

## Borraginaceae novae orientales.

(Rechingeri iter iranicum secundum — No. 24)

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(Mit 8 Textfiguren.)

### *Heliotropium multiflorum* Rech. fil., Aellen & Esfandiari, n. sp.

Sect. *Radula* Bge. — Ima basi tantum lignescens. Caules 15—20 cm alti, validi, longe divaricatae pauciramosi. Tota planta indumento brevi denso aspero cinerea. Folia caulina petiolo crassiusculo brevi saepe vix tertiam partem laminae longitudinis aequante suffulta. Lamina late elliptico- usque ovato-lancolata, 1.5—3 cm longa, 1—2 cm lata, basi subrotundata vel saepius late cuneata, apice acuta, consistentia crassiuscula, nervatura supra immersa subtus prominente, indumento utrinque aequali denso brevi cinereo. Folia superiora brevius petiolata, magis ovata, saepe acutiora, proportione breviora latiora. Rami floriferi aphylli, plerumque furcati, in cincinnos 4—8 cm longos dense multifloros abeuntes. Flores sessiles. Calyx ± 2 mm longus, ad basin usque in lacinias lanceolatas acutas hispidulas divisus,  $\frac{1}{2}$ — $\frac{2}{3}$  corollae attingens. Corolla in eunte anthesi 3 mm longa, demum paulo elongata, tubulosa, in vivo sordide alba, in secco subcarnea, extus dense puberula, intus glabra; limbus brevis erectus vel incurvus, in lobos late rotundatos sese lateraliter tangentes margine crebre minute crispato-crenulatos divisus, sinibus edentatis exappendiculatis. Antherae late lineares, paulo supra medium tubum insertae. Stigma longe conicum; stylus perbrevis. Nuculae dense hispidae. — Differt a *H. larico* Bornm. mihi e descriptione incompleta tantum noto, cui florum structura affine videtur: Lobis corollae valde crispato-crenulatis, cincinnis densissimis multifloris, foliis amplioribus longius petiolatis, indumento magis aspero. — Fig. 5.

Persiae prov. Baluchistan (Makran): Montes Karvandar inter Khash (Vasht, Kwash) et Iranshahr (Bampur), in lapidosis siccis, 1500—1600 m, 16.—17. V. 1948 (Rech. f., Aell., Esf. no. 4006, Typus in hb. Mus. Wien).

### *Heliotropium makranicum* Rech. fil. & Esfandiari, n. sp.

Sect. *Radula* Bge. — Perenne, ima basi tantum lignescens, caules 15 (—25) cm longos singulos subsimplices vel pauciramosos proferens; internodia elongata 2—3 cm longa. Indumentum totius plantae brevissimum densum subvelutino- tomentosum vix asperum. Tota planta brunes-

centi- subviolascenti-canescens. Folia inferiora petiolo crassiusculo dimidiam laminam circiter aequante suffulta; lamina ad 35 mm longa, ad 25 mm lata, ovata, basi late rotundata vel late interdum subsinuato-cuneata, apice subrotundata vel obtusa et indistincte apiculata, infra medium latissima, plana, subintega, nervis utrinque plerumque quinque pennatis arcuatis reticulato-anastomosantibus supra immersis subtus valde prominentibus. Folia superiora sensim paulo decrescentia. Rami floriferi inferne longe nudi, in cincinnos primum densos deinde laxiores abeuntes. Flores sessiles. Calyx  $\pm$  2 mm longus, in lacinias anguste linear-lanceolatas subacutas ad basin usque divisus, brevissime hispidulo-pubescentes. Corolla calyce quarta parte tantum longior, demum paulo elongata, limbo subhorizontaliter vel  $\pm$  erecto-patente, in lacinias breves rotundatas diviso sinibus plicatis, tubus extus hispidulus intus glaber. Antherae anguste lineares, medium circiter tubum occupantes. Stigma perlonge conicum, stylus brevissimus. — Species ab affinibus, imprimis ab *H. rotundifolio* Sieb. et *H. borasdjunense* Rech. fil. basi brevissime tantum lignescente, caule pauciramoso usque subsimplice, indumento brevissimo subvelutino vix scabrido, colore bruneo vel violascenti-canescente totius plantae, foliis magnis late ovatis, ramis floriferis inferne longe nudis, cincinnis congestis, corollae limbo sublatiore magis applanato diversa. — Fig. 7.

