STUDIES IN EAST MEDITERRANEAN SPECIES OF SALVIA

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This paper contains the first results of a study of the genus *Salvia* as it occurs in Turkey and neighbouring countries of Western Asia. Ten new species are described and other critical or misunderstood taxa are discussed with regard to their distribution and nomenclature.

The new species are from the 1954 Kurdistan collection of Dr. P. H. Davis and from the herbarium of Dr. A. Huber-Morath, of Basle, who kindly sent for description his own new Salvias gathered over the course of several Anatolian journeys. Most of them are described in conjunction with Dr. Huber-Morath, for whose collaboration I am very grateful. I am also grateful to Dr. P. Mouterde of Beirut for giving me co-authorship of a new species from Syria.

The sequence of the sections and species is essentially the arrangement used by Boissier in his Flora Orientalis.

SECTION EUSPHACE BENTH.

Salvia adenophylla Hedge & Huber-Morath, **sp. nov.**

Affinis *S. Cedronellae* Boiss. sed pilis capitatis glandulosis ex toto dense viscoso-hirsuta atque foliis angustioribus minoribus munita divergit.

Suffrutex caulibus 25–35 cm. altis. *Planta* ex toto, basi lignosa exclusa, glandulis capitatis dense vestita. *Folia* pinnata, petiolata; segmentum terminale obovato-ellipticum, 15–20 mm. longum, 8–11 mm. latum, non stipitatum, margine dentatum (dentibus utrinque 4–8), apice acutum, concolor viride (in juventute canum), utrinque glandulis subsessilibus et pilis eglandulosis et glandulis punctatis aureis provisum; nervatura subtus non vel vix prominens; segmenta lateralia superioribus minora oblongo-elliptica, 10–13 mm. longa, 3–4 mm. lata, apicem versus serrata; segmenta inferiora parva, 3–7 mm. longa, lineari-oblonga, subintegra. *Petiolus* 5–11 mm. longus, basin versus ciliis 3 mm. longis marginatus. *Caules floriferi* simplices, papillis minutis glandulosis numerosis et pilis glandulosis brevibus et pilis paucis longioribus eglandulosis praediti, indumento in regione florifera densiore. *Folia* superne in folia floralia sensim abeuntia. *Inflorescentia* 6–12 cm. longa. *Verticillastra* 2–(nunc 6–) flora, 3–6-nata, inferiora 12–18 mm. distantia, superne vix approximata. *Folia floralia* superiora sessilia ovato-lanceolata vel lanceolata, variabilia, dense viscida. *Pedicelli* in parte inferiore inflorescentiae c. 6 mm. longi, erecti, sursum decrescentes. *Calyx* tubuloso-infundibularis, 10–12 mm. longus, purpureo-suffusus, 13-nervosus, glandulis capitatis brevissimis et glandulis sessilibus et pilis longioribus eglandulosis obsitus, ± ad medium bilabiatus, labiis divergentibus; labium superius tridentatum, dentibus brevibus subulatis, mediano lateralibus vix minore; labium inferius bidentatum, dentibus triangularibus acuminatis spinulosis. *Corolla* flava, 20–25 mm. longa, ± ad trientem bilabiata; tubus intus basi dense piloso-annulatus; galea emarginata pilis paucis glandulosis et eglandulosis

provisa; labium inferius galea paulo longius, lobo mediano ± reniformi c. 10 mm. lato, lobis lateralibus ovatis obtusissimis. *Connectivum* antherarum c. 7 mm. longum; loculus fertilis 4 mm. longus; staminodia evoluta. *Nux* ignota. Floret Jun.

PROV. DENIZLI (Pisidien): Kizilhisar–Yeşilova, *Quercus coccifera* Macchie 72 km. Südöstlich Denizli 2 km. vor Sirçalik, Blüten gelb, 1030 m., 16 Juni 1954, *A. Huber-Morath* 12722 (holo. E, iso. HM).

S. adenophylla is closely allied to the rare *S. Cedronella* Boiss. The latter, however, is a more or less glabrous plant, the leaves being always glabrous, glaucous and somewhat fleshy, in contradistinction to *S. adenophylla* in which the leaves are densely covered with capitate glands, bright green, and thin in texture.

Although in the type material of *S. Cedronella* one small juvenile shoot has a loose glandular indumentum, Dr. Huber-Morath informs me that his own gatherings from Pisidia are quite constantly eglandular and glaucous; moreover, that *S. adenophylla* in the field is invariably very glandular and forms large and uniform colonies in oak scrub.

Within the section *Eusphace* Benth., the pinnate or ternate-leaved species of *Salvia* (the *Pinnatae* of Boissier) are a critical group almost all of which are represented in, and many restricted to, Asia Minor. Although at present it cannot be ascertained to what extent edaphic and general ecological conditions influence the selection of taxonomic characters used within this group, the presence of very closely allied species within limited geographical areas does suggest that speciation has taken place, or is taking place, quite readily within these areas. For instance, *S. pisidica* Boiss. & Held., *S. potentillifolia* Boiss. & Held. and *S. albimaculata* Hedge & Huber-Morath all grow in the Isaurian Taurus; *S. brevispicata* P. H. Davis and *S. Russegeri* Fenzl are limited to the southern provinces of Turkey (though, in this instance, more material may not vindicate specific distinction); *S. Tchihatcheffii* Boiss., *S. Wiedemannii* Boiss. and *S. Freyniana* Bornm. are restricted to central Anatolia; *S. armenorum* Bornm., *S. Sintenisii* Hausskn. and *S. Michajlowskii* Sosn. are confined to Turkish Armenia; and *S. adenophylla* and *S. Cedronella* are endemic to the south-west of Turkey.

Salvia albimaculata Hedge & Huber-Morath, **sp. nov.**

Affinis *S. potentillifoliae* Boiss. & Held. et *S. pisidicae* Boiss. & Held. sed floribus bicoloribus (galea cyanea, labio inferiore macula alba munito), calyce minus ampliato magis stipitato-glanduloso, dentibus minus acuminatis, bracteis et foliis minoribus inter alia distinguenda.

Frutex nanus, ramis vetustis procumbentibus, divaricato-ramosus; caules erecti, 13–30 cm. alti, simplices, obtuse quadrangulares, inferne purpureo-suffusi, pilis brevibus albis retrorsis eglandulosis praediti, in regione florifera pilis capitatis glanduliferis brevibus et longioribus (ad 2 mm.) tenuioribus eglandulosis immixtis. *Folia* trisecta petiolata; segmentum terminale anguste oblanceolato-spathulatum, 9–15 mm. longum 3–4(–6) mm. latum, breviter stipitatum, margine integrum vel apicem versus serratum, subtus dense appresse et brevissime tomentosum, papillis glandulosis sessilibus aureis praeditum, supra indumento simili sed minus denso obtectum; segmenta lateralia segmentum terminale ± aequantia,

