

REVISION OF PAU'S TYPES OF PLANTS COLLECTED BY MARTÍNEZ DE LA ESCALERA IN IRAN (1899)

by

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(Wien, with contributions by various specialists)

Resumen

RECHINGER, K. H. (1990). Revisión de los tipos de Pau basados en las plantas recolectadas por Martínez de la Escalera en Irán (1899). *Anales Jard. Bot. Madrid* 47(2): 361-375 (en inglés).

Pau (1899) describió 41 especies y 19 variedades nuevas basándose en las plantas recolectadas por Martínez de la Escalera en el distrito de Bakhtiari, en el suroeste de Irán, una zona escasamente herborizada. La mayoría de estas descripciones son demasiado breves. Se ha revisado la mayor parte de los tipos conservados en el herbario MA y se confirma la identidad de 9 especies, de las que se presenta una descripción completa y una de ellas ha sido elegida como tipo de un género nuevo: *Azilia eryngioides* (Pau) Hedge & Lamond (*Umbelliferae*). Se eleva al rango de especie una de las variedades y se cambia el nombre a otra por existir un homónimo anterior.

Palabras clave: Tipos, Pau, Irán.

Abstract

RECHINGER, K. H. (1990). Revision of Pau's types of plants collected by Martínez de la Escalera in Iran (1899). *Anales Jard. Bot. Madrid* 47(2): 361-375.

Pau (1899) has described 41 new species and 19 new varieties collected by Martínez de la Escalera from the Bakhtiari district in southwestern Iran, an area hardly visited by any other botanical collector. Most descriptions are very short. The majority of the types in herbarium MA has been revised. Nine of the new species have been confirmed and complete descriptions are presented. One of them has been made the type of a new genus, *Azilia eryngioides* (Pau) Hedge & Lamond (*Umbelliferae*). One of the varieties has been raised to specific rank. One species had to be renamed because of an earlier homonym.

Key words: Types, Pau, Iran.

The present publication deals with the new species and varieties described by Carlos Pau published in a paper by Carlos Pau and Carlos Vicioso under the title "Plantas de Persia y de Mesopotamia recogidas por D. Fernando Martínez de la Escalera" which appeared in *Trabajos del Museo Nacional de Ciencias Naturales, ser. Bot.* 10, Madrid 1918. The specimens are kept in the herbarium of the Royal Botanic Garden Madrid (MA).

The main collecting activities of Martínez de la Escalera have been concentrated on the valley of the river Bazoft and the mountain of Kuh-e Sefid (Safid) in

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the Bakhtiari district. The Kuh Sefid (White Mountain), about 3500 m high, is situated at about 31°50' N, 50°12' E in Southwestern Iran in the central section of the Zagros Ranges bordering the Iranian highlands in the Southwest. This section of the Zagros Ranges is drained by the Karun, the most important of the rivers running for long distances parallel to the mountain ranges. The Karun abruptly changes its direction and breaks through the high ranges, forming impressive steep gorges, whereas several smaller rivers ooze away in the lowlands of Khuzestan after having cut through the outer Zagros Ranges. The strong Karun, however, falls into the Shatt-al Arab, the estuary in common of Euphrates and Tigris near Abadan, immediately before reaching the Gulf.

The special importance of the Martínez' collection is the fact that to my knowledge no other botanical collections are available from this area. Other higher sections of the Zagros Ranges, e.g., the Kuh-e Dinar (Daëna) or the Zard Kuh have been visited by various botanical collectors.

The plants collected by Martínez have not been dealt with consistently by the various contributors to *Flora Iranica*.

There are no less than 41 new species and 19 new varieties described by Pau. It is evident that he was faced with considerable problems when dealing with a set of Persian plants; at Madrid he had hardly any material for comparison at hand. When revising Pau's novelties some of them turned out to be identical with species already described by BOISSIER in *Flora Orientalis* and some of the new varieties are within the range of variability of known species. Most of Pau's specific descriptions are very short and not up to the point.

I decided to take the opportunity to revise Pau's Martínez-types when working at the Madrid Herbarium on Spanish *Salix* and *Rumex* as a guest of the Research Council in July 1987. M. Antonio M. Regueiro, the keeper of the Madrid Herbarium, has taken the trouble of picking out the pertinent specimens and to send them on loan to me or to specialists. I want to express my sincere thanks to M. Regueiro. He has traced the majority of the types except for *Alyssum montanifolium* Pau, *Delphinium intricatum* Pau, *D. viciosoi* Pau and *Sedum lineare* Pau.

The most impressive discovery of Martínez is the plant described as *Prangos eryngioides* Pau. HEDGE and LAMOND in *Flora Iranica* 162: 386 (1987) have based the new Umbelliferous genus *Azilia* on it. It has been discovered since at two more localities in Luristan. Other noteworthy discoveries of Martínez are the following: *Astragalus erinifolius*, *A. longirostratus* (sect. nov.), *Campanula hystri-cula*, *C. escalerae*, *Convolvulus urosepalus*, *C. sefidiana*, *Dionysia bolivari*, *Hieracium escalerae*, *Jurinea viciosoi*.