Persiae prov. Balučistan (Makran): Sarbaz, Steppe, 23. III. 1949 (Salavatian no. 512 E, Typus in hb. Mus. Wien. Tang-e Sorcheh, 24. III. 1949 (Sharif no. 522 E). Prov. Lar: Minab, 22. III. 1949 (Behboudi no. 514 E).

***Heliotropium nodulosum* Rech. fil., Aellen & Esfandiari, n. sp.**

Sect. *Catoxys* Bge. — Ima basi tantum lignescens, caulis numerosis a basi iteratim ramosis dumos extensos efficiens; caules anni praecedentis expallescentes partim persistentes sed vix lignescentes. Caules 25—35 cm alti, atroviridi-brunescentes, pustulis albis latiusculis breviter setuliferis scaberrimi, praeterea pilis brevibus  $\pm$  appressis sublaxe obsiti, internodiis elongatis paucifoliatis, ramulis cincinniferis longe nudis, cinnini ab initio pauci- et laxiflori, floribus extremis tantum approximatis. Folia omnia brevissime petiolata usque subsessilia; lamina minuta raro ultra 1 cm longa, 3—5 mm lata, infra medium latissima, crassa, basi brevius apice longius attenuata, plana sed margine revoluta, supra ut caules pustuloso-setulosa brunesceni-virescens, subtus inter nervos prominentes scabridos canescenti-puberula. Folia summa valde diminuta, anguste lanceolata sessilia. Flores sessiles. Calyx  $\pm$  2 mm longus, lacinias linearibus erectis acutis setulosis indumento albo-marginatis. Corolla calyce vix tertia parte longior albida paulo constricta, limbo in lacinias breviter acute triangulares infractas diviso sinibus planis exappendiculatis. Antherae late lineares utrinque truncato-emarginatae, in dimidio

superiore tubi insertae. Nuculae setulosae. — Ab affinibus indumento pustuloso-scaberrimo, colore brunescens-viridi caulum et foliorum, foliis paucis minutis lanceolatis revolutis supra pustuloso-scabridis, corolla brevissima, antheris in tubo alte insertis insignis; *H. dasycarpo* Ledeb. et *H. Schrenkianum* Ledeb. affine videtur. — Fig. 8.

Persiae prov. Baluchistan (Makran); Montes Karvandar inter Khash (Vash, Kwasht) et Iranshahr (Bampur), in lapidosis siccis, 1500—1600 m, 16.—17. V. 1948 (Rech. f. Aell., Esf. no. 3999, Typus in hb. Mus. Wien).

