for him available *E. gibbiflora* specimens of Distrito Federal as *E. grandifolia* had as a consequence that *E. gibbiflora* – of course only according to him - does not occur there at all and that its occurrence is limited to Morelos and Estado de Mexico – the latter however he forgot to mention under OCCURRENCE of *E. gibbiflora*!

28. On p. 33 Walther indicated that *E. grandifolia* is growing in "Pine-oak woodland" – how could he know the Mexican origin of *E. grandifolia* Haworth being completely unknown ? ? ?

29. According to GEOGRAPHICAL OCCURRENCE *E. grandifolia* is growing in Distrito Federal, Estado de Mexico and Morelos, while *E. gibbiflora* is restricted to Morelos. This indication is pointless because it is based on Walther's arbitrary distinction between *E. gibbiflora* and *E. grandifolia*.

30. The Index of Walther's monograph includes numerous references to *E. grandifolia* Haworth – of course they all apply to *E. gibbiflora* DC.

Comment :

There is no doubt that Walther knew the publication of *E. gibbiflora* in De Candolle's *Prodromus* and knew that it consisted only of a very scarce description and was not accompanied by Echeverria's excellent drawing. To imply that Haworth and Sweet "would seem to have been well acquainted" with *E. gibbiflora* is nonsense. Neither Baker nor subsequent authors recognised *E. grandiflora* Haworth as an independent species. And because no substantial evidence to the contrary could cause Walther to question his opinion and to dissuade him from his fixed idea that *E. gibbiflora* and *E. grandifolia* are two different species, he - on the contrary - did everything to back it up, among other things by redesignating indiscriminately various *E. gibbiflora* herbarium specimens as *E. grandifolia* - thus obtaining collection localities for the latter, whose Mexican origin is unknown. Otherwise he would have had to give up his intention of publishing *E. grandifolia* as a separate species. Needless to say that these texts, the indications in the Key to Series *Gibbiflorae* included, are of no use at all.

Series 6. Angulatae E. Walther

60. *Echeveria humilis* Rose (p. 210-211) and 61. *Echeveria angustifolia* E. Walther, new species (p. 211, 234 & 235).

Rose published the description of *E. humilis* in *Bull. New York Bot. Gard.* 3: 8, 1903 :

***Echeveria humilis* Rose, sp. nov.**

Acaulescent, or with a short woody caudex, glabrous throughout; basal leaves in a dense rosette, thickish, lanceolate, acute, 5–6 cm. long; flowering stems about 1 dm. long, rather weak, leafy below; inflorescence a few-flowered secund raceme, sometimes paniculately branched; pedicels 2–3 mm. long, bractless; sepals lanceolate, very unequal, the longer 4–5 mm. long, acute; corolla 8–9 mm. long, its segments united for about one fourth their length.

Collected by Parry and Palmer, State of San Luis Potosi, 1878 (no. 233 in part, type), and in the same state by J. G. Schaffner, 1879 (no. 769).

and he added that the type plant was "collected by Parry and Palmer, State of San Luis Potosi, **1878** (no. 233 in part, type) and in the same state by J.G. Schaffner, **1879** (no. 769)."

Parry & Palmer 233 (US 48363), the holotype, was prepared in 1878 and originally simply determined as "*Cotyledon*, Mexico". It consists of two fairly small plants, one with a well developed rosette and a short broken stem, the other with a rudimentary rosette with a longer piece of stem, both of them with a rather short inflorescence with either up to 10 or 3 flowers respectively. [Between them was mounted the inflorescence of *E. agavoides* with two single fragmentary leaves - that's why Rose wrote "in part".]

Regarding **Schaffner 769** the situation is different in so far as this number can be found on specimens prepared 1876, 1877 and 1879.

a) Schaffner 769, **1876** (GH) : The prefab label indicates "Ex. convalli San Luis Potosí", and handwritten "*Cotyledon (Echeveria)* ----- ? near *strictiflora* ! In arenosis circam urbem" and also handwritten "= 233 Parry & Palmer in part". It consists of 3 different plants each with an inflorescence :

- The plant at left has a rosette with narrow leaves to 4.5 cm long, a more than 20 cm tall, 3-branched, many-flowered inflorescence with almost sessile flowers – not corresponding at all to the description of *E. humilis* by Rose, but well corresponding to *E. schaffneri* (Watson) Rose, Schaffner 768.

- The middle plant is small, its rosette leaves are at most 2.5 cm long, the inflorescence ca 10 cm long with only 5 flowers on short pedicels – representing undoubtedly a young / small *E. humilis* Rose.

- The plant at right has rosette leaves to 3.5 cm long, a ca 25 cm tall inflorescence with ca 10 flowers on rather long pedicels, flowers both bigger and broader than those of the former two specimens – representing clearly a different plant.

It is obvious that this is a mixed sheet with 3 different plants / species involved.

b) Schaffner 769, **1877** (NY), from the "Herbario de J.G. Schaffner, n° 386". The prefab label also states "Flora Mexicana ex convalli San Luis Potosí" and handwritten is added "**769 *Echeveria humilis* Rose. See S. Wats. Proc. Am. Acad. 17: 355**". The sheet consists of 1. a perfect plant of *E. humilis*

(roots, stem, rosette, inflorescence with flowers), 2. a single inflorescence with 7 flowers, 3. a less complete plant with a piece of stem, a few-leaved rosette and an inflorescence with ca 6 flowers, and a piece of root and stem with a single leaf.

c) Schaffner 769, **1877** (MEXU 14355). This specimen was first determined as "*Cotyledon grayii* Baker" (*E. paniculata* Gray). Later *Cotyledon grayii* was crossed out and replaced by "*Cotyledon humilis* Rose, s.n., en lugares arenosos cerca de S. Luis Potosí". When Walther came across it he determined it as "*Echeveria humilis* Rose" and in 1958 he even designated it as isotype which is of course complete nonsense. The sheet consists of a rather small plant : a part of the stem, a few rosette leaves, an inflorescence with 3 bracts and ca 6 flowers – much resembling those of the Parry & Palmer 233 type specimen. The 1877 collection of Schaffner 769 was also seen by von Poellnitz who agreed with Walther so much that he didn't even mention Parry & Palmer 233 as type of *E. humilis* Rose but simply stated : "Typ Schaffner 1877 / 769 !"

d) Schaffner 769, **1879** (US 39989) consists only of a short piece of a stem with ca 4 fragmentary leaves and ca 4 cm long lower parts of two inflorescences. The – printed – determination label reads : "New York Botanical Garden, from the Herbarium of A. Vignier, presented by Mr. Andrew Carnegie, 1901. San Luis Potosí, Mexico. Collected by J.G. Schaffner, 1779." In an unknown hand is added : "*Echeveria*" and "See S. Wats. Pro. Am. Acad. 17: 355". The reference to S. Watson concerns his *Contributions to American Botany* from May 5, 1882, which consist of a list of plants collected chiefly by Palmer 1879-1880. Therein Watson wrote regarding Schaffner 769 that "it was also distributed under 233 Parry & Palmer", that means it concerns the same species. While Schaffner 769 of 1879, indicated by Rose, is extremely poor, i.e. not identifiable, the specimens of the previous years compensate this and of course Watson's remark that Schaffner 769 "was also distributed under 233 Parry & Palmer" is very helpful. Why Rose indicated the specimen from 1879, the most useless of all, is not comprehensible.

Walther's text

In his first text regarding *E. humilis* Rose, Walther wrote (*Cact. Succ. J. (Los Angeles)* **7**: 70, 1935) :

15. *Echeveria humilis* Rose, Bull. N. Y. Bot. Gard., 3:9:8. 1903; North Am. Flora, 22:1:20. 1905.

Remarks: The type-material of this consists of two different collections. The first mentioned by Rose, (Parry & Palmer 1878/233) consists of mixed material, part of this being *Echeveria agavoides*. Identity of the remainder is doubtful, so that it would be well to consider as the type only the second collection mentioned by Rose, i.e. Schaffner 1878/769.

Comment :

- "Identity of the remainder is doubtful" – refers to the two pressed Parry & Palmer 233 plants which however correspond perfectly to Rose's description, so are not doubtful at all.

- "Schaffner **1878**/769" is wrong, Rose indicated "Schaffner **1879**" and as the above mentioned specimens show there is no Schaffner collection from 1878.

In the monograph Walther again did not quote Rose's description but wrote a new one "of imported plants / on living material recently imported", i.e. once more he made a description from plants of unknown origin :

transversely reniform, to 2 mm. wide. Flowers from August on. **Description of imported plants grown at Strybing Arboretum, Golden Gate Park, San Francisco.**

material, some of it being *E. agavoides*, which has since been removed. **I base the description wholly on living material recently imported.** *Echeveria humilis*

No surprise therefore that his description does not correspond at all to that by Rose :

Leaves : Walther : 4-5 cm or rarely to 7 cm long, 2.2 cm broad / Rose : 5-6 cm, on dried specimen less than 1 cm broad.

Inflorescence : Walther : usually simple, but sometimes 3-branched */ Rose : a few-flowered secund raceme, sometimes paniculately branched.

Flowering stems : Walther : to 20 cm / Rose : 10 cm.

Sepals : Walther : longest to 9 mm / Rose : 4-5 mm.

Corolla : Walther : to 13 mm long / Rose : 8-9 mm long.

*Walther's "sometimes 3-branched" inflorescence has its origin in Schaffner 769 of **1876** :

leathery; inflorescences one or two; usually simple, but sometimes 3-branched
(G. H. Schaffner, 76/769) (see Bull. NYBG, *loc. cit.*) peduncle erect or some-

As already discussed above, this is a mixed sheet. Very obviously Walther had failed to notice that 3 different plants are mounted and that the plant at left with its 3-branched inflorescence represents *E. schaffneri*, not *E. humilis*, i.e. he had failed to notice that it is a perfect match to the type of *E. schaffneri* (Watson) Rose and therefore in his own description he erroneously attributed a 3-branched inflorescence to *E. humilis*.

In short : The plants Walther considered and described as *E. humilis* Rose were wrongly identified, his description is useless and misleading. Had he compared it with Rose's text he could easily have noticed this. Accordingly also the indications in the Key to Series *Angulatae* are wrong :

C. Leaves broadly ovate-lanceolate, thick, to over 22 mm. wide. . 60. *E. humilis*

long, very thick and turgid, deltoid-lanceolate, acute, ascending; corolla urceolate-campanulate, to 13 mm. long, 8 mm. in basal diameter; petals somewhat

A plant with an "urceolate-campanulate" corolla is out of place in the Series *Angulatae*.

Under OCCURRENCE Walther wrote :

OCCURRENCE. Mexico. San Luis Potosi; Hidalgo (?).

There is no hint whatsoever regarding the occurrence of *E. humilis* in Hidalgo. Accordingly also the indication under GEOGRAPHICAL OCCURRENCE (p. 36) is wrong.

Under COLLECTIONS Walther indicated :

Parry and Palmer, 1878/233 (US, type), Schaffner, 79/769 (GH, MEXU,

"Schaffner, 79/769 (GH, MEXU, NY)" is not correct : The specimen at GH is from **1876**, not 1879 and the specimens at MEXU and NY are from **1877**, not 1879.

Parry and Palmer, 1878/233 (US, type), Schaffner, 79/769 (GH, MEXU, NY), Purpus, 05/465 (GH); Virles, 1891/1573, 1574 (P).

- The citation is not correct : Purpus' n° is 205, 465 is Rose's n°.

Parry and Palmer, 1878/233 (US, type), Schaffner, 79/769 (GH, MEXU, NY), Purpus, 05/465 (GH); Virles, 1891/1573, 1574 (P).

- The correct name of this person is **Virlet**.

Under REMARKS Walther wrote :

the description wholly on living material recently imported. *Echeveria humilis* is closely related to *E. tenuis*, but clearly differs in the evident pedicels and in

The comparison with *E. tenuis* is futile in every respect : Neither do the plants Walther considered to be *E. humilis* nor the plant he considered to be *E. tenuis* agree with either *E. humilis* Rose or *E. tenuis* Rose. Moreover he stated that *E. humilis* differed from *E. tenuis* by longer leaves, however his descriptions show the contrary : Leaf length of *E. humilis* is 4 – 5 cm, while that of *E. tenuis* is 4 – 6 cm.

its narrower, longer, and long-acuminate leaves. The chromosome number is $n=32$.

The chromosome $n = 32$ is correct for *E. humilis* Rose, but definitely not for the plant Walther considered to be *E. humilis* because the latter was not known to Uhl.

E. humilis was again collected by C.A. Purpus, also in San Luis Potosí, in 1905, i.e. 2 years after Rose's publication of the protologue. The respective specimen - Purpus 205 - is US 888640, presumably identified by Rose himself as *E. humilis*. It consists of two inflorescences, 8 leaves and photo 719 of the original plant in a pot. Apart from the fact, that the inflorescences are longer and the flowers more numerous, the overall appearance is corresponding well to Rose's description of *E. humilis*. Walther however, convinced that his "imported plants" were the correct *E. humilis* Rose, 5.5.58 redetermined the specimen US 888640 as *E. humilis* var. *angustifolia* var. nov. and in the monograph he even went one step further and cited it as the type of his newly created *E. angustifolia*. Or in other words : Because his concept of *E. humilis*, based on an unknown plant of unknown origin, was wrong, he converted the correctly identified *E. humilis* collection of 1905 by Purpus to his new species *E. angustifolia* ! That means *E. angustifolia* Walther is identical with *E. humilis* Rose, i.e. is a redescription of *E. humilis* Rose.

The captions of figs 122 & 123 show the redetermination by Walther of US 888640, originally identified as *E. humilis*.

Figure 122. 61. *Echeveria angustifolia* E. Walther. Type plant, grown in Washington; collected near San Luis Potosi, Mexico, in 1905 by C. A. Purpus (205). Photograph from the U.S. National Herbarium, no. 719. [See page 211]

Figure 123. 61. *Echeveria angustifolia* E. Walther. Holotype in the U.S. National Herbarium. [See page 211]

TYPE. Purpus, 05/205 (Rose, 05/465), US, no. 888640, collected at San

And Purpus 205, on the one hand indicated under COLLECTIONS of *E. humilis*, on the other hand is simultaneously the type of his new *E. angustifolia* ! Nothing could better demonstrate that *E. humilis*

and *E. angustifolia* are one and the same plant - which, however, was certainly not Walther's intention !

Under REMARKS Walther wrote :

species *E. angustifolia* is probably related, but from which it clearly differs in the longer, narrower leaves, less than 10 mm. in width, more distinctly concave

Glabrous; stem evident, simple, to 3 cm. tall or more, leaves densely rosulate, to 30 or more, narrowly oblong-oblancheolate, to 4 cm. long, but only 7 to

Leaf length of *E. angustifolia* is "to 4 cm" while that of Walther's "*E. humilis*" is 4-5 cm or rarely to 7 cm" – nevertheless *E. angustifolia* "clearly differs [from the latter] in the longer, narrower leaves".....

E. angustifolia is an excellent example of how Walther worked : When **Moran** saw the US 888640 specimen, prepared in 1905 and identified as *E. humilis*, presumably by Rose who had described this species two years before, he concluded that the plants circulating in California under the name *E. humilis* were misidentified. Regarding US 888640 he wrote : "This plant is not much like the one that has been called *humilis* about here ; and since it was identified as *humilis* presumably by Rose, that suggests that the local plant is misidentified." When **Walther** saw the specimen, the fact that it had been identified presumably by Rose who had described it two years before obviously did not raise any doubts regarding the plants he considered to be *E. humilis* – but simply prompted him to redetermine it and to describe Rose's *E. humilis* as a new species - "based solely on the type and US photograph number 719".

[While in the monograph Walther cited the dates of the type and the paratype of *E. humilis* Rose correctly, he referred to his remark of 1935 as well as to von Poellnitz's text without correcting their obvious errors :

Echeveria humilis ROSE, in Britton and Rose, Bull. New York Bot. Gard., vol. 3, p. 8, 1903; BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 20, 1905; E. WALTHER, Cactus and Succ. Jour. Amer., vol. 7, p. 70, 1935; POELLNITZ, in Fedde Repert., vol. 39, p. 238, 1936.

Comment :

Walther's text about *E. humilis* Rose is unusable in every respect : not only did he fail to notice that his "imported plants" were wrongly labelled because he did not bother consulting the protologue of *E. humilis* Rose, he also failed to notice that Schaffner 769/1776 was a mixed sheet and that the plant he referred to in his description of *E. humilis* in fact is *E. schaffneri* – i.e. because he did not know *E. humilis* he was unable to tell it apart from *E. schaffneri*. And regarding *E. angustifolia* – this is a prime example of how on the basis of unverified plants and an arrogant know-it-all manner a long-established species can be converted in a new one – and no one contradicts.

62. *Echeveria tenuis* Rose (p. 211-212)

E. tenuis was collected by Rose August 26, 1897 among rocks on top of mountains near Monte Escobedo, Zacatecas, Mexico and later described from a pressed specimen :

Echeveria tenuis Rose, sp. nov.

Acaulescent, glabrous throughout; leaves fleshy, numerous, forming a flattened rosette, oblong, 4–5 cm. long, much narrowed at base, acute; flowering branches slender, at first nodding or scorpioid, their leaves linear or at least narrow, with a small rounded spur at base; flowers sessile or nearly so; sepals very unequal, broadly ovate to linear; corolla 9 mm. long, the segments in dry specimens keeled on the back, with scarious margins, not connivent in age, united for about one fourth their length.

Collected by J. N. Rose among rocks on top of mountains near Monte Escobedo, Zacatecas, Mexico, August 26, 1897 (no. 2640a). This species resembles *E. Desmetiana* in its sessile flowers, but the leaves are of different shape, and the bracts are not two-spurred at base.

Walther's text

For his description of *E. tenuis* Walther used "living plants imported from F. Schmoll, Cadereyta", lacking any data regarding their origin :

Stem very short or none, usually simple; rosettes with short axis and few, usually less than 10 crowded leaves, these very thick and turgid, thickest below middle, strongly convex beneath, nearly flat above, oblong-ovate, acute, pungent-mucronate to aristate when young, 4 to 6 cm. long, 10 to 15 mm. broad, 10 to 12 mm. thick, not at all glaucous; inflorescence usually solitary, simple, secund, to 25 cm. tall; peduncle laxly ascending or flexuose; bracts few, appressed, thick, semiterete, narrowly deltoid-oblong, to 18 mm. long, acute, at base truncate or with a short, single, rounded spur; racemes with 12 to 15 crowded flowers; upper bracts linear, to 10 mm. long; pedicels slender, but less than 2 mm. long; sepals ascending-upcurved, very thick and turgid at base, terete-triquetrous, linear-deltoid, acute, the longest to 10 mm. long; corolla urceolate-campanulate, to 15 mm. long, 10 mm. in basal diameter, 6 to 7 mm. wide at mouth; petals thick, bluntly keeled, gibbose at base, at apex outcurved and subulate-apiculate; carpels 7 mm. long; nectaries oblique, narrowly transverse-reniform, to 3.5 mm. wide. Flowers from August on. Description based on living plants imported from F. Schmoll, Cadereyta.

Errors :

1. And his description differs so clearly from that by Rose that his plants cannot possibly have been *E. tenuis* Rose : The latter has a flattened rosette of numerous leaves while Schmoll's plant has only few, i.e. less than ten leaves. Moreover Rose's plant has small flowers – the corolla is only 9 mm long – while that used by Walther has a 15 mm long corolla. While it may be correct to place *E. tenuis* Rose in Series *Angulatae*, it is certainly not correct for the Schmoll plant with an urceolate-campanulate corolla.

COLLECTIONS. Mexico. Zacatecas, the type collection (US). Cultivated: Golden Gate Park, San Francisco, *E. Walther* (CAS).

2. The CAS sheet mentioned is 234672. It consists only of an inflorescence with ca 14 flowers. Basal leaves or a rosette are completely missing, i.e. the specimen cannot possibly be identified with certainty. Originally it was determined by Walther as "*Echeveria pachyphylla*, Type, E. Walther, Queretaro, Mexico, coll. Eric Walther", date unknown. Later Walther redetermined it as *E. humilis*

Rose, again later as *E. tenuis* Rose. That means a plant once collected in Querétaro finally is used as voucher for a species collected in Zacatecas

absence of any pedicels being so readily apparent in dried specimens. Actually, its nearest relation is *E. humilis*, from which it differs in its very short pedicels, less acuminate leaves

3. The comparison with *E. humilis* is futile in every respect : Neither do the plants Walther considered to be *E. humilis* nor the plant he considered to be *E. tenuis* agree with either *E. humilis* Rose or *E. tenuis* Rose.

Comment :

Walther's description of a plant not corresponding to *E. tenuis* Rose is of no use at all.

63. *Echeveria heterosepala* Rose (p. 212, 238, 239, 242 & 245)

Rose's description of *E. heterosepala* was published in *Bull. New York. Bot. Gard.* 3: 8, 1903. The plant had been collected by C.G. Pringle on calcareous hills near Tehuacan, Puebla, August 1897 (n°7499, type) and by Henry E. Seaton near Esperanza, also in Puebla, August 1891 (n° 3333) :

***Echeveria heterosepala* Rose, sp. nov.**

Acaulescent; basal leaves forming a dense rosette, obovate, somewhat acuminate, tipped with a long mucro, glabrous, perhaps also glaucous, 3 cm. long (in specimens seen); leaves on lower part of flowering branches large, above somewhat reduced; inflorescence a secund raceme, 12–15-flowered, at first nodding; lower pedicels longer, 6–7 mm. long; bractlets ascending; sepals ovate, more or less united at base, very unequal, the longer ones 6–7 mm. long; corolla reddish, short and broad, 8–9 mm. long.

Walther's text

Walther's first remarks regarding *E. heterosepala* were published in *Cact. Succ. J. (Los Angeles)* 3: 12, 1931 under the heading *Pachyphytum chloranthum* :

PACHYPHYTUM CHLORANTHUM SP. NOV.

Planta subcaulescens, foliis fusce-viridis, rosulatis-confertis, carnosis, rhomboidis-oblancoelatis, acuminatis, in basin sensim angustatis, supra planis, 4-7 cm. longis, 15-25 mm. latis, scapis lateralibus, excelsis, circa 45 cm. altis cum inflorescentia; bracteis congregatis infimis, oblancoelatis, acuminatis, crassis, 15-20 mm. longis, racemis in apicem cernuis, floribus 8-15, breviter pedicellatis, calycis-laciniis valde patulis, inequalibus, ovatis-deltoidis, corollis brevioribus, corollis urceolatis, antea viridis, deinde rubicundis, 10 mm. longis, ad basin 8 mm. latis, corollis-laciniis intus distincte cucullatis-bilobis.

PLANT glabrous;

STEM evident, but often short, to 6 cm. tall;

ROSETTES dense, with 25 or more

LEAVES; these 4 to 7 cm. long, 15 to 25 mm. broad and 2 to 3 mm. thick, flattened above, rhomboid-oblancoelate, acuminate, at base narrowed to width of 3 to 4 mm., color above dull yellow-green tinged red when young, beneath asphodel-green;

INFLORESCENCE one or more to the rosette, of remarkable height in comparison to size of rosette, to 45 cm. tall, lateral;

PEDUNCLE stout and erect;

LOWER BRACTS numerous, distinctly congregated on basal part of peduncle, ascending to appressed, to over 2 cm. long, oblancoelate to obovate-oblong, acute to obtusish, colored as the leaves but more reddish at base, readily detached and rooting;

RACEME secund, simple, to 15 cm. long, at first nodding, later erect, with 8 to 15 or more flowers;

UPPER BRACTS colored as the lower, but smaller, more remote, oblong, thickest near base, recurved;

PEDICELS stout, about 3 mm. long;

SEPALs spreading at nearly a right angle to corolla, ovate-deltoid, thick, acute, unequal, the longest nearly 5 mm. long;

COROLLA urceolate, sharply pentagonal, to 10 mm. long by 8 mm. in diameter near base and at mouth, glaucous, in bud pale green, only with age turning dull pink or red;

COROLLA-SEGMENTS united at base, oblong-lanceolate, acuminate, spreading at tip, on back keeled or angled, within distinctly appendaged at base of epipetalous filaments; these

APPENDAGES very thin, deltoid-oblong, obtusely rounded at apex;

STAMENS 10, the epipetalous filaments short, thick and broad at base;

CARPELS erect, at first whitish with green tips, later becoming wholly green;

STYLES short, greenish;

HYPOGYNOUS SCALES white, transversely semicircular.

Four years later the following remark was published in *Cact. Succ. J. (Los Angeles)* 7: 70, 1935 :

13. *Echeveria heterosepala* Rose.

Remarks: Living plants of what must be this species identical with the type, (Pringle 95/7499) from Tehuacan, collected by the writer in the same part of Mexico, have now flowered. They clearly prove, first, that this species belongs into *Pachyphytum*, and secondly, that it is identical with *Pachyphytum chloranthum* EW., which last name must now be reduced to a synonym. The following new combination is therefore in order:

***Pachyphytum heterosepalum* (Rose) E. Walther, new combination.**

Echeveria heterosepala Rose, Bull. N. Y. Bot. Gard., 3:8. 1903.

Echeveria heterosepala Rose, North Am. Flora, 22:1:20. 1905.

Echeveria viridiflora Rose, Mss., ined.

Pachyphytum chloranthum EW., Am. Cactus Journal, 3:1:12. 1931.

In his monograph the two previous names were listed as synonyms of *E. heterosepala* Rose because in the meantime Walther had decided to accept Rose's classification of this plant as *Echeveria* :

Pachyphytum chloranthum E. WALTHER, Cactus and Succ. Jour. Amer., vol. 3, p. 12, 1931.

Pachyphytum heterosepalum (Rose) E. WALTHER, Cactus and Succ. Jour. Amer., vol. 7, p. 70, 1935.

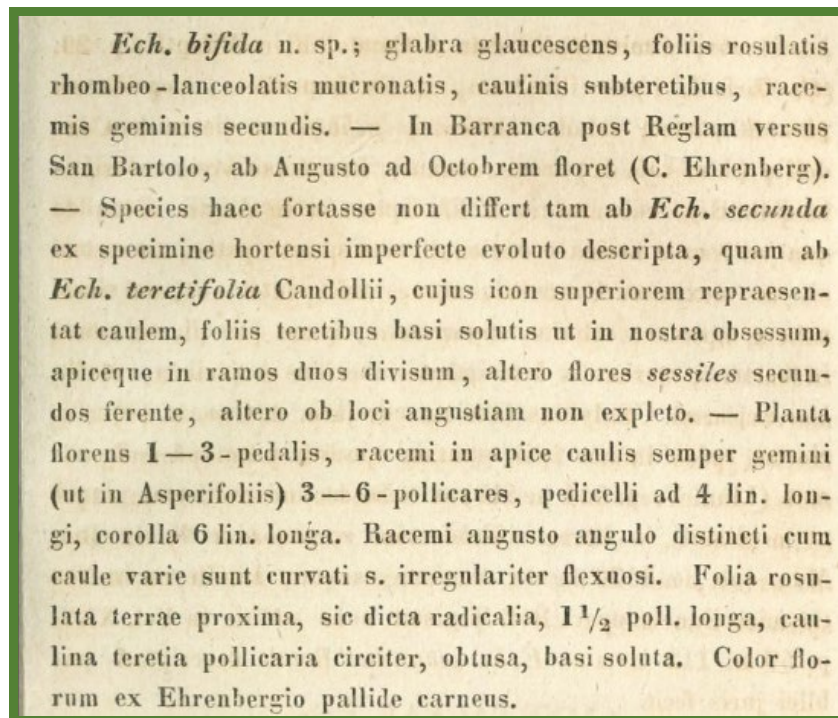
Echeveria heterosepala slightly resembles *E. tenuis*, but that differs in having much thicker leaves broadest below the middle, fewer, semiterete bracts,

The comparison with *E. tenuis* is futile because the plant Walther considered to be this species does not agree with *E. tenuis* Rose.

No comment.

64. *Echeveria bifida* Schlechtendal (p. 245-247, 217 & 243)

E. bifida was described by Schlechtendal in *Linnaea* 13: 411, 1839. The plant had been found by C. Ehrenberg "in barranca post Regla versus San Bartolo", according to von Poellnitz in 1835 :



Walther's text

Walther did not quote or – what would have been much better – translate Schlechtendal's description but produced a new one "based on plant received from J. Brown":

on. Description based on plant received from J. Brown of Pasadena, California, 1935.

- that means again a description of plants with unknown origin and hence again of no use.

Under REMARKS he wrote that in 1957 he had had the chance to visit "the type locality to gather seeds and living plants",

with members of the Mexican Cactus Society, I visited the type locality to gather seeds and living plants, which are undoubtedly *E. bifida*, but distinct

so why didn't he make his description from a plant from the type locality ? ?

Errors :

As synonym of *E. bifida* Walther listed "*E. teretifolia* Kunze":

Echeveria teretifolia KUNZE, *Linnaea*, vol. 17, p. 574, 1843; not DeCandolle. *Cotyledon bifida* (Schlechtendal) HEMSLEY, *Biol. Cent. Amer., Bot.*, vol. 1, p. 388, 1879–1880.

1. This is wrong. Kunze referred his description of *E. teretifolia* to DC. There is no "*Echeveria teretifolia* Kunze".

Figure 128. 64. *Echeveria bifida* Schlechtendal. Flowering plant, × 0.75. Plant photographed in San Diego 9 July 1960; collected at La Paila, ~~Barranca de Venados~~, Hidalgo, Mexico (Moran and Kimnach 7791). ~~Barranca de Venados~~ is a cited locality. [See page 245]

Figure 129. 64. *Echeveria bifida* Schlechtendal. Part of inflorescence, × 2. Plant flowering in San Diego 9 July 1960; collected at La Paila, Hidalgo, Mexico (Moran and Kimnach 7791).

2. The captions of the photos figs. 128 & 129 are wrong : According to Moran's photo collection, the plant was flowering in San Diego 7 **Aug 1961**, not 9 July 1960. And as indicated, M 7791 was collected at La Paila, not at "Barranca de Venados" . These are two different localities. "Barranca de Venados" is Walther's collection locality.

Comment :

Walther's description is again of no use because made from plants of unknown origin.

65. *Echeveria trianthina* Rose (p. 247-248)

The plant Rose described as *E. trianthina* was collected by C.A. Purpus in Hidalgo in 1904, and the description was published in *Contr. U.S. Natl. Herb.* 12: 439, 1909 :

***Echeveria trianthina* Rose, sp. nov.**

PLATE LXXVIII.

Acaulescent, giving off rosettes freely; basal leaves numerous, deep purple and mucronate when young, becoming greenish and losing the mucro, oblanceolate, 6 to 12 cm. long, 10 to 18 mm. broad, very thick, rounded below, concave above; flowering stem 30 to 40 cm. long, naked below; stem leaves narrow, terete or semi-terete, acute, 2 to 8 cm. long, erect or ascending; inflorescence at first strongly reflexed, usually 2-branched near the top, rarely 3-branched or simple, the branches 8 to 10 cm. long; pedicels very short, 2 to 3 mm. long, only a little elongating in age; sepals unequal, deflexed in anthesis, but later spreading at right angles to the corolla, terete, acute; corolla buds ovate, acute; corolla pink; carpels distinct.

Described from specimens sent by Dr. C. A. Purpus from the Rio de Tolantango, Hidalgo, in 1904, which flowered in Washington November, 1905.

Type U. S. National Herbarium no. 399673.

Walther's text

Obviously in the absence of even a remotely suitable plant Walther had no other choice but to quote the original description by Rose - however without indicating this ! He noticed that Rose's indication of an acaulescent plant does not agree with the photo fig. 130, copied from the type specimen.

REMARKS. Plate 78, cited above, clearly shows an obvious caudex. The

Comment :

Walther however failed to notice that in several more aspects Rose's description does not correspond with the living plant of fig. 130. And above all he also failed to notice that neither Rose's description nor the photo correspond with the plant on the type specimen US 399673, consisting only of a ca 45 cm long simple inflorescence and three small leaves, lacking a rosette and a – possible - stem. In short : We have

- a type specimen, too poor to give a correct idea of the living plant.
- the photo of a living plant which does not agree with US 399673.
- Rose's description which does not agree with either the type specimen or the plant on the photo.

As is well known, the name belongs to the type, that means US 399673 is *E. trianthina*. What the plant on the photo and the plant of Rose's description are / were, is impossible to know, and what the true *E. trianthina* is looking like is also impossible to know. In any case Rose's description is of no use when it comes to identifying the true *E. trianthina*. Walther's indications in the Key to Series *Angulatae* refer to Rose's description, not to the type.

66. *Echeveria strictiflora* A. Gray (p. 249-251, 217)

E. strictiflora was described by Asa Gray in *Plantae Wrightianae 1, Smithsonian Contr. Knowl.* 3(5): 76, 1852. The plant had been collected by Charles Wright in the mountains west of the pass of the Limpia in 1849 :

228^a. ECHEVERIA STRICTIFLORA (sp. nov.): foliis radicalibus spathulato-lanceolatis, caulinis lanceolatis parvis, floralibus similibus flore dimidio brevioribus; floribus breviter pedicellatis arcte secundis appresso-erectis in spicam simplicem strictam confertis; petalis longe attenuato-acuminatis sepala oblonga duplo superantibus. — Mountains west of the pass of the Limpia; Aug. "Flowers scarlet," in a very strict and close second raceme or spike, of six or eight inches in length: the flowers two thirds of an inch long; pedicels two or three lines long. — There is an allied species in the collection of Dr. Wislizenus, which I cannot identify with any described.*

Walther's text

Again Walther did not quote Gray's description but produced a new one "based on living plants from Mt Davis of Marathon, Texas".

Errors :

Echeveria strictiflora A. GRAY, *Plantae Wrightianae*, pl. 1, p. 76, 1850; BRITTON AND ROSE, *N. Amer. Fl.*, vol. 22, p. 19, 1905; POELLNITZ, in *Fedde Repert.*, vol. 39, p. 241, 1936.

1. The publication of *Echeveria strictiflora* in *Plantae Wrightianae* occurred in **1852**, not 1850.

Under COLLECTIONS Walther listed :

Chisos mountains, *Havard*, 1883/133 (US); Honeysuckle Canyon, *Warnock*, 37/1004 (GH,US), 40/W-132 (PH), *C. H. Mueller*, 39/8012 (F,PH,US),

2. Honeysuckle Canyon, Warnock, 37/1004 : This is wrong. The collection is either from "Mt Emory near large rock slide, Chisos Mountains, Brewster Co., Aug 26, 1937" or from "Rare on top of Pulliam Bluff, Chisos Mts, June 2, 1937" – in any case not from "Honeysuckle Canyon".

1004 (GH,US), 40/W-132 (PH), *C. H. Mueller*, 39/8012 (F,PH,US),

3. Only Warnock 40/132 is from "Honeysuckle Canyon".

1004 (GH,US), 40/W-132 (PH), *C. H. Mueller*, 39/8012 (F,PH,US),

4. C.H. Mueller, 8012/1939 is a non existing collection / specimen, i.e. there is no Mueller collection from 1939 with the nr. 8012.

Moore and Steyermark, 31/3336 (GH,PH,UC), *C. H. Mueller*, 30/8012

5. Moore and Steyermark, 31/3336 is also not from "Honeysuckle Canyon" but rather from "Blue Creek Canyon".

Moore and Steyermark, 31/3336 (GH,PH,UC), *C. H. Mueller*, 30/8012 (GH), 32/115 (GH), *E. G. Marsh*, 35/192 (F), *Ferris and Duncan*, 21/

6. C.H. Mueller 30/8012 is also wrong : 1. is it not from 1930, but from 1931 and 2. is it either from "Mt Emory, top Chisos Mts", or from "Blue Creek, Chisos Mts" or from "Chisos Mts", but clearly not from "Honeysuckle Canyon".

(GH), 32/115 (GH), *E. G. Marsh*, 35/192 (F), *Ferris and Duncan*, 21/

7. C.H. Mueller, 32/115 is also 1. not from "Honeysuckle Canyon" and 2. is the collection n° not 115, but 32004.

(GH), 32/115 (GH), *E. G. Marsh*, 35/192 (F), *Ferris and Duncan*, 21/

-8. E.G. Marsh, 35/192 is also not from "Honeysuckle Canyon" but from "Chisos Mountains".

(GH), 32/115 (GH), *E. G. Marsh*, 35/192 (F), *Ferris and Duncan*, 21/2796 (CAS); Glass mountains, Brewster Co., *V. L. Cory*, 27/1644 (GH);

9. Ferris and Duncan, 21/2796, last but not least, is also not from "Honeysuckle Canyon" but from "Barrel Springs Ranch, Davis Mts, Jeff Davis County" and the correct n° is 2523, not 2796.

Marathon, *J. R. Parry*, UCBG-55.826 (CAS); Ft. Peña, *Tharp*, 25/3439

10. Marathon, **J.R. Parry** is wrong, the respective collector was **J.B.Perry** !

Mexico. Coahuila: General Cepeda, *Palmer*, 04/R-7 (US), *Hinton*, 44/

11. "Palmer 04/R-7" is not extant at US.

Mexico. Coahuila: General Cepeda, *Palmer*, 04/R-7 (US), *Hinton*, 44/16520 (NY,US); west base of Picacho del Fuste, northeast from Tanque

12. Hinton, 44/16520 in 1958 was determined by Walther as *E. peacockii* ! !

(GH); 1 mile south of Carricilo, *Johnson and Mueller*, 40/164 (GH). Nuevo

13. "1 mile south of Carricilo, Johnson and Mueller, 40/164" – correct is: "**Carricito**", not "Carricilo", and "**Johnston**", not Johnson.

(GH); 1 mile south of Carricilo, *Johnson and Mueller*, 40/164 (GH). Nuevo Leon: near Saltillo on top of bluff, *Palmer*, 02/311 (US); Dulces Nombres,

14. "Nuevo Leon : near Saltillo" – however "Saltillo" is **Coahuila**

Leon: near Saltillo on top of bluff, *Palmer*, 02/311 (US); Dulces Nombres, *Meyer and Rogers*, 48/2872 (BR,G); Lampazos, *Mary Edwards Taylor*, 37/

15. "Dulces Nombres, Meyer and Rogers, 48/2872" – this is *E. schaffneri*, not *E. strictiflora*.

Meyer and Rogers, 48/2872 (BR,G); Lampazos, *Mary Edwards Taylor*, 37/365 (F), Chihuahua: southeast flank of Sierra Rica, Rancho de la Madero,

16. "Lampazos, Mary Edwards Taylor, 37/365" – the sheet MO 1181978 was first determined as "*E. secunda* Benth." and 1958 determined by Walther as *E. walpoleana*; there is a second sheet with the same collection n° at F, and although the inflorescences of both specimens and the shape of the leaves are identical, the latter, also in 1958, was determined by Walther as *E. strictiflora* !

365 (F), Chihuahua: southeast flank of Sierra Rica, Rancho de la Madero, *R. M. Stewart*, 42/2451 (GH); vicinity of Fierro, *Stewart*, 41/774 (GH); Los Organos mountains, *Harde Leseur*, 37/1330 (GH).

17. "Chihuahua : Los Organos mountains, Harde Leseur, 37/1330" – the correct name of this collector is "Harde **LeSueur**", and the same collection has also been listed by Walther for *E. mucronata* !

The Mexican localities cited need verification, for dried specimens of *E. strictiflora* are often difficult to separate from the closely related *E. walpoleana*.

The range of the latter supposedly extends to Coahuila, Nuevo Leon, and Tamaulipas, but it should be separable by its leaves which are deeply concave

18. In regard of the clearly different inflorescences of *E. strictiflora* and *E. walpoleana* the two species are not difficult to distinguish, even in dried specimens.

Comment :

Again Walther used a plant not from the type locality for his description of *E. strictiflora* – instead of quoting Gray's description. The list of collections is another example of Walther's sloppy way of working.

67. *Echeveria walpoleana* Rose (p. 252-255, 220)

E. walpoleana was described by Rose in *Contr. U.S. Natl. Herb.* 8: 295, 1905. The plant had been collected by Dr. E. Palmer near Las Canoas, SLP, Nov 1902 (acc. to the type specimen) :

Echeveria walpoleana Rose, sp. nov.

Acaulescent or becoming in age shortly caulescent; leaves forming a dense rosette, at first pale green with reddish margins but becoming deeply tinged with red throughout, thickish, rounded on the back, boat-shaped above, sharply acute, 6 to 8 cm. long, 2 to 2.5 cm. broad, glabrous; flowering stem 30 to 40 cm. long, its leaves thickish, acute; inflorescence two-branched, each branch a secund raceme of 8 to 10 flowers; pedicels very short; sepals spreading, ovate, acute, green; corolla about 14 mm. long, deeply orange-colored, the lobes erect, very thick, triangular in cross section, acute; stamens about half the length of the corolla lobes and attached near the top of the corolla tube; carpels erect.

Collected by Dr. E. Palmer near Las Canoas, San Luis Potosi, November, 1903, and flowered in Washington in August, 1903 (Rose's no. 506, Walpole's drawing no. 116 ined.).

Walther's text

Instead of citing this description Walther as usual felt appropriate to write a description of his own and – also as usual – from plants without known origin :

Flowers from July on. Description from living plants received from Dr. Lowry, Laredo, Texas.

which happened not to be *E. walpoleana* !

Errors :

Color. Leaves mytho- to biscay-green above, cource-green beneath, more or less spotted morocco-red, scarcely glaucous; bracts as leaves; sepals morocco-red; corolla begonia-rose at base, to peach-red above, spotted scarlet-red towards apex; petals inside orange-chrome to orange-buff at edges; carpels cream-buff; styles lettuce-green; nectaries whitish.

1. The leaves lack the red margins characteristic of *E. walpoleana* and its flowers are "begonia-rose" and "peach-red" instead of "deeply orange-coloured" as Rose indicated. Had Walther not failed to check Rose's description he would have noticed that the plant from Dr. Lowry could not be this species.

Under OCCURRENCE Walther indicated :

OCCURRENCE. Mexico. San Luis Potosi, Coahuila, Guanajuato, Nuevo Leon, and Tamaulipas.

Coahuila is *E. schaffneri* region, and an occurrence of *E. walpoleana* in Guanajuato is not reported.

2.

Under COLLECTIONS Walther listed :

Charcas, C. L. Lundell, 34/5573 (GH,US). Coahuila: barranca near Parras,

3. Charcas, C.L. Lundell 34/5573 is *E. schaffneri*.

Charcas, *C. L. Lundell*, 34/5573 (GH,US). Coahuila: barranca near Parras, *Purpus*, 10/162 (US); Mentlas, north of Saltillo, *Gregg*, 48/531 (GH)

4. Coahuila; barranca near Parras, Purpus, 10/162 : Originally determined as *E. paniculata*, redetermined by Walther as *E. walpoleana* – both not correct, it is ***E. schaffneri***. See comment to fig. 134 below.

Purpus, 10/162 (US); Mentlas, north of Saltillo, *Gregg*, 48/531 (GH)

5. Mentlas, north of Saltillo, Gregg, 48/531 was first determined as *E. strictiflora* Gray, later redetermined – correctly - as ***E. schaffneri*** Rose, in 1958 by Walther again redetermined – wrongly - as *E. walpoleana*. The correct name of the locality is **Mesillas**, not Mentlas.

Guanajuato: San Luis de la Paz, *Kenoyer*, 47/2376 (GH). Nuevo Leon: San

6. Guanajuato: San Luis de la Paz, Kenoyer, 47/2376 : **not *E. walpoleana***. The latter is not known to occur in Guanajuato.

Guanajuato: San Luis de la Paz, *Kenoyer*, 47/2376 (GH). Nuevo Leon: San Jorge, *Purpus*, 11/136 (US); hills between Soledad and Escondido, *Shreve*

7. Nuevo Leon: San Jorge, Purpus, 11/136 is ***E. schaffneri***.

Jorge, *Purpus*, 11/136 (US); hills between Soledad and Escondido, *Shreve and Tinkham*, 40/9608 (GH); limestone loma near Doctor Arroyo, *Shreve*

8. Shreve & Tinkham 9608 is ***E. schaffneri***.

and *Tinkham*, 40/9608 (GH); limestone loma near Doctor Arroyo, *Shreve and Tinkham*, 40/9672 (GH); Rancho Resendez, *Harry Taylor Edwards*,

9. Shreve & Tinkham 9672 is ***E. schaffneri***.

and *Tinkham*, 40/9672 (GH); Rancho Resendez, *Harry Taylor Edwards*, 37/365 (MO). Tamaulipas: Gomez Farias, *Palmer*, 07/284 (NY,US);

10. Rancho Resendez, Harry Taylor Edwards, 37/365 is something completely different, a plant with totally different leaves and a secund raceme. Moreover the name of the collector is **Mary** Taylor Edwards, not Harry.

Result : While from the 11 listed collections 8 are wrong, Tamasopo Cañon, a possible topotype of *E. walpoleana*, is lacking because erroneously indicated for *E. schaffneri*.

Under ILLUSTRATIONS Walther indicated Walpole's drawing :

ILLUSTRATIONS. Walpole no. 116, [see plate 4]; US photographs no. 888641, nos. 812, 814, 815, [see figures 133–134].

colors has ever been published. However, I was able to inspect these drawings and obtain a much clearer idea of the species in question.

11. Obviously Walther did not "inspect these drawings" scrupulously, otherwise he would have noticed that the flowers are clearly orange-yellow and not "begonia-rose at base, to peach-red above".

Figure 134. 67. *Echeveria walpoleana* Rose. Plant grown in Washington; collected in August 1910 by C. A. Purpus in a barranca near Parras, Coahuila, Mexico. Photograph from U. S. National Herbarium, no. 815.

12. Fig. 134. This photo was copied from US 888641. It is one of two photos on this sheet whose determination label reads : "*Echeveria paniculata*. Barranca near Parras. C.A. Purpus. Aug. 1910". Walther noticed that the determination was wrong and redetermined the sheet as *E. walpoleana*. However he erred – the photos undoubtedly represent *E. schaffneri*. And anyway, Coahuila is *E. schaffneri* territory.

Figure 133. 67. *Echeveria walpoleana* Rose. Plant flowering in Washington, 25 July 1911; collected in 1910 by Dr. E. Palmer in Tamaulipas, Mexico. Photograph from the U. S. National Herbarium, no. 814.

13. The photo fig. 133 was copied from US 888645, a Palmer collection in Tamaulipas. However this specimen is wrongly identified : The shape of the leaves is undoubtedly that of *E. schaffneri*, the leaves are up to 3.5 cm wide which is never correct for *E. walpoleana*. Because of his wrong conception of both, *E. schaffneri* and *E. walpoleana*, Walther again erred.

Echeveria walpoleana is intermediate, both in range and form, between *E. strictiflora* and *E. teretifolia*. Since the latter is typified by a quite imperfect

14. In view of the fact that neither the origin nor the form of the rosette and the shape of the leaves of *E. teretifolia* are known, this comparison is completely absurd.

Comment :

While providing *E. schaffneri* with the description of *E. walpoleana*, for the description of the latter he used a plant of unknown Mexican origin, in some respects not unlike *E. schaffneri* – of course again useless. Charles Uhl's comment in *Haseltonia* 6, 1998 reads : "*Echeveria walpoleana* did not fare well in Walther's (1972) monograph. He apparently misidentified some collections of this species, including a probable topotype, as *E. schaffneri* (n = 12), and this led to confusion in his characterization and in his keys."

68. *Echeveria schaffneri* (S. Watson) Rose (p. 255-256)

E. schaffneri was first described by S. Watson as *Cotyledon schaffneri* in *Proc. Amer. Acad. Arts* 17: 354, already in 1882. The plant had been collected by Dr. J.G. Schaffner on sandy slopes of mountains around the city of San Luis Potosí. In 1903 Rose transferred it to genus *Echeveria*.

COTYLEDON SCHAFFNERI. Acaulescent, the basal leaves narrowly lanceolate, narrowing from near the middle each way and acuminate, 3 or 4 inches long by $\frac{1}{2}$ inch wide, somewhat purplish; cauline leaves rather numerous, linear, flattened, very acute, 1 to $1\frac{1}{2}$ inches long: flowering stem a foot high, bearing a 2-branched raceme (the branches 4 inches long and about 8–12-flowered); pedicels very short: sepals narrowly lanceolate, unequal, 2 to 5 lines long; corolla yellow and pink, 6 to 8 lines long, nearly twice longer than the carpels. — On sandy slopes of mountains around San Luis Potosi (768 Schaffner).

Walther's text

Walther's first comment regarding *E. schaffneri* was published in *Cact. Succ. J. (Los Angeles)* 7: 70, 1935 :

14. *Echeveria teretifolia* DC., in *Prodromus*, 3:401. 1828.

Sedum teretifolium Mocino & Sesse, in *Flora Mexicana*, ined.

Cotyledon subulifolium Baker, *Saund. Ref. Bot.*, 1869, No. 32.

Echeveria subulifolia Ed. Morren, *La Belge Hort.*, 24:168. 1874.

Cotyledon schaffneri S. Watson, *Proc. Am. Acad.*, 17:354. 1882. (Not *E. schaffneri* of Rose, which is *E. paniculata* A. Gray).

Echeveria bifurcata Rose, *Cont. U. S. Nat. Herb.*, 12:10:439. 1909.

Remarks: Founded by DeCandolle on a rather fragmentary drawing, this species has long remained among the imperfectly known items. However, DeCandolle's "Memoires Crassulaceae," plate 17A., shows a flowering shoot only, but this is secund, bifid, and has sessile flowers, subterete bracts, widely spreading sepals, and a strongly angled corolla, all characters confined to *E. schaffneri* and *E. bifurcata*. Search for valid characters by which to separate these two species reveals none worth while, especially since we know *E. bifurcata* to be fairly plastic in response to a changed environment. The circumstances are perhaps done justice by reducing these species to varieties, as follows:

14a. *Echeveria teretifolia* var. *schaffneri* (S. Watson) EW., new combination.

Leaves somewhat purplish; bracts slightly flattened; corolla 12 to 16 mm. long, yellow to pink.

14b. *Echeveria teretifolia* var. *bifurcata* (Rose) EW., new combination.

Leaves bright green; bracts subterete; corolla usually 10 to 12 mm. long, bright red above, paler below.

In the 1935 publication Walther commented on *E. teretifolia* and listed *E. schaffneri* first tentatively as a synonym of *E. teretifolia*, then proposed the new combination "*E. teretifolia* var. *schaffneri* (S. Watson) E. Walther" – see also comments on 70. *E. teretifolia* and 71. *E. bifurcata*].

In the monograph however *E. schaffneri* was treated as a distinct species, no longer combined with *E. teretifolia*.

Again Walther did not quote Watson's description but wrote a new one "based on living plants received from E. Oestlund and C. Halbinger :

2 mm. wide. Flowers from January on. Description based on living plants received from E. Oestlund and C. Halbinger.

Errors :

1. Not only is the description once more made from plants without known origin in the wild, but more importantly what Walther had received and described is *E. walpoleana* and not *E. schaffneri* ! !

As REFERENCES Walther indicated :

Echeveria schaffneri (S. Watson) ROSE, in Britton and Rose, Bull. New York Bot. Gard., vol. 3, p. 9, 1903; BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 23, 1905.

2. When Rose published *E. schaffneri* in Bull. New York Bot. Gard., 1903 he wrongly cited Pringle as its collector (instead of Schaffner) and accordingly also the wrong collection n° and collection locality.

Gard., vol. 3, p. 9, 1903; BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 23, 1905.

3. And when he published it again in N. Amer. Fl. 1905 this error was corrected, i.e. Pringle was no longer indicated, however instead of citing Watson's description he provided that of *E. paniculata* Gray !

Under Synonyms of *E. schaffneri* Walther indicated :

As to name; both include foreign material, probably *E. maculata*. POELLNITZ, in

4. It is *E. paniculata*, not *E. maculata* .

As to name; both include foreign material, probably *E. maculata*. POELLNITZ, in Fedde Repert., vol. 39, p. 240, 1936 [as "*E. schaffneri* (S. Watson) E. Walther in litt. ad me."].

Echeveria teretifolia var. *schaffneri* (S. Watson) E. WALTHER, Cactus and Succ. Jour. Amer., vol. 7, p. 70, 1935.