lineari-oblonga vel oblanceolata, subintegra, 9–12 mm. longa. *Petiolus* 9–18 mm. longus, longiciliatus (ciliis c. 2 mm. longis). *Axis* inflorescentiae 7–15 mm. longus. *Verticillastra* 2(–5)-flora, 3–5-nata, internodiis 2·5–3·5 mm. longis. *Folia floralia* lanceolato-acuminata, 6 mm. longa, 2·5 mm. lata, pilis glanduliferis brevissimis et longioribus dense munita. *Pedicelli* 5–6 mm. longi, erecti. *Calyx* tubuloso-infundibularis 15–19 mm. longus, purpureo-suffusus, 14-nervosus, ± ad trientem bilabiatus, labiis vix divergentibus, glandulis capitatis longe stipitatis, glandulis paucis papillosis aureis sessilibus et pilis longioribus eglandulosis praeditus; labium superius in dentes tres brevissimos (intermedio multo breviore) fissum; labium inferius paulo longius, in dentes duos ovato-lanceolatos acute acuminatos (sed vix spinulosos) bifidum. *Corolla* calyce 2–3-plo longior, pulchre cyanea, 3–4 cm. longa, superne glandulis stipitatis capitatis parce pubescens; tubus calyce sesquilongior, ad 26 mm. longus, intus dense piloso-annulatus; labium superius porrectum, 9–12 mm. longum, retusum, intus glandulis purpureo-nigris numerosis brevissime stipitatis et pilis longioribus munitum; labium inferius trilobatum galea paulo brevius, in parte mediana macula alba magna pulchre tinctum, lobo mediano rotundato-reniformi 10–12 mm. lato, lobis lateralibus late ovatis obtusissimis. *Connectivum* antherarum c. 6 mm. longum, curvatum; theca fertilis c. 6 mm. longa, theca sterilis c. 2 mm. longa. *Stylus* c. 4 cm. longus, exsertus. *Nuculae* ignotae. Floret Jun.–Jul.

PROV. KONYA (Isaurien) distr. Ermenek: Kalkmergel, 2 km. ob Ermenek am Weg nach Karaman, 1360 m., 9 Juni 1948, *A. Huber-Morath, H. Reese, J. Renz* (H.M. 8382, holo. HM); Ermenek–Anamur, Kalkmergel 11 km. nördlich Ermenek, 1110 m., 11 Juni 1950, *A. Huber-Morath* 9589 (E); Ermenek, dans le vallon des grottes au dessus d'Ermenek, très rare, 29 Juin 1845, *Heldreich* 1290 (G! cited in Boissier, Fl. Or. iv, 598 as *S. potentillifolia*).

In its habit and indumentum this species resembles quite closely *S. potentillifolia* Boiss. & Held. and *S. pisidica* Boiss. & Held. From the latter, it is distinguished by the clearly separated verticils, the abundance of capitate glands on the calyx and, to a lesser extent, the taller more erect habit.

S. albimaculata has closer affinities with *S. potentillifolia*, originally described from Lycia, but can be separated from it by the deep blue flowers with a white patch in the centre of the lower lip, the less divaricate, narrower calyx which is cleft only to about ⅓ of its length, the denser indumentum and less acuminate teeth of the calyx, and the smaller leaves and bracts. Moreover, the flowers of this magnificent new species are larger than in *S. potentillifolia*.

Salvia tigrina Hedge & Huber-Morath, **sp. nov.**

Affinis *S. recognitae* Fisch. & Mey. sed segmento terminali foliorum latiore et majore, caulibus inferne glabris (glandulis deficientibus), dentibus calycis longioribus, floribus luteis pedicellis longioribus divergit. A *S. Peyronii* Boiss. ex Post (specie incerta), foliis longioribus latioribus, caulibus simplicibus, corollis minoribus distinguitur.

Herba perennis c. 60 cm. alta. *Caules* erecti, simplices, acute quadrangulares, inferne glabri albescentes glaucescentes. *Folia* caulina 2-paria inter se 8 cm. distantia, pinnata, petiolata; segmentum terminale late

ovatum, 8–11 cm. longum, 5–7 cm. latum, distincte stipitatum, margine ± regulariter crenatum, apice acutum vel etiam breviter acuminatum, basi truncatum, subtus pilis brevibus eglandulosis provisum, molliter hirsutum, prominenter reticulato-nervosum, supra simile sed indumento breviore et minus densiore provisum; segmenta lateralia 2-paria, superiora sessilia, elliptica, 5 cm. longa, 2·5 cm. lata, margine subintegra vel ± serrata, apice acuta, inferiora 2 cm. longa, 0·7 cm. lata, elliptica; petiolus segmento terminali paulo brevius, longiciliatus, ciliis eglandulosis ad 5 mm. longis. *Inflorescentia* c. 15 cm. longa, simplex, glandulis capitatis tenuibus longis erectis et pilis brevioribus eglandulosis provisa, viscoso-hirsuta. *Verticillastra* 3–5-flora, 3–?-nata, inferiora 5 cm. distantia, superiora. . . . *Folia floralia* parva, oblonga, c. 4 mm. longa, pedicellis breviora. *Pedicelli* 6–9 mm. longi pilis glandulosis et apicem versum pilis brevioribus eglandulosis muniti. *Calyx* 16–19 mm. longus, tubuloso-infundibularis, glandulis numerosis capitatis et pilis paucis longioribus eglandulosis praeditus, ± ad tertiam partem bilabiatus, viridis vel purpurascenti-suffusus, rigidule herbaceo-membranaceus, distincte 13-nervosus; labium superius tridentatum, dentibus vix 2 mm. longis truncatis rigidule spinulosis, dente intermedio lateralibus paulo majore; labium inferius superiore paulo brevius in dentes duos 8 mm. longos triangulares spinuloso-acuminatos bifidum. *Corolla* flava, 32–36 mm. longa, glandulis capitatis breviter pilosa, ad tertiam partem vel ad quartem partem bilabiata; tubus intus c. 9 mm. a basi dense piloso-annulatus; labium superius flavum, punctis brunneis parvis, suberectum, 8–10 mm. longum, retusum; labium inferius trilobatum, lobo mediano rotundato-ovato c. 8 mm. lato, lobis lateralibus oblongis c. 8 mm. longis. *Connectivum* antherarum c. 10 mm. longum, curvatum. *Theca* magna 4·5 mm. longa, theca parva 2 mm. longa. *Stylus* 35 mm. longus, bifidus. *Nuculae* ± ovatae, 4 mm. latae, 5 mm. longae, laeves, fuscae. Floret Jun.

PROV. AMANUS (Vil. Hatay): Musa Dağ westlich ob Batiayas, Hecke, 800 m., 22 Juni 1953, *A. Huber-Morath* 11871 (holo. HM).

In general habit, *S. tigrina* is similar to *S. recognita* but is readily distinguished from it by the yellow flowers, a more markedly bilabiate calyx, and the longer pedicels. *S. tigrina* is more closely allied to *S. Peyronii*, a species of doubtful status. The name first appears in Post's Flora of Syria, Palestine & Sinai (1st Edit. 1896) as *Salvia Peyronii* Boiss. together with a meagre description. This, however, is of the pattern used by Post throughout this Flora and is certainly not an original description by Boissier. *S. Peyronii* is recorded as having been collected by Peyron among rocks at Faytrûn in the Lebanon. Peyron's main collection is deposited at Geneva where, however, this sheet has not been found. It is also unrepresented, nor is the species known, at the Post herbarium in Beirut; searching last summer in the rocky country around Faytrûn, members of the American University at Beirut failed to find the elusive *S. Peyronii*.