***Heliotropium oliganthum* Rech. fil., Aellen & Esfandiari, n. sp.**

Sect. *Catoxys* Bge. — Ima basi lignescens multicaule, caules 25 cm alti, validi, a tercia circiter parte inferiore iteratim divaricato-ramosi, laxe foliati, in cincinnos strictos divaricatos laxe paucifloros abeuntes. Indumentum totius plantae breve appressum cinereum, setulis antrorsis vel subpatulis in parte superiore plantae immixtis scabridum. Folia caulina inferiora florendi tempore delapsa; media ad 25 mm longa, ad 17 mm lata, petiolo crassiusculo rigido dimidia laminae latitudine breviore suffulta, elliptica, basi cuneata rarius subrotundata, saepius paulo infra medium latissima, apicem versus attenuata, apice ipsa autem rotunda, consistentia crassa rigida, plana, supra viridi-brunescentia subtus subcoerulescentia, nervatura supra impressa subtus leviter prominente. Folia ramealia valde diminuta, brevissime petiolata vel sessilia, ovata acuta, imprimis margine setulosa. Flores sessiles. Calyx ± 2 mm longus, laciniis anguste lanceolatis acutis patule setulosis. Corolla calyce plus quam duplo longior, tubulosa, in vivo albida, in sicco carneo-brunescens, infra limbum subconstricta, limbo in lacinias breves anguste lanceolatas acutissimas infractas diviso, extus appresse pubescens, intus glabra. Antherae sublineares, basi emarginatae, apicem versus angustatae, in medio circiter tubo insertae. Stigma longe conicum, stylus brevissimus. Nuculae setuloso-sericeae. — Inter affines foliis maiusculis latis, cincinnis oliganthis, indumento denso cinereo, corollae cum calyce proportione insigne. — Fig. 4.

Persiae prov. Baluchistan (Makran): Ad limites austro-orientales deserti Lut prope Nasratabad inter Bam et Zahedan (Dustab), ca. 1400 m, 11. V. 1948 (Rech. f., Aell., Esf. no. 3910, Typus in hb. Mus. Wien).

***Heliotropium taftanicum* Rech. fil., Aellen & Esfandiari, n. sp.**

Sect. *Catoxys* Bge. — Ima basi tantum lignescens, multicaule. Caules validi ad 40 cm alti, a basi iteratim intricate ramosi, rami ultimae ordinis tenues subaphylli. Tota planta indumento appresso sed scabrido albido-cinerascens. Folia caulina breviter crassiuscula petiolata, ovata vel ovato-

elliptica, 10—20 mm longa, 7—11 mm lata, basi ± late cuneata, apice rotundata vel subacuta, consistentia crassiuscula, plana, nervis supra immersis subtus valde prominentibus, imprimis margine setis brevibus crassis rigidis papilliformibus scabra, ceterum pilis brevibus ± appressis dense obsita, praeterea subtus secus nervos pilis longioribus albidis densius hispidula. Folia superiora valde diminuta, internodiis elongatis laxe disposita, brevissime petiolata usque subsessilia, ovata usque ovato-lanceolata, acuta. Cincinni ab initio laxiusculi, flores extremi tantum approximati, omnes sessiles vel subsessiles. Calycis laciniae ca. 2 mm longae, lanceolatae crassiusculae rigidulae, breviter hispidulae, indumento albo-marginatae. Corolla 7—8 mm longa, anguste tubulosa, extus breviter appresse pilosa, intus glabra, in vivo sordide alba, in sicco carneo-brunescens, in lacinias acutas breves quartam vel quintam circiter partem corollae longitudinis aequantes anguste lanceolatas inflexas fissa. Antherae oblongae, basin versus paulo dilatatae, utrinque emarginatae, medium circiter tubum occupantes. Ovarium sericeo-hirsutum. Stylus stigmate oblongo-conico brevior. Nuculae subglabrescentes. — Differt ab omnibus affinibus corolla longissima anguste tubulosa, calyce ± quadruplo longiore. — Fig. 6.

Persiae prov. Balučistan (Makran): In ditione vulcani Taftan prope Sangon, in alveo quodam exsiccati lapidoso, ca. 1600 m. 19. V. 1948 (Rech. f., Aell., Esf. no. 4058, Typus in hb. Mus. Wien).