The following list is arranged alphabetically according to families and to genera within the families. It gives the valid names of the species, in many cases amended descriptions of Pau's species if their status has been confirmed. In cases where Pau's species have been identified with species already known the responsible author and the quotation in *Flora Iranica* is given.

CAMPANULACEAE

Campanula escalerae Rech. f. & Schinán-Czeika, Fl. Iran. 13: 22 (1965)
Syn.: *C. violifolia* Pau, l.c.: 38 nec Lam. (1783)

"Gotvend (Rio Karun)", 400 m, without date.

This species has been taken up into *Flora Iranica* according to the original description without having seen the type specimen.

Campanula hystricula Pau, l.c.: 37. Schiman-Czeika in Rech. f., Fl. Iran. 13: 27 (1965)

"Kouh-Sefid (Alto Karun)", 3000 m, VI-1899.

Descriptio completa: Basi indurata, pluricaulis, scabrida. Caules plures, ut videtur radiatim expansi, tenues, flexuosi, simplices, tota longitudine foliati. Folia inferiora ad 12 × 2,5 mm, lineari-lanceolata, basi attenuata, sessilia, acuta, erecto-patentia; superiora sensim minor, cauli ± appressa. Flores in axillis foliorum superiorum breviter pedicellati vel sessiles, saepe autem subterminales, singuli. Calyx 5-6 mm longus; lacinae tubo paulo longiores, lineari-subulatae, patulae. Corolla 10-12 mm longa, late infundibularis, lacinae tubo subtriplo longiores, lineares patulo-recurvae. Stylus erectus.

C. hystricula has been taken up into *Flora Iranica* according to the original description without having seen the type. Here a few remarks completing the original description are given.

CARYOPHYLLACEAE

Dianthus macranthoides Hausskn. ex Bornm.; Rech. f., Fl. Iran. 163: 181 (1988)
Syn.: *D. fimbriatus* M. B. var. *laevissimus* Pau, l.c.: 9

Dianthus stricus Banks & Solander var. **gracillior** (Boiss.) Reeve; Rech. f., Fl. Iran. 163: 136 (1988)
Syn.: *D. paniculatus* Pau, l.c.: 9 und tab. 1

In all six specimens designated by Pau himself as *D. paniculatus* Pau at MA the lower parts of the plants are lacking. The nervation of the calyx with the nerves fading out spotwise in the lower half of the calyx is, however, characteristic for *D. strictus*. The original picture by Pau is misleading as the calyx is far too big and too thick. With the original description no altitude is given. According to the herbarium labels the altitudes are as follows: Gatvend (Rio Karun): 400 m; Valle de Bazouft (Alto Karun): 2000 m; Kouh Sefid: 3500 m.

Gypsophila elegans M. B. var. **elegans** fide Barkoudah; Rech. f., Fl. Iran. 163: 232 (1988)

Syn.: *G. ceballosii* Pau, Bol. Soc. Esp. Hist. Nat. 19: 493 (1919)

Minuartia aucheriana (Boiss.) Bornm., Beih. Bot. Centrbl. 27, 2: 328 (1910);
Rech. f., Fl. Iran. 163: 36 (1988)
Syn.: *M. escalerae* Pau, l.c.: 9

"Kouh Sefid".

Silene conoidea L.

Syn.: *S. conoidea* L. var. *bazuftiana* Pau, syn. nov. fide Melzheimer in litt.

"Gotvend y valle de Bazouft".

Silene daënis Melzh., Pl. Syst. Evol. 150: 311 (1985); in Rech. f., Fl. Iran. 163: 442 (1988)

Syn.: *S. boryi* Boiss. var. *sefidiana* Pau, l.c.

“Kouh Sefid”.

Silene persica Boiss., Diagn. Pl. Or. Nov. Ser. 1, 1: 27 (1843)

Syn.: *S. flaccida* Pau, syn. nov. fide Melzheimer in litt.

“Kouh Sefid”.

S. flaccida Pau was mentioned by Melzheimer in his treatment of *Silene* in Fl. Iran. 163: 507 (1988) as a doubtful member of sect. *Lasiostemon*.

Vaccaria oxyodonta Boiss.; Rech. f., Fl. Iran. 163: 339 (1988)

Syn.: *V. brachycalyx* Pau

COMPOSITAE

Myopordon aucheri Boiss.

Syn.: *Cousinia nuda* Pau, syn. nov. fide G. Wagenitz, in litt.