5. Of course there is no "*E. schaffneri* (S. Watson) E. Walther" !

Under TYPE Walther indicated :

TYPE. *Schaffner*, 1876/768, on sandy hills near San Luis Potosi, Mexico (GH).

6. The **type** is Schaffner 768. There are two specimens of this n° extant : The GH specimen of Schaffner 768 shows a plant with a bifurcate inflorescence, a duplicate specimen at K however has at least **4 branches** of the inflorescence and thus evidences that **inflorescences of *E. schaffneri* do not necessarily have to be bifurcate**.

Under OCCURRENCE & COLLECTIONS Walther indicated :

OCCURRENCE. Mexico. San Luis Potosi: Tomasopo Cañon and San Luis Potosi. Puebla: Necaxa.

COLLECTIONS. Mexico. San Luis Potosi: San Luis Potosi (GH, type), Orcutt, 03/R.643 (US); Tomasopo Cañon, Pringle, 90/3508 (GH); flowered, Washington, D. C., Palmer, 05/R-627 (US).

7. Tomasopo Cañon is the collection locality of *E. walpoleana* (possibly a topotype). The correct name is **Tamasopo**.

8. "Puebla: Necaxa" – the respective specimen represents *E. walpoleana*.

Under REMARKS Walther wrote :

flat or terete, but in *E. teretifolia* they should be quite terete. (Living plants settled that question.) In both *E. paniculata* and *E. maculata*, the inflorescence

9. Complete nonsense ! To what plant the name *E. teretifolia* is referable is impossible to decide – so which "living plants" could help to settle the question whether bracts "should be quite terete" ? ?

Under REMARKS Walther stated :

In its native habitat, this species is said to go under the name "orejo de burro" or donkey's ear. When cultivated in the Cuernavaca garden of our friend, C. Halbinger, this species produced scapes nearly 3 feet tall.

10. Of course this refers to the plant from Oestlund and Halbinger he had used for his description.

In the Key to Series *Angulatae* Walther indicated :

D. Leaves and bracts bright shining-green with red margins; corolla scarlet; inflorescence 2- or 3-branched. San Luis Potosí, **Puebla**. . . 68. *E. schaffneri*

11. Reddish leaf margins are correct for *E. walpoleana*, but not for *E. schaffneri*. And there is no *E. schaffneri* in Puebla, the latter is an *E. walpoleana* locality. Walther thoroughly confused *E. walpoleana* and *E. schaffneri* !

Comment :

Watson's *Cotyledon schaffneri* did not fare well : Rose – when transferring it to genus *Echeveria* - instead of citing Watson's description published it with the description of *E. paniculata*. Walther (1935) considered it merely as a variety of the very imperfectly known *E. teretifolia* and in his monograph (1972) fitted it out with the description of *E. walpoleana* because he omitted to check Watson's description ! In other words : Walther misidentified *E. walpoleana* plants as *E. schaffneri*, with the result that all he has to say regarding *E. schaffneri* concerns *E. walpoleana*. The text about *E. schaffneri* is highly misleading and of course of no use at all.

69. *Echeveria lutea* Rose (p. 256-257)

E. lutea was described by Rose in *Jour. Wash. Acad. Sci.* 1: 268, 1911. It had been collected by C.A. Purpus at San Rafael, San Luis Potosí, Nov 1910 :

Echeveria lutea Rose, sp. nov.

Basal leaves numerous, ascending, thickish, 8 to 10 cm. long, light green, glabrous with upturned margins forming a deep trough, acuminate with mucronate tip, the apical portion upturned like a horn; flowering stem 20 to 30 cm. long; leaves 4 to 5 cm. long, linear, semiterete, stiff, flattened on the upper surface, pointed, with a toothed free margin at base; inflorescence a second raceme, at first strongly reflexed but at the flowers often becoming erect; flowers 20 or more, often subsessile; sepals 5, distinct, very unequal, the longest 2 cm. long, free and toothed at base, linear, pointed, ascending; flower bud strongly 5-angled and pointed; corolla lemon yellow, 15 mm. long, the lobes distinct for about two-thirds their length but not spreading except a little at the tip.

Type in U.S. National Herbarium, no. 619743, collected at San Rafael, San Luis Potosi, Mexico, November, 1910, by C. A. Purpus and flowered in Washington, July, 1911.

Walther's text

Instead of quoting the above description Walther wrote a new one from a plant he had received from Dr J. Meyrán.

cate, to 2 mm. wide. Flowers from July on. Description from living plant obtained from Dr. J. Meyrán, of Mexico City.

Comment :

The plant Walther described differed from *E. lutea* Rose in having a much taller flower stem, a simply racemose or bifurcate inflorescence and shorter subequal sepals. As it is again a plant without known origin, his description is worthless.

69b. *Echeveria lutea* var. *fuscata* E. Walther, new variety (p. 258-260)

In November 1957, Moran collected *Echeveria lutea* on the humid east side of the Sierra de Alvarez in San Luis Potosí (M 6338). He made a short description, mentioning that the leaves were purplish and that the plant was past flowering - only an old floral stem was left. He wrote a new quite extensive description when the plant was flowering in the summer of the following year (1958) in San Diego, and again when it flowered in 1960 - by this time the leaves were "rather dark green, paler dorsally".

He shared the plant with University of California Botanical Garden, Berkeley, where it got the number UCBG 57.944. Later a specimen was prepared (CAS 409865). Walther acquired a plant from UCBG and - because of its brownish leaves - described it as the new variety *Echeveria lutea* var. *fuscata*. Accordingly he determined CAS 409865 as type of *E. lutea* var. *fuscata*. He made a description of *E. lutea* var. *fuscata* for which he used Moran's field note descriptions of *E. lutea* M 6338 :

reniform. Flowers from July on. Description from Reid Moran's field notes, in part.

To be sure, Moran did not adopt Walther's var. *fuscata*, and in his article on "*Echeveria lutea* and its discoverer, Carl Purpus" (*CSJ US* 34(1): 8-12, 1962) the photo of M 6338 of 2 July 1960 is of course captioned *E. lutea*. The editor of Walther's posthumous book however used the very same photo to illustrate Walther's description of *E. lutea* var. *fuscata* and captioned it accordingly :

Figure 136. 69b. *Echeveria lutea* Rose var. *fuscata* E. Walther. Flowering plant, $\times 0.5$. Plant photographed in San Diego 2 July 1960; collected near Las Rusias, Sierra de Alvarez, San Luis Potosí, Mexico (Moran 6338, the type collection).

As a matter of course a somewhat different leaf colour does in no way justify the creation of a new variety. Moreover Uhl wrote : "I noted brown-leaved and green-leaved plants in the same population near Guadalcázar, S.L.P." (*Haseltonia* 6, 77, 1998).

D. Leaves fuscous, brownish green, as are the bracts and sepals; leaves to 5 cm. long; inflorescence to 35 cm. tall. 69b. *E. lutea* var. *fuscata*

As a matter of course Walther's indications in the Key to Series Angulatae are null and void. There is no *E. lutea* var. *fuscata*.

Comment :

Walther's var. *fuscata* is a renaming of M 6338, Moran's *E. lutea* from the Sierra de Alvarez in San Luis Potosí, its somewhat more brownish leaves of course do not justify the status of a variety. His publication is of no relevance whatsoever.

70. *Echeveria teretifolia* DeCandolle (p. 261)

De Candolle's description of *E. teretifolia* was published in *Prodromus* 3: 401, 1828. It was based on a very incomplete drawing by the Mexican artist Atanasio Echeverria :

2. *E. TERETIFOLIA*, foliis teretibus acutis sparsis basi subsolutis, spicis secundis paucifloris. ♂ in Mexico. *Sedum teretifolium* icon. fl. mex. ined. Flos omnino prioris.

Walther's text

Walther's first comment on *E. teretifolia* DC was published in *Cact. Succ. J. (Los Angeles)* 7: 70, 1935 :

14. *Echeveria teretifolia* DC., in *Prodromus*, 3:401. 1828.

Sedum teretifolium Mocino & Sesse, in *Flora Mexicana*, ined.

Cotyledon subulifolium Baker, *Saund. Ref. Bot.*, 1869, No. 32.

Echeveria subulifolia Ed. Morren, *La Belge Hort.*, 24:168. 1874.

Cotyledon schaffneri S. Watson, *Proc. Am. Acad.*, 17:354. 1882. (Not *E. schaffneri* of Rose, which is *E. paniculata* A. Gray).

Echeveria bifurcata Rose, *Cont. U. S. Nat. Herb.*, 12:10:439. 1909.

Remarks: Founded by DeCandolle on a rather fragmentary drawing, this species has long remained among the imperfectly known items. However, DeCandolle's "Memoires Crassulaceae," plate 17A., shows a flowering shoot only, but this is secund, bifid, and has sessile flowers, subterete bracts, widely spreading sepals, and a strongly angled corolla, all characters confined to *E. schaffneri* and *E. bifurcata*. Search for valid characters by which to separate these two species reveals none worth while, especially since we know *E. bifurcata* to be fairly plastic in response to a changed environment. The circumstances are perhaps done justice by reducing these species to varieties, as follows:

14a. *Echeveria teretifolia* var. *schaffneri* (S. Watson) EW., new combination.

Leaves somewhat purplish; bracts slightly flattened; corolla 12 to 16 mm. long, yellow to pink.

14b. *Echeveria teretifolia* var. *bifurcata* (Rose) EW., new combination.

Leaves bright green; bracts subterete; corolla usually 10 to 12 mm. long, bright red above, paler below.

Walther argued that *E. teretifolia*'s secund bifid flowering shoot with sessile flowers, widely spreading sepals and a strongly angled corolla are characteristic for *E. schaffneri* and *E. bifurcata* and suggested the new combinations *E. teretifolia* var. *schaffneri* and *E. teretifolia* var. *bifurcata*. In this way he even endowed the not identifiable *E. teretifolia* with two varieties !!! While obviously in 1958 he still was convinced of this classification (determining the Palmer collection of 1905 (US 574903) as *E. teretifolia* var. *bifurcata*), in the monograph a reference to this publication is completely lacking and *E. teretifolia* is considered a species without varieties. Also its similarity with *E. bifurcata* and *E. schaffneri* is not mentioned any longer.

This is one of the extremely rare cases where Walther had to content himself with quoting De Candolle's description.

Errors :

TYPE. None designated. *Lectotype*: DeCandolle, plate 6-A, 1828.

1. Walther's designation of a lectotype is superfluous. The protologue by DC in *Prodromus* clearly indicates the holotype of this plant : *Sedum teretifolium* icon. fl. mex. ined. - so there is no necessity for a lectotype.

p. 240, 1936. Not *E. teretifolia* D. G. Kunze, which is *E. bifida* Schlechtendal.
Sedum teretifolium MOCINO AND SESSE, cited by DeCandolle, *loc. cit.*

2. Kunze wrote : "*Echeveria teretifolia* DC", i.e. he explicitly referred to DC, so there is clearly no "*E. teretifolia* D.G. Kunze".

No comment.

71. *Echeveria bifurcata* Rose (p. 261-263)

Rose described *E. bifurcata* from a plant he himself had collected at Ixmiquilpan, Hidalgo, July 1905, and published it in *Contr. U.S. Natl. Herb.* 12: 439, 1909 :

Echeveria bifurcata Rose, sp. nov.

PLATE LXXVII.

Caulescent, usually forming a simple rosette of leaves; basal leaves lanceolate, acuminate, rather bright green, apparently never coloring very much, 5 to 7 cm. long, 10 to 15 mm. broad, deeply concave on the face; flowering stem 20 cm. long, leafy to the base, the leaves green and not at all glaucous, semiterete, acute, 3 to 5 cm. long; inflorescence 2-branched, each branch a secund raceme 8 to 12 cm. long; pedicels almost wanting; sepals spreading at right angles to the corolla, very unequal, acute; corolla 10 to 12 mm. long, bright red above, paler below.

Collected by J. N. Rose near Ixmiquilpan, Hidalgo, July, 1905, and flowered in Washington in July, 1906.

Type U. S. National Herbarium no. 454971.

Walther's text

Prehistory

In *Cact. Succ. J. (Los Angeles)* 7: 70, 1935 Walther published the following text :

14. *Echeveria teretifolia* DC., in Prodrumus, 3:401. 1828.

Sedum teretifolium Mocino & Sesse, in Flora Mexicana, ined.

Cotyledon subulifolium Baker, Saund. Ref. Bot., 1869, No. 32.

Echeveria subulifolia Ed. Morren, La Belge Hort., 24:168. 1874.

Cotyledon schaffneri S. Watson, Proc. Am. Acad., 17:354. 1882. (Not *E. schaffneri* of Rose, which is *E. paniculata* A. Gray).

Echeveria bifurcata Rose, Cont. U. S. Nat. Herb., 12:10:439. 1909.

Remarks: Founded by DeCandolle on a rather fragmentary drawing, this species has long remained among the imperfectly known items. However, DeCandolle's "Memoires Crassulaceae," plate 17A., shows a flowering shoot only, but this is secund, bifid, and has sessile flowers, subterete bracts, widely spreading sepals, and a strongly angled corolla, all characters confined to *E. schaffneri* and *E. bifurcata*. Search for valid characters by which to separate these two species reveals none worth while, especially since we know *E. bifurcata* to be fairly plastic in response to a changed environment. The circumstances are perhaps done justice by reducing these species to varieties, as follows:

14a. *Echeveria teretifolia* var. *schaffneri* (S. Watson) EW., new combination.

Leaves somewhat purplish; bracts slightly flattened; corolla 12 to 16 mm. long, yellow to pink.

14b. *Echeveria teretifolia* var. *bifurcata* (Rose) EW., new combination.

Leaves bright green; bracts subterete; corolla usually 10 to 12 mm. long, bright red above, paler below.

That means :

1. *E. bifurcata* and *E. schaffneri* are almost identical and

2. *E. teretifolia*, *E. bifurcata* and *E. schaffneri* share the characteristic features, i.e. do not differ substantially. Therefore *E. bifurcata* and *E. schaffneri* do not deserve specific status and are reduced to varieties of *E. teretifolia*.

To back up his new classification Walther resorted to his tried method of searching old and not definitely identified herbarium specimen he could (re)determine to suit his purposes. Palmer 627 / US 574903 seemed very appropriate. The sheet consists of a piece of a flower stem with some bracts, the upper part of a flower stem with a bifurcate inflorescence, the secund racemes with up to 18 almost sessile flowers, half of them placed at fairly long intervals, another piece of a flower stem with

two 6 cm long bracts and 5 single rosette leaves. The latter are lanceolate, acuminate, up to 10 cm long and to 2 cm broad at the broadest part in the middle of the leaf. At the time the specimen was mounted only the generic name *Echeveria* was annotated, no specific name and no indication of the collection locality. A note **above** the determination label in a different hand reads : "5/06 filed as *E. bifurcata*", i.e. subsequently Palmer's collection was identified as *E. bifurcata*. This however did not prevent Walther from completing the determination label - at what date is not known - by adding : "**bifida** / det. E.W." Later, however, this should be undone because Walther had arrived at the conclusion that US 574903 represented the perfect specimen for his 1935 reduction of *E. bifurcata* to a variety of *E. teretifolia*. So on a new label he wrote : "**E. teretifolia var. bifurcata / Det. E. Walther, 5/5/58**". Therefore "bifida / det. E.W." had to be rubbed out as efficiently as possible - but is still slightly visible..... In short : A Palmer collection of unknown origin from 1905 in 1958 was considered suitable to represent Walther's new classification *E. teretifolia* var. *bifurcata*.

Something similar also happened to US 452589. This sheet consists of two bifurcate inflorescences and a separate piece of a flower stem with numerous bracts. Originally it was determined as "*Echeveria*, N° 9090", collected by J.N. Rose, J.H. Painter and J.S. Rose 1905, again without any information regarding the collection locality. At the same time – **5/5/58** – this was also re-determined by Walther as "*E. teretifolia* var. *bifurcata*" in spite of the fact that the pressed plant differs so much from that on US 574903 that the two sheets cannot possibly represent the same species.

In the monograph

however the situation has changed considerably : *E. teretifolia*, *E. schaffneri* * and *E. bifurcata* are all described as apparently unrelated and distinct species ! The explanatory statement reads :

REMARKS. The incomplete nature of the drawing of *E. teretifolia* as published by DeCandolle makes it impossible to identify any known *Echeveria* as *E. teretifolia*. On comparing the two illustrations available, a curious curva-

That means : After the (re)determination of the US specimens in 1958 Walther evidently completely changed his mind.

[* Note that Walther misidentified *E. walpoleana* as *E. schaffneri* - see comments regarding the latter.]

Once more Walther did not cite Rose's description but made a new one "from living plant received from E.P. Bradbury, Fontana, California" – that means again a description from a plant of unknown origin and therefore useless :

nectaries reniform, to over 2 mm. wide. Flowers from June on. Description from living plant received from E. P. Bradbury, Fontana, California.

Errors :

1. No surprise that it differs from that by Rose in several details, particularly in the colour of the flowers which according to Rose are "bright red above, paler below".

Color. Leaves lime-green, neither glaucous nor reddish; bracts and sepals as the leaves; corolla scarlet or grenadine on keel, at base and edges of petals apricot-yellow; inside deep chrome to salmon color; styles peacock-green;

2. And of course the respective listing in the Key to Series *Angulatae* is also wrong :

F. Corolla red to scarlet; sepals not articulated at base. Ixmiquilpan, Hidalgo. 71. *E. bifurcata*

As synonym of *E. bifurcata* Walther indicated :

Echeveria teretifolia POELLNITZ, in Fedde Repert., vol. 39, p. 240, 1936. Not DeCandolle.

3. This is wrong. Von Poellnitz wrote : "53. *Echeveria teretifolia* DC, Prod. III (1828) 401", i.e. he explicitly referred to DC. There is no "*E. teretifolia* Poellnitz".

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Hidalgo: the type (US); Jacala, *M. T. Edwards*, 37/807 (F); (?) *Dr. J. Gregg*, 531 (MO). *Cultivated*: garden of V. Reiter, San Francisco, *E. Walther* in 1932 (CAS).

4. The specimen Edwards 807 consists of a few thin roots, two basal leaves and a flower stem devoid of bracts. The inflorescence is completely lacking, that means the plant is not identifiable.

5. The Gregg specimen consists of several pieces of inflorescences, completely lacking basal leaves and bracts, and any information regarding the collection locality.

Both specimens therefore cannot be cited for *E. bifurcata*.

in both illustrations. The corolla in our *E. bifurcata* appears to be rather more narrow and the sepals somewhat more ascending than in DeCandolle's figure of *E. teretifolia*.

This comparative remark is useless because "our *E. bifurcata*" is a plant of unknown origin, not well corresponding to Rose's description and in view of the fact that "*E. teretifolia* as published by DeCandolle" is unidentifiable, a comparison with the latter is pointless anyway.

Comment :

Walther's description made from a plant of unknown origin is of no use. And in view of the excellent type specimen of *E. bifurcata* the listing of Edwards 807 and Gregg 531 is totally unintelligible. Equally unintelligible is the fact that he omitted to cite the two above mentioned US specimens he had determined as *E. teretifolia* var. *bifurcata*.

72. Echeveria erubescens E. Walther, new species (p. 263-264)

Walther described *Echeveria erubescens* from a plant he had "received from Sr. C. Halbinger, Mexico City in 1935" and cultivated in Golden Gate Park, San Francisco, i.e. from a plant of unknown origin which has never been found in the wild :

Glabrous; stem evident with age, to 6 cm. tall and to 10 mm. thick, usually simple, crowned by a dense rosette of 20 or more leaves, these thick, turgid, lanceolate, acuminate, to 8 cm. long and 2 cm. broad, rounded beneath, more or less concave above, thickest near middle, tapering to base, apex upcurved; inflorescences one or two, to 50 cm. tall; peduncle erect, stout, nearly 10 mm. thick at base; bracts numerous, ascending, oblong-linear, turgid, subterete, obtuse, and mucronate, to 6 cm. long; branches two or three, secund, each with 12 or more flowers; pedicels short, less than 2 mm. long; sepals subequal, longest to 15 mm. long, in one or more of the lowermost flowers the sepals may at times be articulate and spurred at base (as described by Rose for *E. lutea*), deltoid-lanceolate, acute, subterete, upcurved, ascending; corolla urceolate, gibbose at base, to 17 mm. long, 11 mm. in basal diameter, 7 to 10 mm. at mouth; petals thick, sharply keeled on back, somewhat spreading at tips, acute, with prominent basal hollow within; carpels angular, much hollowed on face; nectaries transversely reniform, 2 mm. wide. Flowers from July on. Description from living plant grown in Golden Gate Park, San Francisco.

Color. Leaves grape-green to olive-lake or congo-pink, not glaucous; bracts grape-green; sepals light bice-green; corolla old-rose, to coral-pink at base, not at all yellow; petals inside salmon-orange above; styles parrot-green; nectaries whitish.

TYPE. *E. Walther* in 1936, cultivated in Golden Gate Park, San Francisco; received from Sr. C. Halbinger, Mexico City, in 1935 (CAS, no. 235487).

As type of *E. erubescens* Walther indicated CAS 235487. The sheet consists of an inflorescence with two branches and the rest of a third branch in an envelope, & another small piece of an inflorescence with a different CAS number (245732). The latter is closely resembling the former - why it got a different number is not obvious. **However the determination label reads : "*Echeveria lutea* Rose,** cultivated in San Francisco / Coll. Eric Walther / July 27, 1936". Only after the publication of the monograph a label was added reading "Holotype collection of *Echeveria erubescens* E. Walther" What CAS 235487 really represents is impossible to know – is it an unusually bifurcate *E. lutea* or is it the plant of unknown origin received from Sr. C. Halbinger that Walther had described as *E. erubescens* ?

Comment :

The description of *E. erubescens* strongly suggests that the plant in question was a garden hybrid. As a matter of course Walther's text is of no further relevance.

73. *Echeveria tenuifolia* E. Walther, new species (p. 264)

Walther prepared his description of *E. tenuifolia* from a plant "imported from unrecorded locality in Mexico by the late Dr. M. Morgan of Richmond, California", originally "obtained from F. Schmoll of Cadereyta, Querétaro, no locality being stated":

COLLECTIONS. Mexico. Type (CAS). Hidalgo: dry slopes and ledges with scrub thickets, kilo 229 on highway between Zimapan and Jacala, District Zimapan, *Moore and Wood*, 48/4311 (BH).

Glabrous; stem short or none, rosette simple or with a few offsets; leaves numerous, narrowly linear-oblong, ascending, crowded, thick, semi-terete, acute, to 11 cm. long, 10 to 12 mm. broad, 5 to 6 mm. thick; scapes mostly solitary, to 30 cm. tall or more; peduncle stout, erect; lower bracts ascending to spreading, linear-oblong, subterete, acute to acuminate, to 50 mm. long; inflorescence usually 3-branched, its branches to over 15 cm. long, each with 18 or more flowers; pedicels very short, 1 mm. long; sepals spreading, longest 10 mm. long, terete, acute, subequal, not articulate at base; corolla to 12 mm. long, 10 mm. in basal diameter, 6 mm. wide at mouth; petals strongly keeled on back, deeply hollowed within at base; carpels slightly thickened above middle; nectaries narrowly transverse-reniform, 3 mm. wide. Flowers from August on.

Color. Leaves light hellebore-green to light brownish olive, scarcely or not glaucous; bracts light brownish olive; sepals cress-green, somewhat glaucous; corolla peach-red above, primrose-yellow at base; styles lumiere-green; nectaries straw-yellow.

TYPE. E. Walther in 1948, cultivated in Golden Gate Park, San Francisco, imported from unrecorded locality in Mexico by the late Dr. M. Morgan of Richmond, California (CAS, no. 343069).

REMARKS. Both Dr. Morgan's plant and another once cultivated at the University of California Botanical Garden were obtained from F. Schmoll of Cadereyta, Querétaro, no locality being stated. My new species appears to be

Under TYPE Walther indicated :

TYPE. E. Walther in 1948, cultivated in Golden Gate Park, San Francisco, imported from unrecorded locality in Mexico by the late Dr. M. Morgan of Richmond, California (CAS, no. 343069).

CAS 343069, the type, was prepared in 1948 and determined as "*Echeveria teretifolia* DC var. *tenuifolia* var. nov. E. Walther". For the publication in the monograph however - notwithstanding the fact that it lacked any data - the variety experienced an improvement in its status : it was established as a species in its own right – *E. tenuifolia* Walther.

Errors :

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Type (CAS). Hidalgo: dry slopes and ledges with scrub thickets, kilo 229 on highway between Zimapan and Jacala, District Zimapan, *Moore and Wood*, 48/4311 (BH).

"Moore and Wood, 48/4311" was collected "between Zimapan and Jacala, District Zimapan". The determination label provides a short description, leaving no doubt that this is *E. bifida*. Moreover the plant of Moore and Wood had petals pink at base shading to orange at tip and within – therefore not corresponding at all to those of *E. tenuifolia* which are "peach-red above, primrose-yellow at base". Needless to say that Moore and Wood, 48/4311, cannot be used as a voucher for *E. tenuifolia*.

2. And to indicate that *E. tenuifolia* is occurring in Hidalgo, as Walther did under GEOGRAPHICAL OCCURRENCE (p. 36), is simply a lie – the plant he described having no origin wherever.

Comment :

As a plant with absolutely no information regarding a possible origin in the wild and never found there, *E. tenuifolia* – like *E. erubescens* – may well have been a garden hybrid, and Walther's text is of no further relevance - yet another example of his unscrupulous handling of the facts in order to hide the truth – and again remaining undetected because nobody bothered to verify Walther's texts.

Series 7. Pruinosae E. Walther

colored; petals keeled on back and hollowed at base within, nectaries truncate.

TYPICAL SPECIES. *Echeveria peacockii* Croucher.

REMARKS. The series Pruinosae comes close to the series Angulatae, but

The name *Echeveria peacockii* Croucher belongs in the synonymy of *Dudleya pulverulenta* Nuttall, so cannot possibly be the type of Series *Pruinosae* Walther.

74. Echeveria peacockii Croucher (p. 265-266)

The very short description of *E. peacockii* was published in the *Gardeners' Chronicle* p. 674, 1874:

fronds, thready at the margin ; Echeveria Peacockii, a neat Californian species, introduced by Roezl, having the obovate leaves erect and pulverulent instead of merely glaucous, as in most of the smaller forms of this genus ;

Later in the same year Baker wrote a more detailed description and mentioned that it had been collected by Benedict Roezl in New Mexico and flowered in the collection of Mr Peacock at Hammersmith. So this was clearly an American plant and therefore could not possibly be a species of genus *Echeveria*.

TYPE. None designated. (B. Roezl.)

As no original material of *E. desmetiana* is known to be extant, neotypification is required.

Walther's text

Errors :

1. Obviously Walther failed to notice that the above description could not possibly refer to genus *Echeveria*, i.e. that *Echeveria peacockii* Croucher was a *Dudleya* and not a species of genus *Echeveria*. That means the name *Echeveria peacockii* Croucher belongs in genus *Dudleya*, more precisely in the synonymy of *Dudleya pulverulenta* Nuttall.

2. And obviously Walther also failed to compare the description of *E. peacockii* Croucher, origin California or New Mexico, with that of *Echeveria desmetiana* De Smet of Mexican origin otherwise he would have noticed that they referred to two clearly different plants and that therefore *E. desmetiana* De Smet cannot possibly be a synonym of *E. peacockii* Croucher.

74. Echeveria peacockii Croucher.

Echeveria peacockii CROUCHER, *Gardeners' Chronicle*, new ser., vol. 1, p. 674, 1874;
Britton and Rose, *N. Amer. Fl.*, vol. 22, p. 19, 1905.

Echeveria desmetiana Ed. MORREN, *La Belg. Hort.*, p. 159, 1874.

Cotyledon peacockii (Croucher) BAKER, *Gardeners' Chronicle*, new ser., vol. 2, p. 258, 1874.

Cotyledon desmetiana (Ed. Morren) HEMSLEY, *Biol. Centr. Amer.*, vol. 1, p. 389, 1880.

ILLUSTRATIONS. *Ill. Hort.*, vol. 42, p. 93, 1895; *Jardin*, vol. 11, p. 57, 1897; *Florist*, p. 121, 1875; Van Laren, *Succ.*, p. 79, fig. 107, 1934.

3. The correct name is *E. desmetiana* De Smet in Morren, 1874 – not *E. desmetiana* Morren, because the description was made by De Smet and not by Morren who only used it for the publication in *La Belgique Horticole* **24**, 159. 1874 :

E. Desmetiana.

« Le plus beau de tous les Echeverias est assurément l'*E. Desmetiana*, originaire des hautes montagnes du Mexique. Imaginez-vous l'*E. agavoides*, avec des feuilles plus courtes et mieux fournies, imbriquées comme les pétales d'une rose et d'une couleur franchement bleue; vous n'auriez encore qu'une faible idée de ce qu'est cette nouveauté. Mais comme la plante ne se multiplie pas, je ne sais encore quand je la mettrai au commerce. » L. DE SMET, *in litteris*.

4. Walther quoted none of the above mentioned descriptions but wrote a new one from "locally cultivated material" – i.e. from plants with unknown origin, and therefore his description is again of no use :

sharply keeled, hollowed within at base; nectaries oblique, reniform to 1.5 mm. wide. Flowers from June on. Description from locally cultivated material.

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Coahuila: Valle Seco, S. Paila, near General Cepeda, Hinton, 44/16520 (GH)? Cultivated: Garfield Park, Chicago, Steyermark in 1939 (F); San Diego, Knickerbocker Nursery, 1936 (BH); garden of Victor Reiter, San Francisco, E. Walther in 1931 (CAS); Hort. Thenensis, 1288/11 (BR).

5. The specimen Hinton 16520 is *E. strictiflora*, not *E. peacockii*. Whether the remaining collections are correctly identified is impossible to verify.

Under REMARKS Walther related :

REMARKS. In its strongly pulverulent leaves and bracts, and its quite sessile, sharply pentagonal flowers, *E. peacockii* is quite distinct from all other species, with the exception of *E. subsessilis* Rose. On a visit to Tehuacan I failed to find any trace of *E. peacockii*, but the term "near Tehuacan" may

6. Tehuacan is the locality where *E. subsessilis* had been found, not *E. peacockii* ! Obviously Walther confused *E. peacockii* and *E. subsessilis* and forgot that the former had been collected in the US state of **New Mexico**, and not in Mexico !

Comment :

1. Obviously Walther did not consider it necessary to check both literature and illustrations concerning the two names he listed as synonyms, *Echeveria peacockii* Croucher and *E. desmetiana* Ed. Morren. Otherwise he would have noticed that the name *Echeveria peacockii* Croucher belonged to a plant from California, so could not possibly denote an *Echeveria* because no echeverias are native to California – what he as a longtime resident of California would certainly have known. Therefore the name does not belong in a list of *Echeveria* synonyms. Moreover, this omission had the fatal consequence that he used a *Dudleya* as the type of Series *Pruinosae* Walther !

And because the name *E. peacockii* belongs in genus *Dudleya*, it cannot be used any longer in genus *Echeveria* and had to be replaced by *E. desmetiana*, the earliest legitimate name for this species. [Published in *Crassulacea* 5: 7. 2017.]

https://www.crassulaceae.ch/docs/24ce97a908928a1874658e2bb182b218_Crassulacea%20%20No%205%20-%2029.%20September%202017%20-%20Corrections%20in%20Genus%20Echeveria%201.pdf

2. The description is made from "locally cultivated material", i.e. material of unknown origin and therefore of doubtful identity with the consequence that the description is useless. Conclusion : The chapter on *Echeveria peacockii* is worthless.

75. *Echeveria subsessilis* Rose (p. 266-269)

E. subsessilis was described by Rose in *N. Amer. Fl.* 22: 19, 1905. The plant had been collected by W. Trelease near Tehuacan, Puebla :

25. *Echeveria subsessilis* Rose, sp. nov.

Acaulescent or nearly so. Leaves forming a very dense rosette, much thicker than in *E. glauca*, ovate or obovate, 3–4 cm. long, 2–3.5 cm. broad, only slightly narrower at base, often obtuse, keeled above, obtuse to truncate, strongly mucronately tipped somewhat back of the margin, very glaucous, rosy-margined; flowering stem slender, 15 cm. tall, leafy-bracted above; raceme secund, at first hooked; bracts broadly ovate, 2–3-spurred at base; flowers about 20, subsessile, the lower pedicels not elongating; sepals very unequal, the lower ones about half the length of the corolla; flower-buds fluted; corolla 10 mm. long, salmon-red, the lobes erect, acute, connivent in age; stamens and erect style about two-thirds the length of the corolla; stigmas green.

Collected by Dr. Wm. Trelease near Tehuacan, Puebla, Mexico; flowered in June, 1904 (Mo. Bot. Gard. accession no. 130/04/30).

This species seems to be nearest *E. Peacockii*, having glaucous leaves, a very similar inflorescence and flowers. It differs chiefly in that the leaves are shorter and somewhat different in shape, the flowers not strictly sessile and the floral bracts are broader. The rosettes of leaves suggest *E. cuspidata* but the inflorescence is quite different. *E. glauca* and *E. secunda* have very different leaves and pedicels.

Walther's text

As usual Walther preferred not to quote the original description but to produce a new one, and also as usual the plants he used are of unknown origin with the consequence that his description is again worthless and unusable :

mm. wide, oblique, elliptic-trapezoid in outline. Flowers from May on.
Description from plants flowering in Golden Gate Park, San Francisco, 1958.

Errors :

Usually stemless or nearly so, stem to 15 cm. long, procumbent, without

1. "Stemless or nearly so, stem to 15 cm" ? ? ?

offsets; leaves relatively few, 15 to 20, rather thick, shallowly concave above,

2. However figs. 139 & 141 show plants with much more than 15 – 20 leaves. In his review of Walther's monograph Reid Moran refers to this as follows : "He separates *E. subsessilis* in part by its fewer and narrower leaves; the number of leaves is given as 15 to 20, but a cited illustration (fig. 141) and a cited collection (fig. 139) clearly have many more than 20." Accordingly the indication in the Key to Series *Pruinosae* is also not correct :

C. Leaves few, broad, thick; bracts and sepals broad. South of Tehuacan, Puebla.
75. *E. subsessilis*

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Puebla: vicinity of Tehuacan, *Trelease*, 04/30 (MO, type); near Tehuacan, *Rose, Painter and Rose*, 05/4741 (US), *Rose*,

3. Rose, Painter and Rose, is 05/A 741 not 05/4741.

Under REMARKS Walther wrote :

REMARKS. I had seen nothing of this species in cultivation until the receipt of several plants from Salinas, near Tehuacan, from Dr. D. K. Cox. These are quite distinct from the commonly grown *E. peacockii*, but agree very well with both Dr. Rose's description and the photographs at the Missouri Botanical Garden. From typical *E. peacockii* this differs in its broader leaves, bracts, and sepals.

4. In view of the fact that the plants Walther described as *E. peacockii* - the "commonly grown *E. peacockii*" - were of unknown origin, one wonders wherefrom he knew what the "typical *E. peacockii*" is. And one wonders also why he described *E. subsessilis* from plants in his collection at Golden Gate Park, origin unknown, and not from the "plants from Salinas, near Tehuacan, from Dr. D.K. Cox", i.e. from plants from the region of the type locality.

In the Key to Series *Pruinosae* Walther indicated :

C. Leaves numerous, relatively thinner, narrower; bracts and sepals narrower.	
	74. <i>E. peacockii</i>
C. Leaves few, broad, thick; bracts and sepals broad. South of Tehuacan, Puebla.	
	75. <i>E. subsessilis</i>

5. The indications regarding these two names are futile because in both cases they refer to plants of unknown origin.

Figure 139. 75. *Echeveria subsessilis* Rose. Flowering plant, $\times 0.5$. Plant photographed in San Diego 13 June 1961; collected near Santiago Acatepec, Puebla, Mexico (Moran 6355, a cited collection).

The captions of figs 139 & 140 are untruthful. They suggest that Walther himself had cited this collection – an absurdity in view of the fact that the plant had only flowered and could be identified correctly in 1961 - two years after Walther's death ! Of course they are deliberately formulated in this way to conceal that Walther himself had designated no photos for his text of *E. subsessilis*. In the same intention the photos are not credited : the name of the photographer, Reid Moran, is not mentioned. Fact is, plant and photos are by Reid Moran.

Comment :

In view of the cited illustrations of *E. peacockii*, the photo of *E. subsessilis* from the US National Herbarium and the plants brought back by Dr. D.K. Cox it is not comprehensible why Walther did not notice that they all referred to one and the same and not to two distinctly different species. His description is of course useless anyway.

76. *Echeveria shaviana* E. Walther, new species (p. 270-272, 221)

Walther's description of *E. shaviana* was published for the first time in his monograph 1972. The plants had been collected already in 1948 by Meyer & Rogers.

Plants glabrous; rosettes without evident caudex, apparently simple, ultimately becoming cespitose (?), to 10 cm. in diameter; leaves very numerous, crowded, to 50 or more in each rosette, to 5 cm. long or more, 15 to 25 mm. broad or more, apparently thinnish, flat or at times with margins finely crenulate or strongly undulate-crispate, at base narrowed into long, narrow petiole which may be less than 5 mm. wide for a distance of 15 to 20 mm., at apex triangular-rounded and deltoid-mucronate; inflorescences one or two or more; scape to 30 cm. tall, erect; peduncle 2 to 3 mm. thick at base; bracts to 10 or more, appressed to ascending, linear- to oblong-obovate, acute or shortly acuminate, long-spurred at base, 10 to 15 mm. long; racemes simple secund, to 12 cm. long, strongly nodding in bud, with 12 to 13 or more flowers; pedicels very short, rarely over 2 mm. long; sepals ascending, not appressed, linear- to deltoid-lanceolate, acute, unequal, longest to 9 mm. long; corolla erect at anthesis, 10 to 13 mm. long, 6 to 7 mm. in basal diameter, pentagonal; petals narrow, keeled, the slender tips somewhat spreading. Flowers from June on.

Color. (After Kodachrome by Meyer and Rogers.) Leaves artemisia-green, but more or less glaucous-pruinose; sepals as the leaves, but tinged purplish; corolla rose-color.

Under TYPE Walther indicated :

TYPE. Collected on limestone in oak-pine woods near Dulces Nombres, elevation 1850 m., Nuevo Leon at border with Tamaulipas, Mexico, Meyer

- This indication is taken from a prefab label evidently used for many collections by Meyer & Rogers. In a letter 28 May 1959 from Dr F.G. Meyer to Walther the collection locality of *E. shaviana* is indicated more precisely as : "On boulders in open places, el. 1690 m., along road between Adelaida (and) Dulces Nombres, Tamaulipas, Mexico".

Errors :

and Rogers, 48/2527 (MO, no. 1598523). Isotype (G). Paratype. Mexico.

1. To which specimen "paratype" refers is not indicated.

Tamaulipas: Sierra del Tigre, Rancho del Cielo above Gomez Farias, Dressler, 57/1838 (MO).

2. Dressler 1838 is not extant at MO.

As ADDITIONAL COLLECTION Walther indicated :

ADDITIONAL COLLECTION. Mexico. Coahuila: near General Cepeda, Palmer, 04R:04.7 (?) (US).

3. The correct data read : Palmer Aug 1904, Rose n° 04.7.

and pruinose foliage. It might be considered transitional between *E. runyonii* from northeast Mexico, and *E. peacockii*. The numerous, thin, petioled leaves distinguish *E. shaviana* from *E. peacockii* while in its smaller leaves

4. In view of Walther's misconception of *E. peacockii* (see comment to 74. *E. peacockii*) the comparison with that species is futile.

Figure 143. 76. *Echeveria shaviana* E. Walther. Inflorescence, $\times 2$. Plant flowering in San Diego 30 July 1964; of unknown origin (Moran 9895).

5. This is wrong. Moran 9895 – according to CAS 820872 – is "from garden of Myron Kimnach, El Cerito, Calif.; from the type collection."

PLATE FIVE, LOWER

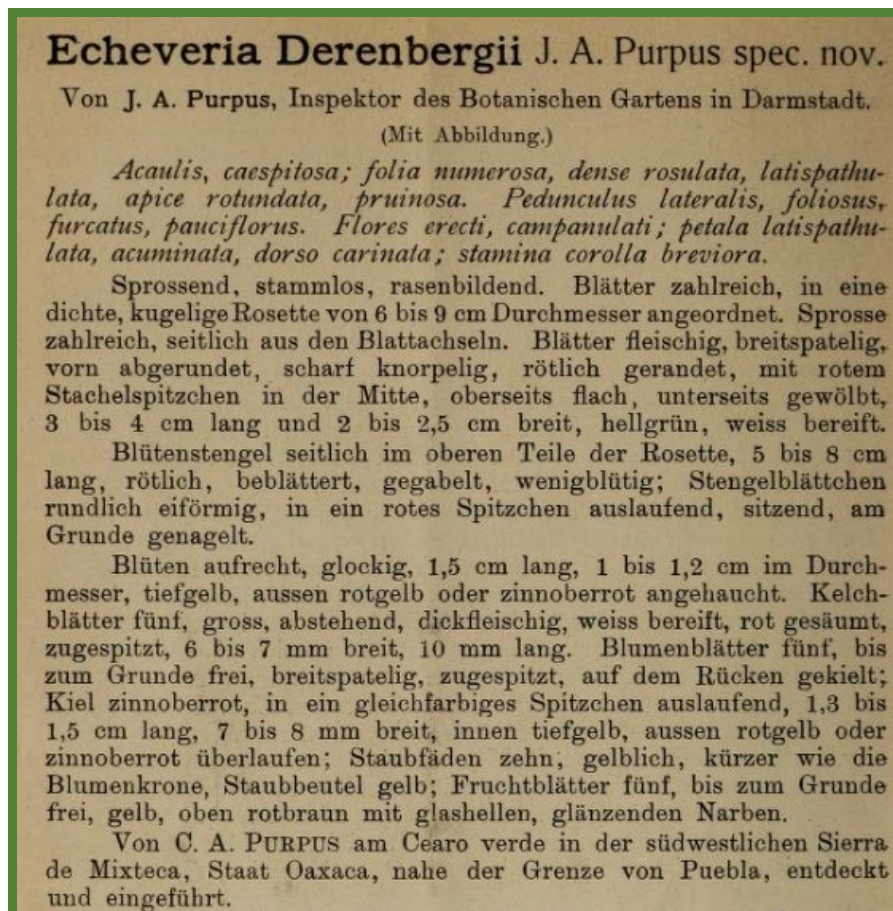
76. *Echeveria shaviana* E. Walther. Rosettes, $\times 1.4$. Cultivated plants of uncertain origin, photographed in Berkeley 29 August 1962. [See page 270]

6. The plant of uncertain origin is not the correct *E. shaviana*.

No comment.

77. *Echeveria derenbergii* J.A. Purpus (p. 272-274)

E. derenbergii was described by J.A. Purpus and published in *Monatsschr. Kakteenkunde* 31: 8, 1921. The plant had been collected by his brother C.A. Purpus on Cerro Verde, Sierra de Mixteca, Oaxaca, 1908 :



Walther's text

hollow within; nectaries ellipsoid, to 1.5 mm. wide. Flowers from April on.
Description from plants cultivated in local gardens.

Unfortunately Walther's description is again made "from plants cultivated in local gardens", i.e. with unknown origin and therefore useless.

broad; inflorescences to four or more, to 10 cm. tall, usually simple, or 2-branched, secund-racemose; peduncle slender, ascending; bracts ascending to appressed, obovate-cuneate, acute or shortly acuminate, keeled beneath, to 15

These plants differ from that described by Purpus / the type, in having a simple instead of a bifurcate inflorescence and obovate instead of ovate sepals.

Comment :

Because made from locally cultivated plants Walther's description is of no use.

78. Echeveria runyonii Rose ex E. Walther (p. 274-275)

In 1922 J.N. Rose received a plant, sent from Brownsville, Texas, by Robert Runyon who had collected it as a cultivated plant in a garden. The following year it flowered in Washington and Rose described and named it – for its collector – *E. runyonii*. Rose's description was never published during his lifetime and it only became known when Walther published it in *CSJ US* 7: 69. 1935 and again in his monograph :

Stem short or none; leaves rosulate, upcurved at the base, spatulate-cuneate, truncate or retuse, very glaucous, 6 to 8 cm. long, 3 to 4 cm. broad, flattish; inflorescences two or more, 15 to 20 cm. tall; bracts numerous, appressed, flat, linear-oblong, 2 to 4 cm. long; racemes bifid, strongly nodding before anthesis; pedicels to 4 mm. long; sepals widely spreading, very unequal, longest to 15 mm. long; corolla sharply pentagonal, pink to scarlet, glaucous in bud, to 20 mm. long and 10 mm. in diameter; segments erect or slightly spreading.—(Near *E. subsessilis* Rose, on account of its short pedicels; Rose in Mss.)

Type specimens U. S. National Herbarium No. 1319920 (Runyon 22/R:339).

Walther's text

Walther had never seen the original plant, he only knew the photo on the herbarium sheet US 1319921 and the description by Rose.

Errors :

TYPE. *R. Runyon*, 22/R:339, cultivated (US, no. 1319920).

1. The n° indicated on the type specimen is 22.339. "22" refers to the year when Rose got the plant, it is not a Runyon n°.

OCCURRENCE. Mexico. Tamaulipas: from cultivation in Matamoros, Victoria, etc.

2. This is wrong. The plant sent to Rose originated in a garden in Brownsville, Texas, not in Matamoros, Tamaulipas. This is explicitly stated on N.Y. Bot. Gard. 52249 & 52724 – the determination labels of both sheets read : "*Echeveria Runyonii*, Brownsville, Texas", material of 22.339 received "via Dr. Rose". And information regarding cultivation in "Victoria etc" could not be traced.

B. Leaves 6 to 10 cm. long, thinnish; corolla to 20 mm. long. Northeast Mexico.
78. *E. runyonii*

3. The indication that the habitat of *E. runyonii* is Northeast Mexico is simply wrong, it is an invention by Walther.

Comment :

The plant described by Rose as *E. runyonii* was a plant from cultivation, a wild origin in Mexico was not known and was not found during Walther's lifetime.

78b. Echeveria runyonii var. macabeana E. Walther (p. 275-276)

While Walther, as already mentioned, never had seen / had Rose's *E. runyonii*, he knew a somewhat similar plant which had been distributed by the Californian nursery McCabe and described and published it in *Cactus and Succ. Jour. Amer.* 7: 71, 1935 as *E. runyonii* var. *macabeana* :

12a. *Echeveria runyonii* var. *macabeana* EW., new variety.

A typo foliis acutis, non retusis abludens.

Similar to the type, but leaves acute, color deep grape-green, but very glaucous and so appearing pale medici-blue; peduncle upcurved at base, erect above; bracts many, somewhat spreading, obovate-oblong, acute, to 4 cm. long; racemes two, strongly nodding before anthesis, each with 10 or more flowers; pedicels stout, to 6 mm. long; sepals ascending-spreading, longest to 11 mm. long, linear to ovate-lanceolate, free nearly to base, color pale violet-plumbaceous; corolla 19 to 20 mm. long, 10 mm. in basal diameter, color alizarine-pink in bud, later without bloom, scarlet; segments thick; with subulate apiculus and deep basal hollow, inside given a coral-red color by many crowded, fine red lines; carpels sea-shell pink; styles slender; nectaries thick, truncate, coral-pink due to presence of many small, red dots.

Type specimen: Cal. Academy of Sciences No. 223894 (E. Walther 35/51).

Remarks: Named in honor of its original local disseminators; this is certainly not a hybrid, as stated, since it is most unlikely that two so very similar plants could originate at the same time in such widely separated localities.

cate, lunate-reniform, to 2.5 mm. wide. Flowers from August on. Description of living plant purchased from McCabe Cactus Garden, San Diego, California.

Errors :

tivation at this time. Nothing is known as to its origin, and possibly it is a locally raised seedling, the seed having come from a typical plant of *E. runyonii*. However, it is not necessary to presuppose hybridization to account for the slightly different leaf shape.

1. Walther admitted that his new variety *macabeana* was a plant from a nursery without known origin. In view of the fact that Rose's *E. runyonii* obviously was not present in California, the suggestion that var. *macabeana* possibly is a seedling from the typical plant lacks any basis.

2. The First Description of *E. runyonii* var. *macabeana* was published 1935. Walther indicated that it differs "a typo foliis acutis, non retusis abludens". Apparently he overlooked that Rose had described the leaves of typical *E. runyonii* as "truncate to retuse to **acute**", i.e. clearly no need to create a variety because of "acute leaves".

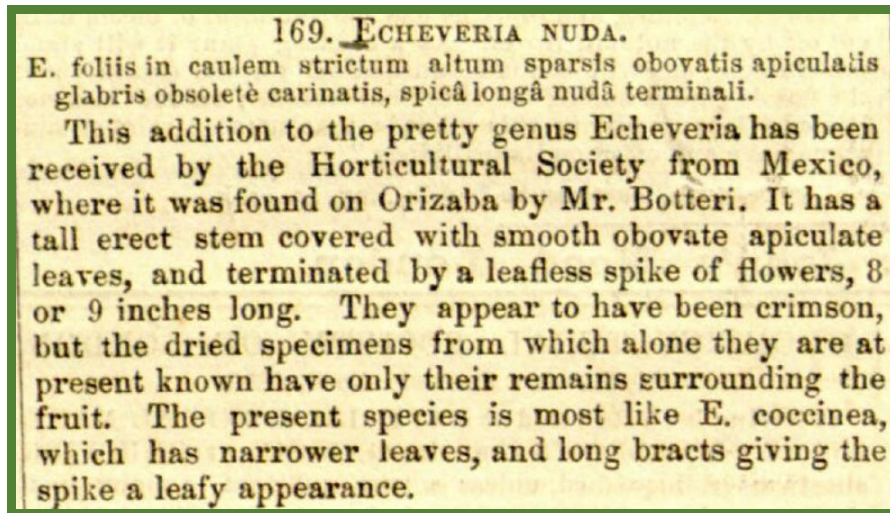
Comment :

To separate a plant with more acute leaves as a variety of *E. runyonii* is in no way justified. Walther's description does not make sense.

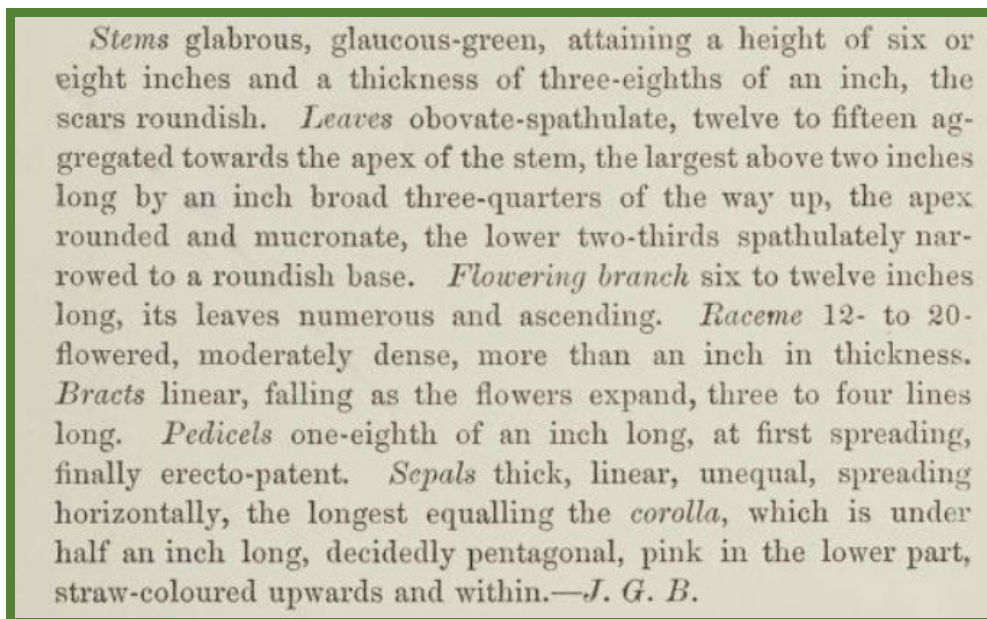
Series 8. Nudae E. Walther

79. Echeveria nuda Lindley (p. 278-281, 221)

Lindley's description of *E. nuda* was first published in *The Gardeners' Chronicle and Agricultural Gazette* 17, 1856, it was made from a plant Mr Botteri had found on Orizaba :



In 1869 Baker made a more detailed description from a plant grown by W.W. Saunders of unknown origin but quite possibly from the original introduction and published it with a partly coloured plate (n° 57) in *Saunders' Refugium Botanicum* 1 as *Cotyledon nuda* :



Walther's text

Errors :

1. Walther did not quote either Lindley's or Baker's description but produced a new one, unfortunately not indicating from which plant(s) he made it. In any case, it does not correspond either to Baker's description in *Saunders' Refugium Botanicum* I, 1869 or to Reid Moran's description of Moran & Kimnach 7775, collected at El Paraje, 4 miles above Acultzingo, shown in fig. 148 and plate 5, upper, p. 221.