### *Heliotropium longicalyx* Rech. fil., n. sp.

Sect. *Bucanion*. — Partes subterraneae desunt, sed planta verosimiliter annua. Caulis fragmentarie tantum obvius a basi ramosus, ramis patentibus ad 15 cm longis cum ramis pilis brevibus retrorsis dense et setis longioribus patulis laxius obsitus. Folia inferiora petiolo ad 25 mm longo rigidulo suffulta; lamina fragmentarie tantum obvia. Folia caulina media petiolo laminae latitudinem aequante suffulta, lamina ad 20 mm longa, ad 23 mm lata, longitudine semper latior, basi perlate rotundato-truncata, apice brevissime acuminata, infra medium latissima, nervis supra valde impressis subtus leviter prominentibus, colore supra brunescenti- subtus flavescenti-viridi, indumento supra brevi laxo appresso subtus densiore glandulis minutissimis immixtis imprimis secus nervos longiore hirsuto. Folia summa sensim decrescentia. Cincinni densissimi multiflori ad 5 cm longi, setis albis demum flavescenti-brunescentibus longis dense obsiti, pilis brevioribus minus numerosis immixtis. Pedicelli brevissimi. Calyx pro genere longissimus 7—8 mm longus, corollam longitudine subaequans, ad basin usque in lacinias anguste lineares acutas porrectas divisus. Corolla ad 9 mm longa, alba, calycem vix vel paulo tantum superans, tubo perlongo tenui, limbo lobato-plicato, lobis brevibus rotundatis erecto-patulis. Antherae anguste lineares, infra medium tubum insertae. Stylus longiusculus; stigma elongato-conicum. — Differt ab

omnibus speciebus mihi notis calyce longissimo laciniis porrectis longe hirsutis, corolla calycem vix superante.

A f g h a n i s t a n: Kala Sarkari, 7000', dry field, plant 8 inches high, flowers white, 9. IX. 1939 (K o e l z no. 13933, Typus in hb. Mus. Wien, Isotypus in hb. Nation. Arbor. Beltsville).

***Trichodesma macrocarpum*** Rech. fil., Aellen & Esfandiari, n. sp.

Sect. *Leiocaryum* (A. DC.) Brand. — Bienne vel perenne? Caulis ad 30 cm altus, erectus vel ascendens, in sicco leviter sulcatus bruneus glabrescens, internodiis mediis  $\pm$  5 cm longis, a basi ramosus; rami inferiores quidem oppositi, valde elongati, ad 20 cm longi. Folia omnia in vivo glauca carnosa, imprimis supra setis nodulis albis depresso-depressis insidentibus  $\pm$  dense punctata, ceterum pilis brevibus simplicibus hirsuto-puberula; folia caulina et ramealia plurima opposita; infima petiolo brevi vel indistincto inclusa ad 6 cm longa, ad 3 cm lata, obovato-oblonga, apice rotundata vel acutiuscula, plana integra, costa mediana crassiuscula, nervis lateralibus indistinctis. Folia superiora sensim breviora obovato- vel orbiculato-spathulata, subsessilia, apice rotundata vel breviter acuminata. Flores inferiores in ramis ad 3 cm longis ex axillis foliorum diminutorum enatis saepe bini, superiores foliis fulcrantibus destituti singuli, in pedicellis demum elongatis flaccidis nutantes. Alabastria ad 10 mm longa, ad 5 mm crassa, longe acuminata, dense canescens-tomentosa. Sepala sub flore porrecta vel conniventia, sub fructu valde acuta, 16—19 mm longa et fere aequilata foliacea, basi inflata apice conniventia, basi late cordata concreta glabrescentia. Corolla minuta sepala vix superans pallide coerulea. Nuculae atrofuscæ glabrae laeves, 7(—8) mm diametro, facie interna depresso-convexa laevi. — Differt ab omnibus speciebus sectionis nuculis maximis, facie interna applanatis laevibus, floribus minutis.

P e r s i a e prov. Lar: In rupium fissuris jugi Guhra inter Hadjiabad prope Tarum et Bander Abbas, ca. 700 m, 29. IV. 1948 (R e c h. f., A e l l., E s f. no. 3321, Typus in hb. Mus. Wien).