Descriptio completa: Humilis, caespitosa, pluricaulis. Caules foliaque omnino appresse albo-tomentosa. Folia omnia basalia, rosulata, 10-15 × 4-8 mm, oblan-ceolata, lyrato-pinnatilobata, inermia, segmento terminali majore, lateralibus minutis, segmentis lateralibus utrinque 1-2(-3), petioliformi-attenuata, basi ipsa eximie membranaceo-dilatata, plurinervia, collum crassum arcte amplectentes, utrinque aequaliter appresse albo-tomentosa. Caulis absque capitulo 10-18 mm altus, crassus, stricte erectus, aphyllus, tenuiter striato-sulcatus, appresse albo-tomentellus, monocephalus. Involucrum in statu compresso 12-15 × 10-12 mm, campanulatum, basi rotundato-truncatum; phylla c. 50-60, membranacea, pallide brunnescentia usque virescentia, e basi ad 3 mm lata in spinam patulam 5-10 mm longam validam attenuata, coriacea, in parte superiore fere appendiculiformia, costa mediana subcarinata, lateribus aliformibus, tenuioribus, basi in medio atro-brunneo-maculata, circa maculam et margine crispule pilosa; phylla intima omnino tenuiter membranacea, sensim in spinam erectam flexibilem attenuata. Corolla 15 mm longa; tubus rectus; limbus tubo vix vel paulo longior; lacinae ± 2,5 mm longae; color (e collectore) rubra. Achaenia (juvenilia) atrobrunnea; pappus multiradiatus demum deciduus; radii basi in anulum concreti, longissimi 10-12 mm longi, ± inaequales, brunnei, interiores basi dilatati, omnes in parte inferiore laeves, a media vel in tertia parte superiore dentati, dentibus a medio sursum increscentibus, dentibus summis diametro radii usque ad duplo longioribus.

PERSIA. W. Bakhtiari: Kuh Sefid, 3000-3500 m, leg. Fernando & Manuel Martínez de la Escalera, VI-1899, MA!

The type material of *Cousinia nuda* consists of three specimens with a single head and one with four heads mounted on two sheets. The original description is very incomplete: “Folia et scapus omnino *Jurineae humilis*; capitula lanuginosa, squamis in spinam validam contractis. Corolla rubra.”

M. aucheri is a low growing and cushion forming plant. The basal leaves form small rosettes with few segments and without thorns. The multiradiate pappus is long and before maturity solidly attached to the achene. Ripe fruiting material would be urgently needed in order to ascertain the fruit characters.

So far *M. aucheri* has only been known from the very scanty type material: AUCHER-ELOY 3188, G-BOISS. Boissier's original description as well as the description by WAGENITZ in *Flora Iranica* 139-b: 165 (1980) are amply amended by the detailed description given here. *M. aucheri* is illustrated here for the first time.

***Cousinia sefidiana* (Pau) Rech. f., stat. nov.**

Syn.: *C. cymbolepis* Boiss. var. *sefidiana* Pau, Trab. Mus. Nac. Cienc. Nat. Ser. Bot. 14: 40 (1918)

Typus: PERSIA. W. Bakhtiari: Kuh Safid "alto Karum", 3000 m, VI-1899, *Martinez de la Escalera*, s.n, MA!

Sect. *Cynaroideae* Bunge

Descriptio completa: Basis deest. Caulis (fragmentum vix 13 cm longum) in ramos tres 5-8 cm longos divisus, cum ramis foliis usque ad capitula tota longitudine complete decurrentibus spinoso-alatus, omnino appresse cinereo-araneosotomentosus. Folia inferiora ignota; caulina superiora et ramealia quasi ad lobos terminales erecto-patulos alarum reducta, spina terminalis 4-5 mm longa. Capitula (ante anthesin) subglobosa, basi subumbilicata; phylla numerosa, indurato-coriacea, leviter araneosa, glabrescentia, supra basin appressam ± 3 mm latam valde contractam in appendicem dilatata; appendix basi ± 2 mm lata, palmato-spinosa, spinis ± 5 , centrali validissima et longissima, 4-6 mm longa, lateralibus divergentibus ± 1 mm longis, infimis brevissimis. Flores et achaenia ignoti.

Pau has characterized his var. *sefidiana* of *Cousinia cymbolepis* with three words only: "humilis, capitula parva". These three words can hardly claim to be a valid description. By interpreting the plant as a variety of *C. cymbolepis*, the author has correctly stated the fact that the specimen belongs to sect. *Cymbolepis*. The varietal name may therefore be used as a specific epithet. Sect. *Cymbolepis* with more than 60 species is one of the largest of the genus. The center of variability is in *Armenia* (s.l.) and in the Zagros mountain ranges. *C. sefidiana* forms the southeastern most outpost of the section. The new species is well characterized by the strongly indurated involucre bracts with a palmately spinose appendix, a feature to my knowledge unique within the genus. No *Cousinia* had been reported so far from the Safid Kuh Mountains.

Revisitation of the area by experienced collectors at various seasons is highly recommended.

***Hieracium escalerae* Pau**

(Subgen. *Pilosella*)

"Valle de Bazouft (alto Karun); 2000 m" (without date), *Martinez de la Escalera*, MA!

Descriptio emend.: Caulis 45-55 cm altus, erectus, valde glabrescens, in dimidio vel 2/3 inferioribus remote foliatus, apice breviter pauciramosus, 3-6-cephalus,

parce stellato-albo-floccosus, valde glabrecens. Folia in sicco tenuiter membranacea; basalialia breviter petiolata, fragmentaria tantum obvia; caulina inferiora usque ad 10 × 3 cm, oblongo-lanceolata, basi longe attenuata, plana; indumentum parcissime albo-stellato-floccosum, valde evanescens, folium summum lanceolatum, ± 5 × 1 cm, utrinque aequaliter attenuatum. Rami primarii 3-5 cm longi, cum involucreo dense stellato-floccosi et pilis grossis glanduliferis in sicco atratis dense obsiti. Pedunculi involucrum ± aequantes. Involucreum ± 8 mm longum, in statu compresso hemisphaerico-campanulatum, atratum.