The differences :

Leaves : Walther : 6-13 cm long, 2.5-5 cm wide, obovate-spathulate to oblanceolate / Moran (M 7775) : 3-3.5 cm long, 1,8-2.3 cm wide, obovate, cuneate.

Sepals : Walther : the longest 9 mm long, i.e. longer than the corolla / Moran (M 7775) : the longest 12 mm long, i.e. not longer than the corolla.

Corolla : Walther : 8 mm long, 6.5 mm wide / Moran (M 7775) : 11-12 mm long, 8-8.5 mm wide.

In short - the leaves of Walther's plant are far too big while the corolla is too small. That means the plant Walther considered to be *E. nuda* and used for his description was not the correct species – the respective specimens are CAS 478853, 478854, 478855.

And as far as Walther's indications regarding *E. nuda* in the Key to Series *Nudae* are concerned, they do not even match his description : the leaves are described as "broadly lanceolate" :

E. Leaves broadly lanceolate; sepals widely spreading at least as long as the narrow corolla. Puebla, Veracruz. 79. E. nuda

Under COLLECTIONS Walther indicated :

COLLECTIONS. Mexico. **Puebla: Tehuacan, P. Maury, 1885/1091 (NY);**

2. The name "P. Maury" is nowhere mentioned on this specimen.

Mt. Orizaba, Wawra, /955 (W), Schlumberger, 1853/138 (BR); Orizaba

3. "Mt. Orizaba" is in Veracruz, not in Puebla.

Mt. Orizaba, Wawra, /955 (W), Schlumberger, 1853/138 (BR); Orizaba

4. The specimen is annotated as "Orizaba", which means this collection is also in Veracruz, not in Puebla; moreover the collector is **Fred Müller**, not Schlumberger.

Mt. Orizaba, Wawra, /955 (W), Schlumberger, 1853/138 (BR); Orizaba Railroad, Purpus and Meyer, 04/1898 (NY,UC); Boca del Monte, Arsene,

5. "Orizaba Railroad" – more precisely "along R.R. to Orizaba City" is of course also in Veracruz, not in Puebla, and "04/1898" is wrong, the correct number is 04/**19981**.

Railroad, *Purpus and Meyer*, 04/1898 (NY,UC); Boca del Monte, *Arsene*, 07/2141 (MO). Botteri's material, i.e. no. 390, from Orizaba belongs to *E.*

6. Boca del Monte, Arsène, 07/2141 was determined as "*Echeveria gibbiflora* DC" which is wrong. Walther redetermined it as *E. nuda* Lindl. However this is also wrong. The specimen represents a much more robust plant, the flowers have huge appressed sepals and side-branches of the raceme are not rarely two-flowered, i.e. it is **not *E. nuda***.

Under REMARKS Walther wrote :

REMARKS. *Botteri* no. 390, referred to *E. nuda* by Poellnitz, if identical with a duplicate in the Gray Herbarium, U.S. photograph no. 399888 is *E.*

7. This is not at all correct. Von Poellnitz only wrote : "Type from Orizaba, Botteri" which is exactly what Lindley had indicated. Neither of them mentioned a Botteri number.

Comment :

Though Walther claims to have found *E. nuda* in habitat several times it obviously did not occur to him that the plant he used for the description was not the correct species – or had he misidentified plants in habitat ? ? The description is useless and misleading.

80. *Echeveria montana* Rose (p. 281-283, 224)

June 16, 1894, C.G. Pringle collected a plant on the Sierra de San Felipe, Oaxaca which some time later was named and described by Rose as *E. montana* and published in *Bull. New York Bot. Gard.* 3: 6, 1903 :

Echeveria montana Rose, sp. nov.

Caulescent; leaves in a dense rosette at the top of the stem, orbicular or obovate, somewhat narrowed below, glabrous, 5–6 cm. long; flowering stems somewhat granular-roughened above, rather densely leafy-bracted below, 2–3 dm. long, many-flowered; inflorescence an equilateral raceme; sepals ovate-lanceolate, 6–7 mm. long; corolla 1 cm. long.

Collected on ledges, trees, etc., by C. G. Pringle on the Sierra de San Felipe, June 16, 1894 (no. 4706, type). Here seems to belong Charles L. Smith's no. 860 from the same locality. Resembling somewhat *E. Pringlei*, but not pubescent.

The description is based on dried material, that means the papillosity characteristic for this species was not evident. Nevertheless the flowering stem is described as granular-roughened.

Walther's text

Walther made a new description from a plant collected by T. MacDougall in the region of Cerro San Felipe.

divergent only when fully mature. Flowers from June on. Description from living plant received from Mr. Thomas MacDougall.

However this plant was completely smooth.

Errors :

Under OCCURRENCE Walther wrote :

OCCURRENCE. Mexico: Oaxaca, Sierra de San Felipe (Type); at high elevations between Tehuantepec and Miahuatlan. Guatemala: usually on shaded

1. "At high elevations between **Tehuantepec and Miahuatlan**" is an unfounded indication, there are no specimens extant which would support this information.

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Oaxaca: type (US), isotypes (G,GH,MEXU,MO, NY,PH,US,W); Sierra de San Felipe, Andrieux, 1831/362 (G). Chiapas:

2. "Sierra San Felipe, Andrieux, 1831/362 is not extant at G.

NY,PH,US,W); Sierra de San Felipe, Andrieux, 1831/362 (G). Chiapas: Sierra Madre, Cerro Laguna, Mapastepec (according to no. 2047 Matuda).

3. The specimens in question are far too poor to allow a reliable identification and there are no additional collections in Chiapas known which would substantiate the occurrence of *E. montana* in Chiapas.

4. Regarding the occurrence of *E. montana* in Guatemala Walther indicated :

variations between Tehuantepec and Miahuatlan. Guatemala: usually on shaded cliffs, 1800 to 3400 m., Solola; Quetzaltenango; San Marcos; Huehuetenango.

Guatemala. Huehuetenango, Standley, 41/81933 (F); Quetzaltenango, Standley, 41/86093 (F); Steyermark, 40/35766 (F); Volcan Tejumulco, Steyermark, 40/34017 (F). Cultivated: Golden Gate Park, San Francisco, E. Wal-

E. Leaves obovate; sepals ascending, shorter than the broader corolla. Oaxaca to Guatemala. 80. *E. montana*

and accordingly he also indicated *E. montana* under GEOGRAPHICAL OCCURRENCE for Guatemala.

It was Standley and Steyermark (1946) who reported *E. montana* from Guatemala, but they worked from dried material and R. Moran, after having examined the specimens on which their report was based, did not consider any of them to be *E. montana* :

- Standley 86093 & 81933 and
 - Steyermark 34960, 36547, 34017, 35766 & 35829,
- all housed at F and wrongly determined as *E. montana*.

Comment :

Moran's review of Standley's and Steyermark's specimen in *CSJ US 37* (6): 178-183, 1965, revealed not only that they do not represent *Echeveria montana* but revealed also that Walther omitted such a critical review, with the result that he erroneously indicated the occurrence of *E. montana* in Guatemala. The same happened in the case of Chiapas where he relied on specimens that are not clearly identifiable. He thus conveyed a completely false picture of the distribution of *E. montana*.

Describing a completely smooth plant as *E. montana*, notwithstanding the fact that in Rose's description the flowering stems are stated to be granular-roughened, without pointing out this discrepancy means spreading a false idea of *E. montana*.

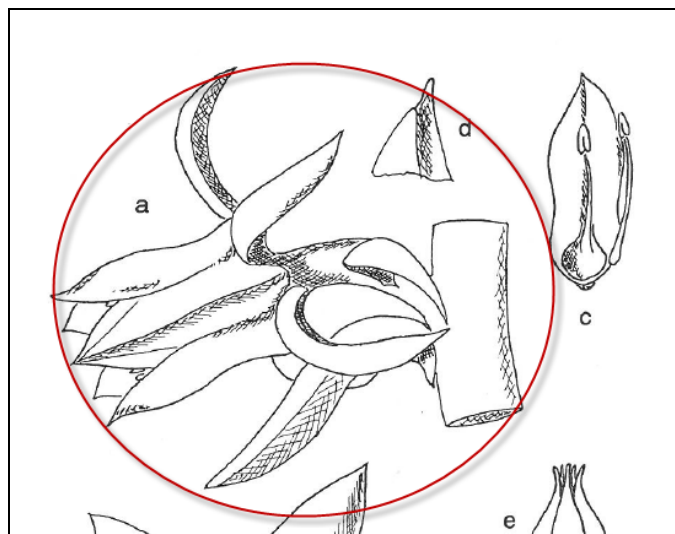
81. *Echeveria viridissima* E. Walther (p. 283-285)

Walther described *E. viridissima* "from living material obtained from UCBG " and published it in *Cact. Succ. J. (Los Angeles)* 31: 22-24, 1959. The protologue consists of a detailed text, a sketch and 3 photos (included unchanged in the monograph) :

Description: (From living material obtained from UCBG.)

Glabrous subshrub with numerous ascending to spreading branches, to 20 cm. tall or more; leaves subrosulate, ascending to spreading, obovate to cuneate, shortly mucronate, flat or shallowly concave above, faintly keeled beneath, to 10 cm. long and 6 cm. broad; inflorescences 1 or more, arising from below the leaves, erect above, racemose to subspicate in upper portion, subpaniculate in lower part; peduncle stout, 8 to 12 mm. thick at base; bracts numerous, broadly ovate, mucronate, 35 mm. long, ascending to strongly recurved; some of the lowermost pedicels with 2 or more flowers, uppermost single-flowered, 4 to 8 mm. long, subangular, with 2-3 bractlets, these recurved; sepals subequal, ascending to recurved, linear-lanceolate, aristate-acuminate, scarcely united at base, longest to 20 mm. long, faintly keeled beneath; corolla pentagonal, bi-gibbose, to 16 mm. long and 10-13 mm. in diameter; petals sharply keeled, deeply hollowed within at base, at apex slightly spreading, acuminate; nectaries transversely-reniform, to 2.5 mm. wide. Fls. IV-XI.

Color: Leaves biscay-green, in sun tinged indian-red at edges, apex and on lower surface; peduncle to spectrum-red in sun; bracts as the leaves; sepals biscay-green tinged morocco-red at tips in sun; corolla spectrum-red; petals light-orange-yellow inside; carpels clear dull-green-yellow; styles morocco-red; nectaries apricot-yellow.



The type of *Echeveria viridissima* is MacDougall's B-134, collected at San Pedro Mixtepec, 10'000 ft. alt. Tom MacDougall passed plants to UCBG where they got the acc. n° 56.805. Several specimens were prepared and distributed to – among others - K, US, NY, G, UC and MEXU, currently available online. They give a good idea of the characteristics of the plant in question, apart from the fact that - of course – they do not give information regarding the colours of living plants and possible papillosity.

The plant Walther described has leaves 10 cm long and 6 cm wide, bracts 35 mm long, sepals to 20 mm long and a 16 mm long corolla. The sketch shows a rather big corolla with huge recurved sepals. In short, this is a rather big plant with quite respectable flowers. The photos however show a plant with leaves only half as long and rather small flowers without huge sepals. In other words : While the description and the sketch do not agree at all with the type specimen B-134, the photos are correct, i.e. the photos show B-134. In other words : The protologue is a mixture of contradictory components. Amazingly no one has noticed this until today.

The indication in the Key to Series *Nudae* of course refers to the plant Walther had described not to B-134, the correct *E. viridissima* :

F. Lowermost pedicels with several flowers each. . . 81. <i>E. viridissima</i>
--

Comment :

What has happened ? Walther stated that he had made the description "from living material obtained from UCBG". But as the description evidences this "living material" was not from B-134.

Because the photos illustrating the protologue show the correct plant it can be assumed that the material from UCBG was correct and that Walther subsequently confused it with other "material" (easily possible with the known mess in his collection in Strybing Arboretum) which - as the naming demonstrates - must have been extremely green! In view of the fact, that the photos which Walther himself added in the protologue are correct, it is totally incomprehensible that he did not notice that he had described the wrong plant. As far as the name is concerned, it may not be really appropriate for B-134 – photos of plants in habitat do not show a distinctly green plant. In short : The name is fixed to the type, Walther's description titled "*E. viridissima*" however is not referable to the type, this means the true *E. viridissima* is lacking a description. Plants currently circulating as *E. viridissima* are only correctly named if they originated at the type locality. And Walther's description should best be wiped out because it conveys a completely false image of *E. viridissima*.

82. *Echeveria guatemalensis* Rose (p. 286-287)

Rose described this species from a plant William R. Maxon had collected on Volcan de Agua at 2700-3000 m, March 22, 1905 in Guatemala. The description was published in *Contrib. U.S. Natl. Herb.* 12: 395, 1909 :

Echeveria guatemalensis Rose, sp. nov.

PLATE XLVII.

Stems branching especially at base, resembling somewhat both in habit and foliage *Sedum prealtum*, 10 to 15 cm. high; leaves equally distributed on the stem, alternate, spreading nearly at right angles to the stem, fleshy but flattened and thinner than in most species of this genus, 2 to 4 cm. long, 2 cm. or less broad, spatulate, with a flat surface above, rounded at apex but with a decided mucro, rounded below into a broad petiole, pale green, slightly glaucous, the margins sometimes tinged reddish; flowering branch 20 to 30 cm. long, from the axil of a leaf near the middle of the stem, reddish, bearing numerous reddish leaves; inflorescence an equilateral raceme bearing 20 or more flowers; pedicels 3 to 4 mm. long; sepals linear, acute, spreading nearly at right angles to the pedicels; corolla buds broadly ovoid, acute, the corolla when open 10 mm. long and broad in proportion, pinkish below, yellowish above, the lobes acute; stamens 10, shorter than the corolla.

Collected by Mr. William R. Maxon, on Volcan de Agua, at an altitude of 2,700 to 3,000 meters, Guatemala, March 22, 1905 (no. 3726) and flowered in Washington, May, 1907.

U. S. National Herbarium no. 399713.

Walther's text

Once more Walther did not quote Rose's description but wrote a new one "from living plant obtained from Don B. Skinner" – so once more a useless description because the received plant was of unknown origin :

rowly transverse-lunate-reniform. Flowers from June on. Description from living plant obtained from Don B. Skinner of Los Angeles, California.

Errors :

1. The plant from Don Skinner differs from the type as follows :

Stem : Rose : 10-15 cm / Walther : to 25 cm.

Leaves : Rose : fleshy / Walther : thin.

Pedicels : Rose : 3-4 mm / Walther 9 mm.

Corolla : Rose 10 x 10 mm / Walther : 12x12 mm.

Flowers : Rose : pinkish below and yellowish above / Walther : rose-doree.

In short : The plant from Skinner was **not E. guatemalensis**.

Under OCCURRENCE Walther wrote :

OCCURRENCE. Guatemala: Jalapa; Sacatepequez; Chimaltenango; Solola, Totonicapan; Quetzaltenango; San Marcos. Honduras: near Tegucigalpa. Nicaragua: in Sierra west of Tinotega.

2. The correct name is Jinotega.

Under COLLECTIONS Walther listed :

COLLECTIONS. Guatemala: Volcan del Agua, *J. Donnell-Smith*, 92/3633

3. "J. Donnell-Smith" : the correct name of this collector is **John Donnell Smith**.

Steyermark, 42/46297 (F); Santa Elena, *Skutch*, 33/444 (US); Dept. Jalapa,

4. "Steyermark 42/46297" : the correct number is 42/46**927**

Kellerman, 08/8015 (NY); Quetzaltenango, *Skutch*, 34/798 (GH). Honduras: on rocks, 5 kilos southwest of Tegucigalpa, near La Soledad, 1200 m., *A. Molino*, R:47/725 (F). Nicaragua: Cerro de la Cruz, 1200 to 1400 m.

5. Molina 47/725 from Honduras : the specimen represents *E. maxonii*, not *E. guatemalensis*.

in Sierra west of *Tinotega*, Dept. *Tinotega*, *Standley*, 47/11104 (F).

6. "Sierra west of Tinotega" and "Dept. Tinotega": should read **Jinotega**.

Under REMARKS Walther wrote :

REMARKS. In its scattered *thin leaves*, *E. guatemalensis* recalls *E. pittieri*, but that species has very short pedicels, appressed sepals, crowded flowers, and

7. The "thin" leaves disagree with Rose's description where the leaves are fleshy and resembling those of *Sedum praealtum*. The "thin" leaves are also indicated in the Key to Series *Nudae* :

G. Leaves scattered, never rosulate, often tinged deep red in sun, *thin*, flexible. Guatemala, Honduras. 82. *E. guatemalensis*

Comment :

Walther's description, made from a plant not corresponding to the type, is unusable.

83. *Echeveria quitensis* (Humboldt, Bonpland and Kunth) Lindley (p. 287-289)

E. quitensis was first described as *Sedum quitense* by Kunth in *Humboldt, Bonpland and Kunth, Nov. Gen. Spec.* 6: 46-47, 1823 :

4. SEDUM QUITENSE. †

S. herbaceum; glabrum; foliis alternis, supra planis, subtus convexis, spathulato-lanceolatis, acutiusculis, integerrimis; racemis elongatis; floribus pedicellatis, aurantiacis; petalis oblongis, acuminatis.

Crescit in ruderatis prope Guallabamba, et in muris urbis Quito, alt. 1492 hex. ☞ Floret Januario.

CAULES teretes, glabri. FOLIA alterna, sessilia, spathulato-lanceolata, acutiuscula, carnosae, subtus convexae, supra plana, integerrima, glabra, 20-21 lineas et longiora, 5 lineas lata. RACEMI elongati, erecti, multiflori. FLORES sparsi, pedicellati, aurantiaci, magnitudine praecedentis; pedunculis 4 lineas longis, glabris, basi unibracteatis rhachique glabris; bractea lanceolata, carnosae. CALYX quinquepartitus, glaber, persistens; laciniis ovato-lanceolatis, acuminatis, planis, corolla duplo brevioribus. PETALA quinque, calyci inserta, oblonga, acuminata, basi lata, planiuscula, dorso carinata, glabra, aequalia, patula. STAMINA decem, corolla breviora; quinque supra basim petalorum, quinque, reliquis parum longiora, inter petala inserta. FILAMENTA subulata, glabra. ANTHERAE oblongae, obtusae, complanatae, basi emarginatae ibique affixae, erectae, glabrae, biloculares, longitudinaliter latere dehiscentes. Squama brevissima truncata ad basim cujuslibet ovarii, ideo petalo opposita, glabra. OVARIA quinque, sessilia, conniventia, aequalia, oblique oblonga, compressiuscula, ventre angulata, apice in stylum desinentia, glabra, unilocularia. Placenta angulo interno loculi longitudinaliter affixa, bilamellata; lamellis angustis, membranaceis. Ovula creberrima, minutissima, subclavata, obtusa, fusca. STYLI subulati, erecti, glabri. STIGMATA simplicia. CAPSULAE quinque, sessiles, calyce corolla et staminibus persistentibus cinctae, oblongae, dorso convexae, ventre angulatae, apice acuminato-rostratae et reflexae. coriaceo-membranaceae, glabrae, uniloculares, polyspermæ, interne longitudinaliter dehiscentes, aequales, vix 4 lineas longae. SEMINA creberrima, minutissima, scrobiculata, oblonga, obtusa, basi acutiuscula, tuberculorum seriebus compluribus longitudinalibus notata, fusca. INTEGUMENTUM duplex, tenuiter membranaceum, exterius fuscum, interius diaphanum. EMBRYO oblongo-subpyriformis, utrinque obtusus, albidus. COTYLEDONES convexo-planæ. RADICULA obtusa, hilum spectans.

Variat foliis rubro-marginatis (*Sedum marginatum* Bonpl. mss.).

In 1852 Lindley classified it as an *Echeveria* species, describing it from a plant received in August 1851 from Isaac Anderson who is known to have imported Andean plants :

6. ECHEVERIA QUITENSIS*—SEDUM QUITENSE. *Humboldt, Bonpland, and Kunth, Nov. Gen. and Sp.*, pl. 6, 46.

Received from Isaac Anderson, Esq., of Edinburgh, in August, 1851.

A bright green smooth succulent plant, forming stiff erect stems about 6 inches high, clothed by imbricated spathulate leaves, with an almost circular base attached to the stem only by one bundle of fibro-vascular tissue. The flowers are in stiff close erect racemes, shorter than the lower bracts, which resemble in form the leaves, but taper less to the base. Sepals 5, longer than the pedicel, equal, linear, acuminate, rather shorter than the corolla, which forms a scarlet five-sided pyramid, opening very slightly at the end into 5 acuminate lobes. Of the 10 stamens, 5 stand in furrows of the petals, and 5 are distinct.

Walther's text

Errors :

1. While according to the protologue *E. quitensis* was found in **Ecuador** "on the waste ground near Guayllabamba and on walls in the town of Quito", the plant Walther used for his description originated "from seed collected [...] South **Colombia**", that means his description is basically worthless :

Description from living plant grown in Golden Gate Park, San Francisco, from seed collected by Miss Ynes Mexía at Ipiales in South Colombia.

2. As synonym Walther listed *E. bicolor* var. *turumiquirensis* Steyermark, a plant collected by Julian Steyermark on Cerro Turumiquire in the NE of Venezuela :

Echeveria bicolor var. *turumiquirensis* STEYERMARK, Contribution to the Flora of Venezuela, Fieldiana, Botany, vol. 28, no. 2, p. 244, 1952.
ILLUSTRATIONS. Gartenflora, vol. 42, pl. 1396, 1893; Cott. Gard., p. 164, 1858.

In his remarks concerning series *Elatae* Walther called it a depauperate form of *E. bicolor*.

related. Depauperate forms of *E. bicolor* appear to be common in Venezuela and Colombia, and include *E. bicolor* var. *turumiquirensis* and *E. bracteolata*, which may be looked for under *E. quitensis*. Much more field-collected mate-

to Layas. Venezuela: Sucre, Cerro Turumiquire. (Note: other Venezuelan material may belong in *E. bicolor*.)

Why however he nonetheless listed it in the synonymy of *E. quitensis* is incomprehensible. And that's not all : in 1958 Walther redetermined all specimens of *E. bicolor* var. *turumiquirensis* he could get hold of as *E. quitensis*. The same happened to Steyermark 62345a, collected at Monagas and determined as *E. bicolor*, at **US**, while the same Steyermark n° at **F** was redetermined as *E. bracteolata* ! All this is completely unintelligible.

Under COLLECTIONS Walther listed :

aequatorialis, US;NY); Santa Rosa de Canar, Rose and Rose, 18/22762

-3. "Santa Rosa de Canar, Rose and Rose, 18/22762" – this is wrong in two respects : 1. the correct number is 18/22726 and 2. the locality is "Vicinity of Canar", not "Santa Rosa de Canar".

(type of *E. pachanoi*, US); Canar, Camp, 45/3967 (NY); Huigra, Azuay, Camp, 45/1951 (NY,US), Haught, 42/3342 (NY,UC,US); Chimborazo,

4. "Huigra, Azuay, Camp, 45/1951" is wrong in so far as "Huigra" is in Prov. Chimborazo, not Azuay, and the correct locality of Camp's collection is "along the rio Matadero, west of Cuenca". Of course this is *E. cuencaensis*.

Camp, 45/1951 (NY,US), Haught, 42/3342 (NY,UC,US); Chimborazo,

5. "Huigra, Azuay, Haught 42/3342" is equally wrong and most likely is also *E. cuencaensis*.

Camp, 45/1951 (NY,US), Haught, 42/3342 (NY,UC,US); Chimborazo, Camp, 45/3036, Penland and Summers (F,US); Pichincha, above Quito, E.

6. "Chimborazo, Camp, 45/3036" has also a wrong number, it should read "45/3056".

Camp, 45/3036, Penland and Summers (F,US); Pichincha, above Quito, E.

7. "Penland and Summers" lacks date and number, should read 39/502.

(US); Cuenca, Quebrada de Chushkin, E. K. Balls, 39/B-7080 (GH,UC,US);

8. "Cuenca, Quebrada de Chushkin, E. K. Balls, 39/B-7080" – this is in the province Azuay and of course is also *E. cuencaensis*.

Andes, F. C. Lehmann, 1880/153 (US); La Cabuya, region del Sarare, Cuatrecasas, Schultes and Smith, 41/12085 (GH). Colombia: Ipiales, Y. Mexia,

9. "La Cabuya region del Sarare, Cuatrecasas, Schultes and Smith 41/12985" this is also in Azuay.

35/7643a (CAS), E. K. Balls, 39/7369 (US); Vetás, Killip and Smith, 27/17245 (GH,NY,US); 27/17399 (GH,NY,US); Santander, Rio Surato,

10. "Vetas" – this is in the department of Santander !

27/17245 (GH,NY,US); 27/17399 (GH,NY,US); Santander, Rio Surato, Bucaramanga-Jaboncillo, Killip and Smith, 27/16380 (PH); Montserrate,

11. "Santander, Rio Surato, Bucaramanga-Jaboncillo" – the correct names are 1. Rio **Suratá** and 2. El Jaboncillo.

Bucaramanga-Jaboncillo, Killip and Smith, 27/16380 (PH); Montserrate, near Bogota, I. F. Holton, 52/660 (PH). Venezuela (some material seen

12. "Montserrate, near Bogota, I. F. Holton, 52/660" – this is misleading : Holton's collection is from **1852** !

The names indicated under OCCURRENCE and COLLECTIONS are a confusing mix of names of Colombian departments and mere localities.

H. Leaves smaller, shorter; inflorescence lower. Venezuela, Colombia, Ecuador. 83. *E. quitensis*

13. Walther's indications in the Key to Series *Nudae* of course refer to the plant of southern Colombia, not to *E. quitensis*.

Comment :

Again a worthless and unusable chapter – a description of a plant from Colombia while the type originated in Ecuador and an altogether careless and unreliable list of collections, showing also that Walther confused *E. quitensis* and *E. cuencaensis*.

84. Echeveria sprucei (Baker) Berger (p. 290-291)

Echeveria sprucei was described by Baker in *Saunders' Refugium Botanicum* 1(3), nr 31, 1869 as *Cotyledon sprucei*. He named it for its collector, R. Spruce, who had found the plant 1857 "in Andibus Ecuadorensibus" and 1858 in "Andes quitenses".

Baker's description reads as follows :

"Andes of Equador, Spruce, 5463.

Caulescent, glabrous, densely rosulate.

The **leaves** lanceolate, not at all spatulate, narrowed gradually from below the middle to an acute point, the largest in a dried specimen **half an inch long** [ca 12 mm] by half as broad [ca 6mm].

The **flowering branch** erect, upwards of a foot long.

The **flowers** ten to twelve in a lax equilateral raceme about half as long. The patent cernuous **pedicels** three-eighths of an inch long.

The **calyx** a quarter of an inch deep, with linear reflexed divisions.

The **corolla** red, half an inch long, decidedly pentagonal."

(Baker described *E. sprucei* from a herbarium specimen and listed it under "Imperfectly known species". So whether the corolla really was red, cannot be taken for granted.)

Unfortunately Baker's description is defective in so far as – according to the scale on the respective sheet – the leaves in fact are one and a half inch long and half as broad, not only "half an inch long and half as broad". That means the **leaves are at least 37.5 x 18.5 mm**, not 12.5 x 6 mm ! On the one hand this of course corresponds much better to the "a foot long" flowering branch and on the other hand also means that *E. sprucei* is not much smaller than *E. quitensis*, whose type locality is Quito, i.e. the same region. Baker's error apparently remained unnoticed by subsequent students of *Echeveria*, for example Berger and von Poellnitz, with the consequence that *E. sprucei* since then is considered a fairly small plant. –

Walther's text

For his own description of *E. sprucei* Walther used a plant he had received from H. Johnson who had collected it somewhere in Colombia, i.e. not "in Andibus Ecuadorensibus" or in "Andes quitensis". That means Walther's description is worth nothing from the outset and need not be considered. And you could leave the matter at that. But how Walther handled *E. sprucei* is a prime example of his dealing with facts if they did not coincide with his intention. This concerns especially elusive species like *E. sprucei*. For the self-proclaimed *Echeveria* expert it was indispensable to have them in his collection and in order to achieve this goal any means was acceptable to him.-

Therefore the **story of *E. sprucei*** is briefly described here :

Joseph Harry Johnson is known to have been travelling in 1951 in Ecuador, Colombia, Peru and Yucatan. Back home he passed an *Echeveria* species he had collected in Colombia to UCBG (acc. nr 52.1793) and also to Eric Walther who cultivated it in the "Strybing Arboretum, San Francisco". In **1956** Walther also passed cuttings of this plant to UCBG where they were filed under the number 57.452 as "**var. minor var. nov. " of *E. sprucei*** Baker, original accession data "Colombia". Specimens were prepared and fairly widely distributed as 57.452-1 and 57.452-2. 1958 however Walther added the following note to the respective determination labels : "This is too much like the Type at Kew to permit of creation of a variety, even if sometimes the corolla may be much larger than in other clones" [what the latter refers to is unknown] – i.e. he revoked his former idea of making Johnson's plant a variety of *E. sprucei* Baker because of its being too similar to the latter, i.e. he considered the

Johnson plant identical with *E. sprucei* Baker. This is simply wrong : Baker described the leaves of *E. sprucei* as "densely rosulate lanceolate, not at all spatulate, narrowed gradually from below the middle to an acute point", while according to Walther's description the leaves of Johnson's plant are "subrosulate or somewhat scattered, oblong-oblancheolate, to 7 cm long and 2 cm broad, flat above, somewhat keeled beneath, mucronate, upcurved" (2). In other words: Johnson's plant from Colombia very obviously does not agree with *E. sprucei* Baker from the Ecuadorian Andes – which actually was to be expected. How Walther despite all appearances could come to this conclusion is in no way comprehensible, especially since he himself pointed out under Remarks that "Baker's type, i.e. Spruce no. 5463, differs from the plant described above [i.e. Johnson's plant] as follows : leaves narrower, linear-lanceolate, long-acuminate" – this is correct -, "not at all rosulate but laxly borne along outer end of branches" – this contradicts Baker's description. In 1959 Walther carried on the equalisation of Johnson's Colombian plant with Spruce's plant from the Ecuadorian Andes by adding on the determination label under "Field collection data" : "Ecuador, Ambato" - this is pure fiction and simply a lie.

But : where did "Ecuador, Ambato" come from ? The source must have been von Poellnitz. When in 1936 he reduced *E. sprucei* to a variety of *E. quitensis*, he cited a specimen collected by Pachano near **Ambato, prov. Tungurahua, Ecuador**, which he apparently considered corresponding to *E. quitensis* var. *sprucei*. And because Walther had got it into his head that the Johnson plant at all costs had to be nothing other than the elusive *E. sprucei*, a possible collection locality in Ecuador came in very handy for him. In doing so, he apparently preferred to overlook the fact that the Pachano specimen, which consists of only two inflorescences, does not allow any positive identification.

In this way a plant collected somewhere in Colombia – exact wild origin unknown - mutated into a plant found in Ecuador and even with an exact locality data : Ambato. But while Walther could revise the entries on the determination labels as he saw fit, he could not undo the information on the UCBG accession card stating that the Johnson plant originated in **Colombia** !

However this is not yet the end of the story : A comparison of Walther's descriptions of what he considered to be *E. quitensis* and the Johnson plant from Colombia – "his" *E. sprucei* –, brings to light that the two descriptions are identical, in most parts even literally identical, the only exceptions are the recurved pedicels and reflexed sepals of the Johnson plant, not present with *E. quitensis*. In other words : The plant for which - in order to be able to present it as *E. sprucei* - Walther did not shy away from any distortion of the facts, is and remains, according to his own description, nothing other than *E. quitensis*. (That Walther's description of the latter itself is of no worth, is another story.) -

Errors :

Back to Walther's text :

Echeveria sprucei (Baker) Berger.

(Figure 154. Plate 6, lower; see page 224.)

Echeveria sprucei (Baker) BERGER, in Engler, Nat. Pflanzenf. ed. 2, vol. 18a, p. 473, 1930.

1. This is wrong, it was already Morren who in *Belg. Hort.* 167, 1874 reclassified *Cotyledon sprucei* Baker as *Echeveria sprucei* > ***Echeveria sprucei* (Baker) Morren** is correct.

TYPE. *Spruce*, 1858/5463, collected at Ambato, Ecuador (K; isotype, W).

2. As explained above, Spruce 5463 was collected in "Andibus Ecuadorensibus" or "Andes quitensis" – definitely not in Ambato, the latter is the collection locality of Pachano 83. Concerning W : what is extant there is a **syntype** (annotated as such by Walther himself), not an isotype.

Under COLLECTIONS Walther listed :

COLLECTIONS. Ecuador: Ambato, *Spruce*, 1858/5463 (K, type; W, iso-type), *Pachano*, 18/83 (GH,NY,US), *Rose and Rose*, 18/22395 (US); Am-

3. "Spruce, 1858/5463" is from "Andes quitensis", i.e. Prov. Pichincha, definitely not from Ambato, which is in Prov. Tungurahua, and note : The Spruce collection used by Baker for his description is from 1857, not from 1858.

type), *Pachano*, 18/83 (GH,NY,US), *Rose and Rose*, 18/22395 (US); Ambato, *Tunguragua*, *Hitchcock*, 23/21703 (GH,US); Ambato towards Pillaro,

4. "Rose and Rose, 18/22395 (US)" – There are two specimens of Rose & Rose 22395 available online:

- US1022048 consists of a fairly long inflorescence with ca 8 flowers, a much shorter inflorescence with a few bracts and about the same number of flowers and a short piece of inflorescence with a few flowers in fruiting stage.

- US1023432 consists of a pressed sterile shoot and a photo of the living shoot. The plant has numerous linear-lanceolate possibly almost subulate-acute leaves, completely different from either *E. quitensis* or *E. sprucei* or the Johnson plant, resembling somehow *E. johnsonii*, nevertheless determined by Walther as *E. sprucei*, who wrote on the sheet : "Blisters due to dipping in hot water", what refers to the apparently damaged leaves of the pressed plant.

E. K. Balls, 38/B-7164 (UC); vicinity of San Antino and Pomasqui, *Rose and Rose*, 18/23560 (US); Paramo near Volcan Antisana, *Prescott*, 53/997

5. "vicinity of San Antino" – should read "San Antonio", today a district of the city of Quito, i.e. in Prov. Pichincha.

and Rose, 18/23560 (US); Paramo near Volcan Antisana, *Prescott*, 53/997 (NY); Riobamba, *Rimbach*, 35/589 (FM,US). *Cultivated*: Strybing Arboretum, San Francisco, *E. Walther* in 1951 (CAS; from H. Johnson, Ambato).

6. "Paramo near Volcan Antisana" – this is in Prov. Napo ! !

(NY); Riobamba, *Rimbach*, 35/589 (FM,US). *Cultivated*: Strybing Arboretum, San Francisco, *E. Walther* in 1951 (CAS; from H. Johnson, Ambato).

7. This of course refers to Johnson's plant.

(NY); Riobamba, *Rimbach*, 35/589 (FM,US). *Cultivated*: Strybing Arboretum, San Francisco, *E. Walther* in 1951 (CAS; from H. Johnson, Ambato).

8. "from H. Johnson, Ambato" – as already explained, Johnson's plant came from Colombia, not from Ambato in Ecuador.

Apart from Spruce 5463, all *E. sprucei* collections cited by Walther concern *E. quitensis*.

Under REMARKS Walther wrote :

REMARKS. Baker's type, *i.e.* Spruce no. 5463, differs from the plant described above as follows: leaves narrower, linear-lanceolate, long-acuminate, not at all rosulate, but laxly borne along outer end of branches. I have before

9. Again as explained above : According to Baker's description and the holotype sheet of *E. sprucei*, its leaves are densely rosulate and not scattered.

Figure 154. 84. *Echeveria sprucei* (Baker) Berger. Flowering plant, $\times 0.75$. Plant photographed in San Diego 14 May 1961; collected by Harry Johnson at Ambato, Ecuador, the type locality (UCBG 57.452b).

10. The caption is defective in several respects :

- "UCBG 57.452**b**" : the correct nr is 57.452-**2**.
- The UCBG n° proves that the photo **does not show *E. sprucei*** Baker but rather Johnson's plant,
- which was, as explained above, from somewhere in Colombia and NOT collected at "Ambato, Ecuador, the type locality" –
- the latter, as said before, refers to Pachano 83.

The same applies to Plate six, lower, nr 84 :

PLATE SIX, LOWER
84. *Echeveria sprucei* (Baker) Berger. Inflorescence, $\times 1.9$. Plant flowering in San Diego 2 April 1960; collected at the type locality by Harry Johnson (UCBG 57.452b).
[See page 290]

Footnote :

(1) In fact there are two specimens mounted on the holotype sheet :

- At right a specimen collected Sept 1857 "In Andibus Ecuadorensibus", from Herbarium Hookerianum. K000006128.
- At left a specimen collected July 1858. "Herba basi fruticosa, subramosa, foliis valde carnosus. Flores rubri." "Andes quitensis, in declivibus saxosis, frequens", from Bentham Herbarium, K000006129. K000006129. This specimen is slightly bigger than the one at right. But there is no doubt that the two specimens represent the same species. As a holotype cannot possibly consist of two plants collected at different times, a lectotypification is indispensable.

(2) perfectly illustrated by UCBG 57.452-1 at F.

Comment :

As explained above, Walther's description does not concern *E. sprucei* Baker and accordingly this chapter is useless, but also a prime example of his Machiavellian (unscrupulous) dealing with facts if they did not coincide with his intention.

85. *Echeveria johnsonii* E. Walther (p. 292-294)

Walther described this new species from a plant cultivated in his collection at Golden Gate Park, San Francisco :

Holotype: CAS:354989; from plant cultivated in Strybing Arboretum, Golden Gate Park; originally collected at type-locality by Mr. H. Johnson.

Occurrence: Ecuador: Ibara (about 100 miles north of Quito.) *Type*.

Description: (from living plant cited above) Plants glabrous, with evident, usually branching stem to 10 cm. tall or more, erect to somewhat decumbent; leaves scarcely or not rosulate, but crowded along upper end of branches, clavate-to linear-oblong, subterete, obtuse, minutely apiculate, usually about 35 mm. long, 9 mm. in thickness; inflorescences subspicate, arising from below the leaves, about 10 cm. long, erect or ascending; bracts terete or slightly flattened, linear-oblong, 2 cm. long, obtuse or acute; flowers 10 to 12; pedicels 3 mm. long or less; upper bracts 10 mm. long; bractlets 2, somewhat smaller; sepals subequal, ascending to spreading, long, 9 mm. in diameter at the open mouth; petals sharply keeled, erect or somewhat spreading, inside at base with rather small hollows, tips apiculate; carpels rather slender, 8 mm. long; nectaries lunate-reniform, oblique, about 1 mm. broad.

Color: Leaves biscay-green, with faint lines of corinthian-purple at edges near apex; bracts similar to leaves, upper bracts apple-green, corinthian-purple at apex; sepals similar to bracts; corolla ochraceous-buff, at apex and on keel coral-red, inside light-orange-yellow; carpels vetiver-green; styles pompeyan-red; nectaries as the carpels.

The specimen which later became the holotype of *Echeveria johnsonii* was prepared Jan 27, 1950 (CAS 354989), simply determined as "Echiveria (!) grown from seed sent from **Ambato**, Ecuador in 1947 by Howard Johnson"- whether this was the collecting locality or simply the shipping place is unknown. Some time later - presumably when Walther wrote the description - he added "Type" and the name "johnsonii, spec. nov." and crossed out the word "seeds". The protologue was published 8 years later in *Cact. Succ. J. (Los Angeles)* 30(2): 46-48. 1958. It differs from the holotype sheet (and so does also the text in the monograph) in

TYPE. From a plant cultivated in the Strybing Arboretum, Golden Gate Park, San Francisco, *E. Walther* in 1950; originally collected in Ecuador at **Ibara (about 100 miles north of Quito)** by Mr. H. Johnson (CAS, no. 354989).
OCCURRENCE. Ecuador: **Ibara**.

- indicating the collection locality as "**Ibara** (about 100 miles north of Quito)", i.e. more than 200 miles north of Ambato, without explaining this change, and in

REMARKS. In naming this species after **Mr. Harry Johnson**, I wish to record not merely the fact that this was discovered and introduced into cultiva-

- indicating the collector as Mr **Harry** Johnson instead of as **Howard** Johnson. However Howard Johnson had sent the seeds in **1947**, while Harry Johnson visited Ecuador for the first time only in the following year (**1948**), so could not possibly have sent anything from there already in 1947. In other words : Howard does not seem to be a confusion with Harry (or vice versa) – rather they seem to be two different men. And the plant was named for a person clearly not involved in its collection !

Under REMARKS Walther wrote :

and the Mexican *E. montana*. All have much in common and no doubt are closely related.

In view of the fact that Walther often falsely identified herbarium specimens as *E. montana* although they did not correspond to it, this comparison is worthless.

Comment :

It is impossible to know where exactly *E. johnsonii* was collected and who Howard Johnson, who supplied the seeds, really was. In view of the unexplained differences between the information on the holotype sheet and the statements of protologue and monograph the credibility of this chapter is very limited.

86. *Echeveria maxonii* Rose (p. 294-297)

The plant Rose described as *E. maxonii* was collected by William R. Maxon at Chuacús, between Salama and Las Canoas, January 22, 1905. The description was published in *Contr. U.S. Natl. Herb.* 12: 395, 1909 :

Echeveria maxonii Rose, sp. nov.

PLATE XLVIII.

Stems glabrous, frutescent, at first erect, becoming decumbent, 60 to 80 cm. long, naked below, very leafy near tips; leaves on young or slowly growing plants massed near the top but in vigorous shoots rather distant, standing at right angles to the stem, 3 to 10 cm. long, spatulate, narrowed at base into a more or less definite petiole, rounded below, decidedly trowel-shaped above, obtuse or acutish, green on the under surface, not at all glaucous, the margins more or less purplish; inflorescence an equilateral raceme or sometimes becoming a narrow panicle; peduncle elongated, 20 to 30 cm. long, leafy (in our herbarium specimens often naked); sepals distinct, semiterete, acute, glaucous, unequal, spreading with age; petals distinct nearly to the base, erect except the tips, these spreading, salmon-pink in color; stamens 10; scales white.

Walther's text

Errors :

Under References he listed :

1936; STANDLEY AND STEYERMARK, *Flora of Guatemala*, Fieldiana, Botany, vol. 24, pt. 4, p. 408, 1946.

1. Citing Standley and Steyermark without a reservation shows that Walther had not studied their publication otherwise he would have noticed that they erred regarding the locality determination of the type of *E. maxonii* : Chuacús is in the department of Quetzaltenango, not in Baja Verapaz, and he would also have noticed that their description of *E. maxonii* deviates from the protologue.

pt. 4, p. 408, 1946.
Cotyledon acutifolia HEMSLEY, *Biologia Centrali-Americana*, Botany, vol. 1, p. 387, 1880 (as pertains to Salvin and Godman's material from Guatemala); not *Echeveria acutifolia* Lindley.

2. The material in question – according to Hemsley at Kew – however is not extant there, what means that it is impossible to know what really had been collected – at least 4 *Echeveria* species are occurring in Guatemala. So this indication is far from helpful and only confusing.

3. As usual Walther omitted to quote Rose's description and produced one of his own, "based on living plant from Dr. Rose, presumably clonotypes" :

lose; nectaries globose-reniform, stipitate. Flowers from December on. De-
scription based on living plants from Dr. Rose, presumably clonotypes.

This is obviously not true, because his description deviates from Rose's description as follows :

Leaves : Walther : minutely papillose / Rose : not mentioned.

Leaf margins : Walther : not mentioned / Rose : more or less purplish.

Petioles : Walther : not mentioned / Rose : more or less definite petioles.

Flower colour : Walther : scarlet / Rose : salmon-pink.

Interestingly in his Key to Series *Nudae* (p. 278) the flower colour of *E. maxonii* is correctly indicated as "salmon" – obviously copied from Rose.

Conclusion: It is evident that the plants Walther considered *E. maxonii* were not correctly identified.

4. Under OCCURRENCE Walther wrote :

OCCURRENCE. Guatemala. Chuacus; Dept. Quetzaltenango, near Zunil, at 1800 to 2100 m., on exposed or shaded rocks, or more often epiphytic, 2200 to 3300 m.; Baja Vera Paz; El Progreso; Totonicapán; Quetzaltenango.

"El Progreso, Totonicapán": According to herbarium specimens available online *E. maxonii* is not at all present in these two departments.

Under COLLECTIONS Walther listed :

Maxon and Hay, 05/3605 (US); Cartago, Friedrichsthal, 1841/1422 (W);

5. "Cartago" is the old capital of Costa Rica – not located in Guatemala

Dept. Zacapa, along Río Repallal, Steyermark, 42/42483 (F); Baja Vera Paz,

6. "Río Repallal" – the correct name is "Repollal. Steyermark, 42/42483 – the correct number is 42/42438.

Dept. Zacapa, along Río Repallal, Steyermark, 42/42483 (F); Baja Vera Paz, Clover, 18689 (UCBG-54.1243). Cultivated: New York Bot. Gard., Maxon,

7. "Baja Vera Paz, Clover, 18689 (UCBG 54.1243)". The specimen itself is correct, however the chromosome n° n = 62 - said to be reported by Uhl - is not correct – it refers to *E. pittieri*.

Clover, 18689 (UCBG-54.1243). Cultivated: New York Bot. Gard., Maxon, 09/24468 (NY); flowered in Washington, D. C., Maxon, 05/242 (US); Sol-

8. "Maxon, 09/24468" does not exist.

Figure 157. 86. *Echeveria maxonii* Rose. Inflorescence, $\times 2$. Plant flowering in San Diego 12 December 1961; collected at Salama, Baja Verapaz, Guatemala (Clover 18689—UCBG 54.1243, a cited collection).

9. The photo is completely wrong – it shows the inflorescence of *E. pittieri*, not that of *E. maxonii*. For once, this was not Walther's fault : acc. to the accession card of UCBG 54.1243 the Clover collection was originally determined as *E. maxonii*, and it was Walther who later correctly identified it as *E. pittieri*. The photo fig. 157 was only made two years after Walther's death (by R. Moran), that means to caption the photo of *E. pittieri* as *E. maxonii* is the fault of the editor and those who had helped him.

10. And "18689" is not the number of the collector Dr. E. Clover, but rather the number under which the University of Michigan Bot. Gdn. had cultivated the plant in question (and wherefrom UCBG had received it). Dr. E. Clover is s.n.

than one flower, and sepals often more or less appressed. Most of the other species in question have larger corollas which are more strongly pentagonal and usually have rather larger nectaries.

Unfortunately Walther does not explain to which plants "most of the other species in question" is referring.

Comment :

It is obvious that Walther's concept of *E. maxonii* was anything but well founded. And his text once more abounds with errors and inaccuracies and is of no use.

87. *Echeveria australis* Rose (p. 297-299)

E. australis was described from "living material from San José, Costa Rica, Dec 1902" by H. Pittier and published in *Bull. New York Bot. Gard.* 3: 6, 1903 :

Echeveria australis Rose, sp. nov.

Caulescent, 2–3 dm. long, or 5–6 dm. including the inflorescence, glaucous; leaves broadly spatulate, rounded at apex, 3–7 cm. long, sometimes 3 cm. broad and spoon-shaped, somewhat glaucous and often purplish, thickly set at apex of branches, early falling off below; flowering branches stout, bearing numerous large oblong bract-like leaves; inflorescence an elongated equilateral raceme or sometimes more compound, forming a narrow panicle; pedicels 1 cm. long, or less, slender; flower-buds strongly 5-angled, acute; sepals unequal, the longer ones 12 mm. long, ovate-oblong, purplish, glaucous, nearly or quite free to the base; petals bright red, thickish, a little longer than the longest sepals, nearly distinct, cup-shaped at base; stamens 10, the 5 opposite the sepals borne on petals about one fourth the distance above the base.

Walther's text

Again the description is made from plants without known origin, so is of no use.

varies narrowly lunate, with central projection above, 1 mm. wide. Flowers from March on. Description from locally cultivated material.

Errors :

As TYPE Walther indicated :

TYPE. Pittier, 02/523, Volcan Irazu, San Jose, Costa Rica (US, no. 397557).

1. This indication is not correct in three respects :

- "Pittier, 02/523" is not correct. "523" is Rose's nr, Pittier's collection is s.n.
- "Volcan Irazu, San Jose, Costa Rica" is also not correct. : Rose did not mention "Volcan Irazu" either in the protologue or in the second publication of *E. australis* in *North Amer. Flora*, 1905.
- US 397557 is a lectotype, designated (most likely) by Walther himself because Rose had preserved two sheets, failing to designate one of them as type.

Under OCCURRENCE Walther wrote :

valley of Rio Caldero, from Boquete to the Cordillera; Honduras: Dept. Morazan, Zamorana.

2. This is wrong, *E. australis* is not occurring in Honduras, the plant in question is *E. maxonii*.

Under COLLECTIONS Walther listed :

Dota, Standley, 25/41876 (US); Volcan Iscazu, Pittier, 98/13064 (US); Rio Reventado, Standley and Valerio, 26/49596 (US); Gorge de Rio Ciruelas, Pittier and Durand, 90/2358 (BR); Valle de Los Arcangelos, Volcan Irazu,

3. "Volcan Iscazu, Pittier, 98/13064" is not correct. "13064" is the n° of Pittier's specimen in the National Herbarium of Cost Rica, not Pittier's n°.

4. "Pittier and Durand, 90/2358 (BR)" is not correct, the collector was Pittier alone.

679 (F). Honduras: Dept. Morazan, Zamorana, J. V. Rodriguez, 45/3583. (F). Panama: Chiriqui; Valley of Rio Caldèro, from Boquete to Cordillera, E. P. Killip, 18/3515 (US); etc.
--

5. The plant collected in Honduras is *E. maxonii*, not *E. australis*.

Under REMARKS Walther wrote :

REMARKS. Here also belong <i>Donnell-Smith</i> no. 3633 (sent out as <i>Sedum</i>

6. "Donnell-Smith" : the correct name of this collector is **John Donnell Smith**.

7. Walther's indication of Honduras as habitat of *E. australis* in the Key to Series *Nudae* and under GEOGRAPHICAL OCCURRENCE is wrong.

Btw : Wherefrom came "Volcan Irazu" ?

The source of the Volcan is von Poellnitz. In his treatment of genus *Echeveria* (*Zur Kenntnis der Gattung Echeveria DC*) in 1936 he wrote :

"Typ aus der Provinz San José, Costa Rica, Tal von Los Archangeles, **Vulkan Iscazu**, auf Felsen zwischen Steinen, 1700 m über dem Meere, **Dezember 1898, Pittier !.**"

In Engl. : "Type from the Province of San José, Cosa Rica, valley of Los Archangeles, **Volcan Iscazu**, on rocks between stones, 1700 m asl, **December 1898, Pittier !.**"

That means von Poellnitz erroneously cited a Pittier gathering of **1898** from a different locality as type of *E. australis* and Walther - while citing the correct date - apparently failed to question the volcan. ("Iscazu" and "Irazu" seem to refer to the same volcan.)

Comment :

Walther's description of "locally cultivated material" – origin unknown – is unusable, and superfluous anyway in view of the protologue.