Certain differences do occur in Post's description that prevent the Amanus plant from being called *S. Peyronii*: the unbranched habit, the much longer terminal leaflets and the smaller corolla. Until, therefore, the original specimen is found or a further gathering is made from the type locality, *S. Peyronii* must be regarded as a doubtful species, to which *S. tigrina* is allied.

Salvia Reeseana Hedge & Huber-Morath, **sp. nov.**

Species valde affinis *S. bracteatae* Banks & Sol. sed habitu magis erecto, indumento ex toto pilis similibus brevibus eglandulosis (non glandulis capitatis) composito, labio superiore calycis distincte sed minute tridentato, dentibus labii inferioris longioribus angustioribus triangularibus divergit.

Herba perennis, basi lignescens, pluricaulis. *Caules* obtuse quadrangulares 35–50 cm. alti, purpureo-suffusi, adscendentes, herbacei, ex toto pilis brevibus albis eglandulosis breviter hirsuti. *Folia inferiora* trisecta, longe petiolata; segmentum terminale ovato-oblongum, 5–7 cm. longum, 2–3 cm. latum, vix vel breviter stipitatum, margine ± regulariter crenatum, apice acutum, subtus pilis eglandulosis et glandulis sessilibus numerosis aureis hirsutum, supra glandulis deficientibus regulariter hirsutum; nervatura subtus prominens, supra tenuissime immersa; segmenta lateralia ellipticolanceolata, c. 2·5 cm. longa et 1 cm. lata, sessilia; petiolus 3–6 cm. longus, piloso-hirsutus. *Folia superiora* 3–5 paria, minora, sessilia, simplicia, in folia floralia sensim transeuntia, internodiis inferioribus c. 3 cm. longis, superioribus brevioribus. *Inflorescentia* pauciracemosa, circiter 15 cm. longa, 6 cm. lata, e ramis strictis adscendentibus eglandulosis, anguste pyramidalis. *Verticillastra* 4–8-flora, 4–6-nata, inferiora c. 3 cm. distantia, superiora approximata. *Folia floralia* ovato-lanceolata, acuminata. *Bracteae* cymbiformes, persistentes, albido- et purpureo-suffusae, hirsutae, calycibus paulo breviores vel subaequales. *Pedicelli* c. 2 mm. longi, erecti. *Calyx* 13–15 mm. longus, 14-nervosus, tubulosus, herbaceus, albidus, ad tertiam (vel quartam) partem bilabiatus, labiis vix divergentibus; nervi et dentes purpurei, pilis albis eglandulosis et pilis glandulosis stipitatis paucissimis minutissimis hirsuti; labium superius minute sed distincte tridentatum, dentibus vix conniventibus intermedio lateralibus subbreviore; labium inferius in dentes duos triangulares acutos 3–4 mm. longos fissum. *Corolla* calyce duplo longior, purpurascens, superne parce pubescens glandulis papillosis minutissimis munita, ad trientem bilabiata; tubus e calyce exsertus, intus circa 7 mm. a basi duobus fasciculis pilorum provisus; labium superius 7 mm. longum emarginatum; labium inferius trilobatum, lobis lateralibus ovatis obtusissimis, mediano rotundato paulo dilatato c. 5 mm. lato. *Connectivum* antherarum 5 mm. longum; theca fertilis 3 mm. longa; staminodia evoluta. *Stylus* vix exsertus. *Nux* ignota. Floret Jun.

PROV. TOKAT (Pontus). Krautig-buschige Stellen, 15 km. südlich von Tokat am Weg nach Artova-Sivas, c. 1400 m., 14 Juni 1939, *H. Reese* (sine numero—holo. HM).

S. bracteata, which must be ascribed to Banks & Solander, not Russell, is very closely allied to this species; the two plants agree in general facies, colour and in the bracteal arrangement (well developed bracts are present in addition to the floral leaves—a condition which is very unusual in the west Asiatic species of *Salvia*).

S. Reeseana can be readily distinguished, however, by the absence of glandular hairs on the vegetative and floral parts, the indumentum being composed entirely of short crisp white hairs of more or less uniform length. Furthermore, the upper lip of the calyx in *S. bracteata* is undivided or minutely subtridentate whereas in *S. Reeseana* the three teeth,

though closely connivent, are individually distinct; also, the lower calyx teeth are narrower and more triangular than those of *S. bracteata*.

In *S. bracteata* the leaf indumentum is heteromorphic, being composed of hairs of different length: long (up to 4 mm.) eglandular white hairs occur at the base of the petiole and on the stem, in addition to the capitate glands which occur on all parts of the plant. The numerous yellow punctate oil globules which are present on the ventral leaf surface of *S. Reeseana* are absent in *S. bracteata*.

This new species is named in honour of its discoverer, the late Dr. Heinrich Reese, who, through his many botanical expeditions to Asia Minor, often in company with his friend, Dr. A. Huber-Morath, contributed much to our knowledge of the Anatolian flora.

Section Hymenosphace Benth.

Salvia blepharochlaena Hedge & Huber-Morath, **sp. nov.**

Affinis *S. cadmicae* Boiss. sed floribus tricoloribus, foliis semper pinnatis (numquam indivisis) segmentis lateralibus 3–5, segmento terminali anguste oblongo-elliptico, bracteis cordato-lanceolatis, floribus majoribus tubis exsertis, calycibus in fructibus majoribus et latioribus distincte differt.

Suffrutex 10–30 cm. altus, ex toto pilis longis tenuibus glandulosis et longioribus eglandulosis densissime ciliatus. *Folia* pro maxima parte basin versus conferta, petiolata, pinnata; segmentum terminale oblongo-ellipticum, 10–12 mm. longum (in rosulis sterilibus ad 22 mm.), 4–5 mm. latum (ad 8 mm.), vix stipitatum, margine serratum, apice acutum, concolor, virescens, utrinque pilis glandulosis et eglandulosis longe ciliatum, nervatura subtus dense reticulata supra immersa; segmenta lateralia 3–5, summa segmento terminali paulo breviora basin versus decrescentia, elliptica vel lineari-elliptica, sessilia. *Petioli* ad 25 mm. longi, inferne interdum purpureo-suffusi, vetusti persistentes partem caulis inferiorem dense quadratim vestientes. *Caules* floriferi simplices, obtuse quadrangulares vel teretes. *Inflorescentia* 4–23 cm. longa. *Verticillastra* (2–) 4(–6)-flora, 2–7-nata, ad summum florifera, inferiora c. 3 cm. distantia, superiora subapproximata. *Folia floralia* lata, cordato-ovata vel cordato-lanceolata, mediana c. 3 cm. longa et 2 cm. lata, paulo attenuata, inferne calycibus subaequalia vel longiora (in statu florifero), superne breviora, nervatura distincta. *Flores* subsessiles. *Calyx* late infundibularis, 20–24 mm. longus, ± ad medium bilabiatus, 13-nervosus, pilis longis eglandulosis et glandulis dense munitus, viridis vel purpurascenti-suffusus; labium superius subtridentatum dente intermedio paulo latiore; labium inferius superiore sub-brevius, in dentes duos ovatos breviter mucronatos fissum; calyx in fructu valde expansus, flavido-viridis, membranaceus, reticulato-nervosus, c. 26 mm. longus et c. 25 mm. latus, deinde deciduus. *Corolla* 40–50 mm. longa, ad trientem circiter bilabiata; tubus exsertus, supra basin late ampliatus, ad 30 mm. longus et ad 15 mm. latus, intus dense piloso-annulatus; galea 11–20 mm. longa, in vivo flavo-suffusa, emarginata, extra dense pilosa, pilis eglandulosis (c. 3 mm. longis) et brevioribus capitatis immixtis; labium inferius superiore longius, flavum violaceo-venosum, lobo mediano orbiculari-reniforme ad 12 mm. lato, lobis lateralibus obtusissime ovatis. *Connectivum* antherarum 10–15 mm.

longum; loculus fertilis 4–5 mm. longus. *Stylus* 30–45 mm. longus, exsertus. *Nuculae* nigricantes, ± laeves, ovatae, obtusae, 4–4·5 mm. latae. Floret Jun.