Pau has erroneously inserted his *H. escalerae* into the sect. *Vulgata* with the remark: "In *Hieracii* sectionibus orientalibus non cadit". As a matter of fact *H. escalerae* is related to *H. cheirifolium* Boiss. & Hausskn. described from Kuh-e Kukul and Sabzekuh (Zagros). Both species are related to the group of *H. procerum* Fries, *H. woronowianum* Zahn and *H. verrucatum* Link. *H. escalerae* shares with *H. cheirifolium* the scanty stellate evanescent indumentum of the stems. *H. escalerae*, however, is distinct by the following characters: short ramification, broader leaves with non setose indumentum as well as by the much denser and dark indumentum of the involucral bracts. *H. escalerae* is evidently the most southeastern representative of the genus *Hieracium* in the *Flora Iranica*-area.

***Jurinea viciosoi* Pau, l.c. 40; Rech. f. & Wagenitz, Fl. Iran. 139: 203 (1980)**

"Kouh Sefid (alto Karun)" 3000 m, VI.

J. viciosoi Pau has been taken up into the treatment of *Flora Iranica* according to its description. It has been inserted into Sect. *Bellae* Iljin. Unfortunately the holotype in MA has lost its capitulum.

***Erigeron acer* L. s.l.**

Syn.: *E. elbursensis* Boiss. var. *sefidianum* Pau, l.c.: 38

"Kouh Sefid".

The specimens are depauperated. They can hardly be identified with any of the numerous subspecies described by me in *Flora Iranica* 154: 18-21 (1981). They seem to be close to subsp. *lalehzaricus* Rech. f.

***Pulicaria arabica* (L.) Cass.**

Syn.: *P. dysenterica* (L.) Gaertn. var. *glossiphylla* Pau, l.c.; syn. nov.

"Ahwas", 3-X-1899.

CONVOLVULACEAE

***Convolvulus urosepalus* Pau, l.c.: 27; Rech. f., Fl. Iran.: 1-8 (1963); Saad, The Convolvulus species of the Canary Islands, the Mediterranean Region and the Near and Middle East (Rotterdam 1967)**

"Kouh Sefid (alto Karun)", 3500 m (without date).

Thanks to Pau's original illustration *C. urosepalus* could be identified and taken up into *Flora Iranica*. It has been recollected by KOELZ 18056 at Galichir in

Bakhtiari. SAAD, *Monogr. Convolv.* 79 (1967) gives a full description and drawings of details.

DIPSACACEAE

Pterocephalus canus Coult. in DC.

Syn.: *P. silenifolius* Pau, l.c. 36, syn. nov.

“Valle de Bazouft y Kouh Sefid”.

Fide Jutta Pollak et H.-W. Lack, manuscr.

Pterocephalus strictus Boiss. & Hohen.

Syn.: *P. melanobasis* Pau, l.c.: 37, 35, tab. 5, syn. nov.

“Kouh Sefid”.

Fide Jutta Pollak et H.-W. Lack, manuscr.

EUPHORBIACEAE

Andrachne telephioides L. var. **brachycarpa** Pau, l.c.: 8

“Capsula duplo minor”

“Gotvend y valle de Bazouft”.

A. telephioides is an extremely polymorphic, widely spread species urgently in need of critical revision; see *Fl. Iran.* 6: 5 (1964).

Pau's variety *brachycarpa* does not agree with any of the unnamed varieties mentioned l.c. Here follows a more complete description of Pau's variety *brachycarpa*:

Planta humilis, glabra, suffrutescens, gracilis; rami tenues, arcuato-ascendentes, 8-10 cm longi, parce patule ramosi vel simplices, tota fere longitudine aequaliter foliata. Folia brevissime petiolata, suborbiculata vel late ellipsoidea, c. 2,5-4 mm longa et saepe fere aequalata. Capsula orbiculata, ± 2 mm diametro. Semina ± 1 mm diametro.

GERANIACEAE

Geranium mascatense Boiss.; Schönbeck Temesy in Rech. f., *Fl. Iran.* 69: 18 (1970)

Syn.: *G. mascatense* Boiss. var. *persicum* Pau, l.c.: 18

“Gotvend”.

Geranium tuberosum L.; Schönbeck Temesy in Rech. f., *Fl. Iran.* 69: 7 (1970)

Syn.: *G. tuberosum* L. var. *sefidianum* Pau, l.c.

“Kouh Sefid”.

GRAMINEAE

Aristida adscensionis L. var. **festucoides** Henrard

Syn.: *Aristida viciosorum* Pau, syn. nov. fide H. Scholz in litt. 6-X-1987

“Ahwas”.

Eriochloa succincta (Trin.) Kunth; Bor in Rech. f., Fl. Iran. 70: 493 (1970)

Syn.: *Panicum karumiense* Pau, l.c.: 43

“Khuzistan, Ahwas”.