***E. australis* does not occur in Honduras, only in Costa Rica and Panama.**

88. Echeveria gracilis Rose ex Walther (p. 299-300)

Prehistory

The holotype of *Echeveria gracilis* is US 1319967 Herbarium. The specimen was prepared from a plant collected by C.A. Purpus on rocky slopes of the High Sierra near Coxcatlan, 8-9'000 ft, October, 1909 (Purpus #24, Rose greenhouse n° 09.426) – neither a generic nor a specific name was indicated.

A second sheet (US 1319924), referring to the same plant, was prepared 2 years later, after the plant had flowered in Washington in August 1911; the respective label reads : "Echeveria, n. sp., (flowered Aug. 1911) Coxcatlan. C.A. Purpus #24, 1909, greenhouse n° 09.426" and it shows a photo of the plant (almost past flowering) in a pot with the greenhouse n° 09.426.

Some time later and in a different hand "*Echeveria gracilis* nsp." was added on the US 1319967 label. This was not repeated on US 1319924. - The name *E. gracilis* has never been validly published by Rose.

Walther's text

In 1935 Walther used Rose's name *E. gracilis* for a plant in cultivation in "our local collections" (i.e. in California). Though the origin of this plant was unknown, Walther had no doubt that it represented not only a new species but corresponded to the plant Rose had intended to name *E. gracilis*. His description was published in the US Journal (*Cact. Succ. J. (Los Angeles)* 7: 40. 1935).

Echeveria gracilis Rose ex E. WALTHER, Cactus and Succ. Jour. Amer., vol. 7, p. 40, 1935; POELLNITZ, in Fedde Repert., vol. 39, p. 233, 1936.
ILLUSTRATIONS. Cactus and Succ. Jour. Amer., vol. 7, p. 38, fig. bottom right, 1935;

Stem evident, if short, often decumbent from base; leaves subrosulate to scattered, thick, 3 cm. long or less, 12 mm. broad, 5 mm. thick, obovate-oblong, mucronate, flat above, rounded beneath, color courcee-green, the mucro nopal-red; inflorescences several, equilateral or subsecund from one-sided lighting, racemose to subpaniculate, to 20 cm. tall; bracts many, leaflike, ascending, to 20 mm. long; pedicels 10 to 15 mm. long the lowermost often 2-flowered, all bracteolate; sepals widely spreading, subequal, to 10 mm. long; corolla bright scarlet, sharply pentagonal, 9 mm. long, 6 mm. in diameter at base, 4 to 5 mm. at mouth; segments thick, erect, deeply hollowed within, apiculate at apex; carpels short; styles short, dark maroon at tips; nectaries maize-yellow, truncate, reniform.

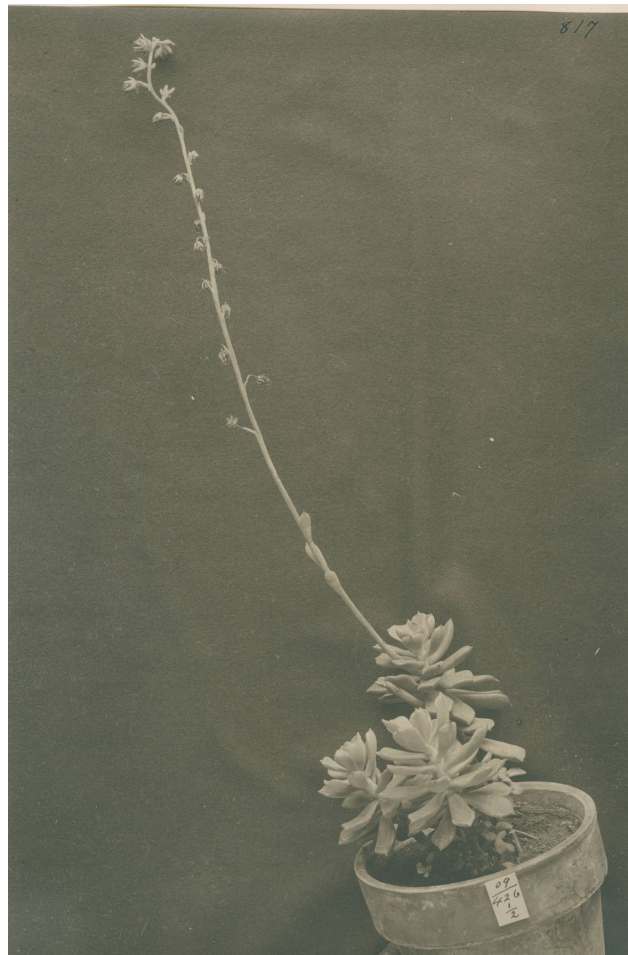
While in the protologue Walther indicated that his description was based on "the study of living plants in our local collections", the text in the book reads : "Description based on locally cultivated plants originally received from Dr. Rose."

base; nectaries thick, truncate. Flowers from September on. Description based on locally cultivated plants originally received from Dr. Rose.

Fortunately the protologue includes a photo of the described plant :



A comparison with the photo of the type plant on US 1319924 (copied in the monograph as fig. 160)
....



.... reveals that under the name *E. gracilis* Rose Walther described a completely different plant, possibly a garden hybrid – so his statement that he had received it "from Dr. Rose" is simply a lie !

Figure 160. 88. *Echeveria gracilis* Rose. Plant of the type collection, flowering in Washington. Photograph from the U.S. National Herbarium, no. 817.

However in the monograph the photo of the protologue of the described plant was replaced by the photo of Rose's type plant from US 1319924. Very obviously this is highly misleading : For the reader it is a matter of course that a description and the accompanying photo correspond – it looks as if the correct photo should hide the fact that the description is completely amiss.

G. Leaves thick, rigid; inflorescence sometimes erect. . 88. *E. gracilis*

Walther's indications in the Key to Series *Nudae* refers to the plant he wrongly considered as *E. gracilis*, not to *E. gracilis* Rose.

Comment :

Walther has validated Rose's name, but the plant he described was not *E. gracilis* Rose. Of course, Walther's description is worth nothing, but it has nonetheless determined the image of *E. gracilis* – wrongly - for decades.

89. Echeveria alata Alexander (p. 301-302)

The plant Alexander described as *E. alata* was collected in the mountains west of Tehuantepec, Oaxaca, in the winter of 1938-39. The description was published in *Cact. Succ. J. (Los Angeles)* 13: 136, 1941 :

Plant caulescent and shrubby, branched from the base, the branches erect; leaves not at all rosulate, scattered along the stem and long persistent, dark green with red margins and red apex to keel on the underside, 5-6 cm. long, 2 cm. wide, thick and fleshy, oblanceolate and abruptly acute; inflorescences 15-20 cm. long, erect, the rachis dark red, the bracts similar to the leaves but only 3.5 cm. long and 12-14 mm. wide; flowers in a multilateral raceme, the pedicels 15-18 mm. long, 2-bracted, the bracts lanceolate, 12 mm. long; calyx-lobes nearly equal, 13-18 mm. long, lanceolate, ascending, acute; corolla 2-2.2 cm. long, urceolate, with sharp, winged angles, bright scarlet outside, (the three inner petals sulphur-yellow at the apex with a scarlet keel), cream-yellow inside, only the petal-tips recurved; stamens opposite the petals 12 mm. long, their filaments unribbed, those opposite the sepals 13 mm. long, their filaments broader and with a strong central rib; carpel-cluster 17 mm. long, yellowish-white flushed with rose, carpels united 2 mm. above the base; styles long-acuminate, greenish-white below, the upper 4-5 mm. maroon; stigmas capitate, pale olive-green.

Walther's text

Walther again did not quote Alexander's description but wrote a new one, without indicating wherefrom the plants he used originated. It differs in several respects from the protologue :

Leaves : Alexander : dark green, oblanceolate and abruptly acute, 5-6 x 2 cm / Walther : lettuce-green, 6 x 2.4 cm.

Bracts : Alexander : 3.5 x 1.2-1.4 cm / Walther : 2 cm long.

Corolla : Alexander : 2-2.2 cm long, bright scarlet outside / Walther : 1.7-2.2 cm long, scarlet below, citron-yellow at apex.

Comment :

As Walther failed to indicate which plant(s) he used, it is impossible to know whether the differences are due to the variability of *E. alata* – the latter is not very likely as the species is known only from a restricted area in the mountains west of Tehuantepec - or whether the plant(s) he used was/were not the true *E. alata*. His description is therefore useless.

90. *Echeveria macdougallii* E. Walther (p. 302-304)

The description was made from a "living plant grown at Strybing Arboretum, Golden Gate Park, S.F.", i.e. from a plant with unknown origin and published in *Cact. Succ. J. (Los Angeles)* 30: 87, 1958 :

Description: (From living plant grown at Strybing Arboretum, Golden Gate Park, S. F.). Plants glabrous, subshrubby, with numerous ascending or spreading branches, to 12 cm. tall or more; leaves many, subrosulate or closely aggregated along upper portion of stems, spreading to reflexed, oblong-obovate to obovate, cuneate, thick-clavate, more or less subterete or faintly subangular and keeled, bluntly pointed, upcurved, not conspicuously papillose, to 3 cm. long or more, 10 mm. thick; inflorescence spreading or ascending, equilaterally-racemose, often less than 10 cm. long; peduncle slender, flexuose; bracts similar to leaves but smaller, 18 to 25 mm. long, widely spreading, obliquely pointed, rather readily detached; flowers often only 5, or fewer, less often as many as 10; pedicels 6 mm. long or less, with 2 linear bractlets that are 2 to 5 mm. long, only rarely with more than a single flower; sepals subequal, longest to 10 mm. long, elliptic-oblong, nearly terete, obtusish, ascending to spreading; corolla nearly straight, pentagonal, to 18 mm. long, 12 mm. in basal diameter, 6 to 7 mm. wide at mouth; petals only slightly spreading above when grown out-of-doors, but often widely flaring when grown in a greenhouse; carpels to 12 mm. long; nectaries narrowly-lunate, about 2 mm. wide.

Color: Leaves oil- to cosse-green, in sun tinged oxblood-red at edges and apex; peduncle chrysolite-green; bracts as the leaves, or more absinthe-green; sepals kildare-green tinged deep-corinthian-red; corolla peach-red to spectrum-red on outside, lemon-chrome inside; carpels bittersweet-pink; styles corinthian-purple; nectaries straw-yellow.

Walther did not prepare a specimen of the plant he had described. Therefore he was in need of a type to make his description valid and searched the CAS herbarium for an appropriate candidate. The CAS 268566 specimen of a plant originally supplied by MacDougall appeared very suitable as type of *E. macdougallii* sp. nov. and he indicated :

TYPE. *T. MacDougall* B-15, collected on rocks at 4000 feet, Cerro Tres Cruces, Tenango, Oaxaca, Mexico (CAS, no. 268566).

However this is not correct at all. The holotype sheet of *E. macdougallii* consists of

1. a branch with two small rosettes and a very short inflorescence with only 3 flowers, a short branch, another piece of inflorescence with also 3 flowers, single leaves and other plant fragments in a transparent envelope – annotated "V.R. 1939". That means the specimen represents a plant from Victor Reiter and was prepared 1939. No indication at all regarding its origin.

2. a piece of paper mounted bottom left with a pencil note reading :
268566 / S Mexico / 1938 by T. MacDougal / 4000 Boston Rd / New York
This indicates that the plant in question was sent by MacDougall 1938 from his home address. No MacDougall n° is mentioned.

3. a prefab label bottom right citing part of this information in a very different hand :
Echeveria / Southern Mexico / T. MacDougall / 1938

4. Bottom left is printed "Coll. Eric Walther".

5. The number is cited on another slip of paper just above : "Calif. Acad. of Sciences # 268566".

6. Most important : This prefab label later was completed by Walther who wrote "*macdougallii* sp. nov., Type", presumably when he was preparing the protologue of *E. macdougallii* for publication (1958).

In short : The respective specimen was prepared in 1939 from a Victor Reiter plant, apparently sent to him the previous year by T. MacDougall from his home address in New York. Neither the time when it had been collected is known nor does it have a MacDougall field number. The latter means that it had not been gathered by MacDougall in the wild. (It was a rule that plants given to him by a helper or picked up in a garden or on a market were not given a field number.) In any case it was not *E. B-15*, as indicated by Walther, because according to MacDougall's *Plant Exploration in the States of Oaxaca and Chiapas*, 2, 1972, and to his plant lists, MacDougall collected *E. B-15* only **Feb 6 1939**, so the plant he sent to Victor Reiter in 1938 could not possibly have been *E. B-15*, and accordingly the specimen CAS 268566 – prepared from Reiter's plant – cannot possibly represent *E. B-15*. Therefore Walther's indication "Type : CAS : 268566, T. MacDougall B-15, Feb. 6, 1939, Cerro Tres Cruces, Tenango, Oaxaca, on rocks at 4'000 ft." does not correspond to truth, i.e. is a lie. Thus - once more - Walther misused a nameless specimen by designating it as type of a new species the description of which he had made from a plant of unknown origin.

Comment :

The type of *E. macdougallii* is a plant of unknown origin. It is not *E. B-15*. The description is made from another plant of unknown origin, also not *E. B-15*, i.e. *E. B-15* is not at all involved in Walther's *E. macdougallii*. As the name is fixed to the type, *E. macdougallii* is the plant represented by CAS 268566, provided by MacDougall but not one of his Mexican collections. Walther's description under the title *E. macdougallii* does not apply to the latter, it is the description of the unknown plant from his garden.

To summarise :

1. We have a specimen of a plant with unknown Mexican origin, prepared 1939, because of Walther's designation as type now bearing the name *E. macdougallii*.

2. We have B-15, mentioned several times but not involved in any way and never pressed / named / described.

3. We have a plant from Walther's own collection, origin unknown, whose description was published in *Cact. Succ. J. (Los Angeles)* 1958, lacking a name because it does not correspond to the specimen designated as type and therefore bearing the name *E. macdougallii*.

This is one of the biggest frauds Walther has committed.

91. *Echeveria sedoides* E. Walther (p. 305-307)

As indicated by Walther, he made the description of *E. sedoides* from plants received through Don Skinner, i.e. plants of unknown origin. It was published in *Cact. Succ. J. (Los Angeles)* 30: 153, 1958 :

Description: (From material received through Mr. Don B. Skinner, L.A.) Plants glabrous, shrubby, freely branching, becoming to 25 cm. tall or more; branches spreading to drooping; leaves scattered, usually rather remote, not at all rosulate, oblong-obovate, quite thick, clavate, subtriquetrous, shallowly convex above, rounded and bluntly keeled beneath, somewhat recurved, obtuse, to 25 mm. long, 10 mm. broad and 8 mm. thick; inflorescences several, with 4 to 6 flowers each, equilaterally-racemose; peduncle decurved to ascending; bracts rather few, similar to leaves but smaller, noticeable recurved, 8 mm. long or less; pedicels elongated, to 20 mm. long, somewhat turbinate below calyx, bibracteolate, bractlets spreading, subterete, to 6 mm. long; sepals subequal, to 9 mm. long, terete, obtuse, more or less reflexed; corolla strongly pentagonal, to 16 mm. long, campanulate, to 12 mm. wide at mouth at full anthesis; petals sharply keeled on back, thick, with deep basal nectar-cavity, apex with thick, blunt mucro; carpels to 8 mm. long; nectaries reniform, to 2 mm. wide. Fls. VI-

Color: Leaves cerro-green, as are the bracts and sepals; peduncle viridine-green, but tinged corinthian-red; corolla scarlet-red, with edges lemon-chrome; petals inside apricot-yellow; carpels scheele's-green; styles viridine-green tinged corinthian-red at tips.

TYPE. A cultivated specimen collected by E. Walther at the University of California Botanical Garden (56/792) from material collected by Mr. T. MacDougall (no. B-171) at Palacio San Bartolo Yautepec, 4500 feet, Oaxaca, Mexico (CAS, no. 409843).

The holotype of *E. sedoides* is CAS 409843. A typewritten label bottom right reads : "*Echeveria sedoides* Walther. Note : The specimen was undoubtedly collected by Eric Walther, June 1958, from the plant grown at the University of California Botanic Garden under No. 56/792, from material sent from Oaxaca by Thomas MacDougall".

reniform, to 2 mm. wide. Flowers from June on. Description from material through Don B. Skinner, Los Angeles, California.

So while "undoubtedly" the holotype is MacDougall's B-171, the plant Walther used for his description was "received through Mr. Don B. Skinner", i.e. was a plant of unknown origin.

Under REMARKS Walther wrote :

sedoides differs from its allies in the large corolla, which is up to 16 mm. long or more, its rather distant thick, subtriquetrous leaves, its pedicels up to 18 mm. long, and its terete widely spreading to reflexed sepals.

However in the above published description Walther indicated the pedicel length as "to 20 mm".

Comment :

While the type plant was received directly from MacDougall, the description was made from a second hand plant, i.e. the type plant and the plant used for the description are not identical. And while the name is fixed to the type, i.e. CAS 409843 is *E. sedoides*, the description referring to a plant of unknown origin, is not that of *E. sedoides* and is of course of no use whatsoever. It is incomprehensible why Walther did not deem it necessary to obtain a plant of the original collection for his description in view of the fact that it was easily available at UCBG.

92. *Echeveria skinneri* E. Walther, new species (p. 307-309)

This is a tall tale.

1. The type of *Echeveria skinneri* is CAS 413180. The determination label bottom right reads : "*Echeveria skinneri* sp. nov. Type. Reiter collection (B-166?) E. Walther, 1/27/59." That means the specimen was prepared from a plant grown by Victor Reiter, origin unknown. Walther tentatively suggested MacDougall's collection B-166, however this is – according to its collector – an *E. gibbiflora*-like plant.

TYPE. *E. Walther*, 27 January 1959, a plant cultivated by Victor Reiter, San Francisco, grown from material collected by Thomas MacDougall (B-204) at 7000 feet altitude, Santo Tomas Quieri, Cerro Madreña, Oaxaca (CAS, no. 413180).

2. The text of the protologue differs significantly from that on the determination label in stating that the type material, grown by Victor Reiter, originated at Cerro Madreña, Oaxaca and in fact was the MacDougall collection B-204. This is, of course, not correct because B-204 does not at all correspond to CAS 413180, i.e. cannot possibly have been the plant in Reiter's collection. To fit the Reiter plant of unknown origin with the data of B-204 is fraudulent.

PARATYPES. University of California Botanical Garden (58.851-1), *E. Walther*, 17 March 1959, and 4 April 1959; J. W. Dodson's nursery, Millbrae, California, *E. Walther*, 12 March 1959; all in Calif. Acad. Sci. Herb.

3. UCBG 58.0851-1 is B-204. The accession notes read : "Cerro Madrena, Santo Tomas Quieri, 7.000 ft. elev. Oaxaca State, Mexico". In 1959 UCBG 58.0851 was determined by Walther as "Paratype of *E. skinneri* CAS no 413180". As just explained the type plant (CAS 413180) and B-204 are two different plants, therefore the latter cannot possibly be the paratype of the former. This is absurd.

Under OCCURRENCE Walther indicated :

OCCURRENCE. Known only from the type locality in Mexico.

4. This is a lie. The type locality of *E. skinneri* Walther is the Reiter collection. This plant has no type locality in Mexico. And B-204, which does have a Mexican origin, is not *E. skinneri*.

5. But that's not all . There is another number that plays a role in this story, namely B-82, a plant collected by MacDougall 1947, Rio de Tablas, Tlaxiaco, Oaxaca (UCBG 56.801). July 1958 Walther determined it as type of *E. amphoralis*, stating that "this is a new species". However shortly after, Sept 1958, he redetermined it as *E. skinneri*. And as UCBG had received B-82 a second time in 1958 (UCBG 58.845), the respective card file couldn't help being determined as *E. skinneri*, too, and was even classified as paratype of *E. skinneri*. So at the end of the day *E. skinneri* has not only two paratypes of different Mexican origin but one of them is simultaneously also the type of *E. amphoralis* or at least what Walther specifies as its type in the protologue – which is, of course, in no way its **true** type (see comment on *E. amphoralis*).

Under REMARKS Walther wrote :

REMARKS. This new species might be mistaken for *E. alata* Alexander, but the latter is clearly distinct in its thinner leaves with more decidedly red margins, apex, and keel, strongly ascending sepals, more urceolate corolla,

6. The leaves of both, *E. alata* and *E. skinneri*, are described in the same way : "thick, fleshy", and the same applies to the colour : "edged and tipped indian-red" (*E. alata*), "with edges and tips indian-red" (*E. skinneri*), and also the nectaries of both species are "narrowly transverse-reniform", i.e. Walther is not even capable of correctly reproducing his own descriptions.

My material of this was first received through Mr. Don B. Skinner, after whom I name this new species with pleasure. Mr. and Mrs. Skinner have

7. It is rather mysterious that all of a sudden Don Skinner is purported to have provided the "material" – to be sure Victor Reiter would have passed this information along with his plant if he had received it from Don Skinner This means the name "skinneri" is applied to a plant that Mr Skinner had nothing to do with.

Figure 166. 92. *Echeveria skinneri* E. Walther. Flowering plant, $\times 0.4$. Plant photographed in San Diego 23 March 1967; part of the type collection (MacDougall B-204).

8. Figs 166 & 167 represent B-204 (UCBG 58.851), which – as already explained – does not correspond to *E. skinneri*, and of course is not "part of the type collection". That the photos are not by Walther is evident as they were made 1967, 8 years after Walther's death. That the author is Reid Moran is concealed, deliberately of course, so that a less attentive reader has the impression that they originated from Walther.

In the Key to Series *Nudae* is stated :

C. Leaves gray-green or lead-colored, Oaxaca.
D. Leaves decidedly flattened. 92. *E. skinneri*

8. This is also wrong : The origin of the plant Walther described as *E. skinneri* is unknown. And the description reads "leaves shallowly concave above", not decidedly flattened.

Comment :

The name *E. skinneri* belongs to a plant in cultivation in Victor Reiter's collection which is likely to have been a hybrid and most probably is no longer existent. Neither all Walther's attempts to eliminate the lack of information about the origin of Reiter's plant by linking it to MacDougall's B-166, B-204 and B-82 – all not correct for *E. skinneri* - nor the editor's addition of two photos of B-204 by Reid Moran to Walther's text, can dispel the true facts.

According to the Code the name is fixed to the type. That means the name *E. skinneri* belongs to a plant ex cult. of unknown origin, thus insufficiently known, and cannot be applied to any known plant / gathering. The only material to which it can be attached with certainty is the holotype sheet CAS 413180. Beyond that the name *E. skinneri* is unusable; it cannot be applied either to *E.* B-204 or to B-82 (which are two different plants) and possible identical gatherings by MacDougall with different numbers or later gatherings at the same localities.

In *CRASSULACEA* 6, 2018, Roy Mottram designated an epitype so that the plants circulating as *E. skinneri* need not be renamed,
https://www.crassulaceae.ch/docs/7375a294bf51a507437bf1bcdd5cd918_Crassulaceae%20%20Nr.%206%20-%208.%20April%202018.pdf.

93. *Echeveria globuliflora* E. Walther (p. 310-311)

E. globuliflora was first published in *Cact. Succ. J. (Los Angeles)* 31, 24, 1959 :

Description: (From plant received of Mr. Scott Haselton, Pasadena.)

Plant glabrous, with evident, erect, at first simple stem to 10 cm. tall or more; bark of stem usually roughened; leaves numerous, subrosulately crowded, ascending when young, later spreading, oblong-ob lanceolate to obovate-cuneate, muchonate, to acute or shortly acuminate, about 5 cm. long, 15 mm. broad, rather thin even though fleshy, upcurved, somewhat oblique, keeled beneath; inflorescences 3 to 5, arising from between lower leaves, to 25 cm. tall, equilateral, irregularly paniculate-racemose or cymose; peduncle erect, to spreading, or even decumbent in shade, 3 mm. thick below; lower bracts not readily detached, obovate-oblong, to 20 mm. long, thick, subtriquetrous, obliquely keeled, acute, or truncate and mucronate, upcurved; lower branches of inflorescence few, short, with 2 to 6 flowers each; upper pseudopedicels slender, elongated, to 10 mm. long or more, somewhat thickened below calyx, bearing 2 slender, linear, terete, upcurved bractlets that are often only 1 mm. long; sepals nearly equal, linear-lanceolate, subterete, acute, strongly ascending to appressed, longest 4 to 5 mm. long; corolla globose-urceolate, almost spherical at anthesis but pentagonal, to 10 mm. long, 8 mm. in diameter near base, 6 mm. wide at mouth at anthesis; petals keeled, rather broad, folded together above, apex bluntly apiculate, bearing a fine, retrorse bristle-like tip; carpels 6 mm. long, slender; nectaries transversely lunate-reniform, 1-1½ mm. wide. Fls. V-XI.

Color: Leaves lettuce to elm-green, strongly tinged pompeian-red beneath, especially at edges and keel; peduncle acajou-red; bracts as the leaves; pedicels jasper-pink with bloom intact; corolla peach-red, edges of petals light-orange-yellow; sepals and upper bracts biscay-green, tipped with sorghum-brown; carpels bright-green-yellow, to neva-green above.

mm. wide. Flowers from May to November. Description from plant received from Scott Haselton, Pasadena, California.

The **description** was made from a plant of unknown origin from Scott Haselton, of which two black & white photos, captioned "grown and photographed by Mr Scott E. Haselton", are illustrating the protologue. The photos leave no doubt that the plant in question is a well grown specimen of *xCremneria* 'Expatriata' and not an *Echeveria* species - i.e. Walther's description of *E. globuliflora* is in fact the description of *xCremneria* 'Expatriata'!

TYPE. *E. Walther*, 6 June 1958, a cultivated plant received from Thomas MacDougall (no. B-79) collected on rocks at about 7000 feet elevation, Cerro Jilotepec, San Pedro Jilotepec, Tehuantepec, Oaxaca, Mexico (CAS, no. 408-986). [Editor's note. The type locality was originally given as "Cerro Arenal,

The **type** of *Echeveria globuliflora* is CAS 408968. The sheet consists of two inflorescences with tiny flowers on long pedicels and a piece of a flower stem without flowers, as well as of two leaves - perfectly corresponding to Haselton's photos, i.e. also representing *xCremneria* 'Expatriata'. However surprisingly the holotype sheet was determined by Walther thus : "*Echeveria globuliflora* sp. nov. / **Th. McDougall B-79, Cerro Arenal, / Coll. E. Walther 6/6/58**". All of a sudden the Haselton plant had mutated to a MacDougall collection ! The **monograph** presents again a different version : The type is now said to be "a cultivated plant received from Thomas **MacDougall (no. B-79)** collected on rocks at about 7000 feet elevation, **Cerro Jilotepec**, Tehuantepec, Oaxaca, Mexico". This is more correct insofar as B-79 in fact had been collected on Cerro Jilotepec, San Pedro Jilotepec, Tehuantepec, (for the first time Dec 20, 1946, and a second time Oct 30, 1952), not on Cerro Arenal. However MacDougall is not known ever having passed B-79 to Walther ! And : Plants nowadays occurring on Cerro Jilotepec have no resemblance whatsoever with *xCremneria* 'Expatriata'!

In view of the fact that admittedly the origin of the plant from Haselton, used for the description, was unknown and the specimen undoubtedly had been prepared from the latter, Walther's reference to B-79 is clearly deceitful.

REMARKS. This is another novelty introduced from Oaxaca, where it was discovered by the indefatigable collector Mr. Thomas MacDougall. *Echeveria*

The plant was "introduced" by Scott Haselton, not by Thomas MacDougall. That is just a lie.

G. Leaves thin, flexible; inflorescence often lax to decumbent. **Oaxaca.**
93. *E. globuliflora*

The indication of "Oaxaca" is of course the same lie, Scott Haselton's plant being without known origin, and accordingly also the indication of Oaxaca under GEOGRAPHICAL OCCURRENCE p. 36.

Comment :

The plant Walther described as *E. globuliflora* is *xCremneria* 'Expatriata', the same plant he had already described as *E. expatriata* Rose in Series *Paniculatae*. Why didn't it occur to him that Scott Haselton's plant was nothing else than a well grown specimen of the latter ? The answer is simple : When he wrote his text about *E. expatriata* Rose, he did not have the original plant but considered some locally cultivated plants as this species, and because he did not bother to check Rose's description, he did not notice that his plants were wrongly identified. In other words : Because his concept of *E. expatriata* Rose was wrong, he couldn't recognise Scott Haselton's plant. Why however one and the same plant at one time is classified in the Series *Paniculatae* and at another in the Series *Nudae* is not understandable. In any case, the photos of the Haselton plant evidence a perfectly paniculate inflorescence.

In short : *E. globuliflora* is an absurdity : The plant described as *E. globuliflora* is *xCremneria* 'Expatriata', and B-79 is not its type. There exists no *Echeveria globuliflora*.

(The Protologue reveals even more blatant errors that have been suppressed in the monograph.)

94. *Echeveria multicaulis* Rose (p. 312-313, 228)

The plant Rose described as *E. multicaulis* was collected by E.W. Nelson and E.A. Goldman near Omiltema, Guerrero, May 1903. His description was published in *Contr. U.S. Nalt. Herb.* 8: 294, 1905 :

***Echeveria multicaulis* Rose, sp. nov.**

Caulесcent, the stem roughened below, naked, crowned near the top by a rosette of obovate or spatulate leaves, the whole plant including flowering branches 20 cm. high in cultivation but said to reach 90 to 120 cm. high in the wild state; leaves 3 to 4 cm. long, 12 to 20 mm. broad at widest point, flattened, mucronately tipped, glabrous, the margin and face more or less brightly colored; flowering branches bright-colored, bearing scattered oblanceolate leaves; inflorescence a short compact equilateral raceme; flowers subtended by small bright-colored bracts; pedicels very short but distinct; calyx lobes narrow, acute, ascending, about one-half as long as the corolla; corolla buds acute, angled; corolla reddish without, yellowish within.

Collected by E. W. Nelson and E. A. Goldman near Omiltema, State of Guerrero, May, 1903 (Rose's no. 628) and flowered in Washington, December, 1903.

Walther's text

Again Walther did not quote Rose's description but wrote a new one "based on locally grown plants received from Dr. Rose". His description differs from that by Rose as follows :

Leaves : Rose : 12-20 mm broad / Walther : 15-30 mm broad.

Inflorescence : Rose : equilateral raceme / Walther : equilateral raceme, spike or thyrse.

Bracts : Rose : oblanceolate / Walther : obovate-orbicular.

Pedicels : Rose : very short but distinct / Walther : to 10 mm long or more.

Corolla : Rose : reddish without, yellowish within / Walther : shining carmine to scarlet outside, orange-yellow inside.

Conclusion : Whether Walther's locally grown plants indeed are traceable to Dr. Rose can be doubted.

Errors :

Under TYPE and OCCURRENCE Walther wrote :

TYPE. *Nelson and Goldman*, 03/R:628, **Omiltemi**, Guerrero, Mexico (US, no. 399650).

OCCURRENCE. Mexico. Guerrero: **Omiltemi**; near Chilpancingo; etc.

1. The correct name of this locality is Omiltema, not Omiltemi.

Under REMARKS Walther wrote :

REMARKS. With its shining, dark-green, rosulate leaves and granular-roughened branches *E. multicaulis* is quite distinct. *Echeveria alata* and *E. guatemalensis* have similarly colored foliage, but in those the leaves are scattered, not rosulate, the corolla is larger and not campanulate, and the branches and peduncles are smooth. *Echeveria gracilis* and *E. macdougallii* have thicker, subangular, grayish leaves and larger flowers.

2. The comparison with *E. alata* is futile because it is unknown which plants Walther used for his description.

3. According to the protologue the corolla of *E. guatemalensis* is 10 mm long, only the plant Walther erroneously identified as *E. guatemalensis* and used for his description has a longer corolla.
4. The corolla of *E. gracilis* is even smaller than that of *E. multicaulis*.
5. The comparison with *E. macdougallii* is likewise futile because the plant Walther described under this name was a plant of unknown origin and not *E. macdougallii*.

Comment :

Needless to say that Walther's text – superfluous anyway - is of no use at all.

95. *Echeveria nodulosa* (Baker) Otto (p. 313-316, 229) and 95b. *Echeveria nodulosa* (Baker) Otto var. *minor* E. Walther, new species (p. 317)

E. nodulosa was first described by Baker as *Cotyledon nodulosa* in *Saunders' Refugium Botanicum* 1, n°6. pl. 56, 1869. The description was made from a plant W.W. Saunders had obtained and "which I understood came from Mexico", i.e. exact origin unknown :

Stems naked, grayish brown, attaining a height of six or eight inches and a thickness of half an inch, tumid, gouty, the scars twice as broad as deep. *Leaves* obovate-spathulate, aggregated at the apex of the stem in a dense rosette, the largest two inches to two inches and a half long by three-fourths of an inch broad three-quarters of the way up, the apex subdeltoid with a mucro, the lower two-thirds spathulately narrowed to a base two to three lines broad, the colour a dull apple-green with a slight glaucous tinge, the under surface and edge more or less tinged with red. *Flowering branches* six to nine inches long, their leaves close and ascending, gradually diminishing upwards, but the lowest not much smaller than those of the rosette. *Flowers* four to six in a lax raceme three to four inches long. *Bracts* linear, the lower ones not more than half an inch long. *Pedicels* finally erecto-patent, the lowest two to three lines long. *Sepals* three-eighths of an inch long, linear, spreading. *Corolla* half an inch long, decidedly pentagonal, straw-yellow tinged with red.—J. G. B.

It was transferred to genus *Echeveria* by Otto in 1873.

Walther's text

Errors :

As SYNONYMS Walther listed :

1. *E. discolor* :

Echeveria discolor L. DE SMET, Cat., 1874; ED MORREN, La Belg. Hort., vol. 24, p. 159, 1874; POELLNITZ, in Fedde Repert., vol. 39, p. 219, 1936.

While there is no description at all of this plant in De Smet's catalogue of 1874, Morren in *La Belg. Hort.* of 1874 wrote : "Mexique. Feuille en rosette compacte, rouges en dessous ; fleurs grandes, d'un orangé très-foncé." Obviously a stemless plant which of course does not correspond to *E. nodulosa* at all !

Echeveria discolor L. DE SMET, Cat., 1874; ED MORREN, La Belg. Hort., vol. 24, p. 159, 1874; POELLNITZ, in Fedde Repert., vol. 39, p. 219, 1936.

As it happens von Poellnitz came across a specimen labelled *E. discolor* in the Herbarium at Berlin-Dahlem. He wrote an emended description of *E. discolor* as a stemless plant with a dense rosette, with the underside of the leaves red and an orange-red corolla 10 mm long, and he compared it with *E. pinetorum*, *E. sessiliflora*, *E. tepeacensis* and *E. mucronata* – but NOT with *E. nodulosa* ! (Fedde, Repert. 38, 1935) So Walther's remark :

REMARKS. Of the synonyms listed above, *E. discolor* de Smet appears to differ only in being stemless; it is not further traceable today. *Echeveria stur-*

is simply inapplicable and proves that he had not really paid attention to von Poellnitz's text.

2. *E. misteca* :

Echeveria misteca L. DE SMET, Cat., 1874; ED. MORREN, *loc. cit.*, p. 282.

The entry in De Smet's catalogue of 1874 reads : "misteca (tout nouveau) jolie plante", and Morren's listing in *La Belg. Hort.* of 1874 reads: "*E. misteca* de M. L. de Smet devrait être rapporté à l'*E. nodulosa* Bak." – there is however no proof whatsoever why *E. misteca* should be referred to *E. nodulosa* !

In short, none of the three listings is correct. Moreover : In view of the fact that neither for *E. misteca* nor for *E. discolor* information regarding their origin is extant, the plants may well have been hybrids.

3. Under REMARKS Walther mentioned *E. sturmiana* Poelln. as synonym of *E. nodulosa* – why is this not listed above following *E. misteca* ?

differ only in being stemless; it is not further traceable today. *Echeveria sturmiana* Poellnitz, as described and pictured (*Desert Plant Life*, vol. 10, p. 226,

4. Walther did not quote Baker's description but produced a new one from "living plant collected alongside road from Tehuacan to Orizaba" :

ber. Description of living plant collected alongside road from Tehuacan to Orizaba.

However it is the road from Tehuacan to **Esperanza**, not to Orizaba, as correctly indicated under REMARKS :

Oaxaca, where I saw it in 1934; in 1957 it was very abundant on low limestone hills along the road between Tehuacan and Esperanza. This is a rather dry

5. Under COLLECTIONS Walther listed :

and Gillespie, 40/5, (CAS, GH,MO); Oaxaca, *Conzatti*, 06/25325 (CAS, NY); Cerro de San Felipe, *Conzatti*, 06/188 (GH, var. *minor*?); Yanhuítlan,

- "Oaxaca, *Conzatti*, 06/25325" and "Cerro San Felipe, *Conzatti*, 06/188" concern the same collection 1906 on Cerro San Felipe del Agua, Oaxaca. Both have the same number 25325 (Rose 06.188), so the latter cannot possibly represent *E. nodulosa* var. *minor* as suggested by Walther.

In an article on *E. nodulosa* Reid Moran wrote (*CSJ US* 1962) : "*Echeveria nodulosa* is not uncommon in central Oaxaca and southern Puebla. I have collected it at eight localities, at elevations of about 1850 to 2400 meters, from Acatepec and Cerro de la Yerba, south of Tehuacán, to above Miahuatlán, 50 miles south of the city of Oaxaca. Though often occurring on gravelly hillsides, either in the open or under brush, it also grows on rocks and cliffs, sometimes in rather deep shade. **Although these collections show considerable variation in several respects, they all seem clearly referable to one species.**" And evidently Walther was of the same opinion otherwise he would not have listed 4 Moran-numbers under COLLECTIONS of *E. nodulosa* :

NY); Cerro de San Felipe, *Conzatti*, 06/188 (GH, var. *minor*?); Yanhuítlan, *R. Moran*, 57/6378 (SD); 14 miles southeast of Huajuapán, *R. Moran*, 57/

Moran 57/6378 has a 7 cm high stem and a 8 cm wide rosette, leaves are scarcely marked with red and only on margins and keels, pedicels are 3–9 mm long and the corolla is more than 16 mm long.

R. Moran, 57/6378 (SD); 14 miles southeast of Huajuapán, *R. Moran*, 57/6373; 5 miles east of Mitla, *R. Moran*, 57/6383 (SD). Puebla: 1 mile north

Moran 57/6373 has a 7 cm high stem and a 13 cm wide rosette, the three low ridges on the leaves are broadly purple marked, pedicels are 5–6 mm long, sepals are nearly equal and the corolla is 13–15 mm long (see fig. 171).

6373; 5 miles east of Mitla, *R. Moran*, 57/6383 (SD). Puebla: 1 mile north

Moran 57/6383 has widespreading equal sepals and a 16 mm long corolla.

6373; 5 miles east of Mitla, *R. Moran*, 57/6383 (SD). Puebla: 1 mile north of Santiago Acatepec, *R. Moran*, 57/6356 (SD); limestone hills near Tehua-

Moran 57/6356 has a 20 cm high stem and a 5–7 cm wide rosette, leaves are yellowish green and more or less red on margins, pedicels are 2–3 mm long and the corolla is 15–16 mm long (Plate 9 lower, p. 229)

can, *Pringle*, 97/6779 (CAS,F,G,GH,MEXU,NY,P,PH,UC,US), *Purpus*, 05/1096 (US); El Riego, *Rose* 05/1131 (NY). *Cultivated*: Knickerbocker Nurs-

6. "Purpus 05/1096" is not correct, the Purpus collection is "s.n.", "1096" is not a Purpus-n°.

7. Apparently however Walther did not remember this/his listing when creating his new *E. nodulosa* var. *minor*, justifying it thus :

REMARKS. Ordinarily *E. nodulosa* appears to be quite uniform in its native habitat, the new variety here described being the sole exception known. It differs in the smaller leaves and the strongly reflexed sepals, but agrees per-

But apart from the fact that smaller leaves and strongly reflexed sepals do not justify the status of a variety, there is a much more serious flaw : The plant he described as *E. nodulosa* var. *minor* was received from F. Schmoll, Cadereyta, Queretaro without any information regarding its origin ! And while called "minor", its corolla is longer than that of the type !

1938) is flowerless, and appears to belong here. In habit, size of flower, etc., *E. nodulosa* recalls *E. spectabilis*, but its unique epidermal papillae are quite

To say that regarding habit and size of the flowers *E. nodulosa* recalls *E. spectabilis* is definitely not correct – the latter is a much more robust and tall plant and has a 2.4 cm long corolla !

Comment :

The text on *E. nodulosa* leaves much to be desired in several respects and the var. *minor* is of course in no way justified.

96. *Echeveria spectabilis* Alexander (p. 317-319)

The plant Alexander described as *E. spectabilis* was a MacDougall collection in the Sierra Juarez near Macuiltianguis, Oaxaca, Feb 11, 1937, not – as the protologue indicates – winter 1937-38. It was published in *Cact. Succ. J. (Los Angeles)* 13: 137, 1941 :

Plant caulescent and shrubby with several few-branched stems up to 6 dm. tall so far as known; all parts densely muriculate-papillose, which produces a satiny sheen and gives an impression of puberulence; leaves subrosulate at the apex and scattered immediately below, 4-7 cm. long and 2-3 cm. wide, dull yellow green with red margins, abruptly mucronate, petiole and blade distinct; inflorescences 2.5-7 dm. long, erect, the bracts similar to the leaves, but not so distinctly petioled, 3-4 cm. long, obovate, abruptly apiculate; flowers 5-12 in a multilateral raceme, the pedicels 3.5 cm. long, 2-bracted, the bractlets oblong-linear, acute, 15-16 mm. long; calyxlobes nearly equal, spreading, 16-18 mm. long, oblong-lanceolate, acute; corolla 2.4 cm. long, 1.5 cm. wide, oblong-conical, sharply angled, vermillion, the apical 5-7 mm. lemon-yellow, the tips spreading, petals deeply channelled the entire length of the inner face; nectar sacs 5 mm. deep; stamens opposite the petals 15 mm. long, those opposite the sepals 17 mm. long, stouter; carpel cluster 21 mm. long, the carpels united for 3-4 mm. above the base, the body 6 mm. long, creamy yellow, styles 13 mm. long, pale yellow green becoming green towards the apex; stigmas maroon-purple with olivaceous tips; nectarine glands lunate, pale yellow, touching each other and standing out collar-like.

Walther's text

Errors :

1. Again Walther did not quote the description of the protologue but wrote a new one :

narrowly lunate-reniform, to 4 mm. wide. Flowers from July on. Description based on living plants received from Mr. Thomas MacDougall, 1939.

This however does not agree with what Walther under COLLECTIONS indicated :

COLLECTIONS. Type (NY), *Alexander* in 1940 (NY). *Cultivated*: Golden Gate Park, San Francisco, *E. Walther* in 1938, 1941, 1958 (CAS).

Walther cannot possibly have cultivated *E. spectabilis* in 1938 when he received it only 1939 from MacDougall.

Under TYPE Walther wrote :

TYPE. Collected by Mr. Thomas MacDougall in 1939, Sierra Juarez, Oaxaca, Mexico (NY).
--

This is wrong. According to the protologue, the plant was collected "in the winter of 1937-38". This however is also not correct : According to MacDougall, *Plant Exploration in the States of Oaxaca and Chiapas, 1936-1971*, the collection date is Feb 11, 1937.

Comment :

Walther's description – even if made from a MacDougall plant – is superfluous – decisive is always the First Description.

97. Echeveria goldmanii Rose (p. 319)

The plant Rose described as *E. goldmanii* was collected by E.E. Goldman at Comitan, Chiapas, March 27, 1904. The protologue was published in *N. Amer. Fl.* 22: 17, 1905 :

11. *Echeveria Goldmani* Rose, sp. nov.

Stems at first erect and bushy, often prostrate and rooting at the nodes, sometimes becoming 20 cm. high. Leaves glabrous, shining, linear-oblong, 2–3 cm. long, acute or obtusish, trough-shaped, pale-green with purple margins; inflorescence an equilateral (?) raceme, many-flowered; carpels erect.

Collected by E. A. Goldman at Comitan, Chiapas, Mexico, March 27, 1904, *no.* 802.

Walther's text

As usual Walther did not quote Rose's description but wrote a new one from "plants locally cultivated, **presumably** received from Dr. Rose".

1 mm. wide. Description from plants locally cultivated, presumably received from Dr. Rose.

Under COLLECTIONS Walther indicated :

COLLECTIONS. Mexico. Chiapas: Comitan, *Goldman* (US, type; isotypes, BH,F,GH,NY,UC,US, probably all clonotypes from plant grown at Washington, D.C.); mountains near Pasitan, *Matuda*, 34a.

The specimen is too puny to be identified with certainty. Moreover the correct nr. is **349**, not 34a.

Comment :

The description is of no use as it is made from plants of uncertain origin.

Series 9. Spicatae (Baker) Berger

illusory. The various species of this series often occur as epiphytes, frequenting tree-trunks, etc., in the moister portions of Mexico and Guatemala.

There are but 3 species in this series – what does "various" refer to ?

A. Flowers rarely or not crowded, if so, then paired on lower pedicels; corolla red. Species of series *Nudae*
B. Leaves nearly flat; at least some pedicels 2-flowered; corolla paler. 87. *E. australis*
B. Leaves concave above, narrower; flowers solitary on each pedicel, the latter very short; petals bright red. 97. *E. goldmani*

The listing of two species of Series *Nudae* in the Key of Series *Spicatae* is confusing and pointless.

98. Echeveria pittieri Rose (p. 320-322)

The plant Rose named and described as *E. pittieri* was collected by Henry Pittier around the lagoon on the volcano of Ipala in Guatemala. The description was published in *Contr. U.S. Natl. Herb.* 13: 296, 1911 :

Echeveria pittieri Rose, sp. nov.

Caulescent, 10 cm. or more high, crowned at the apex by a loose rosette of leaves, glabrous throughout; leaves 6 to 8 cm. long, oblanceolate, tapering into a distinct petiole, acute, greenish or somewhat purplish, sometimes a little glaucous; flowering stem about 20 cm. long, leafy; leaves similar to stem leaves; inflorescence a dense spike 4 to 5 cm. long; flowers subtended by small linear rose-colored bracts and two inner bractlets; calyx cleft nearly to the base into linear, acute lobes about two-thirds the length of the corolla, rose-colored; corolla when in bud somewhat 5-angled; corolla about 12 mm. long, deeply cleft, the lobes stiff, erect or slightly spreading, acute, rose-colored, with a pronounced pocket near the base within; 5 stamens opposite the 5 petals inserted just above this pocket, the other 5 attached to the corolla but lower down; ovaries erect, tipped by the long, slender styles.

Type U. S. National Herbarium no. 618381, collected around the lagoon on the volcano of Ipala, Guatemala, altitude, 1,500 meters, by Henry Pittier (no. 1880).

The living material sent by Mr. Pittier flowered in Washington in January, 1911.

Walther's text

Instead of sharing with the readers of his monograph the First Description by Rose, Walther wrote a new one "based on living plant received from Dr. Poellnitz" :

mm. wide. Flowers from January on. Description based on living plant received from Dr. Poellnitz.

In *Cact. Succ. J. (Los Angeles)* 7: 39, 1935, Walther listed *E. pittieri* as a synonym of *E. rosea*. Von Poellnitz disagreed and sent Walther a "living plant" which he himself had received from the Botanical Garden of Bremen – a precise origin of this material he did not communicate.

Errors :

Under COLLECTIONS Walther listed :

COLLECTIONS. Guatemala: lagoon on Volcan Ipala (type, US); Dept. Jutiapa, Volcan Suchitan, northwest of Asuncion Mita, Steyermark, 39/43840 (US); Dept Totonicapan, Standley, 40/84520 (F); Dept. Quetzalte-

1. "Dept. Jutinapa" – the correct name is **Jutiapa**. And the n° of Steyermark's collections on Volcan Suchitan is **31896**, not 43840. The latter is the n° of Steyermark's collection at Finca Piamonte – see below.

43840 (US); Dept Totonicapan, Standley, 40/84520 (F); Dept. Quetzalte-

2. Standley 84520 was determined as *E. guatemalensis*, and rightly so. Walther redetermined it – wrongly – as *E. pittieri*.

43840 (US); Dept Totonicapan, Standley, 40/84520 (F); Dept. Quetzalte-
nango, Volcan Zunil, Steyermark, 40/34722 (US); Finca Diamante, Steyer-

3. Steyermark 34722 is *E. guatemalensis*, not *E. pittieri*.

nango, Volcan Zunil, Steyermark, 40/34722 (US); Finca Diamante, Steyer-
mark, 42/43840 (F). Nicaragua: Dept. Jinotega, Standley, 47/9857 (F).

4. The correct name of this locality is "**Finca Piamonte**", not "Finca Diamante" and the specimen does not represent *E. pittieri* but an **undescribed species**, in the past wrongly considered *E. montana*.

mark, 42/43840 (F). Nicaragua: Dept. Jinotega, Standley, 47/9857 (F).

5. Standley 9857 is not correct, it is **9837**.

Costa Rica: west coast, Werkle, 07/250 (BH). Cultivated: Strybing Arbo-

6. The specimen Werkle from Costa Rica is not extant at BH, i.e. impossible to verify.

7. Costa Rica is also mentioned under OCCURRENCE

OCCURRENCE. On rocks or epiphytic, usually in shade but sometimes in the open, 1000 to 2400 m.; Guatemala, Nicaragua, Costa Rica.

... and in the Key to Series *Spicatae* :

B. Corolla geranium-pink to jasper-red; sepals broader, linear-oblong, shorter than corolla; leaves concave above, elliptic-oblongate. Guatemala, Costa Rica.
98. *E. pittieri*

However there are no herbarium specimens available online which would attest to the presence of *E. pittieri* in Costa Rica.

Comment :

Walther's description of *E. pittieri* is made from a plant of unknown origin, that means it is of no use and the many wrongly cited *E. pittieri* collections make this chapter worthless and show that he had no clear concept of this species – in spite of the plant sent from von Poellnitz.

99. *Echeveria chiapensis* Rose ex Poellnitz (p. 322-324)

Rose wrote the name *Echeveria chiapensis* on the herbarium specimen of R 1001 which had been prepared from Goldman 964, collected 20 miles SE of Teopisca, Chiapas, but he never published it. Much later von Poellnitz cited this collection as the type of his new *E. chiapensis*.

26. *E. chiapensis* Rose in Herb., descr. von Poellnitz. — Glabra, caulescens, ramosa, humilis. Folia non rosulata, obovato-cuneata, basi subpetiolatim angustata, acuta vel subacuta et mucronulata, usque 4½ cm longa, 1½ cm lata. Inflorescentia aequilateraliter spicato-racemosa. Calycis lobi corollae adpressi, subinaequales, corollae 8—9 mm aequilonges. — Kahl, niedrig, stammbildend, verästelt. Blätter nicht rosettig angeordnet, sondern beim vorliegenden Herbarexemplar zu 18—20 ziemlich gleichmäßig über eine Sproßlänge von etwa 4 cm verteilt, verkehrt-eikeilig, am Grunde etwas stielartig verschmälert, spitz oder spitzlich und undeutlich gespitzt, sicher grau bereift, bis 4½ cm lang, 1½ cm breit. Blütenstengel 25—35 cm lang, Stengelblätter ziemlich zahlreich, verkehrt-eikeilig oder fast länglich, undeutlich gespitzt, die unteren bis 3 cm lang, die oberen kürzer. Blütenstand eine vielblütige, bis etwa 6 cm lange, allseitswendige ährige Traube. Blütenstielchen etwa 1 mm lang. Vorblätter ungefähr so lang als die Blüten. Kelchröhre äußerst kurz, Zipfel etwas ungleich, spitz, so lang als die Krone und dieser angedrückt. Krone getrocknet rötlich, ihre Röhre ungefähr 2 mm lang, Zipfel oben nach außen gebogen. Episepale Staubfäden der Kronenröhre angewachsen, etwa 4 mm lang, epipetale den Zipfeln etwas höher angeheftet, kürzer. Beutel fast länglich, 1—1½ mm lang. Fruchtblätter am Grunde nicht verwachsen, 4 mm lang, Griffel dünn, ungefähr 3 mm lang.