PROV. SIVAS (Cataonia), distr. Kangal: Tecer–Gürün, Gippsshutt 37 km. nördlich Tecer, 1570 m., 27 Juni 1955, *A. Huber-Morath* 13048 (holo. HM; iso. E). Gürün–Sivas, Mergelhügel 58 km. nördlich Gürün, 1450 m., 29 Juni 1953, *A. Huber-Morath* 11858 (E, HM).

PROV. KAYSERI (Cappadocia): Sariz–Pinarbaşi, Serpentinschiefer am Sopan Dağ 15 km. südlich Pinarbaşi, 1620 m., 22 Juni 1951, *A. Huber-Morath* 10771 (HM).

PROV. KONYA (Lycaonia): Steppen 10 km. südlich von Karaman am Weg nach Mut, 14 Juni 1950, *H. Reese* (HM).

This striking new species is most closely related to *S. cadmica* Boiss. which also has an indumentum of long glandular cilia covering the entire plant. Apart from the differences cited in the diagnosis, the leaf segments in *S. blepharochlaena* are more coarsely toothed and the terminal segments are scarcely stipitate as opposed to the regularly crenate margin and clearly stalked terminal leaflets of *S. cadmica* Boiss. The latter species, furthermore, does not have the characteristic petiolar remains at the stem base. *S. blepharochlaena* in habit and floral structure is superficially similar to the large flowered *S. Sintenisii* Hausskn. of Section *Eusphace*. There is another instance of parallelism between these two sections: Boissier in his description of *S. Haussknechtii* (Section *Hymenosphace*) pointed out its similarity to *S. Russegeri* (Section *Eusphace*).

Salva nazalena Hedge & Mouterde, **sp. nov.**

Affinis *S. Pinardii* Boiss. sed caulibus inferne magis lignosis, indumento ex toto pilis stellatis, calycibus dense pilosis (non glabris) fructiferis minus expansis, floribus majoribus differt. A " *S. acetabulosae* Vahl " caulibus suffrutescentibus, calycibus sine pilis glandulosis capitatis, in fructibus non membranaceis valde recedit.

Suffrutex 18–24 cm. altus, ramis erectis inferne lignosis acute quadrangularibus ex toto pilis stellatis vestitis. *Folia* integra simplicia, petiolata; lamina ovata vel oblonga, 2–3·5 cm. longa, 1·2–2 cm. lata, valde rugosa, margine crenata, apice acuta vel etiam obtusa, basi irregulariter truncata, utrinque pilis stellatis adpressis dense pilosa, subtus glandulis sessilibus aureis munita. *Petioli* ad 2·5 cm. longi pilis stellatis. *Inflorescentia* 10–14 cm. longa. *Verticillastra* (3–) 5(–7)-flora, 5–6-nata, ad summam florifera, inferiora c. 3 cm. distantia, superiora approximata. *Folia floralia* cordato-ovata vel cordato-lanceolata calycibus breviora, c. 10 mm. lata et 12 mm. longa, apice sensim attenuata, pilis stellatis adpressis et glandulis aureis sessilibus praedita. *Flores* subsessiles. *Calyx* infundibularis, 14-nervosus, 15–17 mm. longus, glandulis sessilibus et pilis eglandulosis acutis et pilis stellatis munita; labium superius obsolete tridentatum, late ovatum, labio inferiore majus et longius; labium inferius in lobos duos breves latos ovatos non mucronatos fissum; calyx in fructu paulo auctus c. 20 mm. longus, flavido-viridis, subreticulatus. *Corolla* 23–25 mm. longa, caerulea, ad quartam partem circiter bilabiata; tubus valde exsertus, c. 9 mm. a basi dense piloso-annulatus; labium superius c. 7 mm. longum, emarginatum, glandulis capitatis minimis;

labium inferius superius aequans trilobatum, lobo mediano orbiculari-emarginato, lobis lateralibus ovatis. *Connectivum* antherarum c. 5 mm. longum; loculus magnus c. 4 mm. longus, loculus parvus c. 2 mm. longus, uterque pollinifer. *Stylus* c. 29 mm. longus exsertus. *Nuculae* nigricantes laeves, rotundatae. *Floret* Aprili.
SYRIA. Qaryatein; 24 Avril 1935, *Mouterde* 3932 (holo. in Université St. Joseph, Beirut). Qaryatein, Rat-Tush, steep wadis, perennial, 13 Apr. 1943, *Davis* 5664 (E, K—immature specimens).

This new species is characterised by the dense indumentum of stellate hairs on all parts of the plant, the very woody basal portion and the calyx which, after anthesis, increases only slightly in size and is not membranaceous. Other than the affinities given in the diagnosis, *S. nazalena* is also related to *S. rascheyana*, a little known species which Boissier described from one of his gatherings at Rascheya in the Anti-Lebanon. This differs in its distinctly pinnatisect leaves and the small floral leaves.

The specific epithet of the new species is derived from the name Nazala by which the present-day district of Qaryatein was known during the Roman and Byzantine epochs.

SECTION AETHIOPIS BENTH. SUBSECT. GONGROSPHACE (BUNGE) BOISS.

S. eriophora Boiss. & Ky. in Boiss. Fl. Or. iv, 611 (1879).

CILICIA: In Jool Baatsch ad radices Allah Dagh, alt. 1520 m., 3 Jun., Kotschy, Iter cilicico-kurdicum, 1859, No. 229 (holo. G! iso K! BM!).
PROV. MALATYA/KAYSERI: Pass between Pinarbaşi and Gürün, 1830 m., fls. and calyx violet, 18 June 1954, *Davis & Polunin* (D. 21971).

Dr. Davis's collection of this very distinct species is possibly the first gathering since its discovery by Kotschy. With this fresh material, it is clear that *S. eriophora* does not occupy such a unique taxonomic position in Subsection *Homalosphace* (Bge.) Boiss. as Boissier believed—" species characteribus insignis, nulli affinis." Dissections of several flowers revealed that a small corolla tube scale was almost always, though not invariably, present: a morphological feature of Subsection *Gongrosphace* (Bge.) Boiss. In floral structure, together with flower colour and size, *S. eriophora* is similar to *S. brachyantha* (Bordz.) Pobed. The two species also have a similar bract and calyx structure and the same eglandular arachnoid indumentum on the inflorescence axis. *S. eriophora* is better regarded as a member of *Gongrosphace* than *Homalosphace*; as in *S. brachyantha*, it has the characters of the former Subsection but weakly developed.