LABIATAE

Salvia macrosiphon Boiss.; Hedge in Rech. f., Fl. Iran 150: 441 (1982)

Syn.: *S. cuspidatissima* Pau, l.c.: 33

“Gotvend”.

Salvia sclarea L.; Hedge in Rech. f., Fl. Iran. 150: 450 (1982)

Syn.: *S. altilabrosa* Pau, l.c.: 33

“Gotvend y valle de Bazouft”.

Teucrium orientale L. subsp. **taylori** (Boiss.) Rech. f.

Syn.: *T. artemisioides* Pau, l.c.: 31, syn. nov.

“Valle de Bazouft” (without date and altitude).

Ziziphora persica Bunge

Syn.: *Z. tenuior* L. var. *persica* Pau, l.c.: 34, syn. nov.

“Gotvend (bajo Karun), 400 m, IV-1899”.

There is no hint whether the varietal name “*persica*” has been used by Pau independently from the species *Z. persica* Bunge or whether Pau intended a change of taxonomic rank.

ORCHIDACEAE

Orchis palustris Jacq.; Renz in Rech. f., Fl. Iran. 126: 102 (1978)

Syn.: *Orchis laxiflora* Lam var. *persica* Pau, l.c.: 46

“Gotvend”.

PAPILIONACEAE

Astragalus erinifolius Pau, l.c.: 21

“Kouh Sefid”, 2800 m.

According to S. Tietz (manuscr.) *A. erinifolius* Pau belongs to Sect. *Campy-*

lanthus. It is closely related to *A. campylanthus* Boiss. from which it differs by the glabrous stipules, glabrous or loosely pilose bracts, broad transversal elliptic vexillum, thinner soon glabrescent branches and less pairs of leaflets. A full description of *A. erinifolius* is due to be published by Miss S. Tietz in her revision of Sect. *Campylanthus* in Mitt. Bot. Staatssammlung München (in press).

***Astragalus longirostratus* Pau**, Trab. Mus. Nac. Cienc. Nat., Ser. Bot. 14: 21 (1918)

“Valle de Bazouft”, 2000 m, 25-VI/8-VII-1899, *Martínez de la Escalera*, MA!

Descriptio emend.: *Herba annua, 10 cm alta, caulis basi ramosus, c. 7 cm altus, tenuis, paucifolius, aliquantum flexuosus, pilis crassiusculis, rigidis, antrorsis, arcte appressis, 0,3-1 mm longis, albis, prope nodos etiam nigris dense obsitus. Stipulae albo-membranaceae; inferiores e basi lata amplexicauli longe attenuata; superiores anguste triangulares, omnes inter se ut a caule liberae, laxae plerumque nigro-pilosae. Folia 20-35 mm longa; petiolus 10-18 mm longus, laminam circiter aequans, tenuis, ut rachis pilis rigidis 0,5-1,5 mm longis nodulo insidentibus, in foliis inferioribus arcte appressis omnibus albis, in foliis superioribus patulis albis nigrisque immixtis obsita. Foliola 3-4 juga, anguste elliptica, 5-9 × 2-4 mm, antice rotundata, utrinque pilis nodulo insidentibus dense appressis albis obsita. Racemi foliis superioribus suffulti axillares, pedunculo 15-25 mm longo, tenui, pilis albis appressis et patulis, sursum quoque sparse pilis nigris intermixtis obsito, densiuscule 15-20-flori. Bractae albo-membranaceae, lineares, c. 3 mm longae, sparse nigro-pilosae. Calyx 7-8 mm longus, breviter tubulosus, tenuiter membranaceus, stramineus, longe patule albo-pilosus, pilis nigris ad dentes intermixtis, leviter verruculoso-tuberculatus; dentes subulati, 3,5-4 mm longi, tubum subaequantes. Vexillum c. 9 mm longum, anguste ellipticum, in parte media ad 2 mm latum, antice manifeste constrictum, apice ad 1 mm furcato-incisum, laciniis binis angustis, basi in unguem c. 2 mm longum attenuatum. Alae vexillum aequantes; lamina linearis, c. 5 mm longa et 0,5 mm lata, sursum longe attenuata, basi auricula minutissima c. 0,3 mm longa provisa; unguis filiformis, 4 mm longus. Carina c. 6 mm longa; lamina oblique triangulari-elliptica, margine inferiore subrectangulari fere recta, c. 2 mm longa et 1-1,2 mm alta; auricula minutissima; unguis c. 4 mm longus. Tubus staminalis subrectangulariter truncatus. Germen sessile, ovatum, 4-5 mm longum, c. 2 mm altum et latum, ventro et dorso anguste rotundatum, antice brevissime acuminatum, complete uniloculare; valvae convexae, tenuissimae, brunnescentes, pilis longis appressissimis nodulis insidentibus albis dense obsitae. Semina in legumine singula, 3 × 2 mm, brunnea, leviter rugulosa, nitida.*

A. longirostratus represents a new undescribed section notable by several unusual correlated characters, viz.: the presence of hairs sitting on small nodules, the very narrow, deeply bifid vexillum, the very narrow linear, long attenuate minutely auriculate wings, the much shorter keel and the one-seeded unilocular legumen without any trace of septum.