***Lindelofia aspera*** Rech. fil., n. sp.

Sect. *Eulindelofia* Brand — Perennis. Caulis 50—90 cm altus, erectus, internodiis mediis 3—6 cm longis, ad medium circiter foliatus, a tertia parte inferiore iteratim divaricata ramosus et fructifer. Tota planta setulis brevibus patulis aspera, sordide flavescenti-virens. Folia basalia petiolo crassiusculo 3—5 cm longo supra canaliculato suffulta; lamina 15—18 cm longa, 4—5 cm lata, infra medium latissima, basi longe cuneata, apice sensim longe attenuata valde acuta, crassiuscula, costa mediana crassa subtus valde prominente, nervis secundariis pennatis arcuato- et reticulato-anastomosantibus subtus tenuiter prominentibus. Folia caulina valde decrescentia, breviter petiolata usque sessilia, latitudine usque

6-plo longiora; folia summa ramealia valde reducta angustissime lanceo-lato-linearia. Cincinni floriferi ad extremos ramos capitato-contracti, fructiferi elongati laxi. Flores omnes ebracteati. Pedicelli floriferi breves 1—2 mm longi, cum calycibus breviter villosso-hispidi canescentes, fructiferi elongati 3—5 mm longi paulo incrassati, erecto- vel arcuato-patentes. Calyx florifer 2—3(—4) mm longus, fructifer paulo accretus, ad basin fere in lacinias linear-lanceolatas acutas fissus. Corolla ca. 7 mm longa, glabra, in vivo purpureo-coerulea (e collectore), in sicco ± expallens brunescens, limbus breviter late rotundato-lobatus. Fornices oblongo-triangulares usque late sagittatae, antheris forma magnitudineque similes sed basi minus incisae, cum antheris alternantes sed paulo altius insertae. Stylus anguste cylindricus, corollam longe superans. Stigma truncatum. Nuculae 5—6 mm longae, cum glochidiis 4—5 mm latae, depressae, centro applanatae brevius glochidiatae, marginibus convexae. Stylus in fructu persistens ad 9 mm longus. — Ramificatione copiosa, indumento aspero, foliorum nervatura subtus prominente, nuculis maiusculis depressis distincte marginatis insignis vix cum alia specie comparanda, ad interim prope *L. longifloram* (Benth.) Brand inserenda.

A f g h a n i s t a n: Bandar, 6000', along stream, plant 20 inches high, flowers purple-blue, 9. X. 1939 (K o e l z no. 14107, Typus in hb. Nation. Arbor. Beltsville, fragm. in hb. Mus. Wien). Kail, 7500', dry slope, flowers cobalt, herb 3 ft. high, 2. VI. 1937 (K o e l z no. 11665, hb. Mus. Wien et Beltsville).

Die No. 11665 befindet sich im Blütenzustand; sie hat mehr anliegenden Stengelindument und etwas längere Sepalen als der Typus. Bei der vollkommenen Übereinstimmung in Blütenbau und Habitus zweifle ich nicht an der Zusammengehörigkeit der beiden Aufsammlungen. Da die Nuculae vom Beginn an getrennt sind, müßte die Art nach dem Schema von B r a n d, Pflanzenreich 4, 252 : 18 (1921) unter *Cynoglossum* eingereiht werden. J o h n s t o n, Contribution Gray Herb. 73 (1924) zieht die beiden Gattungen, deren Unterscheidung offenbar schwach begründet ist, unter dem Namen *Cynoglossum* zusammen. Wenn ich die neue Art vorläufig doch als *Lindelofia* bezeichne, so geschieht dies, weil sie ihre natürliche Verwandtschaft unter den bisher mit diesem Namen bezeichneten Arten zu haben scheint.