The taxonomic worth of *Homalosphace* is questionable. It is based on the negative and apparently interlinked characters of a non-saccate corolla and the absence of a corolla tube scale. Contained in the Subsection are such dissimilar species as *S. compressa* Vahl, *S. canescens* C. A. Mey., and *S. palaestina* Benth. Of these, *S. compressa*, with its inflated calyx, recalls the Section *Hymenosphace*, *S. canescens* is clearly piloseannulate at the base of the corolla—a feature of the Section *Eusphace*—and *S. palaestina* occasionally has a minute corolla tube scale with a more or less saccate corolla. Moreover, the affinities of *S. palaestina* lie much closer to *S. Aethiopis* L. and *S. Sclarea* L. than to other members of

Homalosphace. K. H. Rechinger, in his *Symbolae Afghanicae*, has already shown that *S. rhytidea* Benth., usually placed in *Homalosphace*, has the floral structure of *Gongrosphace* and should be in that Subsection beside *S. sahendica* Boiss. & Buhse (see Dan. Biol. Skr. 8, i, 72: 1954).

S. brachyantha (Bordz.) Pobed. in Komarov, Flora U.R.S.S., xxi, 660 (1954).

ARMENIA (TURKEY): in pratis prope Ispir, June 1853, *Huet du Pavillon*, (K! as *S. cyanescens* Boiss. & Huet spec. nov.); Erzeroum, *Zohrab* 549 (K!); *Calvert* 188 (no locality indicated, K! E!).

This was first recognised as a separate taxon by Bordzilovski who described it as a variety of *S. modesta* Boiss. (Mém. Soc. Nat. Kieff, xxv, 113: 1915). It was given separate specific status by Pobedimova who, in the diagnosis, differentiated it from *S. modesta* on the grounds of the arachnoid eglandular indumentum of the calyx, the included corolla tube and smaller flowers. The author pointed out that *S. modesta* grows neither in the Caucasus nor in Eastern Turkey and that the Armenian sheets referred by Boissier to *S. modesta* are *S. brachyantha*.

Although the type has not been seen the specimens cited above must, at present, be regarded as belonging to *S. brachyantha*.

In some respects, *S. brachyantha* is intermediate between the Subsections *Gongrosphace* and *Homalosphace* in that the upper part of the corolla tube is but weakly saccate and the corolla tube scale is only poorly developed.

When further material from Turkish Armenia becomes available, it will be possible to establish with greater certainty whether the specific difference between *S. brachyantha* and *S. modesta* can be maintained.

Although only conjecture, it is probable that the *nomen nudum* "*S. cyanocalyx*" refers to *S. brachyantha*. The name occurs in Tchihatcheff (Asie Min. Bot. ii, 148: 1860), with the remark "Armenia, *Calvert*."

Salvia linguifolia Hedge & Huber-Morath, **sp. nov.**

Affinis *S. verbascifoliae* M. Bieb. et *S. atropatanae* Bunge; a priore foliis longissimis viridibus oblongo-lanceolatis haud cordatis, dentibus calycis longioribus, bracteis spinuloso-acuminatis differt; ab altera floribus majoribus, galea corollae valde curvata, foliis caulinis oblongis subintegris recedit.

Herba perennis, basi indurata. *Caules* floriferi circa 70 cm. alti, erecti, simplices vel subramosi, obtuse quadrangulares, inferne purpureo-violacei, pilis capitatis et pilis eglandulosis ex toto dense viscoso-hirsuti, internodiis mediis c. 6 cm. longis. *Folia basalia* et folia caulina inferiora longe petiolata; lamina anguste oblongo-lanceolata ad 20 cm. longa, ad 5 cm. lata, margine crenata usque obtuse subsinuato-dentata, apice rotundata vel acuta, subtus arachnoidea griseo-viridis nervoso-reticulata, superne glandulis sessilibus aureo-punctata; petiolus ad 9 cm. longus. *Folia superiora* sessilia, decrescentia, c. 7 cm. longa et 1·5 cm. lata, anguste oblonga, margine subdentata vel subintegra. *Panicula* c. 20 cm. longa, c. 20 cm. lata, propter ramos stricte ascendentes obpyramidalis, dense sed breviter viscoso-hirsuta. *Verticillastra* 3–5-flora, 3–6-nata, inferiora

3 cm. distantia, superiora approximata, summa sterilia. *Folia floralia* rotundato-cordata, albido-viridia, viscoso-hirsuta, cuspide c. 2 mm. longa, inferiora calyces subaequantia, superiora calycibus breviora. *Pedicelli* 2(–3) mm. longi, erecti. *Calyx* 8–10 mm. longus, 13-nervosus, conicus, ad medium bilabiatus labiis paulo divergentibus, rigidule herbaceo-membranaceus, inferne albescens, superne viridis, nervis viridescentibus distincte prominentibus provisus, dense et minute glanduloso-papillosus et glandulis sessilibus praeditus; labium superius tridentatus, dentibus acuminatis mucronatis conniventibus, intermedio valde reducto; labium inferius in dentes duos ovato-lanceolatos spinuloso-acuminatos fissum. *Corolla* calyce circiter duplo longior, alba, parce pubescens et glanduloso-punctata, ad medium bilabiata; tubus e calyce breviter exsertus superne abrupte inflato-dilatatus; galea in vivo alba, falcato-compressa, valde curvata, breviter retusa, 7–8 mm. longa; labium inferius album, galea paulo brevius, trilobatum, basi attenuata concavum, lobo mediano rotundato-dilatato, lobis lateralibus lanceolatis. *Connectivum* antherarum c. 13 mm. longum, perlonge curvatum, antice abrupte dilatatum. *Stylus* glaber 20–25 mm. longus, exsertus. *Nuculae* ignotae. Floret Jul.-Aug.

PROV. VAN: District Şatak: Kavuşşahap Dağ, 2130 m., rocky slopes, fls. white, hood strongly curved, 24 July 1954, *Davis & Polunin* (D. 23079–holo. E, iso. K); Cuhgedigi, Pass Hoşap—Başkale, Eruptivgestein, Steppe, 2360–2560 m., 9 Juli 1951, *Huber-Morath, Renz & Simon* (H.M. 10766—HM).

S. atropatana was described by Bunge from a single specimen gathered to the east of Tabriz in Persian Azerbaidjan. It was related to *S. verbascifolia* M. Bieb. from which it was said to differ primarily by its much smaller flowers. The author recognised a species which he called *S. verbascifolia* as occurring in Persia and cited under it *Kotschy* 420, 535 and 982 from Kuh Delu in S. Persia, *Kotschy* 274 from the Elbrus range in N. Persia, and others. Boissier in the Flora Orientalis included all these specimens under *S. atropatana* commenting that it was a very variable species.

Although I have not seen Bunge's type specimen of *S. atropatana*, it is at present best regarded as a separate taxon (sensu Bunge) recognised by its small flowers, linear-oblong basal leaves and pinnatifid-incised cauline leaves. *S. linguifolia* Hedge & Huber-Morath must be regarded as very close to this species and further investigation may prove that it is merely a western extension of the Persian species. At present, however, it seems to be distinct on the characters of the larger, strongly hooded flowers, the smaller bracts and the numerous sessile yellow glands on all parts—especially the lower leaf surface.