D. Podlech, München, has kindly contributed the above full description.

***Onobrychis acaulis* Bornm.**; Rech. f., Fl. Iran. 157: 424 (1984)

Syn.: *O. unicornis* Pau, l.c.: 23

“Gotvend (Rio Karun)”, 400 m; “Ahwas (Bajo Karun)”, 300 m (no date).

Onobrychis melanotricha Boiss.; Rech. f., Fl. Iran. 157: 441 (1984)
 Syn.: *O. linearis* Pau, l.c.: 23

“Gotvend (Bajo Karun)”, 400 m.

PRIMULACEAE

Dionysia bolivari Pau, l.c.: 27

“In valle Bezouft”.

WENDELBO in RECH. f., *Fl. Iran.* 9: 19 (1865) with tab. 2, figs. 1 & 2 has seen the type (MA). He furnishes a complete description and figures. *D. Bolivari* has been recollected by Koelz 15135 at Taleh in Bakhtiari.

RANUNCULACEAE

Anemone biflora DC.

Syn.: *A. subvillosa* Pau, l.c.: 12, syn. nov. fide H. Riedl, 14-III-1988

“Valle de Bazouft”.

Ranunculus chius DC. fide Ginés López

Syn.: *R. parviflora* L. var. *persianus* Pau, syn. nov.

“Gotvend”.

RHAMNACEAE

Rhamnus cornifolia Boiss. var. **cornifolia**

Syn.: *Rh. escalerae* Pau, l.c.: 19, syn. nov. fide Browicz, in litt.

“Kouh Sefid”.

ROSACEAE

Rosa elymaitica Boiss.

Syn.: *R. ubachii* Pau, l.c.: 20, syn. nov. fide Browicz, in litt.

“Kouh Cherri”. The situation of this locality is unknown to us.

RUBIACEAE

Asperula fragillima Boiss. & Hausskn.

Syn.: *A. fragosoana* Pau, l.c.: 35, syn. nov. fide Schönbeck-Temesy in Rech. f., Fl. Iran., Rubiaceae (manuscr.)

“Kouh Sefid”.