His description, made from the said herbarium specimen, corresponds well to the description of *E. rosea* Lindley – the critical characters, namely the sepals as long as and appressed to the corolla resemble those of typical *R. rosea*. In other words : Von Poellnitz's description of *E. chiapensis* is in fact a redescription of *E. rosea*.

Walther's text

The plant Walther used for his own description of *E. chiapensis* originated at Lago Montebello, Chiapas, quite distant from the type locality.

gust to December. Description based on living plants from Sr. E. Oestlund, collected at Lago Montebello in Chiapas, Mexico.

However apart from the fact that the pedicels of this plant are very short and those of typical *E. rosea* are to 5 mm long, his description fits typical *E. rosea* quite well. As a matter of course diverse pedicel lengths of some millimetres do not justify status of separate species, i.e. Walther's *E. chiapensis* is *E. rosea*. In other words : Also the plant Walther described as *E. chiapensis* is in fact *E. rosea*.

As TYPE Walther indicated :

TYPE. *Rose*, 04/1011, without locality (NY, no. 20952); isotype (NY).

It is correct that the holotype sheet lacks precise information regarding the collection locality of *E. chiapensis*. However Rose's greenhouse notebook shows that Rose 1011 is = Goldman 964, from "20 miles SE of Teopisca, Chiapas, June 7, 1904". That means the collection locality of Walther's plant - Lago Montebello - is quite distant from the type locality.

Errors :

Under COLLECTIONS Walther listed :

Chiapas: Pasital, Matuda, 36/349 (US). Oaxaca: San Juan del Estado, L. C.

1. Matuda 349 was first determined as *E. goldmanii* Rose, then as *E. australis* Rose, in 1959 by Walther as *E. chiapensis*, in 1998 by Moran as *E. rosea*. The collection locality "Pasital" is very distant from the type locality.

Chiapas: Pasital, Matuda, 36/349 (US). Oaxaca: San Juan del Estado, L. C. Smith, 94/475 (GH); Cumbre de los Frailes, Teotitlan, Conzatti, 07/2104

2. The correct number of this collection is L.C. Smith **457**, not 475. The specimen was determined as "*Cotyledon roseata*" Baker and redetermined by Walther as *E. chiapensis*.

(NY,US); San Juan Bautista, near Elto, Rusby in 1910 (NY); Dist. Cuicat-

3. Rusby of 1910 was determined as "*Courantia rosea*", redetermined by Walther as *E. chiapensis*.

lan, Coyula, Conzatti in 1911 (US). Puebla: on rocks near Esperanza, Purpus, 04/R-937 (NY,US); Xuchitl, near Esperanza, Arsene, 07/7086 (US),

4. The complete locality indication reads "Trees and rocks near Esperanza". The specimen was determined as "*Courantia*" and redetermined by Walther as *E. chiapensis*.

Arsene and Nicholas, 10/5148 (US,GH). Veracruz: Jalapa, P. Maury,

5. The sole collector is Nicolas, not together with Arsène, and the collection locality is "Hacienda Alamos", not "Esperanza". Originally annotated as "*Echeveria*", determined by Walther in 1958 as *E. chiapensis* and redetermined by R. Moran in 1998 as *E. rosea*.

1884/1088 (NY); Orizaba, F. Mueller, 1855/95 (W), Schlumberger, 1855/176 (NY); mountains towards Tehuacan, Pringle, 95/5970 (GH,MEXU).

6. This is nonsense, i.e. another example of Walther's carelessness : "Mueller 1855/95" and "Schlumberger, 1855/176" are one and the same specimen. It is annotated as "A 1855. Legit Fred. Müller. Comm. H. Schlumberger" and it was determined as "*Courantia rosea* (Lindl.) Lemaire" – redetermined by Walther as *E. chiapensis*.

Of the above listed specimens, redetermined by Walther as *E. chiapensis*, not a singly one was collected at or at least near the type locality, i.e. his redeterminations lack any reasonable basis.

Dr. Uhl of Cornell has determined the number of chromosomes as $n=51$.

7. The chromosome count is wrong, *E. rosea* / *E. chiapensis* has $n = 34$.

The reason for this wrong chromosome count is as follows : In 1957 Walther found what he considered *E. chiapensis* also in Puebla, near Esperanza.

Under REMARKS he wrote :

In 1957 I found this species in this general vicinity, atop the first pass leading to Esperanza, just off the Tehuacan-Orizaba highway. There it was in full

Walther erred – he had not found "this species" – had he observed better he would have noticed that the sepals of this plant are very short and not as long or longer than the corolla !

He sent this plant to Uhl for a chromosome count, claiming that it is MacDougall's B-11. However Uhl had already received B-11 directly from MacDougall and had found a chrom. n° of $n = 51$. The plant Walther sent him, purported to be B-11, had $n = 34$, i.e. clearly was *E. rosea*, that means was obviously not B-11 ! Why nevertheless he indicated the wrong chromosome count for his wrongly identified B-11 remains his secret. (Much later, in 2005, the plant with $n = 51$ was published as *E. tencho*.)

8. In the Key to Series *Spicatae* Walther indicated :

C. Pedicels very short; upper bracts, bractlets, and sepals broader, usually somewhat shorter than the corolla; uppermost pedicels all fertile; $n = 51$. Chiapas, Oaxaca, Veracruz 99. *E. chiapensis*
C. Pedicels sometimes to 5 mm. long; upper bracts, bractlets, and sepals linear-filiform, longer than corolla; uppermost pedicels sterile; $n = 34$. San Luis Potosi and Tamaulipas. 100. *E. rosea*

The minor differences regarding measures of bracts, bractlets and sepals and pedicels do not justify the separation of *E. chiapensis* from *E. rosea* – these are variations within one and the same species.

100. Echeveria rosea Lindley (p. 324-325, 229)

Lindley described this species from a plant imported by "Messrs. Lee and Co of the Vineyard, Hammersmith", presented to the Horticultural Society, that means a plant whose origin was not known, and published his description in *Edwards' Botanical Register* 28, pl. 22, 1842 together with an excellent hand-coloured drawing (fig. 176 in Walther's monograph) :

E. rosea ; caulescens, foliis ovalibus erectis acutis nunc terminalibus rosulatis nunc imbricatis, spicâ cylindraceâ densissimâ, bracteis inferioribus coloratis lanceolatis basi angustatis triquetris corollis longioribus, sepalis linearibus acuminatis corollæ campanulatæ æqualibus.

Caulis carnosus, teres, pedalis, ramosus, lutescens. Folia carnosa, ovalia, basi angustata triquetra ; in apicibus ramorum steriliū aggregatis viridibus roseo-marginatis, aut secus ramos floridos imbricatis roseis. Sepala linearia, acuta, rosea, corollæ campanulatæ 5-partitæ æqualia, bracteis linearibus ipsis æqualibus suffulta. Stamina 10, corollæ basi inserta. Carpella 5, acuminata, squamis nullis hypogynis.

Walther's text

What Walther described as *E. rosea* was a plant sent from Las Canoas by Mr. O. Nagel – exact origin not indicated.

Errors :

Under COLLECTIONS Walther indicated :

COLLECTIONS. Mexico. San Luis Potosi: 10 miles from Antigua Morelos,

1. The correct name is **Morales**, not Morelos.

R. Flores, 51/UCBG-51/642 (UC). Tamaulipas: Victoria, Santa Rita Ranch, *Runyon and Tharp*, 26/75 (NY,US). *Cultivated*: Cambridge, England

2. Runyon and Tharp, 26/75 is not extant at US.

Under REMARKS Walther wrote :

In its native home this species occurs most frequently as an epiphyte, as

3. The origin of the type of *E. rosea* not being known – how could Walther know what "its native home" is ?

Comment :

Pedicle length in herbarium specimens of *E. rosea* range from 0 to 10 mm, i.e. Walther's treatment of *E. chiapensis* as a separate species on the basis of very short pedicels is completely unfounded. His description of *E. chiapensis* is not only a superfluous redescription of *E. rosea* but moreover - combined against better knowledge with the chromosome count of $n = 51$, correct for B-11 but wrong for *E. chiapensis* - a highly confusing chapter. Whether his claim to be in possession of the MacDougall collection B-11 is due to - once again - mixed labels or to the effort to enhance the status of a plant collected by himself by attributing it to MacDougall cannot be decided.

Walther did not stop at declaring specimens of plants collected in Chiapas as *E. chiapensis*, but renamed all *E. rosea* or *Courantia* specimens he could find in the herbaria he used to visit as *E. chiapensis* regardless of where they had been collected – in Oaxaca, Puebla, Veracruz etc. – so that at the end of the day *E. rosea* would have to be considered a synonym of *E. chiapensis* as if his renaming action could change anything about the priority of the name *E. rosea* Lindley.

Series 10. Elatae E. Walther

101. Echeveria atropurpurea (Baker) Ed. Morren (p. 328-329, 232)

E. atropurpurea was described by Baker as *Cotyledon atropurpurea* from a plant grown by W.W. Saunders, received from Louis de Smet, Ghent, without any locality data, and published in *Saunders' Refugium Botanicum* 3, pl. 198, 1870 :

Stems glabrous, attaining a height of four to six inches and a thickness of an inch. *Leaves* about twenty, aggregated in a dense rosette, obovate-spathulate, the largest four to five inches long by two inches broad three-quarters of the way up, acute, the base broad for the genus, the texture moderately thick, the upper surface especially dark purple with a glaucous bloom. *Stem* erect, about a foot high without the raceme, its leaves close, much reduced. *Raceme* twenty- to twenty-five-flowered, five to six inches long when fully expanded by less than two inches broad. *Bracts* linear, the lowest half an inch long. *Pedicels* three-eighths to half an inch long, spreading horizontally or in the lowest a little deflexed. *Sepals* subequal, patent, linear-lanceolate, two lines long. *Corolla* bright red, half an inch deep, decidedly pentagonal, the divisions acute, the outer row of *stamens* inserted about half-way down.

Nearest *C. canaliculata* (Mon. No. 9), but the leaves much broader and spathulately narrowed in the lower half, the colour characteristic, and the calyx and corolla much smaller.

This plant has not necessarily been a **species** imported from Mexico; as it has been provided by the nursery of De Smet, one of the famous hybridizers of his time, it might as well have been a hybrid. In any case it has never been found in the wild in Mexico.

Walther's text

Walther did not make a description of his own, but cited Baker's description, which shows that he did not have and had never seen this plant :

decidedly pentagonal; petals acute; outer stamens inserted at the middle. De-
scription after Baker, *loc. cit.*

Errors :

Under OCCURRENCE Walther indicated :

OCCURRENCE. Mexico, presumably Veracruz.

1. As the origin of Baker's plant is completely unknown, to indicate "Veracruz" is simply a fiction.

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. *Purpus*, 08/4455 (UC), without locality, presumably from Veracruz. Cultivated: Missouri Bot. Gard., C. H. Thompson,

2. The specimen Purpus 4455 was determined as "*Cotyledon*" - it was Walther himself who determined it as "vic. *E. atropurpurea* (Bak.)". It is devoid of leaves and a possible stem, i.e. it is impossible to know what plant it represents and that it originated in Veracruz is fiction.

COLLECTIONS. Mexico. *Purpus*, 08/4455 (UC), without locality, presumably from Veracruz. Cultivated: Missouri Bot. Gard., C. H. Thompson, 05/304 (MO).

3. This refers to a not identified plant cultivated in the botanical garden of Missouri, which Walther himself arbitrarily designated as *E. atropurpurea* what allowed him to list it under COLLECTIONS !

4. While Baker - regarding the origin of *E. atropurpurea* - had stated "probably a native of Mexico", in the Key to Series *Elatae* its Mexican origin for Walther was a certainty – of course totally unfounded.

C. Sepals reflexed at anthesis; leaves narrow, 10 to 15 cm. long by 5 cm. broad or less, glaucous tinged with purple. Mexico.
D. Leaves flat or nearly so; corolla 12 to 15 mm. long. . . 101. *E. atropurpurea*

5. Acc. to Baker the corolla is 12.5 mm, not 12 – 15 mm long.

Under REMARKS Walther wrote :

REMARKS. Baker, *loc. cit.*, wrote: "Nearest *C. canaliculata*, but leaves much broader and spatulately narrowed in lower half, their color characteristic, calyx and corolla much smaller." According to W. W. Saunders, this was first grown by de Smet of Ghent; it appears lost to cultivation at present, but seems to have been grown both at Washington, D. C., and at the Missouri Botanical Garden not too long ago. Aside from *E. canaliculata*, this should

6. "Seems to have been grown [...] at Washington" – this refers to plate ten, p. 232, which however represents *E. racemosa* and is very obviously not corresponding at all to *E. atropurpurea* (Baker) Morren which is illustrated in fig. 177.

7. "at the Missouri Botanical Garden" – refers to the above cited specimen C.H. Thompson 304 which Walther himself arbitrarily had determined as *E. atropurpurea* – unquestionably a convincing and irrefutable proof that the plant had been cultivated in the US some 50 years ago ! ! !

Comment :

Walther's chapter about *E. atropurpurea* is of no use and regarding the coloured plate even misleading. It is not understandable how Walther - while citing Baker's description and providing Baker's illustration, i.e. knowing well both, description and illustration, - nonetheless could identified this strikingly different plant as *E. atropurpurea* (Baker) Morren. An absurdity. But obviously none of the users of Walther's monograph were taken aback by two such contradictory illustrations.

This is another very vivid example of how he unrestrainedly manipulated existing material to his liking.

102. *Echeveria canaliculata* Hooker fil. (p. 330-331)

The plants Hooker fil. named and described as *E. canaliculata* were "received from Mr. Staines from the Real del Monte mountains of Mexico, many years ago". The description was published in *Curtis' Botanical Magazine* pl. 4986, 1857 :

DESCR. *Stem* short, thick, between fleshy and woody, erect, marked with the scars of fallen leaves. When not in a flowering state, all the *leaves* are rosulate, crowded, patent, four to six inches long, oblong or somewhat strap-shaped, thick, fleshy, tapering gradually upwards into a very slender almost filiform point, deeply channelled above, semiterete beneath, glaucous but much tinged with purple. *Flowering stem* or *branch* elongated, one and a half to two feet high, its lower leaves the same as the rosulate ones, the rest are placed far apart (yet numerous), of the same shape, but smaller than the rest, with a gibbosity or blunt spur at the base beneath (not dilated like the rosulate ones), gradually passing upwards into small, very glaucous, oblong-obtuse *bracteas*. *Raceme* a span or more long. *Pedicels* half an inch or more long, with a few minute subulate *bracteoles*. *Calyx* of five, equal, linear-lanceolate, patenti-deflexed, glaucous *sepals*, much resembling the bracteas. *Corolla* nearly an inch long, rather bright brick-red, orange within. *Sepals* five, erect, close-placed, united at the base into a short dilated five-angled tube, the segments linear-lanceolate, the apices moderately spreading. *Stamens* quite included, five inserted at the base of the corolla, five smaller ones a little higher up. *Anther* oblong. *Ovaries* five, narrow, oblong, subcoadunate : at the base of each is a conspicuous, suborbicular *gland*, with a depression on the upper side. *Styles* slightly twisted. *Stigma* globose.

Walther's text

Walther's description of *E. canaliculata* is a copy of Hooker's description, however the measures are not always shown correctly.

Errors :

Under OCCURRENCE and COLLECTIONS Walther indicated :

OCCURRENCE. Mexico. Said to have come from vicinity of Real del Monte, (?) Hidalgo; recently from Motozintla, Chiapas.

1. Hooker fil. however stated : "from the Real del Monte mountains of Mexico".

Under OCCURRENCE Walther indicated :

(?) Hidalgo; recently from Motozintla, Chiapas.

COLLECTIONS. Mexico. Motozintla, T. MacDougall in 1958. Cultivated:

2. And the plant from Motozintla, collected by MacDougall, is definitely not *E. canaliculata* but rather a still undescribed species.

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Motozintla, T. MacDougall in 1958. *Cultivated*: Dept. of Parks, Bronx, New York (US); Strybing Arboretum, Golden Gate

3. The specimen US 592711, annotated simply as "Echeveria", consists of a piece of stem, an inflorescence and a single leaf, and most deserving a photo of the living plant apparently cultivated at the Dept. of Parks, Bronx, and from which the New York Botanical Garden had received it where it flowered in 1910. There is no information regarding the origin of this plant. In any case it does in no way represent *E. canaliculata*, the leaves are far too small and the flowers not even half the size of those of the latter. But this did not stop Walther to determine it – of course wrongly - as *E. canaliculata* so that he could list it under COLLECTIONS.

Under REMARKS Walther wrote :

REMARKS. While this appears to have been in cultivation quite recently at Dahlem and the Huntington Botanical Gardens, all trace of it is now lost.

4. There is no record either at Dahlem or at HBG regarding *E. canaliculata* in cultivation there in those years.

differs in its flat leaves, shorter corolla, and shorter sepals. South American species with large leaves resembling this are *E. bicolor* and *E. cuencaensis*, both of which differ in having shorter corollas and spreading sepals.

5. The leaves of *E. cuencaensis* are only to 7 cm long and those of *E. bicolor* to 9 cm – so clearly not large leaves. Moreover comparisons with *E. cuencaensis* are futile because – as explained – Walther confused *E. cuencaensis* and *E. quitensis*.

Comment :

Apart from the more or less correctly cited description by Hooker fil. Walther's text is fiction or wishful thinking.

103. Echeveria penduliflora E. Walther (p. 332-333)

The plant Walther named and described as *E. penduliflora* was collected by MacDougall near San Sebastian de los Fustes, Oaxaca, at 4000 feet, 25 January 1956. The description was published in *Cact. Succ. J. (Los Angeles)* 30: 151, 1958 :

Description: Plant glabrous, caulescent; stem erect, usually simple, to 30 cm. tall or more; leaves scattered alternately or subrosulate at top of stem, thinnish, oblong-ob lanceolate, to 14 cm. long and 4 cm. broad, narrowed to 2 cm. at the thick, keeled petiole, faintly keeled beneath, shallowly concave above, at tips upcurved and mucronate; inflorescences 1 or 2, arising from below leaves, to 30 cm. tall; peduncle erect, to 5 mm. thick at base; lower bracts strongly ascending, to 5 cm. long and 15 mm. broad, obovate-oblong, at apex upcurved and acute, shallowly concave above, faintly keeled beneath, spurred at base; racemes many-flowered, unilateral, to 25 cm. long, flexuose, with 60 or more flowers, these strongly pendulous, crowded or remote; upper bracts abruptly deflexed from the spurred base, but becoming erect in fruit, bearing 2 minute, slender, fugaceous linear bractlets less than 2 mm. in length; sepals subequal, longest 6 mm. long, linear-deltoid, apiculate, ascending; corolla to 13 mm. long, 9 mm. in basal diameter, 4 mm. at mouth, bluntly pentagonal; petals with shallow basal hollow within; carpels 9 mm. long; nectaries 2 mm. broad, truncate-reniform. Fls. VI-

Color: Leaves above cerro-green, beneath asphodel-green; peduncle and rachis grape-green; lower bracts as the leaves; upper bracts and sepals pale-violet-gray; corolla geranium-pink to peach-red and jasper-pink, tips of petals in buds noticeable delft-blue; carpels white at base, above chartreuse-yellow to kildare green; styles dull-indian-purple; nectaries white.

In the protologue Walther wrote : "While this clearly belongs into our Series *Racemosae*, there the tall caudex and scattered leaves are atypical", he seems to have subsequently changed his mind because in the monograph it is placed in Series *Elatae*.

recently in Oaxaca by Mr. Thomas MacDougall. It shows some similarities to both *E. atropurpurea* and *E. canaliculata*, both of which have the sepals

The comparison with *E. atropurpurea*, a plant long lost to cultivation, never found in the wild in Mexico and probably being a hybrid – moreover in the monograph illustrated with the watercolour of *E. racemosa* (plate ten, p. 232) - is completely pointless.

No comment.

104. *Echeveria venezuelensis* Rose (p. 334-335)

The plant Rose described as *E. venezuelensis* was collected by H. Pittier at Los Chorros, above Dos Caminos, about 12 miles east of Caracas, Venezuela, March 1913, alt. 900 m. The description was published in *Gentes Herbarum*, 1930 :

"Glabrous, caulescent, 1 dm. or so long crowned with a rosette of 12 to 18 leaves; leaves fleshy, oblanceolate, 8 cm. or less long, cuneate at base, acute at apex, pale green, more or less glaucous especially beneath, the margins more or less incurved especially when young; flowering stem 3 to 4 dm. long, erect, the lower half bearing closely set leaves borne nearly at right angles to it similar to those in the rosettes but smaller; inflorescence a many-flowered equilateral raceme, 2 to 3 dm. long; bract narrow, 10 to 15 mm. long, acute, subtending the flowers, becoming free at base and then only attached to the under side of the pedicel; bractlets 2, borne on opposite sides of the pedicel, narrow; pedicels 5 to 7 mm. long, spreading; calyx-lobes left nearly to the base, somewhat unequal, 6 to 8 mm. long, ovate-linear, acute, glaucous, purplish green, at first erect, in anthesis widely spreading, then erect again; corolla bud ovoid, 5-angled, acute, when open 10 mm. long, pinkish; petals erect, the tip acute and a little spreading; filaments included, 10, 5 free and 5 borne on the petals; ovary erect, the styles short, purplish; scale at base of capsule broad and low.

Walther's text

In 1935 Walther published *Echeveria venezuelensis* as a synonym of *E. bicolor* (*Cact. Succ. J. (Los Angeles)* 7: 39) and subsequently redetermined all specimens of *E. venezuelensis* he could get hold of as "*E. bicolor* (HBK) EW". And as late as 1957 he redetermined the isotype of *E. venezuelensis* as *E. bicolor*. Regarding the text in the monograph he subsequently changed his mind due to "further considerations":

REMARKS. Further considerations have induced me to retain *E. venezuelensis* as distinct, at least until living material from Venezuela comes to hand. The type of *E. bicolor* Humboldt, Bonpland, and Kunth includes two

Because no plants were in cultivation at that time, Walther copied the original description by Rose, "amending" it by adding details – wherefrom he got them we are not told. So his description is of course worthless :

keeled and hollowed within at base; nectaries broad and low. Description after the original description, as amended by the author.

Errors :

Under REMARKS he wrote :

hand. The type of *E. bicolor* Humboldt, Bonpland, and Kunth includes two collections, of which the one from Caracas, number 610, is very fragmentary, while the other, from Pasto in southern Colombia, is possibly another species.

1. Walther clearly erred, both numbers, 610 & 2135, are from Caracas, Venezuela ! There are two sheets with the number 2135 at P. One of them is labelled "3. *Sedum bicolor*. mn.n. 2135", no location is indicated. The other is labelled "*Sedum bicolor* HBK. N. Gen. sp. VI, 45. **Caracas, Pasto.**" So there is no doubt whatsoever that "2135" also refers to a collection locality at Caracas and not to a place called Pasto in southern Colombia ! ! ! What an absurd idea to suggest that Humboldt & Bonpland were referring to two locations many hundreds of kilometres apart and even situated in two different countries as the place of discovery of *S. bicolor* (see comment on 105. *E. bicolor*) !

What now follows is Walther's justification for considering *E. venezuelensis* a distinct species :

However, in this last number 2135, one flower clearly shows the bigibbose shape of the petals, so different from that seen in the present species. In view of the doubt still existing, I am unable to cite any further exsiccatae.

2. Which one of the 13 flowers of the two pressed inflorescences shows a bigibbose shape of the petals is not recognisable with the best will in the world, nevertheless Walther based the separation of *E. venezuelensis* from *E. bicolor* on this – not to speak of the fact that such a detail is a pure quibble and of no taxonomic significance whatsoever. In his remarks regarding Series *Elatae* this individual observation, which is dubious in itself, is elevated to a fundamental criterion for differentiation :

I feel certain that *E. bicolor* and *E. venezuelensis* are distinct, despite their close proximity near Caracas; the shape of the corolla and of the petals appears to be decisive.

The shape of the corolla and of the petals are the reason why *E. venezuelensis* henceforth should be considered a distinct species - as if these minimal differences would justify this ! A comparison of the type specimens of the two species does not substantiate this "feeling" at all.

D. Leaves closely rosulate, usually glaucous; pedicels of even upper flowers elongated; petals broadest near base. 104. *E. venezuelensis*

3. The characterisation of *E. venezuelensis* in the key to Series *Elatae* : "pedicels of even upper flowers elongated; petals broadest near base" does not correspond to the description by Rose and is also not substantiated by the illustration fig. 181.

Comment :

Walther's treatment of *E. venezuelensis* is of no use at all.

105. *Echeveria bicolor* (Humboldt, Bonpland, Kunth) E. Walther (p. 335-337)

E. bicolor was collected by Humboldt & Bonpland in Venezuela (near Caracas) and described by Kunth as *Sedum bicolor*. The description was published in *Nova Genera et Species Plantarum* 6: 45, 1823 :

3. SEDUM BICOLOR. †

S. herbaceum; erectum aut procumbens; glabrum; foliis alternis, planis, obovato-spathulatis, acutiusculis, integerrimis; racemis terminalibus; floribus pedicellatis; petalis oblongis, acutis.

Crescit in umbrosis, humidis, prope Caracas, alt. 410 hex. (Hacienda del Señor Blandin); item inter rupes, prope Meneses Pastoensium, alt. 1322 hex. (Nova Granata) ¶

HERBA carnosa, pedalis, erecta aut procumbens, glabra. FOLIA sparsa, obovato-spathulata, acutiuscula. integerrima, plana, glabra, $2\frac{1}{2}$ pollices et longiora, pollicem lata. RACEMI terminales. FLORES pedicellati, magnitudine floris Sempervivi arachnoidei; pedicellis 3-4 lineas longis, basi bracteatis; bractea lanceolata, 9-10 lineas longa. CALYX quinquepartitus, unibracteatus, viridis, glaber, persistens; laciniis lanceolatis aut oblongo-lanceolatis, acuminatis, planis, subæqualibus; bractea lineari-lanceolata, obtusiuscula, subconcava, glabra, calyce parum brevior. PETALA quinque, fauci calycis inserta, oblonga, acuta, basi lata, plana, dorso carinata, glabra, calyce parum longiora, æqualia, patula, externe rubra (aurantiaca?), interne flava; ante apertionem floris margine incumbens. STAMINA decem, corolla parum breviora; quinque, petalis opposita, supra eorum basim inserta; quinque alterna calyci inserta, reliquis parum longiora. FILAMENTA subulata, libera, glabra; alterna, petalis opposita, parum breviora. ANTHERÆ oblongæ, acutiusculæ, basi emarginatæ ibique affixæ, erectæ, biloculares, glabræ, longitudinaliter latere dehiscentes. PISTILLA quinque, sessilia, inæquilatero-lageniformia, glabra, æqualia. OVARIUM oblique ovatum, dorso convexum, ventre angulatum, uniloculare, apice in stylum subulatum desinens; ovula creberrima, minuta, clavato-oblonga. Placenta angulo interno loculi longitudinaliter affixa, bilamellata; lamellis angustis. Squama carnosa, abbreviato-truncata, glabra, ad basim cujuslibet ovarii, petalo opposita. STYLII conniventes, rubri, stamina subæquantes. STIGMATA acuta. FRUCTUS desideratur.

Walther's text

Walther's first comment on *E. bicolor* was published in *Cact. Succ. J. (Los Angeles)* 7: 39, 1935, declaring the transfer of *Sedum bicolor* to *Echeveria bicolor* :

4. *Echeveria bicolor* (HBK.) EW., new combination.

Sedum bicolor Humboldt, Bonpland & Kunth, Nov. Gen. & Spec. Plant, 45. 1823.

Echeveria bracteolata Link, Klotzsch & Otto, Icon. Plant. Rar., 1:2:68. 1841.

Cotyledon subspicata Baker, Saund. Ref. Bot., 1:30. 1869.

Echeveria venezuelensis Rose, Gentes Herbarum, 2:4. 1930.

Remarks: Through the kindness of Dr. Guillaumin of the Jardin des Plantes, Paris, we have obtained a photograph of Humboldt's type, which clearly belongs into *Echeveria*, as already suggested by DeCandolle. All subsequent collections from Caracas seem to be the same species; and *E. subspicata* from Columbia seems to differ very little.

Errors :

1. For the monograph Walther once more did not quote the First Description but wrote a new one from a plant "received from Dr. Leon Croizat, Caracas", without information regarding its origin,

3.5 mm. broad. Description of living plant growing in the Strybing Arboretum, Golden Gate Park, San Francisco, originally received from Dr. Leon Croizat, Caracas, Venezuela.

..... "growing in the Strybing Arboretum, Golden Gate Park, San Francisco". Obviously it did not occur to Walther that just because the plant had been sent to him from Caracas it did not necessarily have to be *E. bicolor*. And he also failed to notice that his description of the plant from Caracas agreed in all essential respects with his description of *E. montana* : The Caracas plant is slightly larger in all parts, but the proportions are the same, shape and colour of the leaves, shape of the lower bracts, size of the upper bracts, colour of the sepals, shape and colour of the corolla and even the nectaries are the same. That means Walther's description of *E. bicolor* is a redescription of *E. montana* ! That it cannot have been *E. bicolor* is supported by Uhl who had found a chromosome number of $n = 22$, a number not found in any of the Venezuelan species. Conclusion : Walther's conception of *E. bicolor* is based on *E. montana* and his description is of course completely worthless. And of course the characterisation of *E. bicolor* in the key to series *Elatae*, based on *E. montana*, is also useless :

D. Leaves subrosulate, green, scarcely glaucous; pedicels of upper flowers short; petals broadest above the middle. 105. *E. bicolor*

2. Regarding the origin of *E. bicolor* Humboldt & Bonpland indicated two localities :

TYPE. *Humboldt and Bonpland* no. 610 (P), New Grenada, "crescit in umbrosis, humidis, prope Caracas, alt. 410 hex., Hda. Sr. Blandin; item inter rupes, prope Meneses Pastoensium, alt. 1322 hex. (no. 2135)."

- n° 610 (P), New Grenada, crescit in umbrosis, humidis, prope Caracas, alt. 410 hex., Hda. Sr. Blandin,
- n° 2135 (P), item inter rupes, prope Meneses Pastoensium, alt 1322 hex.

Walther interpreted the latter as a locality in southern Colombia and indicated :

OCCURRENCE. Venezuela: near Caracas (type). Colombia: Sierra de Santa Martha (*Purdie*, type of *C. subspicata*); Dept. Magdalena, about 30 miles inland from Dibulla, near Pasto, southern Colombia; etc.

Aguila, above Chachapo, *Steyermark*, 44/55674 (F). Colombia: near Pasto, *Humboldt and Bonpland* (P, type); Dept. Boyaca, Nevado del Cocuy,

How did he get this idea ?

There are two sheets with the number 2135 at P. One of them is labelled "3. *Sedum bicolor*. mn.n. 2135", the other is labelled "*Sedum bicolor* HBK. N. Gen. sp. VI, 45. **Caracas, Pasto**." So there is no doubt whatsoever that the collection locality Pasto is at Caracas and not a place called Pasto in southern Colombia !!! It was obviously a lack of thoroughness and care in checking the herbarium specimen that led him to this conclusion. But if this had been the case, as he said, it would have meant that Humboldt and Bonpland had indicated two hundreds of kilometers distant collection localities for the type of their *Sedum bicolor*. And to accuse the two botanists of this would have been more than absurd Btw von Poellnitz, whose treatment of genus *Echeveria* was well known to Walther, was clearly aware of the fact that Pasto was a Venezuelan locality. In short : Walther grossly erred : **Pasto** is not in southern Colombia ! And of course his listing of *E. bicolor* for Colombia under GEOGRAPHICAL OCCURRENCE is also wrong.

3. As synonyms of *E. bicolor* Walther indicated :

a) *E. subspicata*

This species was collected on rocks near the snow line on Chevada de Santa Marta, Dept. Magdalena, **Colombia, 5800 m** asl. - very far from the type locality of *E. bicolor* near Caracas ! It is only known from a dried specimen, i.e. *E. subspicata* is an unsufficiently known and therefore doubtful species.

While in the above cited article in *Cact. Succ. J. (Los Angeles)* 1935 *E. subspicata* (Baker) Berger was indicated as a **var.** of *E. bicolor*

4a. *Echeveria bicolor* var. *subspicata* (Baker) EW., new combination.

Remarks: See remarks under preceeding item. In as much as examination of dried specimens alone can be relied upon, our treatment is borne out by a survey of all Colombian material seen.

... in the monograph it was reduced to a **synonym** of the latter :

Cotyledon subspicata BAKER, in Saunders Refug. Bot., vol. 1, no. 30, 1869.
Echeveria subspicata (Baker) BERGER, in Engler, Nat. Pflanzenf. ed. 2, vol. 18a, p. 473, 1930.

In view of the fact that *E. bicolor* is exclusively occurring at much lower elevations of 1000 – 1500 - 2000 m while *E. subspicata* is growing near the snow line, this is absurd. However the reason why Walther considered *E. subspicata* synonymous with *E. bicolor* is obvious : it is his wrong concept of the latter. As explained above he mistook *E. montana* for *E. bicolor* and as far as the inflorescence is concerned, *E. subspicata* is clearly resembling *E. montana*.

b) *E. bracteolata*

Echeveria bracteolata LINK, KLOTZSCH AND OTTO, Icones Plant. Rar. Hort. Berol., vol. 2, p. 68, 1844; LINDLEY, Bot. Reg., Misc. matter, vol. 31 (new ser., vol. 8) p. 13, 1845. Juvenile stage of *E. bicolor*.
Cotyledon bracteolata (Link, Klotzsch and Otto) BAKER, in Saunders Refug. Bot.,

Why *E. bracteolata* is called a "juvenile form of *E. bicolor*" we are not told. In his REMARKS to Series *Elatae*

related. Depauperate forms of *E. bicolor* appear to be common in Venezuela and Colombia, and include *E. bicolor* var. *turumiquirensis* and *E. bracteolata*, which may be looked for under *E. quitensis*. Much more field-collected mate-

it is even called a "depauperate form of *E. bicolor*". As the splendid illustration fig. 182 evidences,

Figure 182. 105. *Echeveria bicolor* (Humboldt, Bonpland, and Kunth) E. Walther. Flowering plant about $\times 0.75$ (about natural size in the original); floral parts enlarged. From the original publication *Echeveria bracteolata* Link, Klotzsch, and Otto (Icones Plantarum Rariorum Horti Regii Botanici Berolinensis, volume 2, plate 27).

neither of the two characteristics does justice to this plant.

Under OCCURRENCE Walther listed :

OCCURRENCE. Venezuela: near Caracas (type). Colombia: Sierra de Santa Martha (Purdie, type of *C. subspicata*); Dept. Magdalena, about 30

4. As explained above, *E. subspicata* is neither a var. nor a synonym of *E. bicolor*, therefore its type locality is completely out of place here.

5. As far as *E. bicolor* var. *turumiquirensis* is concerned – a plant doubtlessly closely related to *E. bicolor* – Walther felt appropriate to indicate it in the synonymy of *E. quitensis*, a decision which prompted him 1958 to redetermine all specimens of *E. bicolor* var. *turumiquirensis* he could get hold of as *E. quitensis*. (The same happened to Steyermark 62345a, collected at Monagas and det. as *E. bicolor*, at US, while the same Steyermark n° at F was redetermined as *E. bracteolata* !) All this is completely unintelligible.

Under COLLECTIONS Walther listed :

COLLECTIONS. Venezuela: near Caracas (P, type); Merida, Laguna Negra, Orillas de la Laguna, Hno. Gines, 51/1741 (US); Rio Tormero below El

6. Gines 1741 is **not at all** *E. bicolor*, the specimen represents a plant collected at 3500 m ! (Probably *E. recurvata*).

Orillas de la Laguna, Hno. Gines, 51/1741 (US); Rio Tormero below El Aguila, above Chachapo, Steyermark, 44/55674 (F). Colombia: near

7. Steyermark 55674 is not identifiable because the specimen is lacking an inflorescence. In any case it is **not** *E. bicolor* because the respective plant had been collected at 3650 – 3965 m.

Aguila, above Chachapo, Steyermark, 44/55674 (F). Colombia: near Pasto, Humboldt and Bonpland (P, type); Dept. Boyaca, Nevado del Cocuy,

8. As already explained above, this locality is non-existent, it is the result of Walther's careless study of the respective herbarium specimen.

Pasto, Humboldt and Bonpland (P, type); Dept. Boyaca, Nevado del Cocuy, Valle de la Cueva, J. Cuatrecasas, 38/1310 (F,US); Cauca, Coconuco, Kjell

9. Cuatrecasas 1310 is *E. subspicata* – wrongly synonymised by Walther with *E. bicolor*.

Valle de la Cueva, J. Cuatrecasas, 38/1310 (F,US); Cauca, Coconuco, Kjell von Sneidern, 39/2337 (F,G,US); Dept Magdalena, Sierra de Santa Martha,

10. This is determined as *E. quitensis*.

von Sneidern, 39/2337 (F,G,US); Dept Magdalena, Sierra de Santa Martha, Purdie (type of *Cotyledon subspicata*); 30 miles inland from Dibulla, Seifritz, 32/431 (US); College of West Indies Exp., 54/7 (US). Cultivated:

11. These are *E. subspicata* collection localities.

fritz, 32/431 (US); College of West Indies Exp., 54/7 (US). Cultivated: Strybing Arboretum, Golden Gate Park, San Francisco, from Dr. L. Croizat, Caracas, E. Walther (CAS).

12. This is *E. montana*, erroneously considered by Walther to be *E. bicolor*.

In short : Apart from the type, none of the listed collections is correct for *E. bicolor*.

Comment :

There are glaring errors that characterise this text.

1. Walther failed to scrutinise and verify the plant sent to him from Caracas - which actually is a matter of course – with the consequence that he described *E. bicolor* as *E. montana*. This has the further consequence that he misclassified *E. subspicata* and accordingly listed – among others – *E. subspicata* specimens for *E. bicolor*.

2. He did not carefully study the Humboldt and Bonpland specimens and therefore came to a completely wrong conclusion regarding the origin of *E. bicolor* and not even the correct information in von Poellnitz's text could teach him better and cause him to question his own conclusions.

Walther's text about *E. bicolor* is highly flawed and totally unusable - unfortunately it has nevertheless wrongly shaped the image of *E. bicolor* for decades - as a plant that looks like *E. montana*.

106. *Echeveria cuencaensis* Poellnitz (p. 337-338)

E. cuencaensis was collected by Rose together with his assistant Pachano and his son George near Cuenca, 17. – 24. September 1918. The respective specimen is US 1022515, it was originally determined as "*Echeveria ingens* Rose sp. nov." Rose did never made a description and the name *E. ingens* was never validly published. It was von Poellnitz who made a description after a herbarium specimen at the Botanical Garden of Berlin. As he had never seen a living plant, he did not know whether the plant had a stem or not and he also did not know the colour of the flowers. In view of the collection locality – near Cuenca – he named it *E. cuencaensis*. His description (in German) was published in *Repert. Spec. Nov. Regni Veg.* 38: 187, 1935 :

4. *Echeveria cuencaensis* von Poellnitz spec. nov. — *Echeveria ingens* Rose in Herb., non Berger 1930. — Glabra. Acaulis vel caulescens? Folia oblonga vel oblongo-obovata, mucronata, usque 7 cm longa, 2½ cm lata. Inflorescentia multiflora, aequilateraliter racemosa, sed flores inferiores 2 aggregati. Pedicelli breves. Calycis lobi corollae adpressi, inaequales, usque circ. 7 mm longi. Corolla 10—14 mm longa. Stamina omnia corollae affixa. — Kahl. Stammos? Blätter länglich oder verkehrt-eilänglich, gespitzt, sicher grau bereift, am Rande rot, die älteren bis 7 cm lang, 2½ cm breit. Blütenstengel verlängert. Stengelblätter unbekannt. Blüten zu mehr als 30 in einer allseits wendigen Traube, deren untere Stielchen etwas verlängert sind und je 2 Blüten tragen. Stielchen kurz, etwa 3 mm lang. Deckblätter unbekannt. Kelchröhre kurz, Zipfel ungleich, spitz, bis ungefähr 7 mm lang, der Krone angedrückt. Krone etwa 12—14 mm lang, sicher rot, Röhre kurz, etwa 1—2 mm lang, Zipfel spitz, oben nach außen gebogen, am Rande und an der Spitze wahrscheinlich gelb oder rötlich. Staubfäden rot, die episepalen der Kronenröhre oben angewachsen, 5—6 mm lang, die epipetalen ungefähr 2 mm höher den Zipfeln angeheftet, etwa 3 mm lang. Beutel schmal, etwa 1 mm lang. Fruchtblätter aufrecht, am Grunde etwas untereinander verwachsen, rot?, ungefähr 5 mm lang, Griffel aufrecht, rot?, etwa 2 mm lang.

Ecuador: Bei Cuenca, 17.—24. September 1918, I. N. Rose, A. Pachano et George Rose 22941!.

Walther's text

Instead of writing a new description as he used to do, Walther for once contented himself with translating von Poellnitz's German description.

Error :

celsa from Peru in having longer pedicels, but shorter corolla. The Mexican *E. canaliculata* and *E. atropurpurea* both have much longer pedicels and reflexed sepals.

E. atropurpurea originated in the nursery of Louis de Smet, Ghent. There is no Mexican origin known.

Comment :

That Walther confused *E. quitensis* and *E. cuencaensis* has become evident in his partly erroneous listing of *E. quitensis* specimens (see comment to 83. *E. quitensis*).

107. Echeveria excelsa (Diels) Berger (p. 338)

E. excelsa was first described by Diels as *Cotyledon excelsa* and published in Bot. Jahrb. Syst. 37(4): 412, 1906. The plant had been collected by Weberbauer 1903 in Peru, Dept. of Ancash, between Samanco and Huaraz at 3300 - 3400 m :

Cotyledon excelsa Diels n. sp.; caulis basalis percrassus 3—5 cm diamet. Folia subrosulato-conferta oblongo-obovata vel oblanceolata basin versus sensim angustata apice acuta 12—15 cm longa 3,5—4 mm lata. Scapus peraltus foliis appressis decrescentibus remotis parce praeditus circ. 1—1,2 m altus. Spica anguste cylindrica floribus infimis remotis; bracteae 15 mm longae 3 mm latae oblongo-lanceolatae complicatae; sepala ovata 7 mm longa, circ. 3 mm lata; petala lanceolata, implicata, acuta 16—20 mm longa, 5—7 mm lata scarlatina.

Peru: Depart. Ancachs inter Samanco et Caraz infra praedium Cajabamba in rupibus 3300—3400 m, flor. m. Maj. 1903 (WEBERBAUER n. 3149 — Herb. Berol.).

It was Berger who in 1930 classified it as an *Echeveria* species.

Walther's text

Walther's description is "after Diels".

Errors :

Under TYPE Walther indicated :

TYPE. Weberbauer, 03/3149, below Estate Cajabamba, between Samanca and Huaraz, Dept. Ancash, Peru, altitude 3300 to 3400 m. (B; destroyed?).

1. The correct names read : "Samanco" and "Caraz", not "Huaraz".

Under COLLECTIONS Walther listed :

COLLECTIONS. The type; Matarragua, *E. Cerrate*, 49/73 (US).

2. Cerrate 73 is not extant at US.

Under REMARKS Walther wrote :

broader, in *E. canaliculata* the leaves are deeply hollowed above, in *E. atropurpurea* the flowers are long-pedicelled, and in *E. peruviana* the leaves are

3. The comparison with *E. atropurpurea*, a plant long lost to cultivation, never found in the wild in Mexico and probably being a hybrid is completely pointless.

No Comment.

Series 11. Racemosae (Baker) Berger

differences, the species of this series indeed have much in common. The length of pedicels, on which depends whether the inflorescence is spicate or racemose, is a most uncertain character; so that I prefer giving weight to development of the caudex, most species of the series Racemosae being practically stemless.

Walther states that pedicel length is a most uncertain character, however in the Key to Series *Racemosae* pedicels play a decisive role :

A. Pedicels relatively short and stout.

A. Pedicels slender, elongated, as long as or longer than corolla.

Weight is given to the development of the caudex – however there is no mention of a caudex in the entire Key, i.e. the Key demonstrates the contrary.

Nonsensically *E. peruviana* and *E. chilensis* are listed twice with identical text :

E. Leaves narrower, scarcely over 25 mm. wide, if so, then over 3 times as long as broad, acute to acuminate, occasionally more or less glaucous; stem distinct in age; corolla red, or red and yellow.
F. Leaves broader, 5 to 7 cm. long by 25 mm. wide, more or less glaucous; corolla 12 to 15 mm. long, red and yellow. Peru, Bolivia, Argentina. 121. *E. peruviana*
F. Leaves narrower, 15 to 20 cm. long by 25 mm. broad, green or brownish; corolla 13 to 20 mm. long, red. Peru. 122. *E. chilensis*

E. Leaves larger, broader; inflorescence taller.
F. Leaves broad, 5 to 7 cm. long by 25 mm. broad, more or less glaucous; corolla 12 to 15 mm. long, red and yellow. Peru, Bolivia, Argentina. 121. *E. peruviana*
F. Leaves narrow, 15 to 20 cm. long by 25 mm. wide, brownish green, not glaucous; corolla 13 to 20 mm. long, red. Peru, Chila. 122. *E. chilensis*

108. *Echeveria racemosa* Schlechtendal and Chamisso (p. 340-342, 233) and

109. *Echeveria lurida* Haworth (342-344)

Echeveria racemosa was one of the countless plants the two German explorers Schiede and Deppe collected in Mexico between 1824 and 1829 – most likely in 1828. While travelling in the Mexican state of Veracruz they found it at Jalapa. Material was sent to Berlin where Schlechtendal and Chamisso 1830 described it as *E. racemosa*. The description was published in *Linnaea* 5: 554, 1830 :

520. *Echeveria racemosa* n. sp. ex toto glaberrima. Foliis radicalibus carnosulis ellipticis acutis muticis rosulatis, scapo simplici nudo (squamis scapi alternis bracteis-que squamiformibus caducis), racemo spiciformi elongato, floribus alternis erectis breviter pedunculatis. — — Statura spithamea et sesquipedalis. Folia pollicaria et bipollicaria. Flores (coccinei?) magnitudine caeterisque floribus *E. coccinae* similes, sepalis vero brevioribus mucronatis nec acuminatis, et petalis angustioribus. — — Jalapae ad muros Aug.

The plant was cultivated in the Berlin Botanical Garden and Ch.F. Otto, inspector of this botanical garden, informed his friend Haworth about this novelty who in turn described it in 1831 as *E. lurida* – ignoring that it had already been named by Schlechtendal & Chamisso – i.e. *E. racemosa* and *E. lurida* are identical and Haworth's description of *E. lurida* is a redescription of *E. racemosa*.

Haworth's description was published in *Taylor's Phil. Mag. and Ann.*, 10: 418, 1831 :

lurida. E. (The dingy-leaved) subcaespitosa: foliis imis lanceolato-cuneatis lividis, superioribus lanceolatis, floribus racemoso-spicatis.

Habitat in Mexico. G. H. 2.

Communicavit amicus Dom. Otto.

Obs. Herba succulenta perennis sive suffrutex laxè caespitosa surculis paucis brevibus. *Folia* paginis laevibus glauco-fusca inflexo-concava, et nitentia, si benè culta; *subtus* convexa obtusè carinata, margine cartilagineo, tenuiter exasperato; *apice* saepè parùm recurva acuminulata. *Scapi* in plantâ nostrâ tres dorantales vel pedales, teretes et minimè sursùm attenuati laeves pallidi seu albicantes, primò terminales, sed citiùs è progressionè plantæ laterales et basi parùm flexi, mox recti et erecti foliolosi seu bracteati. *Bractea* alternæ, folio consimiles, gradatim sursùm minores, distantes patulæ, vel inter flores recurvulæ. Omnes *bractea* sic leviter scapo adnatæ, ut citiùs deciduæ, e levissimo tactu, et insuper terram facillimè radicanter, et (uti folia) in proprias plantas crescentes. *Flores* racemosi, seu racemoso-spicati; superiores confertiores; aperti horizontales. *Pedunculi* breves subindè 1-2-bracteolati. *Corolla* ut in *E. grandifolia* Nob. sed magis coccinea, et certo situ rore glauco cum rubedine vivaciter violascens.

Walther's text

Walther described *E. racemosa* from plants he himself had collected at Jalapa, the type locality, in 1935.

Errors :

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Veracruz: Mirador, Liebmann, 1842/12294

1. The specimen Liebmann 12294 is not identifiable, it consists only in a naked flower stalk with one flower with a 2 cm long pedicel (much too long for *E. racemosa*), no leaves and no possible stem are present. It cannot be cited for *E. racemosa*.

(UC); Jalapa, Rose and Hay, 01/316 (NY,UC,US), 6124 (US); Xalapa de la Banderilla, V. Lobato, 88 (NY). Cultivated: F. Weinberg, Rose, 11/057

2. "Lobato 88" means collected in 1888, i.e. is not a Lobato n°.

la Banderilla, V. Lobato, 88 (NY). Cultivated: F. Weinberg, Rose, 11/057

3. The specimen is determined as *E. racemosa*, redetermined by Walther as *E. lurida*, however cited in the monograph as a collection of *E. racemosa*

4. While Walther's description of *E. racemosa* is from a plant collected at Jalapa, i.e. with known origin, **the description of *E. lurida* he made "based on plants grown locally, of unknown source"**. So it is no surprise that the two descriptions differ considerably :

- **Leaves** of *E. racemosa* are 5 - 8 cm long, those of *E. lurida* 5 - 10 cm long.

- **Raceme** of *E. racemosa* is 10 - 20 cm long, that of *E. lurida* is 20 cm long.

- **Corolla** of *E. racemosa* is to 12 mm long, that of *E. lurida* is 9 - 15 cm long.

The differences clearly evidence that the locally grown plants were wrongly identified, because – as already explained - *E. lurida* Haworth is only a renaming of *E. racemosa* Schlechtendal, the description of the correct *E. lurida* would not differ from that of *E. racemosa*.

Walther's classifying *E. racemosa* and *E. lurida* as two distinct species proves that he obviously completely ignored the historical facts, i.e. that he had not taken the trouble to consult Haworth's text. The consequence : The chapter *E. lurida* in the monograph is to be ignored completely.

Under REFERENCES Walther indicated :

BRITTON AND ROSE, N. Amer. Fl., vol. 22, p. 18, 1905.

5. Rose's text has the flaw that while he had a specimen of *E. racemosa* from Jalapa, the type locality, at his disposition, he knew *E. lurida* only "from garden material", i.e. his comparison is of no use. Moreover his text is rather defective, for. ex. the flowering branches are said to be only 3 – 5 cm long. But most important : Rose had also not taken the trouble to research the prehistory of *E. racemosa* and *E. lurida*.

Cotyledon lurida (Haworth) BAKER, in Saunders Refug. Bot., vol. 1, pl. 59, no. 11, 1869.

6. The citation of Baker reveals that Walther had overlooked the fact that the latter considered *E. racemosa* and *E. lurida* one and the same species, i.e. he had not even checked Baker.

Echeveria racemosa POELLNITZ, in Fedde Repert., vol. 39, p. 219, 1936.

7. "*Echeveria racemosa* Poellnitz" is of course complete nonsense. Von Poellnitz' text is the German translation of "*E. racemosa* Schlechtendal et Chamisso in *Linnaea* V (1830), 554". There is clearly no "*E. racemosa* Poellnitz". Furthermore also von Poellnitz considered *E. racemosa* and *E. lurida* one and the same species, listing the latter as a synonym of the former.

8. Under ILLUSTRATIONS for *E. lurida* Walther listed :

ILLUSTRATIONS. Saunders Refug. Bot., vol. 1, pl. 59, 1869; Bot. Mag., vol. 64 (new ser., vol. 11) pl. 3570, 1837; Bot. Reg., vol. 27, (new ser. vol. 4) pl. 1, 1841.

This is captioned *E. racemosa*.

9. Under TYPE Walther indicated :

TYPE. None designated. Neotype: Botanical Register, volume 27, plate 1, 1841.

Figure 184. 109. *Echeveria lurida* Haworth. From an article by J. Lindley (Edwards's Botanical Register, volume 27, plate 1). This plate is designated neotype for the species.