The question then arises as to the identity of the other Persian plant: Bornmüller Nos. 1733 and 1734 labelled "*S. pseudofrigida* Hausskn. et Bornm.", and "*S. Carduchorum* Hausskn. et Bornm.", (both exsiccata names) from Sahehistanek, and *Kotschy* 420 and 535. Although the sheets examined are rather incomplete, they are very similar to *S. linguifolia* and it would, indeed, be hard to separate them. Further collections of Persian material, however, are necessary before the true identity of these species, including the allied *S. bachtiarica* Bunge and *S. urmiensis* Bunge, can be conclusively established.

Salvia brevidens Hedge & Huber-Morath, **sp. nov.**

Species haec affinis *S. poculatae* Nábělek et *S. frigidae* Boiss.; a priore floribus albidis vel lilacinis, foliis floralibus ± abrupte mucronatis, calyce brevissime bilabiato et dentibus brevioribus recedit; ab altera bracteis multo longioribus et latioribus amplexicaulibus, calyce vix fisso saepius minore differt.

Herba perennis, basi, indurata. *Caules* floriferi 30–40 cm. alti, erecti, ± acute quadrangulares, in dimidio superiore (vel supra) paniculato-ramosi, in parte inferiore pilis paucis albis eglandulosis, in regione inflorescentiae pilis longis glandulosis et longis eglandulosis crebrius viscoso-hirsuti, internodiis mediis c. 3·5 cm. longis. *Folia basalia* petiolata; lamina oblonga vel oblongo-lanceolata, 10 cm. longa et 3–4 cm. lata, basi cuneata vel truncata, margine irregulariter crenata vel subsinuato-dentata, apice obtusa, subtus pilis albis longis eglandulosis laxe arachnoideo-floccosa, reticulato-nervosa, supra atroviridia rugosa (in juventute folia dense albolanata). *Petiolus* c. 4 cm. longus, pilis longissimis eglandulosis et minutissimis acutis eglandulosis immixtis. *Folia caulina* similia sed minora, sessilia. *Panicula* obpyramidalis, 15–20 cm. longa et 20–25 cm. lata; rami 2–4-nati. *Verticillastra* 3–6-nata, 3–8-flora, inferiora c. 3 cm. distantia, superiora inter se haud attingentia, summa sterilia. *Folia floralia* magna, late rotundato-ovato, cordata, ad 20×15 mm., viridia, ± abrupte mucronata (mucrone c. 3 mm. longo), inferiora calyce multo longiora, superiora caules et verticillastra involucrantia. *Flores* subsessiles. *Calyx* 10 mm. longus et ad apicem 12 mm. latus, obpyramidalis, vix fissus, nervis 13 viridibus vel purpureis distinctis provisus, membranaceo-herbaceus, pilis glandulosis et eglandulosis immixtis dense glanduloso-hirsutus. *Labium* superius breviter tridentatum dente intermedio vix prominente lateralibus etiam breviore; labium inferius in dentes duos triangulares breves spinulosos (mucrone c. 2 mm. longo) bifidum. *Corolla* calyce sesquilongior, albida vel pallide lilacina, parce capitato-glandulosa, ad medium circa bilabiata; tubus in calyce inclusus, in faucem abrupte inflatus, intus squamula provisus; galea in vivo albida vel lilacina, vix falcata, circiter 7 mm. longa; labium inferius album, galeam subaequans, trilobatum, lobo mediano rotundato-dilatato emarginato lobis lateralibus oblongis lanceolatis. *Connectivum* antherarum c. 7 mm. longa ad basin cohaerentia; theca fertilis c. 2 mm. longa. *Stylus* c. 15 mm. longus, exsertus. *Nuculae* ignotae. Floret Jun.–Jul.

PROV. BITLIS (Turkish Kurdistan); Kambos Dağ, 2100 m., rocky N. slope, fls white or very pale lilac, 31 June 1954, *Davis & Polunin* (D.23395, holo. E, iso. K); Karz Dağ above Kotum, 1800 m., rocky slope, fls white with violet tinged hood, viscid, 28 June 1954, *Davis & Polunin* (D.22246); Steppe am steilen Südufer des Vansees zwischen Avata und Garzet, auf Kalk, Blüten weiss, lila überlaufen, 1640 m., 5 Juli 1951, *A. Huber-Morath* 10772 (HM).

PROV. VAN: District Şatak: Kavuşşahap Dağ, 2900 m., slopes near yaylâ, fls. white (or pale lilac) small, 23 July 1954, *Davis & Polunin* (D.23222).

ARMENIA (without exact locality): *Calvert & Zohrab* (without number, as "*Salvia* cf. *frigida* Boiss").

The best single diagnostic feature of this new species is the almost truncate calyx, a marked character which also occurs in the unrelated *S. brachycalyx* Boiss. The polymorphic species *S. frigida* Boiss., which also grows in Turkish Kurdistan, bears a considerable resemblance to *S. brevidens* but can readily be distinguished by the much smaller bracts, the clearly split calyx and the mucronate calyx teeth. Much more closely related is *S. poculata* Náb. which also has large enclosing bracts, but here they are acute, not abruptly mucronate, and the flowers are described as being rose coloured. Nábělek described this species from Berwari and Rowanduz in Iraqi Kurdistan, considerably further to the south than the cited material of *S. brevidens*. In some respects, the new species is intermediate between *S. poculata* and *S. frigida* sensu lato which is widespread throughout Turkey.

Salvia odontochlamys I. C. Hedge, **sp. nov.**

Affinis *S. poculatae* Náb. et S. *brevidenti* Hedge & Huber-Morath: a priore floribus albo-lilacinis, calycibus vix bilabiatis recedit; ab altera calycibus tenuioribus minus truncatis, dentibus attenuatis longioribus divergit; ab ambabus bracteis albo-canescentibus dentatis inferioribus majoribus differt.