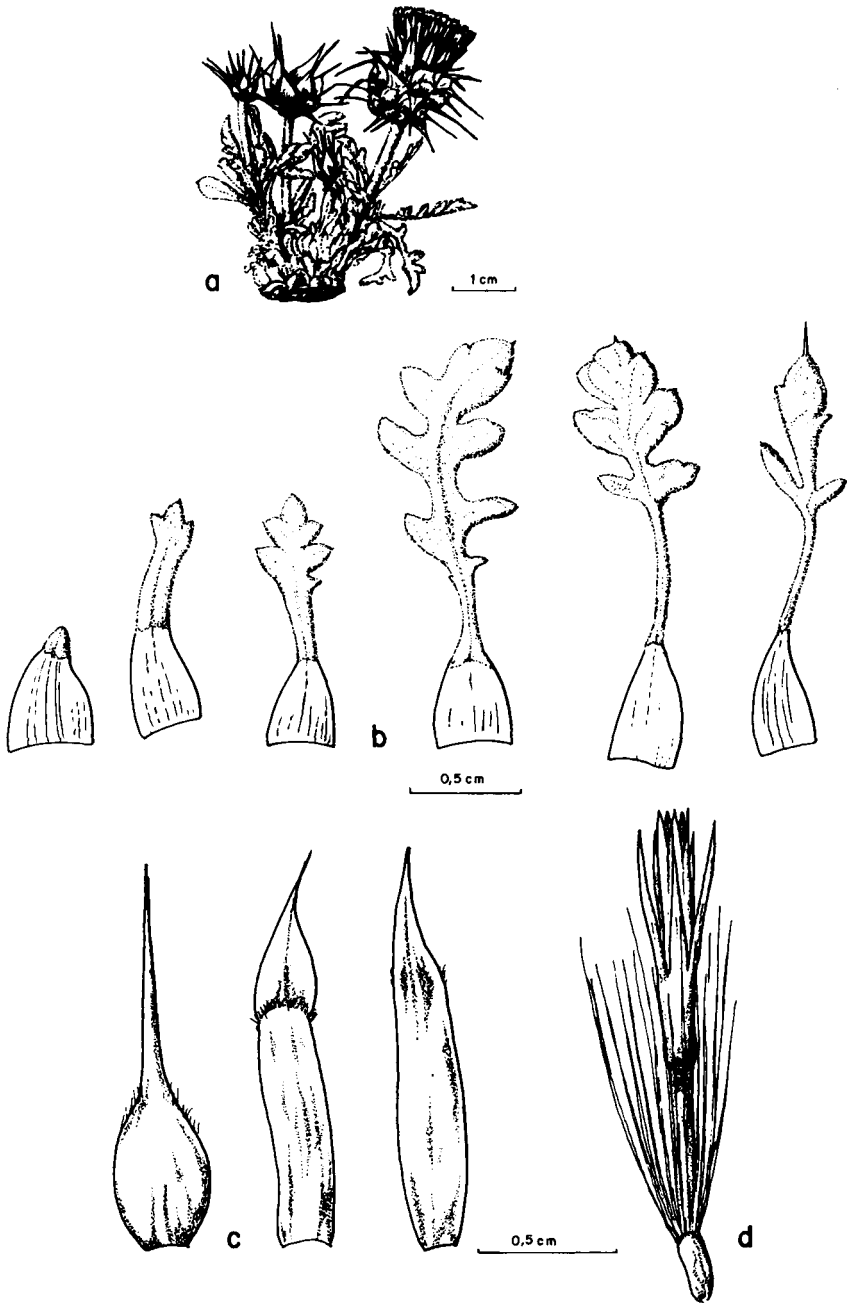


Fig. 1.—*Myopordon aucheri* Boiss.: a, habitus; b, basal leaves; c, involucre bracts; d, flower.

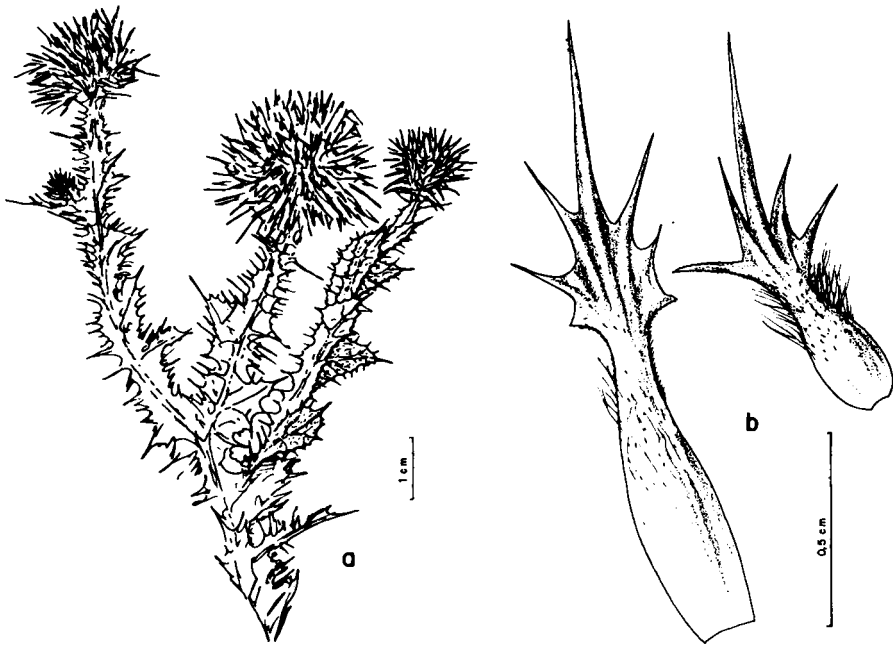


Fig. 2.—*Cousinia sefidiana* (Pau) Rech. f.: a, habitus; b, involucreal bracts.

***Galium murale* L.**

Syn.: *Galium calvipes* Pau, l.c.: 36, *syn. nov.* fide Schönbeck-Temesy, ined.

“Valle de Bazouft”.

RUTACEAE

***Haplophyllum tuberculatum* (Forssk.) Adr. Juss.**

Syn.: *Ruta telephiifolia* Pau, l.c. 14: 19 (1918)

“Ahwas (Rio Karun) Oct. 1899”.

Fide Townsend, *Taxonom. Revision of the genus Haplophyllum*: 153 (1986), in HOOKER's *Icon. Plant.* 40 (1986).

SCROPHULARIACEAE

***Chaenorrhinum gerense* (Stapf.) Speta**

Syn.: *Ch. rubrifolium* (Rob. & Cast.) Lange var. *persianum* Pau, l.c.: 27

“Gotvend y valle de Bazouft”.

Fide F. Speta, *Stapfia* 7: 27 (1980).

Scrophularia subaphylla Boiss.

Syn.: *S. tenuisecta* Pau, l.c., syn. nov.

"Kouh Sefid".

Fide J. Grau, in litt.

Veronica fragilis Boiss. & Hausskn.; M. A. Fischer in Rech. f., Fl. Iran. 147: 137 (1981)

Syn.: *V. adenotricha* Pau, l.c.: 30

"Valle de Bazouft".

Veronica orientalis Miller; M. A. Fischer in Rech. f., Fl. Iran. 147: 130 (1981)

Syn.: *V. konantha* Pau, l.c.: 30, tab. 4

"Kouh Sefid".

THYMELAEACEAE

Daphne Stapfii Bornm. & Keissler; B. Petersson in Rech. f., Fl. Iran. 95: 6 (1972)

Syn.: *D. escalerae* Pau, l.c.: 24

"Gotvend y valle de Bazouft".

UMBELLIFERAE

Azilia eryngioides (Pau) Hedge & Lamond in Rech. f., Fl. Iran. 162: 386 (1987)
with tab. 314, 315, 316 and fig. clavis gr. H-2

Syn.: *Prangos eryngioides* Pau, l.c.: 26

"Gotvend y valle de Bazouft" (publ.).