As *E. lurida* is identical with *E. racemosa*, a neotype is obsolete.

Under OCCURRENCE Walther wrote :

OCCURRENCE. Mexico: Veracruz, vicinity of Orizaba.

10. Orizaba is quite distant from Jalapa. Walther does not explain wherefrom he had got this information.

COLLECTIONS. Mexico. Veracruz: Corral de Pietra, near Zimapan, Pur-

11. While "Corral de Pietra" is in Veracruz, "Zimapan" is in Hidalgo

pus, 06/R-235 (UC). Cultivated: Flowered in Washington, D. C., Rose, 03/531 (US, Walpole drawing). Probably known only in cultivation.

12. This refers to "Plate eleven" :

PLATE ELEVEN

108. *Echeveria racemosa* Schlechtendal & Chamisso. Plant flowering in Washington 21 August 1903; collected at Jalapa, Veracruz, Mexico, the type locality (Rose & Hay 6124 = greenhouse plant 316). Watercolor painting no. 120 by F. A. Walpole, from the U.S. National Herbarium. [See page 340]

.... that means to *E. racemosa*, collected by Rose at Jalapa ! And clearly not "Probably known only in cultivation" ! ! ! Moreover the Walpole drawing is listed twice : also - correctly - under "Illustrations" of *E. racemosa*.

Apart from being completely futile, Walther's *E. lurida* text is a particularly annoying example of his careless working.

Under REMARKS of *E. racemosa* Walther wrote :

Echeveria racemosa is very close to *E. lurida* from the same part of Mexico, but lacks the deeply colored foliage of the latter, and is rather larger in all its parts. *Echeveria carnicolor*, also from near Jalapa, differs in the conspicuous

As explained above *E. lurida* and *E. racemosa* are one and the same plant. These wrong indications are the result of the fact that Walther's so-called *E. lurida* was a plant of unknown origin, i.e. not the correct plant. Of course also his indications in the Key to Series Racemosae are wrong – they refer to the plant he erroneously had identified as *E. lurida*.

Comment :

Walther's texts about *E. lurida* and *E. racemosa*, based on his ignoring the fact that the two names refer to one and the same species, need not be considered any further. And his indications in the Key to Series *Racemosae* are of course obsolete as well.

110. Echeveria carnicolor (Baker) Ed. Morren (p. 345-347)

E. carnicolor was first described and published by Baker as *Cotyledon carnicolor* and published in *Saunders' Refug. Bot.* 3, pl. 199, 1870. The plant was cultivated in W.W. Saunders' collection and believed to have come from Mexico – i.e. origin unknown :

Quite stemless and glabrous. *Leaves* about twenty in a dense rosette, thicker in texture than the average of the section, oblanceolate-spathulate, the outer ones two inches long by three-quarters of an inch broad half-way up, acute, the haft three-eighths of an inch broad just above the base, the face concave, the colour a pale glaucous-green with a decided reddish tinge, the papillæ more distinct than in any other species. *Stems* two or three from the crown of the root, arcuately ascending, not more than half a foot high including the raceme, densely leafy. *Racemes* six- to twelve-flowered, fifteen to eighteen lines broad, not more than an inch and a half to two inches long when fully expanded. *Bracts* linear, the lowest nearly as long as the pedicel, the upper much shorter. *Pedicels* erecto-patent, three to four lines long. *Sepals* lanceolate, subequal, subpatent, two lines deep. *Corolla* bright red when mature, distinctly pentagonal, half an inch deep, the divisions lanceolate, the outer *stamens* inserted near the base of the corolla.

The specific epithet 'carnicolor' is referring to the colour of the leaves, not to the colour of the flowers which are described as "bright red".

When Britton & Rose in 1905 published their revision of the *Crassulaceae* in *North American Flora*, they had never seen a living plant of *E. carnicolor* and therefore included only a very short summary of Baker's description. However in the subsequent years (1906 & 1907) C.A. Purpus collected the plant in the Mexican State of Veracruz and Rose reported the rediscovery in 1909 in *Contributions from the U.S. National Herbarium*, adding a short description of Purpus' plants.

Walther's text

Walther wrote his own description of *E. carnicolor* from a plant said to be traceable to Rose :

February. Description of living plants originally obtained from the University of California Botanical Garden, traceable to Dr. Rose.

His description however differs in several respects from that of Rose :

Leaves : Walther : 5-7 cm long or more, apex obtusish / Rose : 3-4 cm long, apex acute.

Colour of the leaves : Walther : cress-green tinged drab / Rose : more or less glaucous, of a decided bluish tinge with hints of pink and a decided metallic sparkle.

Inflorescences : Walther : up to twelve / Rose : two or three.

Corolla : Walther : 10 mm / Rose : 12 mm

Colour of the flowers : Walther : salmon-orange above, to flesh-color at base / Rose : bright red or orange red.

Comment :

Walther's plants are 1. not "traceable to Dr. Rose" and 2. not *E. carnicolor*. Moreover he apparently ignored that the specific epithet 'carnicolor' refers to the colour of the leaves, not to the colour of the flowers. Needless to say that his description is useless.

111. *Echeveria moranii* E. Walther, new species (p. 347-349) and 112. *Echeveria proxima* E. Walther, new species (p. 350-352)

Glabrous; stem short, 2 to 3 cm. tall, to 8 mm. thick, simple or ultimately branching below, with fibrous roots; leaves rosulate, to 25 or more, erect to spreading, obovate-cuneate, to 6 cm. long, 3 cm. broad, narrowed to 10 mm. at base, 9 mm. thick near middle, upcurved, shallowly concave above, beneath rounded and keeled, mucronate at the somewhat incurved tips, epidermis of young leaves glistening-crystalline and appearing papillose, the lenticular-hemispheric papillae appear to be solid; inflorescences one or two, racemose, equilateral or unilateral, 20 to 30 cm. (50 cm.) tall; peduncle slender, flexuous, laxly ascending, to 4 mm. thick at base; bracts numerous, strongly ascending, elliptic-oblong, to 3 cm. long, 10 mm. broad, nearly flat above, beneath rounded and faintly keeled, basal spur blunt, hyaline; raceme to 20 cm. long, with about 15 nodding flowers; pedicels slender, 1 mm. thick, to 10 mm. long, with two minute, linear bractlets, not thickened near apex; sepals appressed, subequal, longest 4 mm. long, ovate-deltoid, acutish, thick, very turgid at base, strongly connate, with one or two basal sutures visible, their thick bases form an umbilicate depression for reception of the slender pedicel; corolla conoid-cylindroid, bluntly pentagonal, to 13 mm. long, 9 mm. in diameter near base, 4 mm. or more in diameter at mouth; petals bluntly keeled, with basal hollow, at apex rather blunt; carpels 8 mm. long; nectaries transversely lunate-reniform, to 3 mm. wide. Flowers from June on. Description from plant cultivated in San Francisco by Victor Reiter, originally received from Cornell.

Color. Leaves above light elm-green to pois-green, beneath tea-green; margins, mucro, and scattered spots on lower surface maroon, with numerous sub-epidermal, anthocyan-containing idioblasts scattered in the parenchyma just below the upper surface; bracts slate-olive; sepals celandine-green to pale bluish-gray; corolla peach-red to coral-red or scarlet; inside of petals orange-buff; carpels pinard-yellow below, towards styles asphodel-green; stigmas maroon; nectaries whitish.

In the Key to Series *Racemosae* Walther indicated :

- | | |
|--|------------------------|
| E. Leaves conspicuously papillose, the mucronate apex incurved, sepals ascending to very slightly spreading, longest less than half the length of corolla. | 111. <i>E. moranii</i> |
| E. Leaves minutely papillose, their mucro outcurved; sepals appressed, longest to half the length of the corolla. | 112. <i>E. proxima</i> |

Reid Moran's comment in *Cactaceas y Suculentas Mexicanas* 2, 1974 regarding the relationship of *E. moranii* and *E. proxima* :

"On a trip to Oaxaca in November 1957 [...] I collected the type of *E. moranii* 5 km north of Totolapán, at km 618. [...] Thomas MacDougall collected the type of *E. proxima* (B-140) also in 1957, on the same road but about 15 km east of Totolapán, near km 638. This place is in the same type of terrain and at about the same elevation ("about 4000 feet"). Under the same number he collected more plants near km 637 in 1963 and kindly sent me some.

Walther wrote that *E. proxima* is distinct from *E. moranii* in the outcurved mucro of the leaves and the longer sepals, the largest of which he described in the key as half as long as the corolla. The key also describes the leaves as minutely papillose rather than conspicuously papillose and the sepals as appressed rather than ascending to very slightly spreading. However, MacDougall's re-collected plants do not differ from my collections in these respects. Furthermore, they have corollas slightly

larger than others rather than slightly smaller, as implied by Walther's description ; and other minor differences suggested by the descriptions, as in size of leaves, do not hold. Thus it appears that Walther was describing individual plants instead of species and that the alleged differences are trivial. It should be emphasized that the plants grew less than 20 km apart, in the same type of country and at the same elevation. *Echeveria proxima*, so named because it is close to *E. moranii*, thus appears too close and evidently cannot be maintained."

Comment :

Another of Walther's pointless efforts to divide apart two collections from the same locality on the basis of completely insignificant differences while ignoring the realities. No further comment necessary.

113. *Echeveria backebergii* Poellnitz (p. 352-353)

The plant von Poellnitz named and described as *E. backebergii* was collected by Curt Backeberg near Matucana, 2600 m asl. The German description was published in *Repert. Spec. Nov. Regni Veg.* 38: 185-186, 1935 :

2. *Echeveria Backebergii* von Poellnitz spec. nov. — Acaulis. Folia dense rosulata, lanceolata vel oblongo-lanceolata vel inconspicue ovato-lanceolata, subobtusata vel subacuta, saepe brevissime et inconspicuissime albido-mucronulata, supra \pm plana, subtus convexa, usque 6 cm longa, sordide viridia, subaspera, albide papillosa. Inflorescentia aequilateraliter racemosa vel e racemis aequilateralibus 2 composita. Pedicelli elongati. Sepala inaequalia, usque 8 mm longa. Corolla pentagona, circ. 14 mm longa, luteola, basin versus subrubra, tubus circ. 3—4 mm longus, lobi apice distincte extrorsum curvati. Stamina omnia corollae affixa. — Stammlos, sprossend, mit Rübenwurzel. Blätter in dichter Rosette, ziemlich zahlreich, lanzettlich oder länglich-lanzettlich oder etwas eilanzettlich, stumpflich oder spitzlich, oft mit winzigem, weißlichem Spitzchen, oberseits mehr oder weniger flach, unterseits gewölbt und bisweilen ein wenig gekielt, ausgebreitet bis aufsteigend, bis 6 cm lang, 6—10 (—15) mm breit, schmutzig grün, etwas rauh, mit winzigen weißlichen Papillen besetzt, diese Hervorwölbungen sind glänzend, sie stehen auf den Blattflächen in äußerst geringer Anzahl, fallen auch hier meist bald ab, an den Blatträndern sind sie mehr börstchenartig, stehen sehr dicht beieinander, fallen meist nicht ab, sind aber auch äußerst klein. Blütenstengel bis 30 cm lang, am Grunde bis 6 mm dick und grün, nach oben dünner und rötlich. Stengelblätter zahlreich, aufsteigend, den Rosettenblättern ähnlich, aber kleiner. Blütenstand bis etwa 20-blütig, aus einer oder zwei allseitswendigen Trauben bestehend. Deckblätter etwa 18—22 mm lang, am Grunde mit einem 1—2 mm langen Sporn, mit weißlichen Papillen. Stielchen etwa 2—2½ cm lang, oft mit einem 2—5 mm langen Blättchen. Kelchblätter aufsteigend, ungleich, grün, papillös, 1 mm etwa verwachsen, 6—8 mm lang. Krone fünfkantig, ungefähr 14 mm lang, gelblich (wachsgelb), später blasser, nach dem Grunde zu rötlich, Röhre etwa 3—4 mm lang, Zipfel oben sehr deutlich nach außen gebogen. Staubfäden weiß, nach unten verbreitert, die episepalen der Kronenröhre oben angewachsen, ca. 5 mm lang, die epipetalen, den Zipfeln etwas höher angeheftet, kürzer, Beutel 1 mm lang, gelb. Fruchtblätter aufrecht, fast frei, etwa 5 mm lang, weißlich, Griffel aufrecht, grün, ungefähr 4 mm lang, Narben grün, etwas verdickt.

Walther's text

Errors :

1. Again Walther used for his description of *E. backebergii* a plant with uncertain origin and while at first he suggested that it was grown "from Backeberg seed":

Flowers from July on. Description from living plant grown by Mr. V. Reiter, Jr., perhaps from Backeberg seed.

..... under REMARKS he stated that it was "grown from Blossfeld seed"-

Mr. Reiter's plant grown from Blossfeld seed, first flowered in 1937.

- another example of his careless working. Of course the description is of no use at all.

2. Under COLLECTIONS Walther listed :

COLLECTIONS. Peru. Matucana, MacBride and Featherstone, 22/279, photograph F-1663 (US).

Obviously Walther forgot that in 1958 he had redesignated MacBride and Featherstone 279 as *E. chilensis*

3. In the Key to Series *Racemosae* Walther indicated :

D. Leaves papillose at least when young, flat above, shortly acuminate; pedicels 1-flowered; corolla reddish. Peru, Matucana. 113. <i>E. backebergii</i>
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Comment :

The characteristic feature of *E. backebergii* (*E. chilensis* var. *backebergii*) is the fact that leaves and inflorescence are densely and conspicuously long-papillose. The plant Walther described had papillose leaves only at least when young. So obviously the plant grown "perhaps from Backeberg seed" respectively "grown from Blossfeld seed", cultivated in Reiter's garden, was not the correct species, i.e. Walther did not know the correct *E. backebergii*. Of course the respective text is of no use.

114. *Echeveria whitei* Rose (p. 353-355)

The plant Rose named and described as *E. whitei* was brought back from Quime, Bolivia, by Dr. Orland E. White of the Brooklyn Botanic Garden. The description was published in *Addisonia*, 10: n°3, pl. 344, 1925 :

The stem of White's echeveria is weak, usually less than four inches long, and is crowned by a dense rosette of leaves. The leaves are fleshy, flattened, spatulate, acute, one and one half to two inches long, glabrous, pale green, with purplish margins or sometimes with a blush over the whole surface. The flowering stem is sometimes one foot long, red, bearing a few small leaves; the inflorescence is an equilateral raceme about four inches long, with ten to fifteen flowers. Each flower is subtended by a small linear bract a half inch or less long. The five sepals are linear, acute, unequal, and green. The corolla is red, about half an inch long, with the five petals angled, erect but with spreading tips. There are ten stamens, five of which are borne on the petals, the alternating five free.

Walther's text

Errors :

1. Walther's description was made "from locally cultivated plants" of unknown origin.

to 3 mm. wide. Flowers from February to June. Description from locally cultivated plants.

It is no surprise that his description does not match either the protologue of *E. whitei* Rose nor the illustration in *Addisonia*, shown in fig. 192 : Walther's plant has pedicels to 20 mm long and they are often two-flowered below and have two minute bractlets near middle – all this is neither mentioned by Rose nor shown on plate 344 from *Addisonia*. That means the locally cultivated plants may have been anything but not *E. whitei* Rose.

Accordingly also the indications in the Key to Series *Racemosae* are wrong :

C. Bracts few, ovate-deltoid; leaves brownish green. 114. *E. whitei*

2. Under REFERENCES Walther listed :

Echeveria chilonensis E. WALTHER, (not *Sedum chilonense* O. Kuntze), Cactus and Succ. Jour. Amer., vol. 7, p. 40, 1935.

"*Echeveria chilonensis* Walther" "(not *Sedum chilonense* O. Kuntze)" - this is sheer nonsense and shows again that Walther is not even capable of citing himself correctly. The title of the respective publication in *Cact. Succ. J. (Los Angeles)* 7: 40, 1935 reads :

7. *Echeveria chilonense* (O. Kuntze) EW., new combination.

Sedum chilonense O. Kuntze, Rev. Gen. Plant., 3:83. 1893.
Echeveria whitei Rose, *Addisonia*, 10:47:344. 1925.

Remarks: Thanks are due the late Dr. Britton for loaning us what must be considered Kuntze's type, purchased for the Britton Herbarium by Mr. A. Carnegie. The material in question undoubtedly belongs into *Echeveria*, and even if the original description calls for "yellow" flowers and a "cymose" inflorescence, these slight discrepancies need not be taken too seriously. In at least some of our material, cultivated under the pseudonym *E. whitei*, the inflorescence is somewhat paniculate below and could readily be called cymose.

However in this very same publication Walther listed the red flowered *E. whitei* as a synonym of *E. chilonensis* because he pretended that he former also must have been a red flowered plant, not – as Kuntze had noted on the respective herbarium sheet – a yellow flowered species – of course a totally wrong listing - see comments to 115. *E. chilonensis*.

3. Under TYPE Walther indicated :

TYPE. *O. E. White*, 21/220, Quime, Bolivia (US, no. 1111971).

However the type is **US1319935**, not 1111971.

4. Under COLLECTIONS Walther listed :

Quime, *White*, 22/2292 (US); declivities near La Paz, *Buchtien*, 32/9208 (B, type of *E. buchtienii*; vicinity of La Paz, *M. Bang*, 1890/148 (K,PH,US);

"Buchtien 32/9208" is not correct : the sheet 9208 is designated as isotype of *E. buchtienii*, and the year of collection is **1934**, not 1932. The type was collected 1933 and has no n°.

5. Under REMARKS Walther wrote :

It is quite different from *E. chilonensis*, which has a very short caudex, bright-green linear leaves, more numerous bracts, spreading sepals, and a **white corolla**, the latter turning yellow in drying. *Echeveria buchtienii* Poellnitz

The comparison is pointless and useless because what Walther described as *E. chilonensis* is not this yellow flowered species but a white flowered plant of unknown origin from the garden of Victor Reiter, clearly not *E. chilonensis* (Kuntze) Walther.

D. Leaves narrow, brownish green, epidermis not at all papillose; lowest pedicels elongated, often 2-flowered; stem evident even if short. Bolivia, Quime.
114. *E. whitei*

6. The indication in the Key to Series *Racemosae* does not agree with the protologue where the leaves are described as "pale green, sometimes with a blush over the whole surface" – not "brownish green" - and where the bracts are not described as "ovate-deltoid".

Comment :

The text about *E. whitei* is unusable because based on plants of unknown origin.

115. *Echeveria chilonensis* (O. Kuntze) E. Walther (p. 355-356)

E. chilonensis was first described as *Sedum chilonense*. Otto Kuntze discovered this plant near Chilon in the Department Sierra de la Cruz in Bolivia in 1892. Unfamiliar with genus *Echeveria*, he took it to be a *Sedum* mentioning however that it differed from other sedums by its "not toothed" leaves. His description was published in *Revisio generum plantarum* 3(3): 83, 1898 :

S. chilonense ÖK. n. sp. e. § Aizoon. Rhizoma repens — 1 cm crassum caulibus erectis — 5 cm altis, absque surculis rosulentibus vel sterilibus. Folia dense alternantia late sessilia oblonga acuta integerrima glabra plana crassa — 2½ cm longa — 1 cm lata. Pedunculus axillaris — 10 cm longus. Inflorescentia corymbosa 5—10-flora bracteata bracteis lineari-lanceolatis vix 1 cm longis. Pedicelli erecti ½—1½ cm longi. Flores flavi pentameri hermaphroditi. Sepala oblonga obtusa petalis breviora. Petala libera 5 lanceolata — 1 cm longa. Stamina 10. Folliculus quisque in stylum brevem attenuatus, seminibus pluribus. Bolivia: Chilon, Sierra de Santa Cruz. Die § Aizoon hat nur sehr wenige Arten mit meist gezähnten Blättern und keine Sedum-Art, war bisher aus Bolivia bekannt. Diese Art sah ich nur an einem einzigen Standort, dort aber häufig.

Most important : **The flowers of *Sedum chilonense* are yellow.**

Walther's text

When Walther got to see the type specimen of *Sedum chilonense*, he realised that Kuntze's *Sedum* in fact was an *Echeveria* species and he published the new combination *Echeveria chilonensis* (Kuntze) Walther in *Cact. Succ. J. (Los Angeles)* 7: 40. 15 Sept, 1935 :

7. *Echeveria chilonense* (O. Kuntze) EW., new combination.

Sedum chilonense O. Kuntze, Rev. Gen. Plant., 3:83. 1893.
Echeveria whitei Rose, Addisonia, 10:47:344. 1925.

Remarks: Thanks are due the late Dr. Britton for loaning us what must be considered Kuntze's type, purchased for the Britton Herbarium by Mr. A. Carnegie. The material in question undoubtedly belongs into *Echeveria*, and even if the original description calls for "yellow" flowers and a "cymose" inflorescence, these slight discrepancies need not be taken too seriously. In at least some of our material, cultivated under the pseudonym *E. whitei*, the inflorescence is somewhat paniculate below and could readily be called cymose.

Errors :

1. As synonym Walther listed :

Echeveria whitei Rose, Addisonia, 10:47:344. 1925.

This is an error : *E. whitei* has red flowers, so cannot possibly be a synonym of the yellow flowered *E. chilonensis*.

2. Under REMARKS Walther wrote :

question undoubtedly belongs into *Echeveria*, and even if the original description calls for "yellow" flowers and a "cymose" inflorescence, these slight discrepancies need not be taken too seriously. In at least some of our material, cultivated under the pseudonym *E. whitei*, the inflorescence is somewhat paniculate below and could readily be called cymose.

That means Walther considered the red flowered *E. whitei* as wrongly named, i.e. in fact being *E. chilonensis*. However Kuntze's plant had yellow flowers. This was explicitly indicated on the holotype sheet. Walther however considered this to be absolutely impossible and wrote to von Poellnitz that Kuntze must have been colour-blind. He was sure that *E. chilonensis* had red flowers and accordingly he indicated the red flowered *E. whitei* Rose as a synonym of the former.

In short : Kuntze, the collector, was colour-blind, and he, Walther, who had never seen a living plant of Kuntze's finding, knew better : It is red-flowered ! What a know-it-all's arrogance !

While preparing his monograph however in 1958 all of a sudden Walther changed his mind and *E. chilonensis* became a **white flowered species**, and he annotated this on the holotype sheet : "Living plants have white flowers". The reason for this change of mind was a white flowered plant Walther had found in Victor Reiter's garden. He declared it as *E. chilonensis* (Kuntze) Walther and made a description :

Flowers from June on. Description largely from living plant grown by V. Reiter, Jr.

- irrespective of the fact that its origin was totally unknown and also irrespective of the fact that it did not correspond at all to Kuntze's description of *Sedum chilonense* : While the latter is rather small in all its parts, the Reiter plant with leaves up to 7 cm, an inflorescence of 60 cm and bracts to 3.5 cm is distinctly larger, and - most important - the colour of its flowers is white and not red and also not yellow.

Accordingly also the indications in the Key to Series *Racemosa* are completely wrong :

D. Leaves not papillose, subterete, obtuse or shortly acute; most lower pedicels 2-flowered; corolla whitish to pale yellow. Bolivia, Chilon, Sucre.
115. *E. chilonensis*

Sedum chilonense O. KUNTZE, Rev. Gen. Plant., pt. 3 (2), p. 83, 1898.

3. *Sedum chilonense* was published in **1893**, not 1898.

Under OCCURRENCE Walther indicated :

OCCURRENCE. Bolivia: Chilon; Sucre, about 120 miles from Chilon; near

4. "Sucre" refers to the specimen CAS 409841, made from a plant which had flowered in Victor Reiter's garden, origin unknown, and had been determined by Walther himself as "*E. chilonensis* (O. Kuntze) E. Walther" and equipped with a collection locality ! However in its subpaniculate inflorescence with many two-flowered pedicels it is not corresponding at all to *Sedum chilonense* Kuntze. "Sucre" is Walther's invention.

OCCURRENCE. Bolivia: Chilon; Sucre, about 120 miles from Chilon; near LaPaz (UCBG, 56.697).

5. UCBG 56.697 was collected by Dr. Martin Cardenas, Cochabamba, Bolivia. Neither is "La Paz" mentioned on the respective herbarium specimen nor any other precise collection locality, also it is impossible to know the colour of the flowers – i.e. to know whether the specimen represents *E. chilonensis* at all. That it was determined by Walther himself as *E. chilonensis* is no proof at all for its correctness, rather the contrary.

6. Under REMARKS Walther wrote :

Echeveria buchtienii Poellnitz from La Paz is clearly distinct in having obovate-cuneate, reddish-green leaves, few bracts, and a corolla 16 to 18 mm. long, red, not yellow in color. These characters point to its being a form of *E. whitei*. (See "Remarks" under *E. whitei*.)

The comparison with *E. buchtienii* Poellnitz on the basis of the Victor Reiter plant of unknown origin is pointless. What however is interesting : It is the only time that the – correct – yellow flower colour of *E. chilonensis* – which he always had denied - is mentioned – apparently Walther had forgotten that a few lines above he had described it as white

Comment :

***E. chilonensis* did not fare well :**

- Walther's description of *E. chilonensis* is not a description of that species but of a plant of unknown origin in cultivation in Victor Reiter's garden. That means this chapter is completely useless.

- Because there was no way that Kuntze's statement that the plant he had collected was yellow flowered could be true, Walther equalised it with the red-flowered *E. whitei*. When he came across an unknown white flowered plant of unknown origin in Reiter's garden he abandoned this claim and in order to agree with his new view Kuntze's plant had to become white flowered and at the same time Reiter's plant of unknown origin was given the status of a species. That's how Walther was working. That is not only careless or bad science, this is criminal behaviour.

116. Echeveria bella Alexander (p.356-357) and Echeveria bella var. major E. Walther, new species (p. 358-359)

The plant Alexander named and described as *E. bella* was collected by MacDougall winter 1938/39 near San Cristobal Las Casas, Chiapas. It was published in *Cact. Succ. J. (Los Angeles)* 13(8): 133-135, 1941 :

Plant caespitose and freely offsetting, the rosettes dense, 2-4 cm. in diameter; leaves 1.2-1.8 cm. long, narrowly oblanceolate, acute, 2-4 mm. wide, bright yellow-green, not at all glaucous; inflorescence 10-20 cm. tall, erect, its bracts very different from the leaves, 18 mm. long and 5 mm. broad, becoming reduced upwards, acutish; the upper ones somewhat glaucous as also is the reddish rachis; flowers 4-12 in a multilateral raceme, the pedicels reddish, 6-10 mm. long, occasionally 2-flowered, the two bracts linear, 2-5 mm. long; calyx yellow-green, somewhat glaucous, the tube 1 mm. long, the lobes spreading, linear, obtuse, nearly equal, 3-5 mm. long; corolla 8-10 mm. long, orange-yellow flushed with rosy-scarlet especially on the upper side, campanulate, sharp-angled in bud, blunt-angled in flower, the lobes spreading apart nearly to the middle, the tips recurved; stamens opposite the petals 5 mm. long, those opposite the sepals 6 mm. long; carpel-cluster broadly ovoid, 7-8 mm. long, the carpel bodies pale greenish-yellow, stigma and styles bright green, the styles 2 mm. long; nectarine gland white, 1.5 mm. broad.

Walther's text

Errors :

Instead of quoting Alexander's description, Walther wrote a new one "from plants [.....] obtained from Dr. J. Meyran, Mexico City, 1959" :

on. Description from plants cultivated by V. Reiter, Jr., San Francisco, obtained from Dr. J. Meyrán, Mexico City, 1959.

1. This cannot possibly be correct : Walther died 1 July 1959, so cannot possibly have been able to describe a plant only received from Dr. Meyran in 1959 by V. Reiter but already cultivated in his garden In any case – once again Walther made his description from a plant without known origin, no surprise that it differs in several respects from that by Alexander :

Stem : Alexander : acaulescent / Walther : evident stem.

Leaves : Alexander : bright yellow-green / Walther : spinach-green. And while Walther explicitly states : "epidermal cells conspicuous, especially at apex and there semipapillate", Alexander doesn't mention anything like that.

Bracts : Alexander : very different from the leaves / Walther : does not mention such a difference.

Upper bracts : Alexander : somewhat glaucous as also is the reddish rachis / Walther : plant lacks any glaucousness.

Corolla : Alexander : orange-yellow flushed with rosy-scarlet especially on upper side / Walther : coral-red below and empire-yellow toward apex.

2. Conclusion : It is obvious that the plant Walther described was not the correct *E. bella* Alexander. The sketch fig. 193 however is by Alexander, not representing Walther's plant.

While the identity of the plant Walther used for his description of *E. bella* is unknown, regarding his description of *E. bella* var. *major* it was the MacDougall collection B-180. A comparison of Walther's description of *E. bella* var. *major* and Alexander's description of *E. bella* shows that the var. *major* is definitely bigger, but differences in size do not justify even the status as variety.

Under REMARKS concerning the var. *major* Walther wrote :

Echeveria bella differs from *E. gracilis* in being strictly short-stemmed, more or less caespitose, with smaller, narrower, greener leaves and narrower flowers. Of nearly stemless species with an equilateral inflorescence, few

3. The flowers of *E. gracilis* have the same measures as those of *E. bella*.

have leaves as small as those of *E. bella*; my new *E. ballsii* comes close, but

4. The comparison with *E. ballsii* should be treated with caution – see comment to 117. *E. ballsii*.

leaves. Locally *E. macdougallii* has been confused with *E. bella*, but the former is caulescent, with thick short leaves and a corolla to 16 mm. long.

5. In his own description of *E. macdougallii* Walther has indicated the length of the corolla as to 18 mm.

Comment :

Walther's description of *E. bella*, made from a plant obviously not agreeing with *E. bella* Alexander is of course of no use and moreover – unfortunately - misleading.

117. *Echeveria ballsii* E. Walther (p. 359-361)

Description: (from living material as cited above) Plant glabrous; stems evident, but short, several from one base; leaves thick, turgid above, oblong-obovate, acutish, to 35 mm. long, about 10 mm. broad, narrowed to less than 5 mm. at base; inflorescences one or two to each rosette, 25 to 30 cm. tall, equilaterally racemose but sometimes unilateral from one-sided lighting; peduncle erect; lower bracts ascending to spreading, narrowly oblong-obovate, to 15 mm. long; flowers about 10, nodding; pedicels to 10 mm. long, their bractlets slender, to 5 mm. long; sepals subequal, longest to 8 mm. long, flat, acuminate, ascending; corolla nearly straight, to 12 mm. long, about 8 mm. in diameter near base; petals spreading at apex, inside with basal hollow; nectaries oblique, trapezoid-reniform, to 2 mm. broad. Fls. VIII —

Color: Leaves cosse-green; bracts chrysolite-green; pedicels onion-skin-pink; sepals chrysolite- to absinthe-green; corolla peach-red to scarlet; petals pale-yellow in shade, pinard-yellow inside; carbels maize-yellow to buff-pink; nectaries whitish.

Aug 4, 1942 Walther prepared a herbarium specimen of a plant growing in his collection in Strybing Arboretum, Golden Gate Park, San Francisco (CAS 297644) without any determination. Some time later the determination label was completed by the following text : "*Echeveria colombiana*. Grown from plant, coll. by E.K. Balls, n° 7587, Siachoque, Boyaca, Colombia 25/5/1939." That means the plant from Strybing Arboretum, with no known origin, was stated to have been originated from B 7587 and thus had become *E. columbiana*. However, in 1957, Walther redetermined CAS 297644 as "*Echeveria ballsii* sp. nov." and published this new species in *Cact. Succ. J. (Los Angeles)* 30: 44, 1958. Under OCCURRENCE the protologue indicated : "Colombia : Dept. Boyaca, near Siachoque (Type-material), also **US: 1779205** & **UC: 682828**".

US 1779205 was prepared "8.25.1939". The determination label bottom right reads : "Plants of Colombia. *Echeveria columbiana* Poell., det. **E. P. Killip**, no. 7587, Edward K. Balls, collector". A label bottom left provides the following text : "*Echeveria*. Siachoque, dep. Boyaca, Colombia. 25.8.1939. 8,55 ft. Flowers scarlet and yellow, rather short, rounded bells. Slender stems to 12" tall. Leaves small pointed and rather rounded (longwise) small terminal rosettes on grey, woody stems. Growing on the tops of dry, Adobe walls, 7587".

UC 682828 was also prepared "August 25, 1939". The determination label reads : "Expedition to the Andes, 1938-1939, Colombia, *Echeveria columbiana* Poell. Dupl. det. **E. P. Killip**. Altitude 8,500 feet. Siachoque, dept. Boyaca. E. K. Balls B7587."

That means : The 2 herbarium specimens **US 1779205** and **UC 682828** refer to the same collection, namely **E. K. Balls 7587**, determined as *E. columbiana* Poell., and this not by anyone but by **E. P. Killip** who formerly had collected the type of *E. columbiana* Poell., and as the first undated determination of CAS 297644 proves, Walther himself likewise considered B-7587 as *E. columbiana*.

However by 1957 at the latest, Walther changed his mind :

11/20/57 CAS 297644 was redetermined as *E. ballsii* sp. nov. type.

10/23/57 US 1779205 was redetermined as *E. ballsii* sp. nov. isotype, and

8/24/58 UC 682828 was redetermined as *E. ballsii* topotype.

In short, *E. columbiana* Poelln. had become *E. ballsii* Walther. He seems to have completely tuned out the fact that B 7587 was undisputedly identified as *E. columbiana*, i.e. was not a "novel species" needing a name.

However :

The description of *E. ballsii* was made from the plant of unknown origin from Strybing Arboretum, "immortalised" as CAS 297644 – an almost sessile plant with very small leaves and a rather long inflorescence with small flowers – clearly not corresponding to von Poellnitz's description of *E. columbiana*. In other words : The Strybing Arboretum plant cannot possibly have been "grown from plant, coll. by E.K. Balls, n° 7587, Siachoque, Boyaca, Colombia 25/5/1939", as some time after the preparation of CAS 297644 was added on the determination label. And the photos published with the protologue and again in the monograph are irrefutable evidence. *E. columbiana* is a distinctly caulescent plant. This is – another - fraudulent attempt by Walther to enhance the value of a plant with unknown origin from his collection, i.e. its origin from Ball's collection is nothing other than a lie.

Conclusion : *E. ballsii* is one of the numerous plants of unknown origin in Walther's collection at Strybing Arboretum, documented as CAS 297644, certainly long lost to cultivation, and it is pointless to search for it in Colombia or anywhere in Central or South America.

Errors in the monograph :

Flowers from August on. Description from living material cultivated in the Strybing Arboretum, Golden Gate Park, San Francisco; plants received from E. K. Balls.

1. This was – according to its description - not the plant "received from E.K. Balls" but a plant of Walther's collection, origin unknown.

TYPE. Cultivated in Strybing Arboretum, Golden Gate Park, San Francisco, *E. Walther*, 4 August 1942, from plant collected in 1939 by E. K. Balls, no. 7587, near Siachoque, Dept. Boyaca, Colombia, elevation 8500 feet (CAS, no. 297644).
OCCURRENCE. Colombia: near Siachoque and west of Bogota.
COLLECTIONS. Colombia. Dept. Boyaca, Siachoque, 8500 feet *E. K. Balls*, 39/B-7587 (UC,US), as well as the type (CAS) cultivated from this collection; Cundinamarca, Mosquera Hills, 6 miles southwest of Mosquera, west of Bogota, *H. L. Mason*, 49/13743 (UC). Other collections in U.S. National Herbarium are: *R. M. Schultes*, 46/7222, Cuatrecasas, 39/5002, *Barkley, et al.*, 47/17-C-714, Killip, 39/33962.

2. All indications refer either to *E. columbiana* Poell. or to other variants of *E. quitensis* or possibly even to *E. bicolor*. The numerous – originally as *E. columbiana* determined and by Walther as *E. ballsii* redetermined – specimens from localities in Colombia do of course not represent the latter whose only known origin is Walther's collection in the Strybing Arboretum and of course Walther's erroneous redesignations do not affect their true identity.

of the Rancho Santa Ana Botanic Garden, Claremont, California.

According to Dr. C. Uhl of Cornell, the gametic chromosome number is $n = 40-42$.

3. This information is not traceable. Not mentioned by Uhl

vided me with living material of this and many other species of *Echeveria*. It was a pleasure to dedicate this species to its discoverer, formerly on the staff of the Rancho Santa Ana Botanic Garden, Claremont, California.

4. Unfortunately Balls' name is now fixed to a species (or hybrid) with which he has never had anything to do.

G. Leaves obovate-oblong, bright green. Colombia. . 117. *E. ballsii*

5. The statement in the Key to Series *Racemosae* is of course totally worthless.

Comment :

To summarise : According to the protologue *E. ballsii* has its origin in the Strybing Arboretum, Golden Gate Park, i.e. in Walther's collection, origin unknown. For the publication in the monograph the plant was upgraded by the additional remark "received from E.K. Balls" and under TYPE this remark was supplemented by the addition "collected in 1939 by E.K. Balls n° 7587, near Siachoque, Dept. Boyaca, Colombia, elevation 8500 feet (CAS n° 297644)". However B 7587 is *E. columbiana*, determined by Killip, the collector of the type of *E. columbiana*, so doubtlessly correct, that means B 7587 cannot possibly represent *E. ballsii*. Walther's redetermination of *E. columbiana* specimens to type, isotype and topotype of *E. ballsii* is an act of fraud. Walther's *E. ballsii* is a - most likely - no longer existing plant. As its origin is completely obscure, it may even have been a hybrid. Walther's text is full of lies that are supposed to make you forget the fact that his *E. ballsii* is without origin. Needless to state that the description is of no relevance at all.

118. Echeveria westii E. Walther, new species (p. 361-362)

No comment.

119. Echeveria eurychlamys (Diels) Berger (p. 362-363)

E. eurychlamys was first described and published as *Cotyledon eurychlamys* by Diels in *Bot. Jahrb. Syst.* 37(4): 411, 1906 and reclassified as a species in genus *Echeveria* by Berger in 1930. The plant had been collected by Weberbauer between Samanco and Caraz, Dept. Ancash, Peru, 1903 :

Cotyledon eurychlamys Diels n. sp.; caulis basalis mediocris. Folia dense rosulata exteriora latissima brevia, interiora longiora late ovato-elliptica, acuta, 3—3,5 cm longa, 1,7—2 cm lata. Scapus adscendens, (cum inflorescentia) 25—30 cm longus, hinc inde foliatus, folia caulina appressa. Racemus primo congestus demum elongatus; bracteola ampla rotundato-ovata vel suborbicularis circ. 13—15 mm longa, 12—13 mm lata; sepala ovato-oblonga 6 mm longa, 2,5 mm lata; petala lanceolata colore carnea superne implicata, circ. 15—17 mm longa, 2,5 mm lata; stamina circ. 10 mm longa; ovarium 5 mm longum, stylus 4—5 mm longus.

Peru: Depart. Cajamarca pr. Hualgayoc juxta praedium La Tahona in rupibus 3100 m s. m., flor. m. Maj. 1904 (WEBERBAUER n. 4056 — Herb. Berol.).

Walther's text :

Under TYPE Walther indicated :

Weberbauer, 04/4056 (B, destroyed?). Lectotype: type-photo, Rockefeller

This does not correspond to the protologue which indicates Weberbauer 3149 and 1903.

No Comment.

120. Echeveria megacalyx E. Walther (p. 364-366)

According to the protologue Walther wrote the description of this species in 1937. He had received the plant from Mr Halbinger who had it in cultivation in his garden in Cuernavaca, having obtained it through Sr. O. Nagel – **without any definite locality** :

I first met with this distinct species in Cuernavaca in the garden of C. Halbinger, who had obtained it through Sr. O. Nagel, without any definite locality.

Description: (Of original plant cultivated at Golden Gate Park, 1937).

Plant glabrous, not papillose; stem short, in age emitting offshoots at base; roots fibrous, neither fleshy nor fusiform-thickened; leaves numerous, densely rosulate, thin, nearly flat, oblong-spathulate, up- or recurved, to 10 cm. long and 25 mm. broad, shortly aristate-mucronate, epidermis faintly punctate, margins often lacerate when young; inflorescence equilateral, subspicate, at times strongly nodding or scorpioid at apex, to 45 cm. tall; peduncle erect or ascending, to over 8 mm. thick at base; lower bracts obovate, to 3 cm. long, spreading, not readily detached; flowers to 30 or more; upper bracts 10 mm. long, 6 mm. broad; uppermost pedicels very short, lowermost 3 to 8 mm. long, their 2 oblanceolate bractlets to 10 mm. long; sepals often large, leaf-like, from $\frac{2}{3}$ to as long as corolla, but often smaller, somewhat spreading, obovate-elliptic, acute, subequal, 8 to 10 mm. long, to 6 mm. broad; corolla urceolate, to 8 mm. long, 5 to 8 mm. in diameter at tips of the outcurved petals; petals thin, with shallow basal hollow; carpels *ca.* 6 mm. long, ridged on face; stamens longer than carpels, nearly as long as petals; styles obliquely capitate; nectaries thin, narrowly-lunate, to 1.5 mm. wide. Fls. VII-X.

Color: Leaves grass-green to dark-bluish-glaucous; peduncle apple-green, bracts and sepals as leaves; corolla dull-green-yellow; carpels spinach-green; nectaries yellowish to white.

As the name implies, the characteristic feature of this plant is its sepals : "often large, leaflike, from two-thirds to as long as the corolla".

Errors :

Walther explained that the publication occurred only 21 years later because of the "loss of that material", i.e. because he had not been able to prepare a herbarium specimen. Thanks to MacDougall's "recent discovery" this now became possible :

house of Golden Gate Park. Loss of that material prevented me from publishing this interesting item at that time, and its recent rediscovery in Oaxaca, by Mr. Thomas MacDougall, was most welcome. Of the locality, Neveria, Mr.

However Walther erred : What he called a "rediscovery", i.e. the MacDougall collection B-187, was a quite different plant – lacking precisely the big sepals, the characteristic feature of the plant from

Cuernavaca. However, because Walther indicated B-187 as type of *E. megacalyx*, the name is now fixed to a plant without a "mega calyx".

TYPE. *Thomas MacDougall*, B-187 (UCBG, no. 58.738).
 OCCURRENCE. Mexico. Oaxaca: San Juan Mixtepec, Neveria, about 10,000 feet, on rocks in partial shade in pine forest. *T. MacDougall* B-197 is

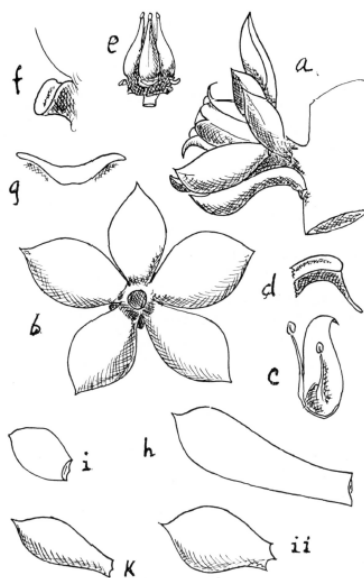
In other words, the protologue and accordingly also the text in the monograph is a mix of two different items :

- a description of a "mega calyx" plant,
- the indication of a plant without "mega calyx", B-187 (UCBG 58.738).

Under REMARKS Walther mentioned :

When brought to San Francisco, the same plant flowered again, but **changed considerably**, no doubt in response to the quite different climate in the greenhouse of Golden Gate Park. Loss of that material prevented me from publish-

Fig. 197 documents this change : While (a) – (k) show the plant after cultivation in Walther's garden in Golden Gate Park,



(l) & (m) show the plant while in cultivation in Cuernavaca :



Obviously lacking the big sepals ! ! ! i.e. the latter seem to have developed only when grown in California

B. Sepals more or less appressed, broad, at least as long as the yellow corolla; leaves thinnish, gray-green. Mexico; Oaxaca 120. <i>E. megacalyx</i>

E. megacalyx – that means the plant he described as such - came from a garden in Cuernavaca, was never found in the wild in any Mexican state – so the indication of "Oaxaca", repeated also under GEOGRAPHICAL OCCURRENCE (p. 36), is misrepresentation of facts.

Comment :

Once more Walther misused a MacDougall collection (B-187) to substantiate the description of a plant of which he had neglected to make a herbarium specimen in time – notwithstanding the fact that B-187 did not correspond at all to his description, lacking the specific feature of the huge sepals completely. As Walther admitted the plant from Cuernavaca is lost to cultivation. In any case such a plant has never been found in any Mexican state in the wild and may well have been a garden hybrid.

In short, there exists the description of a mysterious plant – origin unknown and with a strange behaviour after its arrival in California and which collapsed shortly after it was described – and the specimen B-187 (UCBG 58.738) designated as type of the said plant and bearing its name though not corresponding to it at all.

Conclusion : The description under the heading *E. megacalyx* is completely obsolete. B-187, bearing the name *E. megacalyx*, still occurring at MacDougall's collection locality, has never been described. Because no one ever checked the facts, Walther's description of no earthly use unfortunately is still relied on.

To designate a specimen as type of an unrelated plant in order to validate its name is fraud by false representation.

121. *Echeveria peruviana* Meyen (p. 367-368)

Meyen found this species in the south of Peru, on the road from Tacna to Palca, near Palca, ca 1832. It was described in a footnote in *Reise um die Erde* 1: 448, 1834 :

Echeveria peruviana (an nov. gen.?) *E. foliis radicalibus obovatis-cuneatis acutis, carnosius, foliis caulibus lanceolatis acutis, spica terminali laxa bracteata, calyce corollae multo breviori, foliolis obovatis acutis glabris, staminibus longis corollam vix aequantibus, corolla purpurea.*

Meyen prepared a herbarium specimen which is unfortunately not more meaningful than the short description. In other words, it is impossible to get a clear idea of the characteristics of *E. peruviana*. Meyen's description can be applied to any red flowered *Echeveria* of Peru or adjacent Bolivia.

Walther's text

Errors :

1. Of course Walther did not bother to translate Meyen's description but wrote a new one :

May to August. Description from living material cultivated locally, originally from Argentina.

While the type locality of *E. peruviana* is in **Tacna, southern Peru**, Walther made his description "from living material cultivated locally, originally from **Argentina**" – complete nonsense, needless to say that his description is totally useless.

2. Under SYNONYMS Walther indicated :

Cotyledon peruviana (Meyen) BAKER, in Saunders Refug. Bot., vol. 1, no. 10, 1869;

Baker's combination is validly published, however his description is from a plant of unknown origin which might even have been a hybrid and it differs clearly from Meyen's description of *E. peruviana*, i.e. his description is to be ignored.

3. Under OCCURRENCE Walther indicated :

OCCURRENCE. Peru: type locality, Dept. Junin and Dept. Lima. Argentina: Dept. Humahuaca and Prov. Jujuy.

E. peruviana is only known from the type locality – the localities indicated by Walther are fictitious.

Under COLLECTIONS Walther listed :

COLLECTIONS. Peru. The type; Dept. Junin, Prov. Tarma, between Palca and Carpapata, 2900 m., Stork, 39/10967 (F,MO,UC); Tarma, limestone

4. Stork 10967 is *E. andicola*.

ca and Carpapata, 2900 m., Stork, 39/10967 (F,MO,UC); Tarma, limestone ledges at 13,000 feet, Macbride and Featherstone 22/1061 (F,NY,US);

5. MacBride and Featherstone 1061 represents *E. andicola*.

Depto. Lima, Rio Blanco, Killip and Smith, 29/21600 (US). Argentina: cult.

6. Killip and Smith 21600 is *E. chilensis*.

7. Needless to say that the remaining collection localities in Argentina do not concern *E. peruviana*.

Under REMARKS Walther wrote :

REMARKS. In central Peru, *E. peruviana* may appear to overlap the territory of *E. chilensis*, but the latter is much less xerophytic, its leaves are de-

8. In view of the extremely short description by Meyen and the poor herbarium specimen not permitting a positive identification of *E. peruviana* Walther's geographical information lacks any basis.

F. Leaves broader, 5 to 7 cm. long by 25 mm. wide, more or less glaucous; corolla 12 to 15 mm. long, red and yellow. Peru, Bolivia, Argentina. 121. *E. peruviana*

9. And of course this passage in the Key to Series *Racemosae* is also unfounded – in every respect.

10. Under GEOGRAPHICAL OCCURRENCE *E. peruviana* is also wrongly listed under Argentina.

Comment :

It is incomprehensible why Walther – knowing the collection locality of *E. peruviana* – used an Argentinian plant for his description of this species. The listed collections are a mix of Peruvian and Argentinian localities – none of them near the type locality. Walther's text about *E. peruviana* as a whole is devoid of any sound basis.

122. *Echeveria chilensis* (Ball) Berger (p. 368-369)

E. chilensis was first described and published as *Cotyledon chilensis* by John Ball in an article titled "Contributions to the Flora of the Peruvian Andes" in *Jour. Linn. Soc. Botany* 22: 38, 1887 :

COTYLEDON CHILENSIS, n. sp. Chicla !
Radice crassa, fusiformi, pluries furcata; foliis radicalibus dense rosulatis, glaberrimis, lineari-lanceolatis, acutis, 6–8 pollices longis, crasse succulentis; caule erecto, 12–18-pollicari, foliaceo; foliis caulinis numerosis, oblongo-lanceolatis, sessilibus, basi calcaratis; floribus omnibus pedicellatis, erectis vel demum nutantibus, pedicellis inferioribus 6–8-linearibus, superioribus sensim brevioribus, bracteis pedicello subæquilongis; calycis segmentis ovatis, obscure virentibus; petalis coccineis, lineari-oblongis, acuminatis, calycis longitudinem ter superantibus, basin versus usque ad quartam partem coalitis. Carpellis siccis (emarcidis) sensim acutatis, subrecurvis, divaricatis.
An ornamental plant, with a general resemblance to several of the cultivated species of the *Echeveria* group; but I find it impossible to identify it with any of those hitherto described.

As the name suggests the plant was collected near Chicla, Peru.

It was Berger who in 1930 reclassified *C. chilensis* as an *Echeveria* species.

Walther's text

Errors :

1. Walther did not translate Ball's description but wrote a new one from plants collected in the Rio Rimac cañon

mm. long; nectaries lunate, to 2 mm. wide. Flowers from June on. Description from plants cultivated at the University of California Botanical Garden, 52.728, Cañon Rio Rimac, above Matucana, east of kilo 85 at 2500 m.

.... above Matucana, 2500 m, that means it is **not** *E. chilensis*, which is growing only above 3000 m.

2. Under OCCURRENCE Walther indicated :

OCCURRENCE. Peru: Chicla, Oroya, Matucana, Rimac Valley, etc.

Matucana belongs to the **distribution area of *E. backebergii***, not to that of *E. chilensis*.

Under COLLECTIONS Walther listed :

COLLECTIONS. Ball in 1882 (K) Chicla, Peru; Ruiz and Pavon, Huanuco

3. Ruiz and Pavon from 1787, Huanuco, cannot possibly be *E. chilensis* because of an altitude of only 1880 m – *E. chilensis* is occurring only above 3000 m. The Ruiz and Pavon specimen represents either *E. andicola* or a yet undescribed species.

(MA); Cante, Soukup, 45/2835 (GH); Oroya, Rose and Rose, 14/18760

4. Soukup 2835, wrongly determined by Walther 1958 as *E. chilensis*, is not this species : Cant^a (not Cante) is 2942 m, **not high enough for *E. chilensis***.

(MA); Cante, Soukup, 45/2835 (GH); Oroya, Rose and Rose, 14/18760

5. Rose and Rose is from Matucana, not from Oroya, again wrongly determined by Walther as *E. chilensis* – Matucana is only ca 2500 m, so this **cannot be *E. chilensis***. The specimen is *E. backebergii*.

Goodspeed, Stork and Horton, 39/11548 (UC); Depto. Lima, Prov. Huarochiri, Infienillo, P. Hutchison, 52.1929 (UCBG), Depto. Lima, Prov. Huarochiri,

6. The correct name is "Infierⁿillo".

chiri, Infienillo, P. Hutchison, 52.1929 (UCBG), Depto. Lima, Prov. Huarochiri, Cañon of Rio Rimac, at Rio Blanca, UCBG, 52.728–3 (cultivated;

7. This refers to the plant Walther used for his description from "above Matucana at 2500 m" which however – because of the altitude – is not *E. chilensis*. And the correct name is "Rio Blanco" not "Rio Blanca".