Herba perennis, basi lignescens. *Caules* erecti vel subflexuosi, simplices, circa 30 cm. alti, obtuse quadrangulares, inferne pilis eglandulosis longiusculis albis parce floccosi vel ± glabrescentes, in dimidio superiore florifero indumento e pilis laxis glandulosis et longioribus eglandulosis immixtis composito provisi, internodiis mediis c. 2 cm. longis. *Folia radicalia* longe (ad 5 cm.) petiolata; lamina oblongo-lanceolata ad 13 cm. longa et 4 cm. lata, margine irregulariter et leviter sublobato-crenata vel subintegra, apice obtusiuscula vel ± acuta, basin versus attenuata vel truncata, subtus dense areolato-reticulata ad nervos laxe arachnoideo-floccosa, supra manifestius arachnoideo-floccosa, subpapilloso-rugosa, in juventute densissime albo-canescentia. *Folia superiora* similia sed minora, omnia ± concoloria, in folia floralia transeuntia. *Verticillastra* (3–) 5 (–7)-flora, c. 7-nata, inferiora 3 cm. distantia, superne approximata. *Folia floralia* inferiora 4·5 cm. × 1·3 cm. lata, anguste oblongo-lanceolata, dense albo-canescentia horizontaliter patentia, margine dentata, apice acuta; superne decrescentia, viridia, herbacea, ovato-cordata, c. 2 cm. × 1·5 cm., grossius dentata, dentibus breviter cuspidatis, subtus nervis reticulatis distinctis munita, indumento laxe floccoso e pilis albis eglandulosis et pilis brevioribus glanduliferis composito. *Flores* subsessiles. *Calyx* 10–12 mm. longus, tubuloso-infundibularis, breviter bilabiatus (labiis valde divergentibus) ad 13 mm. latus, inferne viridis, superne interdum parce purpurascenti-suffusus, pilis albis longis eglandulosis et pilis brevioribus capitatis et glandulis sessilibus paucis praeditus, nervis distincte prominentibus; labium superius brevissime tridentatum, dentibus breviter mucronatis intermedio valde reducto; labium inferius in dentes duos lanceolatos mucronatos (mucrone ad 2 mm. longo) attenuatum. *Corolla* alba, violaceo-suffusa, 17 cm. longa; tubus vix vel breviter exsertus, superne inflato-ampliatus c. 8 mm. longus; labium superius falcato-curvatum, pilis purpureis et pilis longioribus eglandulosis ecoloratis praeditum; labium inferius galeam subaequans, lobis lateralibus anguste lanceolatis, lobo mediano concavo-dilatato. *Stamina* inferne cohaerentia, sub galea ±

inclusa; loculus fertilis c. 2·5 mm. longus. *Stylus* ± longe exsertus. *Nux* ignota. Floret Jun.–Jul.

PROV. BITLIS (Turkish Kurdistan): Kambos Dağ above Hürmüz, 2100 m., fls. white tinged lilac, 30 June 1954, *Davis & Polunin* (D.23385—holo. K.—specimen unicum).

The large, canescent, spreading, lower bracts and the marked dentation of the upper ones characterise this new species which is closely related to *S. brevidens* Hedge & Huber-Morath. In the latter species, however, there is a more or less abrupt transition from stem to floral leaves, and a much branched inflorescence with a denser glandular indumentum. Although *S. brevidens* also grows on the same mountain at the same altitude, the different facies and morphological features of the new plant are sufficient to justify specific recognition.

Salvia vermifolia Hedge & Huber-Morath, **sp. nov.**

Affinis *S. candidissimae* Vahl sed caulibus tenuioribus, foliis linearibus revolutis simplicibus, verticillastris regulariter 2-floris, labio inferiore corollae laete flavo facile distinguenda. Species propter formam foliorum in sectione distinctissima.

Herba perennis, basi indurata. *Caules* erecti, subtenues, 25–40 cm. alti, simplices, acute quadrangulares, inferne griseo-virides vel fusci, pilis acutis eglandulosis parce albido-arachnoideo-tomentosi, in dimidio superiore flavescenti-virides pilis brevibus acutis eglandulosis et papillis brevissimis glandulosis praediti, dense viscosi. *Folia basalia* conferta; lamina linearis vel lineari-oblonga, 2–4 cm. longa, 2 (–4) mm. lata, margine minute crenata, anguste revoluta, apice acuta vel rotundata, basi in petiolum sensim attenuata, subtus glandulis sessilibus aureis dense floccoso-tomentosa, nervatura vix distincta, supra minute rugosa indumento tenuiore griseo-viridi; folia juvenilia densissime albo-tomentosa; petiolus basi dense albo-floccosus. *Folia caulina* 2–3-paria, sessilia, c. 2 cm. longa, semi-amplexicaulia, internodiis 5–8 cm. longis. *Axis inflorescentiae* c. 12 cm. longus, simplex vel nunc ramulis 1–2 abbreviatis inferne provisus. *Verticillastra* regulariter biflora, 6–8-nata, inferiora 3 cm. distantia, summa c. 1 cm. distantia. *Folia floralia* rotundato-ovata, cordata, non mucronata, c. 6 mm. longa, c. 5 mm. lata, dense glanduloso-papillosa. *Pedicelli* 2(–3) mm. longi, erecti. *Calyx* tubulari-campanulatus, 10–12 mm. longus, breviter hispidulus rigidule herbaceo-membranaceus, flavescenti-viridis, ± ad trientem bilabiatus, nervis 13 virescentibus superne purpureo-suffusis provisus, indumento e papillis glandulosis minutis sessilibus et pilis erectis albis eglandulosis acutis dense composito; labium superius tridentatum recurvatum dentibus brevibus acuminatis mucronatis vix conniventibus, dente intermedio reducto; labium inferius in dentes duos ovatos lanceolatos acuminatos breviter spinulosos fissum. *Corolla* calyce circiter duplo longior; tubus breviter exsertus, superne abrupte et distincte inflato-ampliatus, intus squamula magna ciliata provisus; labium superius c. 14 mm. longum, album, falcato-compressum, parce pubescens et glanduloso-punctatum; labium inferius galea brevius, in vivo laete flavum, labiis lateralibus, c. 6 mm. longis oblongo-lanceolatis, mediano rotundato-dilatato c. 6 mm. lato. *Stamina* inferne cohaerentia; connectivum antherarum c. 21 mm. longum; loculus fertilis c. 4 mm. longus; staminodia evoluta. *Stylus* exsertus ad 4 cm. longus. *Nuculae* ignotae. Floret Jun.

PROV. SIVAS: Sivas–Ulaş, Hügel, Eruptivgestein 27 mm. südlich Sivas, 1450 m., 27 Juni 1955, *A. Huber-Morath & Ch. Simon* (H.M. 13040—holo. E, iso. HM).

S. vermifolia is distinct and unique among the East Mediterranean representatives of the Section *Aethiopis* on account of its long, linear, revolute leaves. In general habit, crowded basal leaves and slender unbranched flowering stems, the new species bears a certain superficial resemblance to *S. Montbretii* Benth. in the subsection *Homalosphace*. On more basic characters, however, its affinities lie with *S. candidissima* Vahl. The two species have a similar calyx structure and agree in the indumentum of the calyx and inflorescence axis. Outwith the obvious difference in leaf shape, however, *S. vermifolia* has a more rigid, narrower, unbranched stem, regularly two-flowered verticils, and the corolla colour is white with a bright yellow lower lip, as opposed to the (generally) white flowers of typical *S. candidissima*.

Salvia candidissima Vahl, Enum. i, 278 (1804).

This is a very confusing species in Turkey with great variation in calyx size and structure, flower colour and type of indumentum. It is probable that several taxa, of differing ranks, are at present united under the one name. The difference between the Armenian and Lycian plants, to mention only two localities, surely needs some form of taxonomic distinction. I intend, with the fairly abundant material available, to carry out a revision of this species throughout its range.

Equally difficult to determine is the kinship of *S. candidissima* with its allied species, *S. cyanescens* Boiss. & Bal., *S. cilicica* Boiss. & Ky. and *S. crassifolia* Sibth. & Sm. Mass gatherings might prove of great value in determining the occurrence of introgression between these species.

Salvia cilicica Boiss. & Ky. in Boiss. Diag. Ser. II (4), 19 (1859).