"Valle de Bazouft (alto Karun), 2000 m", lectotypus!!

Azilia is remotely related to *Ferula* and *Peucedanum*. It is the most impressive of Martínez's discoveries. *Azilia* is a vigorous plant with a stem up to 5 cm thick near the base and 1-2 m in height. It has been recollected in Luristan twice since. As for details see Hedge & Lamond, l.c.

Torilis chrysocarpa Boiss. & Bal.; Peev in Rech. f., Fl. Iran. 162: 126 (1987)

Syn.: *Torilis leucotricha* Pau, l.c.: 26

"Valle de Bazouft".

VIOLACEAE

Viola pachyrrhiza Boiss. & Hohen. det. A. Schmidt (manuscr.)

Syn.: *Viola bolivari* Pau, l.c.: 17, syn. nov.

"Kouh Sefid (alto Karun), 3000-3500 m" (without date).

ALPHABETICAL LIST OF PLANTS NAMED BY PAU

(!! = valid name, identity confirmed)

- Andrachne telephioides* L. var. *brachycarpa* Pau!!
Anemone subvillosa Pau = *A. biflora* DC.
Aristida viciousorum Pau = *A. adscensionis* L. var. *festucoides* Henr.
Asperula fragosoana Pau = *A. fragillima* Boiss. & Hausskn.
Astragalus erinifolius Pau!!
Astragalus longirostratus Pau!!
Campanula hystriacula Pau!!
Campanula violifolia Pau = *C. Escalerae* Rech. f. & Schiman-Czeika
Chaenorrhinum rubrifolium (Rob. & Cast.) Lange. var. *persianum* Pau = *Ch. gerense* (Stapf) Speta
Convolvulus urosepalus Pau!!
Cousinia cymbolepis Boiss. var. *sefidiana* Pau = *C. sefidiana* (Pau) Rech. f.
Cousinia nuda Pau = *Myopordon aucheri* Boiss.
Daphne escalerae Pau = *D. stapfii* Bornm. & Keissler
Dianthus fimbriatus M.B. var. *laevissimus* Pau = *D. macranthoides* Hausskn. & Bornm.
Dianthus paniculatus Pau = *D. strictus* Banks & Solander var. *laevissimus* Pau
Dionysia bolivari Pau!!
Erigeron elbursensis Boiss. var. *sefidianum* Pau = *E. acer* L. s.l. (aff. subsp. *lalezarica* Rech. f.)
Galium calvipes Pau = *G. murale* L.
Geranium mascatense Boiss. var. *persicum* Pau = *G. mascatense* Boiss.
Geranium tuberosum L. var. *sefidianum* Pau = *G. tuberosum* L.
Gypsophila ceballosii Pau = *G. elegans* M.B. var. *elegans*
Hieracium escalerae Pau!!
Jurinea viciousoi Pau!!
Minuartia escalerae Pau = *M. aucheriana* (Boiss.) Bornm.
Onobrychis linearis Pau = *O. melanotricha* Boiss.
Onobrychis unicornis Pau = *O. acaulis* Bornm.
Orchis laxiflora Lam. var. *persica* Pau = *O. palustris* Jacq.
Prangos eryngioides Pau = *Azilia eryngioides* (Pau) Hedge & Lamond.
Pterocephalus melanobasis Pau = *P. strictus* Boiss. & Hausskn.
Pterocephalus silenifolius Pau = *P. canus* Coult.
Pulicaria dysenterica (L.) Gaertn. var. *glossiphylla* Pau = *P. arabica* (L.) Cass.
Ranunculus parviflorus L. var. *persianus* Pau = *R. chius* DC.
Rhamnus escalerae Pau = *Rh. cornifolia* Boiss. var. *cornifolia*
Rosa ubachii Pau = *R. elymaitica* Boiss.
Ruta telephiifolia Pau = *Haplophyllum tuberculatum* (Forssk.) Adr. Juss.
Salvia atilabrosa Pau = *S. sclarea* L.
Salvia cuspidatissima Pau = *S. macrosiphon* Boiss.
Scrophularia tenuisecta Pau = *S. subaphylla* Boiss.
Silene boryi Boiss. var. *sefidiana* Pau = *S. daënensis* Melzh.
Silene conoidea L. var. *bazuftiana* Pau = *S. conoidea* L.
Silene flaccida Pau = *S. persica* Boiss.

- Teucrium artemisioides* Pau = *T. orientale* L. subsp. *taylori* (Boiss.) Rech. f.
Torilis leucotricha Pau = *T. chrysocarpa* Boiss. & Bal.
Vaccaria brachycalix Pau = *V. oxyodonta* Boiss.
Veronica adenotricha Pau = *V. fragilis* Boiss. & Hausskn.
Veronica konantha Pau = *V. orientalis* Miller
Viola bolivari Pau = *V. pachyrrhiza* Boiss. & Hohen.
Ziziphora tenuior L. var. *persica* Pau = *Z. persica* Bunge

Acceptado para publicación: 7-III-1989