8. In the Key to Series Racemosae Walther indicated :

F. Leaves narrow, 15 to 20 cm. long by 25 mm. wide, brownish green, not glaucous; corolla 13 to 20 mm. long, red. Peru, Chicla. 122. *E. chilensis*

This refers to the plant from Matucana that Walther regarded as *E. chilensis* and which he used for his description but which is not the correct species.

Comment :

Evidently it did not occur to Walther that his description of what he called *E. chilensis* is – partly even literally – identical with that of the plant he called *E. backebergii*. However the description is not correct for *E. chilensis* and clearly also not for *E. backebergii*, because the characteristic feature of the latter - the fact that leaves and inflorescence are densely and conspicuously long-papillose – is missing. Obviously he did not have / know either the true *E. chilensis* or the true *E. backebergii*. The texts in question are therefore in their entirety of no use at all.

Series 12. Mucronatae E. Walther

123. Echeveria paniculata A. Gray (p. 371-372)

It was Asa Gray who described and published this species in *Plantae Wrightianae* 1: 76, 1852. The plant had been collected by Wislizenus, near Cosiquiriachi, Chihuahua, 1846 :

* *Echeveria paniculata* (sp. nov.) : foliis radicalibus obovato-lingulatis, caulinis sparsis parvulis lanceolatis canaliculatis, omnibus mucronato-acutis ; floribus laxe paniculatis undequaque versis ; petalis apice breviter recurvis sepala duplo superantibus. — Cosiquiriachi, Northern Mexico, *Wislizenus*. — Flowering stems a foot long above the rosulate and apparently radical tuft of leaves ; the latter 2 or 3 inches long, the scattered or subopposite stem-leaves from half an inch to an inch in length. Flowers half an inch long, disposed in a loose, elongated panicle : the proper terminal flowers are on very short peduncles, the lateral ones mostly with rather long, bracteate peduncles. Bracts small, linear.

Walther's first publication concerning *E. paniculata* appeared in *Cact. Succ. J. (Los Angeles)* 1935 :

Echeveria paniculata A. GRAY, *Plantae Wrightianae*, pt. 1, p. 76, 1850; BRITTON AND ROSE, *N. Amer. Fl.*, vol. 22, p. 18, 1905; E. WALTHER, *Cactus and Succ. Jour. Amer.*, vol. 7, p. 36, 1935 (in part); POELLNITZ, in *Fedde Repert.*, vol. 39, p. 222, 1936.

There he wrote :

3. *Echeveria paniculata* A. Gray, *Plantae Wrightianae*, 1:76. 1850.

Cotyledon grayi Baker, *Saund. Ref. Bot.*, 1:33. 1869.

Echeveria grayi Ed. Morren, *La Belge Hort.*, 24:161. 1874.

Echeveria schaffneri Rose (not Watson), *North Am. Flora*, 22:1:18. 1905.

Echeveria maculata Rose, l.c., page 18. 1905.

Remarks: Of these synonyms, the first two are accounted for by the existence of a previously named South African species of *Cotyledon*. Dr. Rose's description of *Echeveria schaffneri* clearly applies to *E. paniculata* rather than to Watson's plant, which last has a bifid inflorescence with secund branches and bractless pedicels. Rose's *E. maculata* is supposed to differ mainly (and solely?) in having leaves spotted or mottled, a feature we have found to occur in several species, allied or otherwise, as a consequence of insect infestation, by thrips, aphids, etc.

The plant, long cultivated in California under the name *Echeveria maculata*, has finally flowered at the Botanical Gardens of the University of California and turns out to be *Sinocrassula densirosulata* (Praeger) Berger, of a genus closely related to *Sedum*, but with only 5 stamens.

Walther's text in the monograph

Again Walther did not quote Gray's description but wrote a new one

on. Description from living material received from the University of California Botanical Garden.

According to the UCBG 53.483 accession card the exact origin of the respective plant was not known. It had been collected by Hermann Marks of Salinas somewhere in Chihuahua. Walther stated : "The only living specimen I have ever seen", i.e. his concept of *E. paniculata* is based on a single plant, exact origin unknown.

Errors :

1. Under COLLECTIONS Walther listed :

US). *Zacatecas: Mazapil, F. E. Lloyd in 1908 (NY)*. *Cultivated: University of California Botanical Garden, 53.483, E. Walther (CAS)*.

The Lloyd specimen consists of two very small inflorescence sections, one with 5 flower buds with ca 3 mm long pedicels, the other with two open and one spent flower on very long pedicels. A reliable identification is impossible.

2. Under REMARKS Walther wrote :

REMARKS. As delimited here, *E. paniculata* differs from the very similar *E. maculata* in having more ascending sepals and a more reddish corolla which is rather shorter and broader. Its range is northwestern, whereas *E. maculata*

"more ascending sepals and a more reddish corolla which is rather shorter and broader" do not justify status of a separate species, moreover – as already mentioned above – in *Cact. Succ. J. (Los Angeles)* 1935 Walther clearly stated that *E. maculata* is simply an *E. paniculata* infested by insects.

3. In the Key to Series *Mucronatae* Walther wrote :

B. Corolla red and yellow, usually broader and shorter; sepals mostly ascending.
C. Leaves rather thin, nearly flat; lowest pedicels with 3 to 5 flowers. Chihuahua, etc. 123. *E. paniculata*

This is not mentioned in the protologue. That's what Walther wrote in his description of the plant of unknown exact origin he used for his description.

124. Echeveria maculata Rose (p. 372-374)

The plant Rose described and published in *Bull. New York Bot. Gard.* 3: 7 1903 as *E. maculata* he had collected himself in 1901 near Dublan, Hidalgo :

Echeveria maculata Rose, sp. nov.

Acaulescent, glabrous throughout; basal leaves in a dense rosette, elongated-lanceolate, thickish, about 1 dm. long, 1.5–2 cm. broad, acute, dark green and somewhat mottled; flowering branches stout, 6–8 dm. long, their lower leaves 8–10 cm. long; inflorescence paniculate, the lower branches bearing 3 or 4 sessile flowers arranged along one side of the branch, the upper flowers in the panicle axillary and sessile; sepals very unequal, somewhat spreading, fleshy, acute; corolla pale lemon-yellow, 10 mm. long; lobes free nearly to the base, acute at tip and slightly spreading.

Collected by J. N. Rose near Dublan, Hidalgo, Mexico, July 2, 1901 (no. 5412), and sent to Washington where it has repeatedly flowered.

This species is somewhat similar to *E. mucronata*, but is certainly distinct.

Walther's text

As usual Walther did not quote Rose's description but wrote a new one from a plant he himself had collected at El Salto, Hidalgo, and which he originally had identified as *E. paniculata*. In any case it was not from the type locality. So it is no surprise that it differs from the protologue.

many, ascending, linear-oblongate, subterete, acute, longest to 5 cm. long; lower branchlets bearing two to five sessile flowers each, upper often shorter and single-flowered; ultimate pedicels 1 to 2 mm. long, bibracteolate; sepals

Moreover it is deficient insofar as the length of the branchlets is not indicated at all.

Errors :

Under COLLECTIONS Walther listed :

Michoacan.
COLLECTIONS. Mexico. Hidalgo: the type (US); Tula, Pringle, 02/11345 (US, all flowers solitary); El Salto, Rose, 03/11857 (US), Pringle, 03/8778 (F,US); Metepec, Pringle, 04/11977 (MO,US); Dublan, Rose, 01/217 (GH), Rose, 03/6412 (NY). Queretaro: Del Cierva de San Juan, Altamir-

1. "Hidalgo : the type (US)" and "Dublan, Rose, 01/217" refer to the same collection, the type was collected near Dublan.

Michoacan.
COLLECTIONS. Mexico. Hidalgo: the type (US); Tula, Pringle, 02/11345 (US, all flowers solitary); El Salto, Rose, 03/11857 (US), Pringle, 03/8778

2. Pringle 11345 is *E. platyphylla*.

Michoacan.
COLLECTIONS. Mexico. Hidalgo: the type (US); Tula, Pringle, 02/11345 (US, all flowers solitary); El Salto, Rose, 03/11857 (US), Pringle, 03/8778 (F,US); Metepec, Pringle, 04/11977 (MO,US); Dublan, Rose, 01/217 (GH), Rose, 03/6412 (NY). Queretaro: Del Cierva de San Juan, Altamir-

3. Pringle 8778 is *E. platyphylla*.

(F,US); Metepec, Pringle, 04/11977 (MO,US); Dublan, Rose, 01/217 (GH), Rose, 03/6412 (NY). Queretaro: Del Cierva de San Juan, Altamirano, 05/1742 (US); San Juan del Rio, Rose, Painter and Rose, 05/9860

4. The correct name is "Del Ciervo de San Juan", moreover the specimen Altamirano 1742 shows *E. platyphylla*.

ano, 05/1742 (US); San Juan del Rio, Rose, Painter and Rose, 05/9860 (most flowers single) (MEXU,NY,US), Rose, 05/1207 (GH). Michoacan:

5. Rose, Painter, Rose 9860 is *E. platyphylla*.

ano, 05/1742 (US); San Juan del Rio, *Rose, Painter and Rose*, 05/9860 (most flowers single) (MEXU,NY,US), *Rose*, 05/1207 (GH). Michoacan:

6. Rose 1207 is *E. platyphylla*.

5 miles southwest of Quiroga, *Barkley, Westland and Webster*, 47/2713 (F). San Luis Potosi: alkaline plains, Hacienda de Angostura, *Pringle*, 91/3766

7. The correct name is "Westlund".

R. Moran, 57/6322 (SD). Zacatecas: Hacienda las Cedras, *F. E. Lloyd*, 08/226 (US). Cultivated: La Mortola, *A. Berger* Herb., in 1931 (NY);

8. The correct name is "Hacienda las Cedros".

08/226 (US). Cultivated: La Mortola, *A. Berger* Herb., in 1931 (NY);

9. Berger's specimen is *E. platyphylla*.

10. In the Key to Series *Mucronatae* Walther stated :

F. Corolla clear yellow; flowers rarely borne singly on the pseudopedicels.
124. *E. maculata*

This does not agree with the description by Rose.

E. paniculata & *E. maculata* :

For the first time Walther commented on *E. maculata* in *Cact. Succ. J. (Los Angeles)* 7: 36, 1935, explaining :

3. *Echeveria paniculata* A. Gray, *Plantae Wrightianae*, 1:76. 1850.

Cotyledon grayi Baker, *Saund. Ref. Bot.*, 1:33. 1869.

Echeveria grayi Ed. Morren, *La Belge Hort.*, 24:161. 1874.

Echeveria schaffneri Rose (not Watson), *North Am. Flora*, 22:1:18. 1905.

Echeveria maculata Rose, l.c., page 18. 1905.

Remarks: Of these synonyms, the first two are accounted for by the existence of a previously named South African species of *Cotyledon*. Dr. Rose's description of *Echeveria schaffneri* clearly applies to *E. paniculata* rather than to Watson's plant, which last has a bifid inflorescence with secund branches and bractless pedicels. Rose's *E. maculata* is supposed to differ mainly (and solely?) in having leaves spotted or mottled, a feature we have found to occur in several species, allied or otherwise, as a consequence of insect infestation, by thrips, aphids, etc.

The plant, long cultivated in California under the name *Echeveria maculata*, has finally flowered at the Botanical Gardens of the University of California and turns out to be *Sinocrassula densirosulata* (Praeger) Berger, of a genus closely related to *Sedum*, but with only 5 stamens.

In the monograph however *E. maculata* is no longer indicated as a synonym of *E. paniculata* but rather treated as a separate species. Under REMARKS on *E. paniculata* Walther stated :

REMARKS. As delimited here, *E. paniculata* differs from the very similar *E. maculata* in having more ascending sepals and a more reddish corolla which is rather shorter and broader. Its range is northwestern, whereas *E. maculata*

And under REMARKS on *E. maculata* Walther wrote :

flowered. Such a form can of course receive no taxonomic recognition. From *E. paniculata* the present species would seem to differ in range, color of the corolla, leaf texture, and shape. *Echeveria mucronata* would appear to differ

While in the first citation *E. paniculata* and *E. maculata* differ only in more or less ascending sepals and a more or less reddish corolla, in the second citation they differ also in range, leaf texture and shape – suddenly the diseased leaves are once again a valid distinguishing criterion. These differences do not justify the classification of the latter as a separate species. They are within the variability to be expected in a species whose range extends over more than half of all Mexican states. Walther admittedly knew only one living plant of *E. paniculata*, which besides was of unknown origin, and what he had collected as *E. maculata* in Hidalgo - clearly not a well founded and reliable basis for comparison. And the many *E. platyphylla* specimens wrongly listed under COLLECTIONS of *E. maculata* also show that Walther did not have a clear concept of either *E. paniculata*, *E. maculata* or *E. platyphylla*. The best proof is the photo of *E. paniculata* published in *Cact. Succ. J. (Los Angeles)* 7: 38, 1935 – in the monograph the very same photo is published under *E. maculata* and accordingly captioned !

125. Echeveria longipes E. Walther (p. 374-37)

Stem short, subterranean; roots fusiform; leaves rosulate, linear-oblong, sharply acute, 8 to 10 cm. long, 15 mm. broad, light elm-green, slightly glaucous; inflorescence racemose-paniculate to subspicate above, to 35 cm. tall; peduncle 5 to 6 mm. thick; lower bracts elliptic-oblong, 3 to 4 cm. long, cuspidate; most branches single flowered except one or two near center of panicle, but even the single flowered ones to 16 mm. long, strongly ascending, 3-bracteolate; sepals strongly ascending, subequal, to 9 mm. long, asphodel-green, acute; corolla short, 14 mm. long, 8 to 9 mm. broad at base, 4 mm. at mouth, color light congo-pink at base, flesh-ocher above, tips and inside of segments empire-yellow; styles slender, apple-green; nectaries pale, 1¼ mm. wide.

In the travelogue of his 1934 visit to Mexico Walther wrote : "found what seems to be Dr. Rose's *E. maculata* near Huehueteca" (*CSJ US* 6(10): 151, 1935). 4 months later – in the same year and in the same journal – the very same plant was published as a new species called *E. longipes* (*CSJ US* 7: 36, 1935) because of "its elongate, yet often single flowered, lower pseudopedicels". However this feature is not unusual in the range of the highly variable inflorescences of *E. paniculata*, and of course longer pseudopedicels in no way justify classification as a separate species.

Puente Grande, Huehuetoca, Hidalgo, Mexico, and cultivated in Golden Gate Park, San Francisco (CAS, no. 234671).
OCCURRENCE. Mexico. Hidalgo: known only from the type locality.

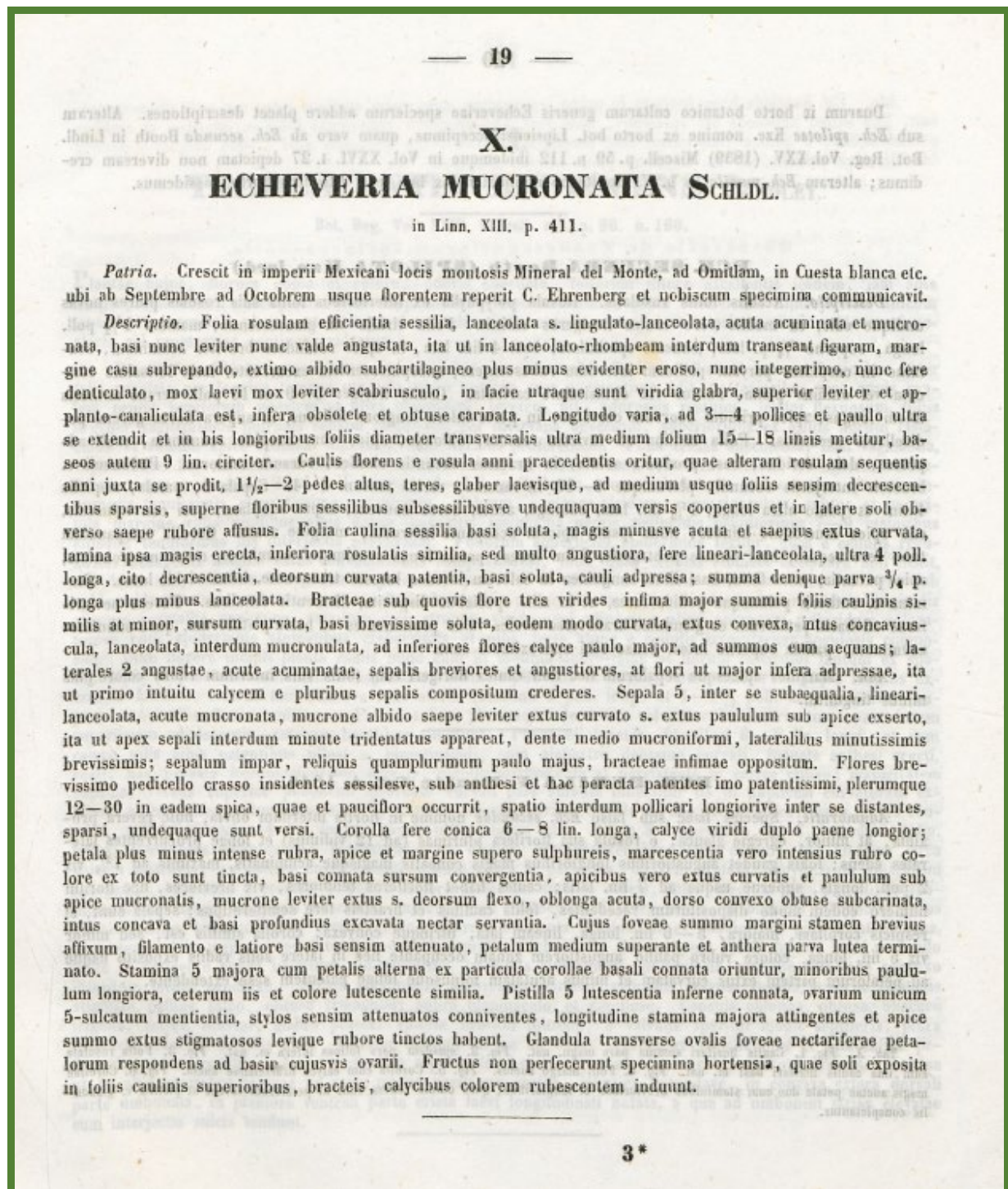
This is not correct. "Puente Grande, Huehuetoca" is in Estado de Mexico, not in Hidalgo.

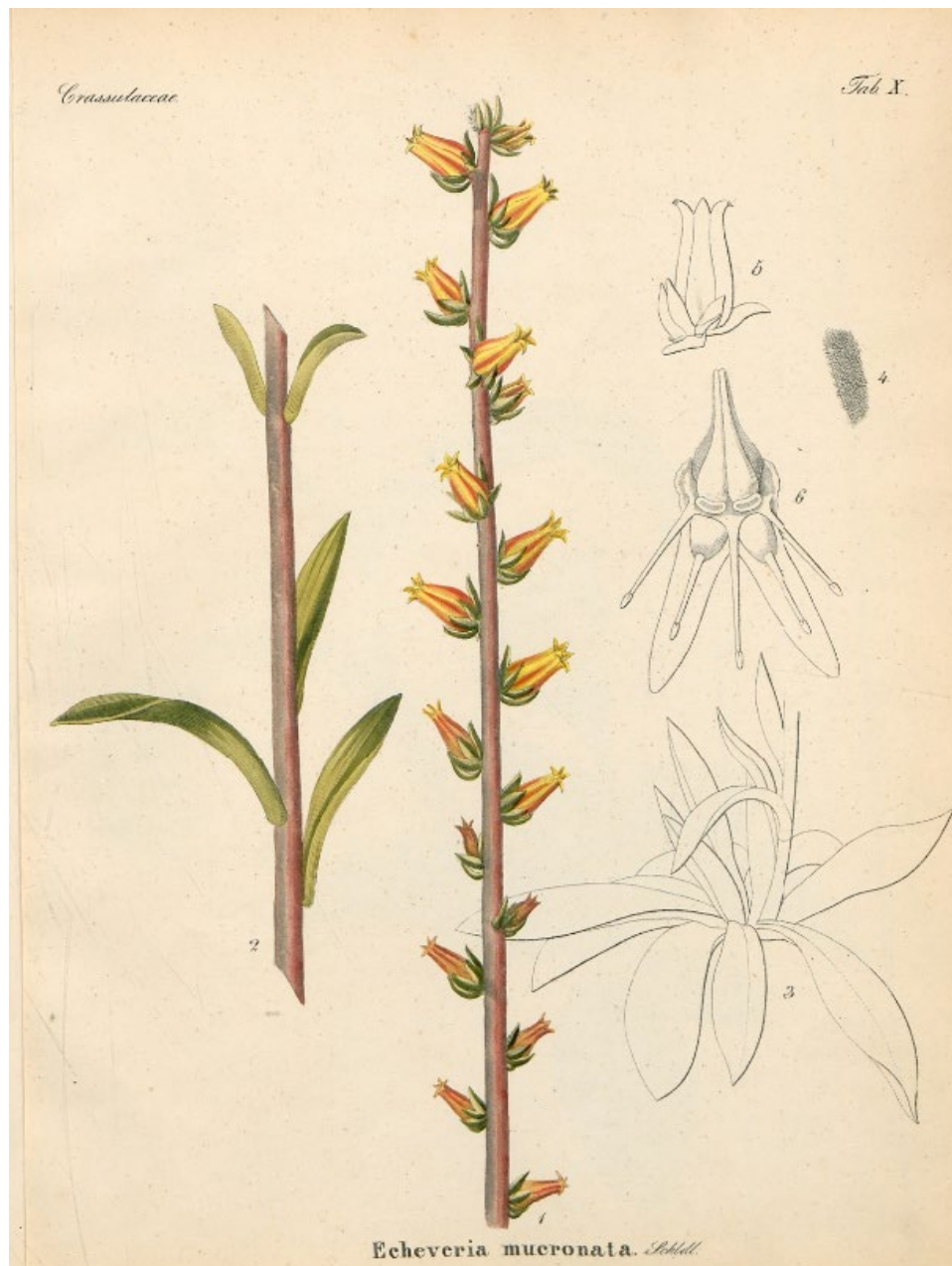
Comment on *E. paniculata*, *E. maculata* and *E. longipes* :

In regard of the protologues of *E. paniculata* Gray and *E. maculata* Rose, Walther's original decision to synonymise the latter was very appropriate. However instead of sticking to it he unnecessarily redescribed *E. maculata* from a plant not from the type locality and another *E. maculata* clone as spec. nov. *E. longipes*. A species occurring in more than a dozen Mexican states cannot help being somewhat variable regarding size and shape of the leaves, however as numerous herbarium specimens from a great number of different localities clearly show, the inflorescences - often very diverse on one and the same plant - of plants in the northern states do not differ from those of plants in central Mexico. It is pointless to treat *E. maculata* as an independent species. And *E. longipes* is best completely disregarded – Felipe Otero's re-collection of 1970 of this plant at the type locality resulted in a plant with extremely short pedicels !

126. *Echeveria mucronata* Schlechtendal (p. 375-377)

The plant Schlechtendal described as *E. mucronata* was collected by Carl Ehrenberg in the mountains of Mineral del Monte, near Omitlan, Cuesta blanca etc., Hidalgo. His description was published in *Linnaea* 13: 411, 1839 and in *Hortus Halensis* 10, 1853 :





ILLUSTRATIONS. Hort. Hal., pl. 10, 1841.

The correct date is **1853**, not 1841.

Walther's text

Again Walther did not quote / translate the First Description by Schlechtendal but wrote a new one of a plant he had collected himself when botanising in Mexico in 1934. His aim at the time was to find *E. mucronata* at Omitlan, Hidalgo, one of the possible collection localities mentioned by Schlechtendal in the protologue. His search was in vain. However at El Salto (also in Hidalgo), quite distant from Omitlan and not indicated by Schlechtendal he came across a plant he considered to be *E. mucronata* and described it as such :

Description from living plants flowering in Golden Gate Park, San Francisco, collected in El Salto, 1934 by the author.

Errors :

Under REMARKS Walther wrote :

without success, but the living plant described above, from El Salto in Hidalgo, agrees almost perfectly with Schlechtendal's description and with the illustra-

1. However he was badly mistaken. To state that it "agrees almost perfectly with Schlechtendal's description" clearly reveals that he had not consulted the latter : The leaves of *E. mucronata* Schlechtendal have somewhat variable margins, sometimes slightly waved or irregularly toothed or almost denticulate, hard and tough, surfaces sometimes minutely scabrous (slightly rough to the touch), upper surface lightly flattened–canaliculate, lower surface obtusely carinate. And leaves, bracts and sepals are distinctly mucronate, even petals have a dorsal mucro and can almost be tridentate. Moreover the flowers are more or less intensely red, only tips and upper margins are yellow. None of this is mentioned in Walther's description, i.e. Walther's description corresponds in no way to the protologue by Schlechtendal. What he had found at El Salto and erroneously called *E. mucronata* in fact was / is ***E. platyphylla***.

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Hidalgo: the type (probably lost); El Salto, Pringle, 03/8778 (G, GH, MEXU); Buena Vista, Pringle, 04/8913 (CAS, G,

2. Pringle 8778 is unambiguously ***E. platyphylla***, not *E. mucronata*. But this is not the only erroneous listing of Pringle 8778 : Walther cited it also in the list of COLLECTIONS of *E. paniculata* !

GH, MEXU, NY, P, PH, US). Chihuahua: Los Organos Mountains, Harde le Suer 37/1330 (F). Durango: Palmer, 97/4010 (US). Michoacan: Paracho,

3. The correct name of this collector reads "Harde LeSueur", and his n° 1330 is ***E. strictiflora***. There is no *E. mucronata* in Chihuahua.

10/ (US); Barranca northwest of Punguato, Arsene, 09/10055 (MO, US). Estado de Mexico: Tultenengo, Rose and Painter, 03/7866 (US). Puebla: vicin-

4. The correct name of the locality is Tultenango.

tado de Mexico: Tultenengo, Rose and Painter, 03/7866 (US). Puebla: vicinity of Esperanza, Arsene 07/10180 (US); Chalcicomula Plaza, Rose and Hay,

5. The exact locality information reads : "Esperanza, alt. 2450 m".

ity of Esperanza, Arsene 07/10180 (US); Chalcicomula Plaza, Rose and Hay, 05/3605 (US); on road to Puebla, "El Corazon," J. K. Langman, 40/2655

6. The correct data is : "Rose & Hay, **01/5782**" not "05/3605".

In the Key to Series *Mucronatae* Walther indicated :

paniculata may have single-flowered pedicels, while *E. mucronata* may bear several flowers to each branch. Further field work in both northeastern and

7. This remark is completely unsubstantiated.

F. Corolla yellowish tinged red; flowers nearly always solitary on each pedicel. Hidalgo, etc. 126. *E. mucronata*

8. This refers to *E. platyphylla*.

Under REMARKS to Series *Mucronatae*, Walther wrote :

will be found to vary in the direction of another species, as for instance, *E. paniculata* may have single-flowered pedicels, while *E. mucronata* may bear several flowers to each branch. Further field work in both northeastern and

9. This is wrong and is due to his erroneous concept of *E. mucronata*.

Comment :

Because Walther's concept of *E. mucronata* is erroneous, his comparisons and conclusions are also erroneous, i.e. the text about *E. mucronata* as a whole is completely useless. However because no one ever questioned Walther's description and Kimnach even used it for his treatment of genus *Echeveria* in the *Illustrated Handbook of Succulent Plants* 2003 – ignoring that it is the description of *E. platyphylla* - *E. mucronata* erroneously is still considered to be a yellow-flowered species, which of course is not correct : the flowers of *E. mucronata* are "more or less intensely red, tips and upper margins yellow".

127. Echeveria platyphylla Rose (p. 378)

The plant Rose named and described as *E. platyphylla* he had collected himself in the Valley of Mexico in 1901. The protologue was published in *Bull. New York Bot. Gard.* 3: 7, 1903 :

***Echeveria platyphylla* Rose, sp. nov.**

Acaulescent, glabrous throughout; basal leaves in a dense rosette, somewhat rhomboid in outline, thinnish, pale green, acuminate, tipped with a slender cusp, 4–5 cm. long, about 2 cm. broad; flowering branch 2–3 dm. long, bearing small scattered leaves below; flowers 15 to 20, arranged in an equilateral raceme; pedicels 3 mm. long or less; sepals green, thickish, linear, erect, subequal; corolla reddish yellow, lobes 9 mm. long, tips spreading even in age, tube very short, 1–2 mm. long.

Collected living by J. N. Rose, Valley of Mexico, July, 1901 (no. 6393). The specimens have frequently flowered in cultivation at Washington. This species must be close to *E. mucronata*, but has very different foliage. The above description is drawn entirely from living plants. The Department of Agriculture has many seedlings for distribution.

Walther's text

Walther did not cite Rose's description but wrote a new one from a plant collected at Lecheria, Estado de Mexico, 1943, i.e. not from the type locality. It differs in several respects from the type :

reniform, 1 mm. wide. Flowers from June on. Description from living plants collected near Lecheria, Mexico in 1934 by the author.

Leaves : Walther : description : light bice- to light elm-green; in Remarks : gray-green / Rose : pale green.

Inflorescences : Walther : 40 cm tall / Rose : 20-30 cm tall.

Flowers : Walther : description : dense equilateral raceme, in Remarks : crowded / Rose : arranged in an equilateral raceme - the several specimens of R 6393 all show inflorescences with spaced flowers.

Colour of corolla : Walther : amber-yellow above, whitish below / Rose : reddish yellow.

Length of corolla : Walther : 14 mm / Rose : petals 9 mm.

Pedicels : Walther : with two large bractlets / Rose : not mentioned in the protologue.

Obviously the plant from Lecheria does not well agree with the type of *E. platyphylla* Rose, particularly concerning the colour of the flowers. Accordingly the following remark is useless :

REMARKS. The broad, rhomboidal, gray-green leaves and the crowded flowers should suffice to distinguish this species from its allies. Its natural

Errors :

1. Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Estado de Mexico: Lecheria, *Pringle*, 04/11976 (F,GH,US), *E. Walther* in 1934 (CAS); Llano Grande, *Matuda*, 50/18878

Matuda 18878 originally and correctly was determined as *E. mucronata*, however 1958 Walther – wrongly - redetermined it as *E. platyphylla*, and thus he could list it in his text about *E. platyphylla*.

(UC); Pedregal near Tlalpan, *MacDaniels*, /951 (BH). Federal District: type collection. Hidalgo: rocky hills above El Salto, *Pringle*, 03/8778 (CAS,

2. MacDaniels 951 is not extant, so could not be verified.

type collection. Hidalgo: rocky hills above El Salto, *Pringle*, 03/8778 (CAS, F,G,GH,NY,PH,UC,US).

3. Pringle 8778 figures also on Walther's COLLECTION lists of *E. paniculata* and *E. mucronata*

Comment :

In fact Walther described *E. platyphylla* twice : Firstly the plant from El Salto, Hidalgo, in fact *E. platyphylla*, which he erroneously described as "*E. mucronata*", and secondly the plant from Lecheria, Estado de Mexico. A comparison of the two descriptions evidences that they are very similar, in parts even literally identical ! Quite obviously it did not occur to Walther that - if the descriptions of *E. mucronata* and *E. platyphylla* are roughly the same - something must have gone wrong..... Unnecessary to add that Walther's description of *E. platyphylla* is also of no use and superfluous anyway.

128. Echeveria crassicaulis E. Walther (p. 379-381)

The plant Walther described and published as *E. crassicaulis* in *Cact. Succ. J. (Los Angeles)* 7: 36, 1935 he had collected himself at Cima, Federal District, near the border of Morelos, along road to Cuernavaca, at 9-10'000 ft., on pine-covered lava flows :

Stem short, subterranean; roots fusiform-thickened; leaves rosulate, deep green, oblong, oblanceolate-rhomboid to orbicular, apex rounded and mucronate, 5 to 8 cm. long, 20 to 35 mm. broad; inflorescence apparently pseudoterminal, equilaterally-spicate, to 60 cm. tall; peduncle stout, to 15 mm. thick; lower bracts numerous, obovate-cuneate, 25 to 40 mm. long; flowers to 30 or more, closely subtended by upper bracts which are only slightly shorter than corolla, the latter red and yellow, to 15 mm. long, 10 mm. in diameter at base, 6 mm. at mouth; sepals somewhat unequal, more or less spreading at anthesis, longest to 10 mm. long; corolla-segments thick, broad, at their mucronate tips only slightly outcurved.

ILLUSTRATIONS. *Cactus and Succ. Jour. Amer.*, vol. 6, p. 150, figs. 5, 6, 1935; vol. 7, p. 37, 1935.

This refers to two photos of *E. mucronata* at Cima, in the south of the Federal District, published 1935 in the travelogue of Walther's visit to Mexico in 1934. However 5 months later, September 1935, in the same journal he described and published this very same plant as *E. crassicaulis* - without any explanation regarding the sudden name change respectively change of mind. The reason why however is obvious : When botanising at El Salto in Hidalgo Walther had found a plant which he – erroneously - considered the epitome of *E. mucronata*, but which in fact is /was *E. platyphylla*. And because the plant at Cima did not correspond to the plant at El Salto, Walther's wrong "*E. mucronata*", it couldn't help being a new species ! And the fact that already in 1903 it had been collected there by Pringle (n° 11814) and – of course correctly - identified as *E. mucronata* Schlechtendal did not prompt him to rethink and question his own concept of *E. mucronata*. In the contrary : he searched for Pringle 11814 specimen of *E. mucronata* from Cima in the respective herbaria and did not shy away from redetermining them as topotype and paratype of his new *E. crassicaulis* ! The same happened to Pringle 6490, collected at Serrania de Ajusco, in the vicinity of Cima, determined as "*Cotyledon mucronata* Baker ?", the respective specimens suffered the same fate being also redetermined as *E. crassicaulis*.

He explained :

present species had been collected there on several occasions previously. Distributed as *E. mucronata*, this material clearly differs from that species in having broader leaves and bracts, longer sepals, and a broader shorter corolla.

Walther's redetermination of *E. mucronata* at Cima and Serrania de Ajusco as *E. crassicaulis* does not change the fact that the former still is *E. mucronata*, i.e. Walther's description of *E. crassicaulis* in fact is a redescription of *E. mucronata* Schlechtendal.

Errors :

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Federal District: Cima, the type collection (CAS), Pringle, 03/11814 (F,GH,US,W), *Rose and Painter*, 03/7175 (GH,US); Ser-

1. The correct number is "03/7170". And as of course this collection was also determined as *E. mucronata* Schlechtendal, Walther repurposed it and indicated it as paratype of *E. crassicaulis*.

Pringle, 03/11814 (F,GH,US,W), Rose and Painter, 03/7175 (GH,US); Serrania de Ajusco, Pringle, 96/6490 (F,GH,MEXU,MO,NY,P,PH,US); alpine

2. Pringle 6490 from Serrania de Ajusco (as explained above) is *E. mucronata*, redetermined by Walther as *E. crassicaulis*.

16-M-648 (F). Estado de Mexico: 25 miles southeast of Mexico City, in pine forest at 9000 feet, Barkley, Rowell and Webster, 47/2415 (F); 55 kilos

3. This collection was in the Federal District, not in Estado de Mexico.

southeast of Mexico City, in pine forest, 10,500 feet, J. N. Weaver, 42/795 (GH, with *E. alpina*). Puebla: near Esperanza, Arsene, 07/10180 (US); Los

4. What "with *E. alpina*" means is not comprehensible, there is only one specimen mounted on the respective sheet, however in fact the very same Weaver specimen has been listed by Walther also as collection locality of *E. alpina* !

southeast of Mexico City, in pine forest, 10,500 feet, J. N. Weaver, 42/795 (GH, with *E. alpina*). Puebla: near Esperanza, Arsene, 07/10180 (US); Los

5. This collection was also cited by Walther for *E. mucronata*.

Chinos, E. K. Balls, 38/5304 (US); Mt. Orizaba, at timberline, Heller and Barber, 04/23 (F,MO). Veracruz: Sierra de la Cruz, F. Mueller, 1853/95

6. The timberline of Mt. Orizaba is in Veracruz, not in Puebla. It was Walther himself who identified the specimen Heller & Barber as *E. crassicaulis*. Why this should be *E. crassicaulis* and not *E. mucronata* is incomprehensible.

Comment :

Because Walther did not study carefully Schlechtendal's description of *E. mucronata* he misidentified *E. platyphylla* of El Salto, Hidalgo as *E. mucronata* and redescribed the true *E. mucronata* from Cima and Serrania de Ajusco as *E. crassicaulis*. In other words : *E. crassicaulis* is a superfluous redescription of *E. mucronata* Schlechtendal. There is no species *E. crassicaulis*. *E. crassicaulis* and *E. mucronata* are one and the same species. And of course the indication regarding *E. crassicaulis* in the Key to Series *Mucronatae* refers to *E. mucronata*.

129. *Echeveria pinetorum* Rose (p. 381-383) and 130. *Echeveria sessiliflora* Rose (p. 384-386)

The plant Rose described as *E. pinetorum* was collected by E.A. Goldman in pine woods SE of Teopisca, Chiapas in 1904. The description was published in *N. Amer. Fl.* 22: 20, 1905 :

29. *Echeveria pinetorum* Rose, sp. nov.

Acaulescent, forming very dense rosettes of leaves. Leaves bright-green, the margins tinged with red, narrowly oblanceolate, 2-4 cm. long, 1-1.5 cm. broad, rounded beneath, acute and mucronate-tipped; flowering stem, including the inflorescence, 1-2.5 dm. long, bearing closely set leaves 2-3 cm. long, below, and small ovate ones above; inflorescence an open-flowered equilateral raceme or spike; flowers subsessile; sepals ovate, acute, somewhat unequal; corolla 8-10 mm. long, its lobes acute.

Collected by E. A. Goldman in pine woods 20 miles southeast of Teopisca, Chiapas, Mexico, May 8, 1904 (*no. 1013*); flowered in Washington, March, 1905.

The imperfection of the original material of this species led to its association with *E. Byrnesii*. The recent flowering of some of the plants, which has shown that its true relationship is rather with *E. sessiliflora*, occurred in time to correct the description, but too late to alter the arrangement of the species.

The plant Rose described as *E. sessiliflora* was also collected by E.A. Goldman, at the same locality and in the same year, and the description was published in the same volume at the same time :

2. *Echeveria sessiliflora* Rose, sp. nov.

Acaulescent. Leaves numerous in dense flat rosettes, 1 cm. broad, pale-blue, somewhat glaucous, lanceolate, acute; flowering stem 15-30 cm. high, with many ascending lanceolate leaves; inflorescence a very open spike with 12 flowers or more; sepals unequal, acute, much shorter than the corolla; corolla about 8 mm. long, 5-angled.

Collected by E. A. Goldman 20 miles southeast of Teopisca, Chiapas, Mexico, May 24, 1904 (*no. 978*).

That means : The types of *E. pinetorum* and *E. sessiliflora* have been collected at the same locality : 20 miles southeast of Teopisca, Chiapas, and at the same time : May 8 and May 24, 1904, and both have been described by Rose in 1905. The descriptions are almost identical, the only difference worth mentioning is the colour of the leaves : *E. pinetorum* has green leaves with red margins while *E. sessiliflora* has pale blue leaves which are somewhat glaucous. This means that Rose did not describe two different species but two slightly different clones of one and the same species. He already was aware that the true relationship of *E. pinetorum* is with *E. sessiliflora*.

Walther's text

Walther also agreed that *E. pinetorum* is rather close to *E. sessiliflora*. However instead of quoting Rose's description, he - totally incomprehensible - published *E. sessiliflora* with Alexander's description and sketch (fig. 207) of *E. corallina* with the result that *E. pinetorum* and *E. sessiliflora* henceforth appeared as two distinct species.

Under SYNONYMS Walther indicated :

Echeveria huehueteca STANDLEY AND STEYERMARK, Field Mus., Bot. Ser., vol. 23, no. 4, p. 159, 1944; Fieldiana, Bot. Ser., vol. 24, pt. 4, p. 407, 1946.

Echeveria huehueteca has been described from plants found in Guatemala, Dept. Huehuetenango. Uhl is not convinced that it is identical with *E. pinetorum* from Chiapas and Oaxaca. However as long as there is no living material available, this problem remains unsolved.

Errors :

TYPE. Pine woods 20 miles southeast of Teopisca, Chiapas, Mexico, *Goldman*, 04/R:1013 (US, no. 399735); isotypes (CAS, NY).

1. The original publication by Rose in *N. Amer. Fl.* 1905 leaves no doubt that the n° 1013 is a Goldman nr. On the holotype sheet (US 399735) it was first noted as such and later «corrected» to a Rose n°.

In the Key to Series *Mucronatae* Walther wrote :

B. Leaves conspicuously bluish-gray. Chiapas. 130. *E. sessiliflora*

2. This is not correct, according to the protologue, the leaves of *E. sessiliflora* are "pale-blue, somewhat glaucous", not "conspicuously bluish-gray".

C. Leaves small, rarely over 5 cm. long or over 20 mm. broad; corolla small, mostly not over 10 mm. long. 129. *E. pinetorum*

3. There is no indication either in the protologue or in Walther's own description that the leaves ever are longer than 2-4 cm and broader than 1-1.5 cm.

Comment :

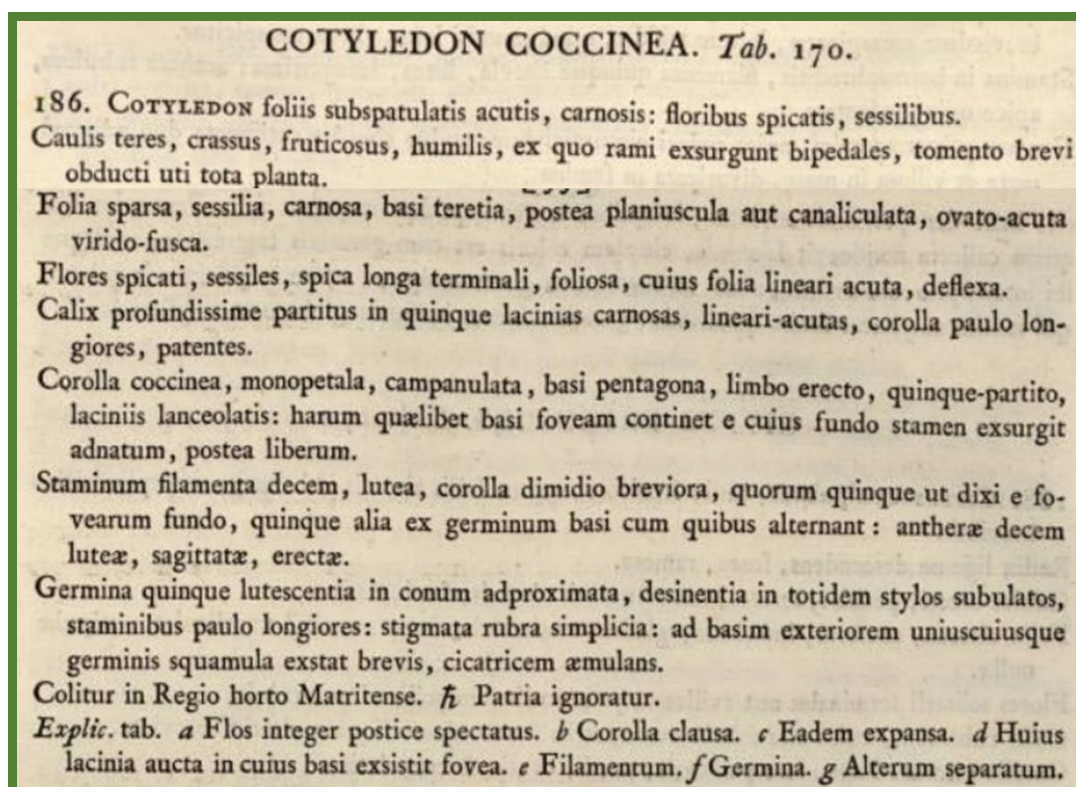
While Walther's description of *E. pinetorum* is correct, the text under REMARKS is pointless. The text about *E. sessiliflora* - in fact dealing with *E. corallina* – as a matter of course is of no use at all. Shortly after the publication of Walther's monograph Thomas Macdougall, the collector of *E. corallina*, draw attention to Walther's error but none of the subsequent authors dealing with genus *Echeveria* made an effort to correct it and to reinstate *E. corallina* as distinct species not to be confused with *E. sessiliflora*. Meanwhile this has been done, see *Crassulacea* No. 5, 29. Sept. 2017 :

https://www.crassulaceae.ch/docs/24ce97a908928a1874658e2bb182b218_Crassulacea%20%20No%205%20-%2029.%20September%202017%20-%20Corrections%20in%20Genus%20Echeveria%201.pdf

Series 13. Echeveria

131. Echeveria coccinea (Cavanilles) DeCandolle (p. 388-390)

E. coccinea was described by Cavanilles as *Cotyledon coccinea* and published in *Icones et Descriptiones Plantarum* 2: 54, 1793. It was one of the 4 species on which De Candolle in 1828 based his new genus *Echeveria*.



Walther's text

Under TYPE Walther indicted :

TYPE. None designated. Lectotype: Cavanilles, *Icones Plant.*, volume 2, plate 170, 1793.

There is a specimen at the Madrid Botanic Garden n° 29325 labelled "*Cotyledon coccinea* Cav., ex hort. Reg. Matr." which could well serve as type specimen instead of – as Walther suggested – the plate of Cavanilles as lectotype.

Errors :

Under COLLECTIONS Walther listed :

COLLECTIONS. Mexico. Hidalgo: Pachuca, *Neé*, *Hisp. ex. Hort. Bot.*

1. This information is wrong. It refers to *E. bifida*, as the respective specimen at MA evidences, not to *E. coccinea* whose origin is completely unknown.

Matr. (MA,F, photo); Regla, *P. Maury*, 91/5645 (NY); between Metepec

2. While Walther cited Regla as type locality of *E. pubescens* (wrongly, see comment to 132. *E. pubescens*), here he indicated Regla as collection locality of *E. coccinea*.

Cuesta de Texquedo, kilo 184, Zimapan-Tasquillo, *Moore* 46/1257 (BH,

3. "Tasquillo" is not mentioned on the respective herbarium sheet.

GH). Puebla: Sierra de Guadalupe, *Bourgeau*, 65/739 (GH,P), *E. K. Balls*,

4. The correct number of Bourgeau's plant is **730**, not 739.

GH). Puebla: Sierra de Guadalupe, *Bourgeau*, 65/739 (GH,P), *E. K. Balls*,
38/5600 (UC,US); Tepeaca-Acatzingo, *Rose and Haugh*, 99/87 (MEXU).

5. E.K. Balls 38/5600 was collected in the Sierra de Guadalupe which is at the border of the Federal District and the State of México, not in Puebla.

38/5600 (UC,US); Tepeaca-Acatzingo, *Rose and Haugh*, 99/87 (MEXU).

6. The specimen is at NY, not at MEXU. Rose is the only collector and Acatzingo is not indicated. Besides the correct name of Rose's assistant is **Hough**, not Haugh.

Tlaxcala: *Arsene and Nicolas*, 10/5721 (US). Oaxaca: Mixteca Alta, *Gale-*

7. A label bottom left on US 1032590 reads : "No. 5721. Mexique. Etat de Puebla. Tlaxcala. 1910. Nicolas." On the label bottom right Bro. G. Arsène is indicated, but ~~collector~~ is crossed out. So while it seems that the plant was rather collected in Puebla, in any case the collector was Nicolas and not Arsène.

Tlaxcala: *Arsene and Nicolas*, 10/5721 (US). Oaxaca: Mixteca Alta, *Gale-*
otti, 1840/2813 (BR,G,UC). Federal District: Churubusco, *Orcutt*, 10/4267

8. Galeotti's n° 2813 has been applied to two different herbarium sheets :

- Herb. Hort. Bot. Nat. Belg. barcode BR0000029922215, called **1er exemplaire**, shows part of an inflorescence with four branches with up to 4 flowers each. It was determined by Walther as *Echeveria acutifolia* in 1957. Label bottom left reads : "Rocher calcaire, Mixteca alta, Sierra, 6-7500, coll. H. Galeotti 1840, Oaxaca, Mexico."

- Herb. Hort. Bot. Nat. Belg. barcode BR0000029922253, called **2ème exemplaire**, designated as *E. coccinea*, lacks any information regarding collection locality and date of collecting. The determination label bottom right only mentions : "Don de Pierre Martens, 1932".

Very obviously Walther added the data of the "1er exemplaire" to the "2ème exemplaire", notwithstanding that there is no proof whatsoever that the two plant had been found at the same time at the same locality, i.e. that Galeotti's *E. coccinea* had been collected in Oaxaca.

The only *Echeveria* species with which *E. coccinea* might possibly be confused is *E. pubescens*, but that differs in having larger, relatively broader

9. The comparison of *E. coccinea* and *E. pubescens* is of no use because Walther's concept of the latter is based on undocumented material.

Comment :

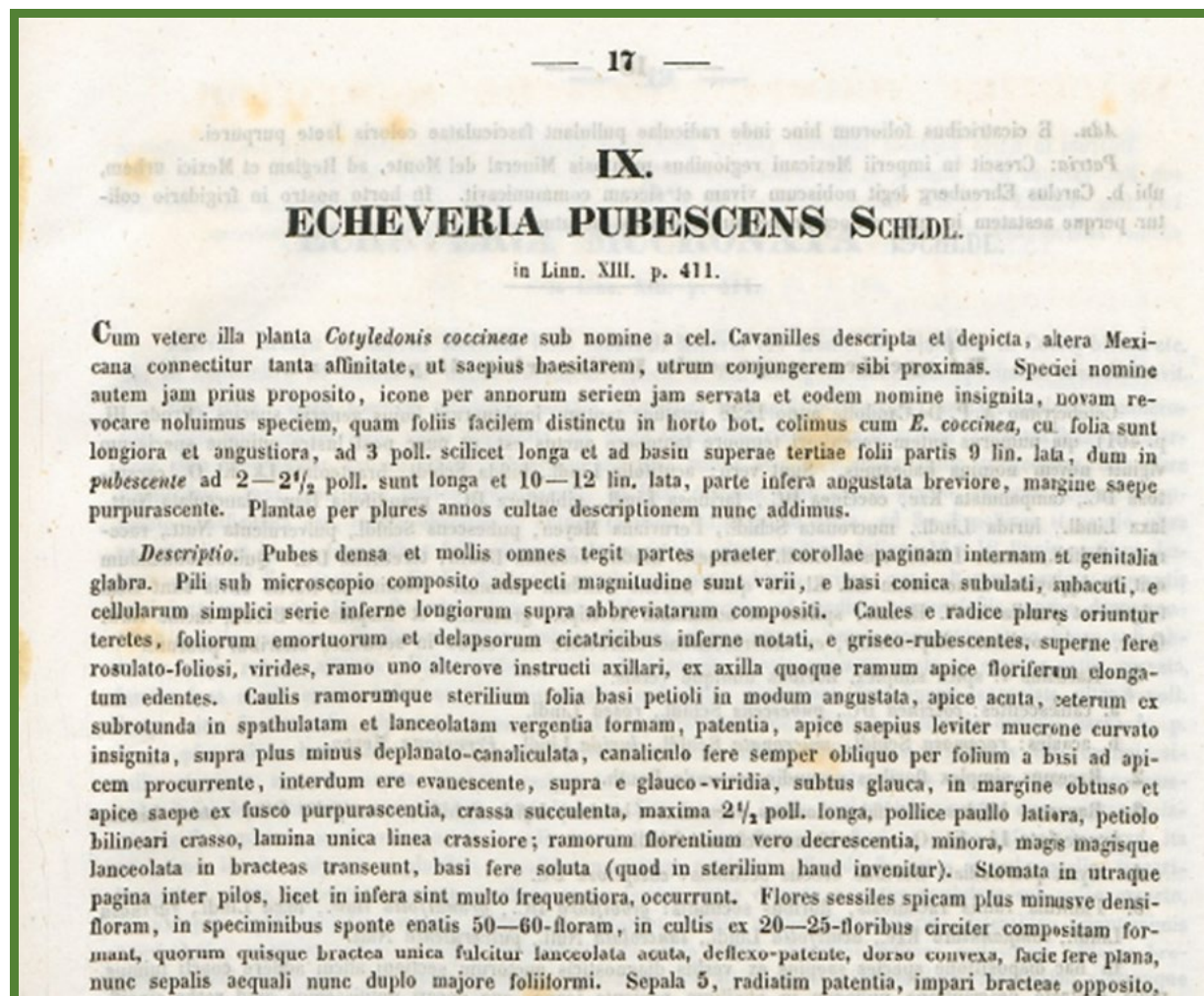
While the description from a plant collected in the Federal District is fine, the accuracy of the other information leaves much to be desired.