CILICIA: in solo schistoso vineti ad pagum Anachscha prope Bozanti, 1200 m., 11 Sept. 1853, *Kotschy* 355b (G!); auf kreidigen Kalk, Blütenfarbe bläulich, Bozanti, *Siehe* a. 1896, n. 391 (E! K!—as *S. crassifolia* Sibth. & Sm.); am Tschakitfusse bei Station Bozanti der Bagdadbahn, 750 m., Juli 1912, *Siehe* 292 (as *S. crassifolia*); Bords de la route de Tarsous a Cesarée, entre le Bosante-Tchai et le Kamechli-Tchai, terraines calcaires, 9 Août 1855, *Balansa* 546 (G!); in rupestribus Berytdagh, flor. alb., 2100–2400 m., 9 Aug. 1865 *Haussknecht* 1256 (G!); ad orientem ab Ulukişla (Vil. Nigde) in rupestribus tracheae, 12 Juni 1937, *H. Reese* (HM!).

This species was first described from the collections made by Balansa and Kotschy. Boissier in Flora Orientalis (iv, 622), however, included it under *S. crassifolia* Sibth. & Sm.

As K. H. Rechinger has already suggested (Arkiv för Bot. i (5), 320: 1950), Boissier's concept of *S. crassifolia* covers more than one recognisable species. The true *S. crassifolia* was described originally from Cyprus and is endemic to that island. It is characterised by the densely pannose leaves (mostly basal), the more or less acutely serrated leaf margin, the multicellular eglandular hairs and shorter papillose glands on the calyx (which is c. 10 mm. long), and by the pale lilac flowers.

In contrast, *S. cilicica*, a much taller plant, has about four pairs of orbicular leaves decreasing in size up the stem, a long leafless portion, topped by a much-branched eglandular inflorescence with remote and few-flowered verticils. The calyx is small (c. 7 mm.), split to about one third of its length, and the upper teeth are small and connivent; the flowers are up to three times the calyx length and bluish in colour. The most typical plants of this species come from the limestone at Pozanti. Gatherings from elsewhere, such as *Haussknecht* 1256 and Reese's specimen differ in the less dense indumentum, particularly on the upper leaf surfaces, the tendency towards a small acute serration of the leaf margin and in the white flowers. In these features, *S. cilicica* closely approaches *S. candidissima* Vahl which can normally be separated by the larger calyx and the shorter leafless portion of the stem. However, on the characters of habit, leaf shape, indumentum, calyx, flower size and colour, it would be easy to believe that there has been some genetic interchange between them.

It was with a combination of *S. candidissima* and *S. cilicica* that Briquet was dealing when, under *S. crassifolia*, he described the races *epimallota* Briq., *epigraphica* Briq., and *lepidota* Briq. (Ann. Conserv. Jard. Bot. Genève, ii, 124–125: 1897).

Another species allied to *S. cilicica* is *S. cassia* Sam. ex. Rech. f. based on a collection from Mount Cassius. The two species agree in the orbicular leaves decreasing in size up the stem and in the dense leaf indumentum, but *S. cassia* is easily distinguished by the glandular inflorescence axis and the larger bracts and calyces.

Salvia cyanescens Boiss. & Bal. in Boiss. Diag. Ser. II (4), 19 (1859).

CAPPADOCIA: Collines bordant la rive gauche du Kamechly-Tchai, à la base du Masmeneu-Dagh, 14 Juin 1856, *Balansa* 233 (holo. G!).

Considerable confusion has surrounded this specific name and its application. It first appears written on a Huet du Pavillon sheet (in pratis prope Ispir, June 1853) as " S. cyanescens Boiss. et Huet sp. nov." This name was never published. As pointed out above (p. 181), this, and other sheets bearing the same name, fall within the orbit of *S. brachyantha* (Bordz.) Pobed.

S. cyanescens Boiss. & Bal. is a quite different plant. It is very closely related to *S. candidissima* Vahl but differs in the violet-coloured bracts and calyces and—the best diagnostic feature—in the short broad middle tooth of the upper calyx lip. It appears to be an uncommon, or at least seldom collected, plant. In his Flora Orientalis, Boissier cites under *S. cyanescens* a specimen collected by Wiedemann (No. 324: prope Tokat et Mersivan). This differs in several respects from *Balansa* 233, particularly in the eglandular inflorescence axis and the smaller calyces. It comes within the *S. candidissima* complex.

Although Bornmüller and Czeczott both collected specimens which were named *S. cyanescens*, it is open to doubt whether these are, in fact, referable to that species.

SECTION PLETHIOSPHACE BENTH.

Salvia pratensis Linn., Sp. Pl. 25, (1753).

Although Boissier and some subsequent authors have recorded this species from Asia Minor, Palestine and the Caucasus, it is very doubtful whether the essentially European *S. pratensis* is native in these parts. The Israel sheets I have seen bearing that name were, in fact, *S. hierosolymitana* Boiss. (which sometimes has blue flowers, as in *S. pratensis*).

Two species closely allied to *S. pratensis*, which in the past have probably been confused with it, are *S. pontica* Freyn & Bornm. from the Pontus and *S. Kuznetzovii* Sosn., native of the Caucasus.

SECTION HEMISPHACE BENTH.

Salvia Russelii Benth. in DC. Prod. xii, 357 (1848).

ANATOLIA: ad Angora Galatiae, *Bornmüller* Iter pers. turc. 1892–93, No. 3094 (as *S. Bornmuelleri* Hsskn.—K! E!); in *Sintenis*, Iter Orient. ann. 1892, No. 4167; *Bornmüller*, Pl. exs. Anat. orient. ann. 1889, No. 612 (as *S. Bornmuelleri* Hsskn.–Jena); Egin, Szanduk, in campis, 15 Jul. 1890, *Sintenis* Iter. Orientale, No. 2634 (as *S. verticilliformis* Hsskn. —K!)

Although in the Index Kewensis (1st Supplement: 1906), there is the citation " *Salvia Bornmuelleri* Hsskn.–Mitth. Bot. Ver. Jena, ix, 21, 1891" this appears to be a mistake. The reference leads one to *Salix Bornmuelleri* Hsskn. but to no *Salvia* of that name. It must be assumed that, during the compilation of the Index, the specific epithet was, in error, transposed to *Salvia*. *Salvia Bornmuelleri* Hsskn. does appear, however, as an exsiccata name on the labels of *Sintenis* 4167, *Bornmüller* 612 and 3094. On the latter sheet at the Haussknecht herbarium Bornmüller wrote " *S. Bornmuelleri* Hsskn.=*S. Russelii* fol. basi lobatis." The basal lobing is the only difference that exists between the two and, as all intermediate forms occur from entire to lobed leaves, there are no grounds for taxonomic differentiation. Consequently, the previous gatherings which have been named *S. Bornmuelleri* Hsskn. must be referred to *S. Russelii*.

The Sintenis specimen (*Sintenis* 2634) bearing another undescribed name, *S. verticilliformis* Hsskn., likewise cannot be distinguished from *S. Russelii*. The name *S. pseudoverticillata* Briq. occurs (in Engl. & Prantl, Nat. Pflanzenfam., iv Teil, Abt. 3a, 386: 1895) as a "nomen". Briquet later equated it with *S. verticilliformis*, pointing out that the former name was published in error (Ann. Cons. Jard. Bot. Genève, xii, 1897).