132. *Echeveria pubescens* Schlechtendal (p. 390-392)

E. pubescens was described and published by Schlechtendal in *Linnaea* 13: 411, 1839 :

Ech. pubescens n. sp.; tota pubescens foliis rosulatis caulinisque crassis lanceolatis utrinque attenuatis, spica simplici densiflora, floribus undequaque versis, corollae laciniis subulato-acuminatis apice extus curvatis. — Mineral del Monte, Regla, Mexico. (C. Ehrenberg.) — Pube densa molli fere velutina omnes fere partes et corollae exteram paginam obtegente facilis distinctu. Corollae 4 lineas longae, lacinae apice extus curvatae, intense coccineae?; calyces dimidia corolla paullo longiores. Spica 50—60-flora, 6—7 poll. longa, in caule pedem et ultra longo, foliis minoribus angustioribus sparsis instructo. Folia rosulata in apicibus ramorum cauliumve.

and in Hort. Hal. 3: 17, 1841-1853 - obviously he ignored the description of *E. coccinea* by Cavanilles in 1793 :



hinc, si bractea minor est, corolla calyci hexasepalo imposita videtur, nunc omnino inter se sunt aequalia, nunc, si bractea major, et duo huic proxima majora esse solent, omnia angusta lanceolata subito-acutata, apice plerumque leviter incurvo et purpura tincto, ceterum viridia, succulenta, utrinque convexiuscula, mox corollam longitudine aequantia, mox superantia. Corolla ante et post anthesin pentagono-conica, clausa, angulis obtusis, sub anthesi apice aperta pentagono-prismatica, speciem prae se fert corollae apice acute 5-dentatae. Petala aestivatione quincunciali disposita, 5 lin. longa, obtuse carinata, intus concaviuscula et basi fovea ovali concava mellifera instructa, acuta cum mucrone parvo dorsali erecto pilosiusculo, dorso intense coccinea, marginibus basi que lutea, omnia basi inter se cohaerentia, ita ut gamopetala fere dici possit corolla. Summo foveae margini stamen insidet brevius, alternans cum longiore ad basin germinis, si petala detrahis, persistente. Stamina omnia fere aequilonga, $\frac{3}{4}$ corollae aequantia, usque ad sinus inter apices liberos petalorum porrecta. Filamenta alba plana sensim angustata: Antherae ovaes sulphureae. Pistilla 5, inferne connata, germen unicum obtuse 5-sulcatum mentientia, staminibus breviora, stylo brevi erecto, parte ejus stigmatosa subcapitata paululum extus curvata et rubore affusa. Glandula transversa elliptica ad basin cormi cujusvis ovarii, foveae nectariferae in petalo respondens. Fructus nunquam perfecti sunt.

Adn. E cicatricibus foliorum hinc inde radicae pullulant fasciculatae coloris laete purpurei.

Patria: Crescit in imperii Mexicani regionibus montosis Mineral del Monte, ad Reglam et Mexici urbem, ubi b. Carolus Ehrenberg legit nobiscum vivam et siccam communicavit. In horto nostro in frigidario colitur perque aestatem in tuto collocatur ne nimis pluviis laedatur.

The plant had been collected by Carl Ehrenberg in Mexico (Mineral del Monte, Regla and Mexico).

Walther's text

Errors :

1. Again Walther did not translate Schlechtendal's description but wrote a new one from locally cultivated plants of unknown origin.

Flowers from January on. Description based upon locally cultivated material.

Under REMARKS Walther wrote :

collections should be referred. *Echeveria pubescens* would appear to differ amply in its broader leaves and bracts, a broader corolla, and more spreading sepals. My description is based on locally grown plants, actually quite rare

Unfortunately Walther's "*E. pubescens*" was not the correct species but rather the hybrid *E. 'Pulvicox'*. No surprise that it differed from *E. coccinea* Cavanilles ! And accordingly also the indication in the Key to Series *Echeveria* is wrong :

G. Corolla dull red; leaves broader, obovate-spathulate, scarcely rigid; sepals spreading to recurved. 132. *E. pubescens*

2. Under TYPE Walther indicated :

TYPE. *C. Ehrenberg*, Mineral del Monte, Regla, Hidalgo, Mexico (HAL?).

and again under COLLECTIONS :

COLLECTIONS. Mexico. Hidalgo, the type from Regla. Puebla: Barranca,

Schlechtendal indicated as source of *E. pubescens* "Mineral del Monte, Regla, Mexico)". This is an enumeration of three different collection localities, two of them in Hidalgo, one in the Federal District. We are not told from which one the type originated, therefore Walther's statement that the type came from Regla is not substantiated. On the other hand this did not prevent him from specifying Regla also as a collection locality of *E. coccinea* (see comment on 131. *E. coccinea*).

Comment :

Walther's text about *E. pubescens* is worthless because based on the hybrid *E. 'Pulvicox'*.

133. Echeveria pulvinata Rose (p. 392-394, 237)

The plants named and described as *E. pulvinata* were collected by Rose and his assistant Walter Hough in Tomellin Cañon, Oaxaca, June 15, 1899. The description was published in *Bull. New York Bot. Gard.* 3: 5, 1903 :

Echeveria pulvinata Rose, sp. nov.

Caulescent, 12 cm. high, naked below, somewhat branching; young branches, leaves and sepals covered with a dense white velvety pubescence; leaves clustered in a rosette at the top, obovate, tapering to a narrow base, 2.5–3 cm. long, 2 cm. broad, rounded at apex and apiculate, 5–6 mm. thick; flowers in a leafy raceme; pedicels 10–12 mm. long, bracteolate; sepals ovate, acute, unequal, the longest about half the length of the corolla; corolla scarlet, sharply 5-angled, 18–20 mm. long, pubescent without, the lobes apiculate.

Walther's text

Again Walther preferred to write a new description instead of citing Rose's description :

to 2 mm. wide. Flowers from January to June. Description from living plants grown in local gardens.

.... with the consequence that it is useless because based on plants of unknown origin.

Errors :

Color. Trichomes colorless to rusty-brown in sun; leaves elm-green; bracts and sepals as the leaves, but often pompeian-red at tips; corolla scarlet-red,

1. That his plants from local gardens were not the correct species results from the information regarding the colour of leaves, bracts and sepals : *E. pulvinata* has entirely green leaves with white hairs.

In the Key to Series *Echeveria* Walther wrote :

E. Lower pedicels evident, with several flowers each; corolla about 16 mm. long, 9 mm. thick; sepals less than half as long as corolla, connate at base; leaves obovate, their hairs sometimes reddish. . . . 133. *E. pulvinata*

2. The characterisation of *E. pulvinata* in the Key is another proof that the plants from local gardens did not correspond to *E. pulvinata* Rose : "lower pedicels evident" is nonsense, the pedicels of *E. pulvinata* Rose are 10 – 12 mm long, i.e. are evident throughout ! "With several flowers each" however is not indicated in the protologue and also not shown in the respective illustration fig. 210.

ington, D. C., and collected at the type locality by Rose and Haugh, (99/4976) and by Rose (01/4994).

OCCURRENCE. Mexico: Oaxaca.

COLLECTIONS. Mexico. Oaxaca: the type collection (US, type; GH); Tomellin Cañon, Rose, 01/4994 (US), Rose and Haugh, 99/4976 (NY,US);

3. The correct name of Rose's assistant is **Hough**, not Haugh.

Cerro de San Felipe, Conzatti, 96/107 (US); Almoloyas Cañon, Conzatti, 06/

4. There is no Cañon indicated on the herbarium sheet.

hairs a more intense, more wide-spread rusty color. This has been given the cultivar name, *E. pulvinata* cultivar 'Ruby,' B. K. Boom.

5. This is wrong. The hairs of *E. pulvinata* 'Ruby' are not "a more intense, more wide-spread rusty color". *E. pulvinata* 'Ruby' is characterised by margins and tips of leaves and sepals intensely red.

Comment :

Evidently Walther had failed to consult the protologue otherwise he would have noticed that his material does not correspond to *E. pulvinata* Rose. The result : His text is of no avail.

134. Echeveria leucotricha J.A.Purpus (p. 394-395)

E. leucotricha was collected by C.A. Purpus in the mountains near San Luis Tultitlanapa in the Sierra Mixteca, Puebla, 1908, and it was described by his brother J.A. Purpus and published in *Monatsschr. Kakteenkunde* 24: 65-66, 1914 :

Stammbildend. Verzweigt. Stamm und Zweige dicht mit fuchsbraunem Haarfilz bekleidet. Blätter rosettig, locker gestellt, oblong, elliptisch, lanzettlich, stumpfspitzig, 6—8 cm lang, 2—2,5 cm breit, dickfleischig, oberseits etwas konkav, unterseits konvex, dicht mit ca. 2 mm langen, weissen, derben, weichen Haaren filzartig bedeckt, an der Spitze fuchsbraun.

Blütenstände seitlich in den Blattachseln der Rosette, sich bis ca. 30—40 cm verlängernd, locker beblättert; Blätter kürzer und schmaler als die Rosettenblätter, mehr zylindrisch und ebenfalls dicht mit weissem Haarfilz bekleidet, an der Spitze fuchsbraun. Blüten sitzend in einfacher, anfangs dichtblütiger, kurzer, später sich verlängernder, lockerblütiger Traube; sie sind von drei dicht dem Kelch anliegenden, fleischigen Hochblättern gestützt; das mittlere Stützblatt grösser, so lang wie der Kelch, die beiden seitlichen kleiner, viel kürzer als der Kelch. Kelchblätter 5, bis zum Grunde frei, lanzettlich zugespitzt, fleischig, dick, 1 cm lang, 2 mm breit, wie die Hochblätter dicht weissfilzig behaart, an der Spitze mit fuchsbraunem Haarbüschel; Blüte glockig, Krone spreizend. Kronenblätter 5, bis zum Grunde frei, lineallanzettlich, in eine feine Spitze auslaufend, oben zurückgekrümmt, fleischig, auf dem Rücken scharf gekielt, innen tiefrinnig, im Durchschnitt dreieckig, zinnoberrot, in der Mitte am Kiel dunkler, innen und nach dem Rande zu heller, auf der Rückseite mit fleischigen Drüsenhaaren besetzt, 1,8—2 cm lang, 3 mm breit.

Fruchtknoten 5 blätterig, weiss. Staubfäden weiss, Staubbeutel gelb, nur wenig die Griffel überragend. Griffel 5, kurz, oben bräunlich, mit glasigen, glänzenden, seitlich stehenden Narben.

Walther's text

Instead of translating the German text of the First Description, Walther wrote a new one "based upon plants from the University of California Botanical Garden", that means obviously on plants of unknown origin, otherwise Walther would have indicated it.

Errors :

Under TYPE / OCCURRENCE Walther indicated :

TYPE. Collected by J. A. Purpus in 1908, on rocks in mountains near San Luis Tultitlanapa, Sierra de Mixteca, southern Puebla, Mexico (B?).
OCCURRENCE. Mexico. Puebla, vicinity of San Luis Atotitlan, Purpus, 07/413, (US); Cerro del Castillo, Caltepec, southern Puebla.

This is a mix of correct and not correct information :

1. Atotitlan : the correct name is Atolotitlan.

2. San Luis Atolotitlan is the new name of San Luis Tultitlanapa. That means "on rocks in mountains near San Luis Tultitlanapa" and "vicinity of San Luis Atolotitlan" refer to the same locality, namely to the type locality of *E. leucotricha*. As correctly indicated, the type has no Purpus n° and was collected 1908.

3. Pupus 07/413 is wrongly applied to the "vicinity of San Luis Atoltitlan" (type locality), it is however correct for "Cerro del Castillo, Caltepec, southern Puebla".

Under REMARKS Walther wrote :

REMARKS. The present species comes quite close to <i>E. pulvinata</i> , but would seem to differ amply in having rather longer, narrower leaves with
--

4. The comparison with *E. pulvinata* is of no use because Walther's concept of the latter is based on locally cultivated plants obviously not corresponding to the type (see comment on 133. *E. pulvinata*).

Comment :

Walther's description made of plants of unknown origin is of no use.

135. *Echeveria pilosa* J.A.Purpus (p. 396-397)

As *E. leucotricha*, also *E. pilosa* was collected by C.A. Purpus in the mountains near San Luis Tultitlanapa, Sierra Mixteca, Puebla, 1909 and described by his brother J.A. Purpus in *Monatsschr. Kakteenkunde* 27: 146, 1917 :

Stammbildend. Stamm holzig, rotbraun, filzig, einfach, später sprossend. Blätter in lockerer Rosette angeordnet, dickfleischig, spatelförmig bis länglich-elliptisch, keilförmig, nach oben spitz zulaufend, ca. 7—8 cm lang, 3 cm breit, oberseits etwas rinnig, konkav, dicht mit weichen, weissen, kurzen Haaren bekleidet. Spitze rotbraunhaarig. Rosette ca. 14—15 cm im Durchmesser.

Blütenstände seitlich aus der Rosette, bis 35 cm lang, oben verästelt, beblättert, alle Teile weiss behaart. Blätter ähnlich in der Form wie diejenigen der Rosette, viel kleiner, nach oben schmaler und kürzer werdend. Ästchen in der Regel 3—4blütig.

Blüten festsitzend oder kurz gestielt. Kelchblätter 5, dickfleischig, länglich-elliptisch, rundlich, spitz zulaufend, schief abstehend, kurz behaart, 11—14 mm lang. Krone kantig, nach oben nicht oder wenig verschmälert, 11—13 mm lang, 7—8 mm im Durchmesser, mennigrot, innen gelb. Kronenblätter 5, 12 mm lang, 4 mm breit, auf dem Rücken gestielt, in ein feines Spitzchen auslaufend, mennigrot, am Rande gelb, kurz, fleischig, behaart, innen gelb, glatt. Fruchtknoten fünfblättrig, grünlich weiss. Staubfäden weiss, Beutel gelb, etwas länger wie die Fruchtblätter, kürzer wie die Krone. Griffel kurz, rötlich mit glänzender, glasartiger Narbe, kürzer wie die Kronenblätter.

Walther's text

Again Walther did not translate the German description of the protologue but wrote a new one "from living plants imported from R. Graessner, Perleberg", i.e. from plants of unknown origin :

January to December. Description from living plants imported from R. Graessner, Perleberg.

Errors :

Echeveria pilosa J. A. PURPUS, Monatsch. Kakteenk. vol. 27, p. 146, 1917; POELLNITZ, in Fedde Repert., vol. 39, p. 213, 1936.
ILLUSTRATIONS. Monatsch. Kakteenk., vol. 27, p. 147; Cactus and Succ. Jour. Amer., vol. 7, p. 86, fig. (upper left), 1935.

1. The correct name is "Monatsschrift".

OCCURRENCE. Mexico. Known only from the type locality, Sierra de Mixteca, near San Luis Atotitlan, southern Puebla.

2. The correct name is "Atoitlan".

Comment :

In view of the accurate description by J.A. Purpus on the one hand and the lack of the true species in California on the other hand it is incomprehensible why Walther nevertheless created his own description. Needless to say that it is of no use at all.

136. Echeveria setosa Rose and Purpus (p. 398-400)

E. setosa was collected by C.A. Purpus on rock, Cerro de la Yerba, near San Luis Tultitlanapa, Puebla, 1907, and the description was published in *Contr. U.S. Natl. Herb.* 13: 45, 1910 :

Echeveria setosa Rose & Purpus, sp. nov.

PLATE 10.

Acaulescent giving out offsets from the base; leaves 100 or more, forming dense, almost globular rosettes (10 to 12 cm. in diameter), thickish but flattened, spatulate to oblanceolate, 4 to 5 cm. long with an ovate, acute tip, slightly ridged along the middle both above and below, covered on both sides with setiform hairs; flowering stems setose, 20 to 30 cm. high, bearing small bract-like setose leaves; inflorescence usually simple, consisting of an 8 to 10-flowered secund raceme; lower pedicels 2 to 3 cm. long; sepals green, linear, setose, spreading; petals 10 to 15 mm. long, red at base, yellow at tip, smooth within, short-setose without; stamens white; styles greenish.

Collected by Dr. C. A. Purpus on rock, Cerro de la Yerba, near San Luis Tultitlanapa, Puebla, in 1907, and grown both in Washington, D. C. and at Darmstadt, Germany, flowering at the latter place in 1909.

Type U. S. National Herbarium no. 592487.

Walther's text

Walther did not consider the description by Rose and Purpus but wrote a new one "from locally cultivated plants" :

rowly reniform, to 2 mm. wide; mature follicles widely spreading. Flowers from June on. **Description from locally cultivated plants.**

Color. Trichomes colorless, leaves spinach-green; bracts and sepals as the leaves; **corolla lemon-chrome overlaid with spectrum-red;** petals inside empire-yellow; styles cosse-green.

Comment :

These "locally cultivated plants" are of unknown origin and are dubious insofar as the size and the colour of their corolla does not agree with the protologue, i.e. the description is again of no use.

137. Echeveria ciliata Moran (p. 401-402, 240)

No comment.

138. Echeveria pringlei (S.Watson) Rose (p. 402-404)

E. pringlei was first described by S. Watson as *Cotyledon pringlei* in *Proc. Amer. Acad. Arts* 25: 148, 1890 and transferred to genus *Echeveria* by Rose in *Bull. New York Bot. Gard.* 3: 6, 1903. The plant had been collected by C.G. Pringle on dry shaded ledges of the barranca near Guadalajara, Jalisco, 1888.

COTYLEDON PRINGLEI. Stems stout, decumbent, a foot long or more, very leafy and branching : leaves (and branches) puberulent, rather thin, broadly oblanceolate, acute, mostly 1 or 2 inches long : racemes simple, terminal, the foliaceous bracts nearly equalling the flowers ; pedicels 2 to 4 lines long : sepals narrowly lanceolate, acuminate, as long as the corolla (6 to 8 lines) ; petals united only near the base, red, very acutely and prominently carinate, acuminate : stamens a third shorter. — On dry shaded ledges of the barranca near Guadalajara ; 1889 (n. 1853).

Walther's text

Walther did not quote Watson's description but wrote a new one "from living plant received from University of California Botanical Garden" :

Plant densely pubescent on all exterior portions, trichomes colorless, transparent, to 0.2 mm. long, straight or tapering to base; stem evident, to 10 cm. tall or more, with numerous, decumbent or ascending branches; leaves laxly rosulate or scattered, thinnish, scarcely turgid, to 4 cm. long and 2 cm. broad, oblanceolate to rhomboid-obovate, acute or mucronate, flat or recurved; inflorescences simple, equilaterally-racemose, to 20 cm. long; peduncle spreading, to ascending above; lower bracts rhomboid-obovate, to 3 cm. long, cuspidate-apiculate, recurved; raceme with 12 or more flowers; upper bracts obovate, less than 25 mm. long; pedicels stout, 4 to 8 mm. long, bracteolate; sepals subequal, longest to 14 mm. long, narrowly-lanceolate, acuminate, ascending to spreading; corolla urceolate, sharply pentagonal, to 15 mm. long, 10 mm. thick below middle, 9 mm. wide at mouth; petals sharply keeled, ob-

The measures of stem, leaves and corolla do not correspond to the protologue :

Stem : Watson : a foot long / Walther : to 10 cm tall or more.

Leaves : Watson : 2.5 – 5 cm long / Walther : to 4 cm long.

Corolla : Watson : 13.5 – 18 mm / Walther : to 15 mm.

Errors :

1. Under COLLECTIONS Walther listed :

COLLECTIONS. The type collection; barranca at Guadalajara, Pringle, 03/R-870 (flowered, CAS,NY), Rose and Painter, 03/870 (GH,MEXU,US).

The correct text should read : "COLLECTIONS. The type collection, barranca at Guadalajara, Pringle, 1888/1853. Rose and Painter, 03/870." There exists no "Pringle, 03/870".

Under REMARKS Walther wrote :

number of *E. pringlei* is $n = 23$, the same as in *E. pulvinata*. The present species differs from related hairy species as follows: from *E. pulvinata* and *E. leucotricha* in its spreading sepals, from *E. coccinea* and *E. pubescens* in its elongated pedicels, from *E. pilosa* and *E. setosa* in its simply racemose, equilateral inflorescence with bracteolate pedicels, and from *E. carminea* and *E. amphoralis* in its smaller corolla. The simple trichomes of the last two species are very similar to those of *E. pringlei*.

These comparisons are all of no avail because the plants Walther used are of unknown origin - regarding *E. pubescens* even a hybrid and regarding *E. amphoralis* only a herbarium specimen (see comment on 140. *E. amphoralis*).

Comment :

The plant Walther used for his description does not agree well to the protologue, therefore his description is of no interest.

139. Echeveria carminea Alexander (p. 404-406)

The plant Alexander described as *E. carminea* was collected by MacDougall's guides between Santiago Lachiguiri and Jalapa, Feb 1939 (B-17). His description was published in *Cact. Succ. J. (Los Angeles)* 13: 138, fig. 81, 1941 :

Plant caulescent, with stems up to 7 dm. tall so far as known, all parts densely papillose-puberulent, leaves subrosulate at the apex and scattered immediately below, 10-12 cm. long, 2.5-3 cm. wide, dark green, deeply channelled and v-shaped, the margins black-purple, the undersurface glaucous and silvery puberulent, the apex abruptly apiculate, the midrib raised and distinct only at the cuneate base; inflorescences 4-5 dm. long, erect, the bracts similar to the leaves, but not so tapered at the base, 5-6 cm. long, oblanceolate, somewhat broadly acuminate; flowers 12-15 in a multilateral raceme, the pedicels 1-2 cm. long, 2-bracted, the bractlets deciduous, oblong-lanceolate, acute, 18-20 mm. long; calyx spreading, the tube scarcely 1 mm. long, lobes nearly equal, more or less recurved, 2-2.2 cm. long, lanceolate, acute, both sides decurved towards the base causing a tapered appearance; corolla 22-24 mm. long, 17-18 mm. broad, ovoid-conical, very sharply angled, carmine, the tips yellow, slightly spreading, petals deeply v-grooved on the inner face for the lower two-thirds, the upper third flattened; nectar-sacs 5 mm. deep; stamens opposite the petals 15 mm. long, their filaments unribbed, 1.75 mm. wide at the base, those opposite the sepals 18 mm. long, their filaments with a broad midrib, 2.5 mm. wide at the base; carpel cluster 18 mm. long, orbicular, the carpels united for 2 mm. above the base, the body 7-8 mm. long, gradually tapered into the 10-11 mm. long beak, the beaks somewhat outwardly bulged at the midportion, leaving a central hollow; styles pale yellow-green, the stigmas maroon-purple with olivaceous tips; nectarine glands lunate, 5 mm. long, whitish, not touching each other, standing out collar-like.

Walther's text

Once more the description is made from plants without known origin, and regarding shape and size of the leaves Walther's plant differs clearly from the type.

Description from plant cultivated locally, received through Sr. C. Halbinger, Mexico City.

Errors :

Under TYPE Walther wrote :

TYPE. *T. MacDougall*, 38-39/, from mountains west of Tehuantepec, Oaxaca, Mexico (NY).

This is wrong in two respects :

1. There exists no "T. MacDougall, 38-39". MacDougall's number for the type of *E. carminea* is B-17. "38-39" refers to the date of collection of the respective plant, copied from Alexander. According to MacDougall's notes the plant was collected Feb 21, 1939.
2. MacDougall has never mentioned a locality named San Juan del Estado. And *E. carminea* is not occurring at this place.

Echeveria amphoralis has a conspicuously red and yellow corolla and much smaller leaves, at most 35 mm. long, rather flat, and somewhat thicker.

This comparison is of no avail – see comment to 140. *E. amphoralis*.

Comment :

Walther's description from a plant without known origin is of no use – superfluous anyway.

140. *Echeveria amphoralis* E. Walther (p. 406-408, 241)

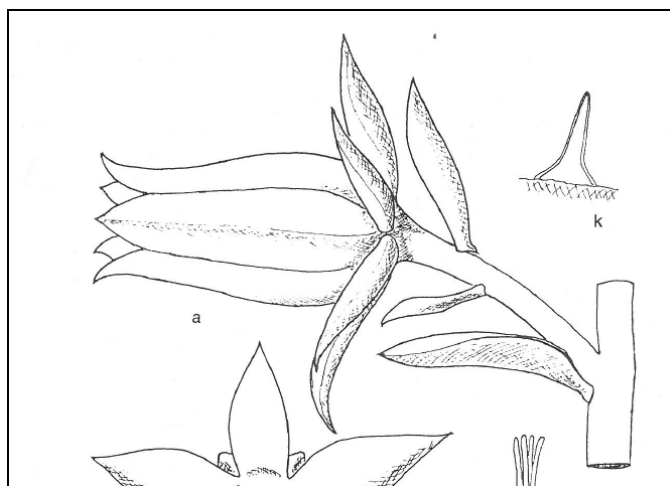
Walther made the description of *Echeveria amphoralis* from "plant and flowering material furnished by Mr. Don B. Skinner, L.A., 6/18/58", without further information regarding its origin. It was published in *Cact. Succ. J. (Los Angeles)* 30: 149, fig. 84-85, 1958 :

Description: (From plant and flowering material furnished by Mr. Don B. Skinner, L.A., 6/18/58.) Plant puberulous on all external parts; subshrubby, to 20 cm. tall or more, with numerous ascending branches; leaves numerous, subrosulate or somewhat scattered, obovate-cuneate, mucronate, to 35 mm. long and 20 mm. broad, thickish, subpetiolate; petiole thick; blade shallowly concave above, obscurely keeled beneath; inflorescences several from below the leaves, erect or ascending, to 20 cm. tall; peduncle stout, 4 mm. in diameter at base; lower bracts obovate, mucronate, 30 mm. long, 15 mm. broad, widely spreading; racemes equilateral, each with 4 to 7 flowers; pedicels stout, to 20 mm. long and 3 mm. thick, bibracteolate, bractlets linear-lanceolate, acute, subterete, to 14 mm. long; sepals subequal, to 14 mm. long, semiterete or somewhat flattened, lanceolate, acute to acuminate, ascending to widely spreading at anthesis; corolla quite large, to 24 mm. long and 14 mm. in basal diameter, 7 to 11 mm. wide at mouth, amphora-shaped, pentagonal; petals sharply keeled on back, apiculate at the somewhat spreading tips, with short basal hollow within; carpels to 18 mm. long with the styles, these last long and slender, to 12 mm. long, somewhat divergent at tips; nectaries transversely-lunate-reniform, to 4 mm. broad; trichomes app. 0.1 mm. long. Fls. VI-

Color: Leaves lettuce-green, kildare-green beneath; lower bracts as the leaves; peduncle cosse-green tinged russet-vinaceous; sepals cosse-green; corolla spectrum-red to scarlet at base and middle, with edges and apex of petals conspicuously lemon-yellow; petals inside pale-lemon-yellow; carpels white at base, above light-yellow-green; styles lettuce-green with faint red lines on inner surface; nectaries white to pale-lemon-yellow.

0.1 mm. long. Flowers from June on. Description from plant and flowering material furnished by Mr. Don B. Skinner, Los Angeles, 18 June 1958.

He chose this name because its flowers were amphora-shaped. For the publication he produced a sketch of the floral parts, the flower itself however – surprisingly – does not look amphora-like at all :



Instead of preparing a specimen of this plant, i.e. the type, he searched for an already existing specimen he could use to validate his new species - a taxonomically totally unacceptable procedure. The specimen CAS 409844 was fit insofar as it had been prepared at an unknown date from a plant of unknown origin, i.e. was nameless. June 18 1958 Walther determined it as : "*Echeveria amphoralis* sp. nov." And in order to compensate for the lack of information regarding the origin of Skinner's plant he added fictitiously: "Mexico, Oaxaca" and tentatively suggested : "MacDougall B-82 (?)", moreover he referred to "UCBG: 56/801-1" (the accession number of B-82), so that – when the protologue was published in *Cact. Succ. J. (Los Angeles)* 30(5): 149-150, 1958 – the Skinner plant of unknown origin was equipped with a type specimen : CAS 409844; a Mexican origin : Oaxaca, Tlaxiaco, Río de Tablas, 7,000 ft ; a collector name : MacDougall, and the collector's number : B-82 – no longer tentatively because in the meantime (July 1958) Walther had designated UCBG 56/801 as *Echeveria amphoralis*, "a new species" - none of this is true, everything is invented i.e. a lie.

Under TYPE Walther indicated :

TYPE. *T. MacDougall*, B-82 (UCBG:56.801-1), Tlaxiaco, Río de Tablas, elevation 7000 feet, Oaxaca, Mexico (CAS, no. 409844).

According to the Code, the name is fixed to the type. This means the specimen CAS 409844 (of an unknown and unnamed plant) now is the type of *E. amphoralis*, notwithstanding that it was not only not prepared from the plant Walther had described (from Don Skinner) but does also not correspond to it. It does also not represent B-82, therefore MacDougall cannot possibly have been its collector and it cannot have either a Mexican origin or a MacDougall number. (And for the sake of completeness : B-82 (UCBG 56.801) is represented by CAS 414591, a specimen that is in no way related to CAS 409844.)

Under REMARKS Walther wrote :

REMARKS. This plant is another of Mr. Thomas MacDougall's many discoveries in Oaxaca; its showy red and yellow flowers of good size promise to

The plant used for the description was furnished by Don B. Skinner, obviously without information regarding its origin, therefore cannot possibly have been "another of Mr Thomas MacDougall's many discoveries in Oaxaca". This is a lie.

Figure 220. 140. *Echeveria amphoralis* E. Walther. Flowers and rosette, both $\times 2$. Plant of type collection (MacDougall B-82) flowering in San Diego 12 July 1963.

The photos in the monograph are not the same as those in the protologue. While the latter showed a plant in the garden of Victor Reiter, not the "plant and flowering material furnished by Mr Don B.

Skinner", the photos in the monograph (fig. 220) show B-82 which, however, as explained above, has no relation to *E. amphoralis*.

PLATE FIFTEEN, LOWER
140. *Echeveria amphoralis* E. Walther. Inflorescence, $\times 0.8$. Plant flowering in San Diego 18 July 1964; collected at kilometer 606, south of Mitla, Oaxaca, Mexico, by H. E. Moore (8176). [See page 406]

This photo, taken July 1964, 5 years after Walther's death, evidently has been added by the editor – it is no enhancement of Walther's text because it shows a plant with extremely amphora-unlike flowers. Again the caption is lacking the information that the photo is by Reid Moran.

To summarise : *E. amphoralis* is composed as follows :

- a plant from Don Skinner, origin unknown, described by Walther;
- a specimen from an unnamed plant, prepared at an unknown date, origin also unknown, determined by Walther as its type;
- a reference to B-82 which Walther himself had designated as *E. amphoralis* but which is not *E. amphoralis*.
- a plant grown by Victor Reiter also of unknown origin (the protologue photos), in the monograph replaced by two photos of B-82, taken 1963, 4 years after Walther's death – rather pointless as B-82 has nothing to do with *E. amphoralis*. Their author is Reid Moran but his name is not shown so that a less attentive reader could assume they were by Walther!
- a plant collected by H.E. Moore (8176) at kilometer 606, south of Mitla, flowering in San Diego 18 July 1964. Again the caption is lacking the information that the photo is by Reid Moran.

None of these plants has amphora-like flowers.

(And for the sake of completeness: As already mentioned, July 1958 Walther determined UCBG 56.801 as *E. amphoralis*. Two months later, after having completed the chapter on *E. amphoralis*, he redesignated it as *E. skinneri*, so that at the end of the day *E. skinneri* is equalised with *E. amphoralis*!)

* With *E. carminea* and *E. harmsii*, this new species constitutes a group of related forms within the series *Echeveria*, characterized by their rather large flowers and simple trichomes.

This comparison is useless because there is no evidence that the type specimen of *E. amphoralis* (CAS 409844) has simple trichomes.

Comment :

Instead of preparing a herbarium specimen of the plant he had described as *E. amphoralis*, Walther designated the name- and dateless specimen CAS 409844 as type of *E. amphoralis* - a taxonomically totally unacceptable procedure - with the consequence that the specimen will bear this name hence and forever while the described plant – which may even have been a hybrid - remains nameless. That means *E. amphoralis* is a herbarium specimen, not a living plant. The name cannot be used any longer for a living plant be its flower as amphora-like as possible.

The chapter on *E. amphoralis* is a pack of lies beyond compare.

141. Echeveria macrantha Standley and Steyermark (p. 409)

The plant Standley and Steyermark described as *E. macrantha* was collected by Steyermark Dec 6, 1939 on dry rocky slopes, Montaña Miramundo at Buena Vista, 2000-2200 m. The description was published in *Publ. Field Mus. Nat. Hist., Bot. Ser.* 23: 159, 1944 :

Echeveria macrantha Standl. & Steyermark, sp. nov.—Herba erecta sparse ramosa, plus minusve suffrutescens, ramis usque 1 cm. crassis ochraceis apice tantum foliatis; folia ad apices ramorum dense rosulata sessilia rotundo-cuneata ca. 3 cm. longa atque 2–2.8 cm. lata, apice late rotundata vel subtruncata et brevissime apiculata, basi latissime cuneata, crassa carnosae utrinque copiose sed non dense hirtella in vivo pallide lutescenti-viridia roseo-marginata; pedunculus crassus 4.5 cm. longus ca. 3-florus, pedicellis in statu fructifero 8 mm. longis dense hirtellis; sepala fere libera 8 mm. longa lanceolato-oblonga apicem obtusum versus sensim angustata dense hirtella; corolla in statu fructifero persistens extus sat dense pubescens, segmentis fere liberis ca. 2 cm. longis anguste lanceolatis apicem versus sensim attenuatis dorso acute carinatis; follicula ca. 15 mm. longa sparse pubescentia brunnea, corpore lanceolato-oblongo ca. 8 mm. longo in rostrum gracile aequilongum sensim attenuato.—Guatemala: Dept. Jalapa: Dry rocky slopes, Montaña Miramundo at Buena Vista, alt. 2,000–2,200 meters, December 6, 1939, Julian A. Steyermark 32808 (type in Herb. Field Mus.).

Echeveria macrantha is known only from its somewhat fragmentary type specimen, no living plants have ever been in cultivation.

Walther's text

Walther's description of *E. macrantha* is copied from *Fieldiana Botany* 24 (4): 407-408, 1946, without indicating this.

Errors :

Under TYPE Walther indicated :

TYPE. Julian A. Steyermark, 1939/32808, collected on dry rocky slopes, between Montana Miramundo and Buena Vista, between Jalapa and Lago Ayarya, altitude 2000 to 2200 m., Dept. Jalapa, Guatemala (F, type; US,

1. The correct information regarding the collection locality reads thus : "Dept. Jalapa: Dry rocky slopes, Montaña Miramundo at Buena Vista, alt. 2,000-2,200 meters, December 6, 1939". "Between Jalapa and Lago Ayarya" is wrongly added.

2. In 1958 Walther added a note to the type specimen, stating that *E. macrantha* is "related to *E. carminea* Alexander and to *E. amphoralis* E.W.", and in 1959 he also added a note to the isotype at US, indicating that *E. macrantha* is "closest to *E. amphoralis* E.W.". In view of the fact that the name *E. amphoralis* is fixed to CAS 409844 and not to a living plant, these remarks are futile.

"The species is noteworthy for its exceptionally large flowers and of course, among Guatemalan species, for its pubescence. Eric Walther considers it synonymous with *E. pringlei*, a Mexican species." (Standley and Steyermark,

3. Why Walther cited the obviously outdated statement that *E. macrantha* is synonymous with *E. pringlei* is not plausible.

Comment :

Walther's comment to *E. macrantha* deserves no further attention.

142. *Echeveria harmsii* J.F.Macbride (p. 409-412, 244)

E. harmsii was first described and published by Rose as *Oliverella elegans* and published in *Bull. New York Bot. Gard.* 3: 2, 1903. Rose himself had found the plant in cultivation at Amecameca, near the City of Mexico, August 1901. That means the type of *E. harmsii* is of unknown wild origin. It was McBride who in 1931 reclassified it as *E. harmsii*.

***Oliverella elegans* Rose, sp. nov.**

Caulescent, 3–5 dm. high, branching throughout, densely pubescent; leaves closely set near the ends of young branches, gradually falling away below, oblanceolate to spatulate, thick, but flattened except at base, acute, pubescent, 2–3 cm. long; flowering branches slender, 1 dm. long, with some scattered leaves, but finally becoming naked, terminated by one or two flowers; calyx-lobes linear, spreading, very unequal, green, the longer ones 15 mm. long; corolla 2.5–3 cm. long, bright red except the yellow tips.

Walther's text

Walther's first text regarding *E. harmsii* was the following publication in *Cact. Succ. J. (Los Angeles)* 7: 60, 1935 :

8a. *Echeveria harmsii* var. *multiflora* EW., new variety.

Typo similis, sed cyma bi- vel tri-fidas plurifloribus abludens.

Inflorescence many-flowered, with two or more secund branches, each with 5 to 6 flowers similar to those of the type; leaves unknown.

Type specimen: Herbarium of University of California, No. 136164 (Purpus 09/3935).

Locality: Cerro de Chicamole, 7 to 9,000 ft., Sierra de Mixteca, Puebla, Mexico.

Additional material seen: US. No. 1319918 appears to be a fragment of the same collection, consists of but a single flower and is labelled *Echeveria magnifica*. US. No. 1165083 (Ortega 23/5040) from Balboa, Sinaloa, seems the same, but is quite leafless, too, may have been from a cultivated plant, and is labelled (by Dr. Rose?), *Echeveria ortegae*.

Remarks: The term "Magnificent" indeed fits this *Echeveria*, which would truly deserve the name of "most remarkable of Crassulaceae," but most regrettably is not yet in cultivation locally. So far our efforts directed at its introduction have been in vain, but we are still hopeful. In the absence of all knowledge as to its foliage, we forbear describing this as a new species; actually, it differs from the type in nothing except the number of flowers. Thus disappears another of the generic characters depended upon by Rose for distinguishing the genus.

At the University of California Herbarium he had come across the specimen of a Purpus collection of 1909 from Cerro de Chicamole, Sierra Mixteca, Puebla, which was only determined as "Cotyledon" (CAS 136164). It consists of 3 differently sized parts of inflorescences, one with 3 flowers, the others with 4 flowers each. The flowers are big and similar to those of *E. harmsii*, however because *E. harmsii* is known to have only one or two flowers per inflorescence Walther thought it fit to publish this 3- or even 4-flowered plant as a variety of typical *E. harmsii* and designated CAS 136164 as type of his newly created var. *multiflora*.

Errors:

Typo similis, sed cyma bi- vel tri-fidas plurifloribus abludens.

Inflorescence many-flowered, with two or more secund branches, each with 5 to 6 flowers similar to those of the type; leaves unknown.

1. This is not correct. The said specimen CAS 136164 consists (as just explained) of inflorescence fragments with 3 respectively 4 flowers – **not 5 to 6** - , i.e. is in no way many-flowered, and has also clearly not "more secund branches".

Additional material seen: US. No. 1319918 appears to be a fragment of the same collection, consists of but a single flower and is labelled *Echeveria magnifica*. US. No.

2. This is also wrong. US 1319918 consists of a single flower and a part of an inflorescence with two flowers.

Additional material seen: US. No. 1319918 appears to be a fragment of the same collection, consists of but a single flower and is labelled *Echeveria magnifica*. US. No.

Remarks: The term "Magnificent" indeed fits this *Echeveria*, which would truly deserve the name of "most remarkable of Crassulaceae," but most regrettably is not yet in culti-

3. US 1319918 is designated as "*Echeveria magnifica* Rose n.sp." Obviously Rose didn't get round to making a description. However the proposed name clearly shows that he considered the Purpus collection from Cerro de Chicamole a new species and not belonging to *E. harmsii*, described by him as *Oliverella* / *Oliveranthus elegans*.

still hopeful. In the absence of all knowledge as to its foliage, we forbear describing this as a new species; actually, it differs from the type in nothing except the number of flowers.

It is a matter of course that "the absence of all knowledge as to its foliage" and possible stems makes a reliable identification impossible, but obviously this did not prevent Walther from classifying the not identifiable specimen as a variety of *E. harmsii*.

lection, consists of but a single flower and is labelled *Echeveria magnifica*. US. No. 1165083 (Ortega 23/5040) from Balboa, Sinaloa, seems the same, but is quite leafless, too, may have been from a cultivated plant, and is labelled (by Dr. Rose?), *Echeveria ortegae*.

US 1165083 later was used by Walther as paratype of *E. dactylifera*.

Comment :

CAS 136164 and US 1319918, consisting only of heavily withered flowers, cannot possibly be identified with certainty. The reason for their determination as type respectively isotype of *E. harmsii* var. *multiflora* is the fact that *E. harmsii* was known only from cultivation, wild origin unknown. Providing it with a variety with known wild origin should partially remedy this deficiency. To follow Rose i.e. to consider the Purpus collection a new species therefore was not in Walther's interest. However this has not been his last word – in the monograph *E. harmsii* var. *multiflora* was listed as synonym of *E. longissima*.

To come back to *E. harmsii* :

In the monograph an indication of the above publication is lacking.

Walther made his description once more from "locally cultivated material", i.e. plants of unknown origin :

mouth of the corolla; nectaries narrowly transverse-lunate, to 3 mm. wide. Flowers from June on. Description from locally cultivated material.

PLATE SIXTEEN, UPPER

142. *Echeveria harmsi* J. F. Macbride. Flowering plant, \times 0.6. Cultivated plant of unknown origin (Moran 8362) flowering in San Diego 8 July 1961. [See page 409]

Not only Walther's description but also the photo by Reid Moran are based on undocumented plants. While the description by Rose, the herbarium specimens of Rose 6073 and the photo of the respective plant all show 1- or two flowered inflorescences, the plants of unknown origin used by Walther and Moran seem to produce 3- flowered inflorescences.

Error :

Under REMARKS Walther wrote :

longissima, of the series Longistylae. The latter species is distinct in its wholly glabrous leaves possessing palisade-cells, its stemless, dense rosettes, and its

This is a misunderstanding. So-called palisade cells are essential for photosynthesis in leaves of dicotyledonous plants, i.e. are by no means unique in *E. longissima*.

Comment :

Neither Walther's description of a plant with unknown origin nor the photos of plants of unknown origin are of any worth.

Serie 14. Longistylae E. Walther

REMARKS. Since this series consists of only a single species, no key is required. The species (and series) is unique in the genus *Echeveria*, for no other species has corolla and styles as long, proportionally, as in *E. longissima*. Only in this one species have my own observations established the presence of true palisade tissue in the leaves. The probable chromosome number of

So-called palisade cells are essential for photosynthesis in leaves of dicotyledonous plants and are by no means "unique" in *E. longissima*.

143. *Echeveria longissima* E. Walther (p. 413-416, 244)

Walther's description :

Plant wholly glabrous; stem usually quite short, simple, giving out offsets only rarely and belatedly; leaves densely rosulate, to 20, broadly obovate-cuneate, cuspidate-mucronate, thick, beneath rounded, shallowly concave above, to 6 cm. long and 3 cm. broad, with palisade cells; inflorescence to 30 cm. tall, of a simple raceme or 2- or 3-branched; peduncle erect or ascending, to 4 mm. thick near base, in its upper portion bearing 8 to 12 bracts, these slightly spreading, obovate-oblongate, shortly cuspidate-acuminate, 2- or 3-spurred at base, to 20 mm. long; racemes secund, with rachis conspicuously zigzag between successive pedicels, illustrating the terminal character of the flowers; flowers 4 to 7 or 12, strongly nodding in bud, spreading at anthesis; upper bracts oblong-obovate, cuspidate, spurred at base, to 12 mm. long; pedicels slender, to 17 mm. long, bractless; sepals subequal, longest to 8 mm. long, ascending to widely spreading, ovate-deltoid to oblong-lanceolate, much connate at base, with subterminal apiculus; corolla very narrowly urceolate-cylindrical, to over 30 mm. long, 10 mm. in diameter near base, with a ratio of length to thickness of nearly 4 to 1, at anthesis the mouth is to 14 mm., but the throat only 6 mm. in diameter; petals narrowly oblong, scarcely keeled, rim of basal hollow tapering above into two ridges that parallel filament, occasionally produced into appendages simulating those found in the genus *Pachyphytum*; stamens to 25 mm. long; anthers to 4 mm. long; carpels 25 mm. long inclusive of ovaries, with the styles proper over 4 times as long as ovaries, the latter only 5 mm. long; nectaries reniform, nearly 3 mm. wide. Flowers from June to August. Emended description from type plant, received through Sr. M. Martínez of Santiago de Mihautlan, Puebla, Mexico.

Color. Leaves cerro-green to light elm-green above, acajou-red beneath, at edges Hays-maroon; bracts light bice-green above, edges and mucro tinged Brazil-red at base, at middle pale greenish yellow, above pois-green; petals inside maize- to buff-yellow below, to grass-green above; carpels pale chalcodony-yellow; styles apple-green; nectaries whitish.

Under Synonyms Walther listed :

Echeveria harmsii var. *multiflora* E. WALTHER, Cactus and Succ. Jour. Amer., vol. 7, p. 60, 1935.

This refers to the following text :

8a. *Echeveria harmsii* var. *multiflora* EW., new variety.

Typo similis, sed cyma bi- vel tri-fidas plurifloribus abludens.

Inflorescence many-flowered, with two or more secund branches, each with 5 to 6 flowers similar to those of the type; leaves unknown.

Type specimen: Herbarium of University of California, No. 136164 (Purpus 09/3935).

Locality: Cerro de Chicamole, 7 to 9,000 ft., Sierra de Mixteca, Puebla, Mexico.

Additional material seen: US. No. 1319918 appears to be a fragment of the same collection, consists of but a single flower and is labelled *Echeveria magnifica*. US. No. 1165083 (Ortega 23/5040) from Balboa, Sinaloa, seems the same, but is quite leafless, too, may have been from a cultivated plant, and is labelled (by Dr. Rose?), *Echeveria ortegae*.

Remarks: The term "Magnificent" indeed fits this *Echeveria*, which would truly deserve the name of "most remarkable of Crassulaceae," but most regrettably is not yet in cultivation locally. So far our efforts directed at its introduction have been in vain, but we are still hopeful. In the absence of all knowledge as to its foliage, we forbear describing this as a new species; actually, it differs from the type in nothing except the number of flowers. Thus disappears another of the generic characters depended upon by Rose for distinguishing the genus.

Errors :

Typo similis, sed cyma bi- vel tri-fidas plurifloribus abludens.

Inflorescence many-flowered, with two or more secund branches, each with 5 to 6 flowers similar to those of the type; leaves unknown.

1. This is wrong. The type specimen CAS 136164 consists of two inflorescence fragments with 3 respectively 4 flowers – not 5 to 6 - , i.e. is in no way many-flowered, and has also clearly not "more secund branches".

Additional material seen: US. No. 1319918 appears to be a fragment of the same collection, consists of but a single flower and is labelled *Echeveria magnifica*. US. No.

2. This is also wrong. US 1319918 consists of a single flower and a part of an inflorescence with two flowers.

Additional material seen: US. No. 1319918 appears to be a fragment of the same collection, consists of but a single flower and is labelled *Echeveria magnifica*. US. No.

Remarks: The term "Magnificent" indeed fits this *Echeveria*, which would truly deserve the name of "most remarkable of Crassulaceae," but most regrettably is not yet in culti-

3. US 1319918 is designated as "*Echeveria magnifica* Rose n.sp." Obviously Rose didn't get round to making a description. However the proposed name clearly shows that he considered the Purpus collection from Cerro de Chicamole a new species and not belonging to *E. harmsii*, described by him as *Oliverella* / *Oliveranthus elegans*.

still hopeful. In the absence of all knowledge as to its foliage, we forbear describing this as a new species; actually, it differs from the type in nothing except the number of flowers.

It is a matter of course that "the absence of all knowledge as to its foliage" and possible stems makes a reliable identification impossible.

lection, consists of but a single flower and is labelled *Echeveria magnifica*. US. No. 1165083 (Ortega 23/5040) from Balboa, Sinaloa, seems the same, but is quite leafless, too, may have been from a cultivated plant, and is labelled (by Dr. Rose?), *Echeveria ortegae*.

US 1165083 later was used by Walther as paratype of *E. dactylifera*.

So while in 1935 the plant in question was classified as a variety, in the monograph it was elevated to a species in its own right – what Rose already had proposed by calling the plant *E. magnifica*. Walther found the name very fitting, but did not consider it necessary to adopt it and replaced it with *E. longissima*.

Walther's text in the monograph :

Under References Walther indicated :

Echeveria longissima E. WALTHER, Cactus and Succ. Jour. Amer., vol. 9, p. 147, 1938.

This refers to the protologue of *E. longissima*. As type Walther indicated CAS 251052 "from collection of Golden Gate Park, 1938". This means the plant Walther had described as *E. longissima* was of unknown wild origin. Under REMARKS Walther explained that he had received it from Dr. Morgan of Richmond, California.

Errors :

1. In 1958 Walther came back to the Purpus specimen CAS 136164 which he had designated as type of his *E. harmsii* var. *multiflora*, and redesignated it as **Topotype** of his new *E. longissima*.

However a topotype is a specimen collected at the same locality at which the type was obtained. While the wild origin of the Purpus gathering CAS 136164 is roughly known, the origin of the plant from Dr. Morgan is completely unknown. Therefore to designate the type of *E. harmsii* var. *multiflora* as **topotype** is nonsense.

TYPE. Collected by E. Walther from a plant grown in Golden Gate Park, San Francisco, from Puebla, Mexico, from near San Luis Atototitlan (CAS, no. 251052).

2. While according to the protologue the plant Walther described as *E. longissima* was provided by Dr. Morgan without any information regarding its origin in the wild, according to the text in the monograph it came from Puebla, near San Luis Atotitlan (not Atototitlan) – an obviously fictitious statement.

cence, without any basal leaves. On visiting Tehuacan in 1934 I asked our guide, Sr. Manuel Martínez, to try and obtain this for me, and 2 months later several plants were received. Sr. Martínez told me that in its native range this

3. Again the true facts are being concealed : The protologue explicitly stated that the plants Sr. Martinez had collected were sent to "Sr. Christian Halbinger of Mexico City and Mrs. K. Schmoll of Cadereyta", not to Walther.

June to August. Emended description from type plant, received through Sr. M. Martínez of Santiago de Mihautlan, Puebla, Mexico.

4. The type plant is the plant Walther had received from Dr. Morgan and which he had used for his description, so whatever he whenever had received through Martínez of Santiago de Mihautlan (should read : Miahuatlan) cannot have been the type plant.

Not to forget : The collection locality of Sr. Martínez has never been communicated.

Figure 226. 143. *Echeveria longissima* E. Walther. Flowers, \times 2. Plant flowering in San Diego 11 June 1966 (Moran 12277), of unknown origin but presumably stemming from the type collection.

PLATE SIXTEEN, LOWER

143. *Echeveria longissima* E. Walther. Flowering plant, \times 0.5. Cultivated plant (Moran 12277) presumably from the original introduction; flowering in San Diego 12 June 1966. [See page 413]

5. "Of unknown origin but presumably stemming from the type collection". This is deceptive : Moran's Notes concerning M 12777 do not furnish even the slightest hint regarding this 'presumed' origin – in the contrary : While *E. longissima* is described as "giving out offsets only rarely and belatedly", M 12777 is offsetting freely.

Comment :

All we know for sure regarding *E. longissima* Walther : The plant bearing this name came from Walther's collection in Golden Gate Park, San Francisco, received from Dr. Morgan.

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