### *Lindelofia stenosiphon* Rech. fil., n. sp.

Rhizoma atrum, verosimiliter caules plures emittens. Caulis florifer e basi arcuata erectus 25 cm altus, tota longitudine foliatus, internodiis mediis 1—2 cm longis, in quarta parte superiori breviter erecto-ramosus et florifer. Tota planta setis brevibus patulis aspera, sordide flavescentivires. Folia basalia et caulina inferiora longiuscule (2—3 cm) petiolata; lamina anguste linear-lanceolata, 7—8 cm longa, 6—8 mm lata, utrinque subaequaliter attenuata, in medio circiter latissima, apice valde

acuta saepe producta. Folia caulina superiora sensim paulo decrescentia sessilia, ceterum basalibus similia. Cincinni ebracteati pauciflori, floriferi densiusculi. Pedicelli floriferi perbreves usque subnulli, cum calycibus dense breviter hispiduli canescentes. Calyx florifer ad basin usque in lacinias linearis-subulatas divisus, 4—5 mm longus. Corolla 11 mm longa, in vivo verosimiliter coerulea, in sicco expallens, glabra, tubo 9 mm longo tenuissimo recto, limbo patelliformi ca. 7 mm diametro, lobis suborbicularibus fere ad faucem usque liberis. Fornices exsertae trapezoideae antice rotundatae emarginatae. Antherae lineares exsertae utrinque emarginatae. Stylus filiformis; stigma minute capitatum subemarginatum. Gynobasis conica, ovarium quadripartitum; nuculae ignotae. — Positio generica fructibus deficientibus dubia remanet. Si planta revera ad *Cynoglossneas* pertinet, corollae tubo longo tenui, limbo patelliformi, foliis angustis ab omnibus speciebus generis *Lindelofiae* valde diversa; habitu et indumento *L. asperae* Rech. fil. aliquantum similis.

A f g h a n i s t a n: Kabul, 20. V. 1947 (K. Lindberg, no. 57, Typus in hb. Lindberg, fragm. in hb. Mus. Wien).

### *Mattiastrum Amani* Rech. fil., n. sp.

Sect. *Macromattiastrum* Brand — Perenne, rhizoma pluriceps lignescens surculos foliiferos ± elongatos et caules floriferos nonnullos emitens. Caules ad 30 cm alti, internodiis mediis 2—2,5 cm longis, a medio circiter furcati floriferi, rarius subsimplices. Tota planta pilis mollibus ± appressis et intertextis laxiuscule lanato-tomentella. Folia rosularia petiolo 2—3 cm longo suffulta; lamina 2—4 cm longa, 1,5—2 cm lata, ovato-elliptica, in medio vel paulo infra latissima, in petiolum breviter attenuata, apice breviter rotundato-acuminata, crassiuscula plana integrerrima, nervis omnibus tenuibus vix prominentibus, primum utrinque indumento densissimo valde appresso albida, demum canescens. Folia caulina basi ± anguste cordata sessilia, oblonga vel oblongo-lanceolata acuta, erecta vel cauli fere appressa, quam internodia circiter sesquisque duplo longiora. Cincinni ab initio laxiusculi demum laxissimi, erecto-patentes vel paulum recurvi. Pedicelli floriferi ± 2 mm, fructiferi 3—4 mm longi, erecto-subpatuli. Calyx florifer ± 2 mm fructifer 4—5 mm longus, laciniis oblongo-lanceolatis acutiusculis, pilis albis longis crispuulis dense usque laxiuscule villoso-lanatus albidus usque canescens. Corolla in vivo ?, in sicco brunescens, calyce circiter sesquialongior. Fornices trapezoideo-quadratae longitudinaliter furcatae antice emarginatae bigibbae. Antherae ellipsoideae utrinque emarginatae. Nuculae 9—11 mm diametro, suborbicularis, plerumque infra medium latissimae, crasse membranaceae; alae bruneae non pellucidae margine remote minute apiculato-denticulatae; discus ovatus superne attenuatus longiuscule glochidiatus. Stylus 2 mm longus rigidulus crassiusculus. — Differt a

ceteris speciebus sectionis indumento densissimo albo foliorum juniorum, foliorum forma, corollae nucularumque structura.

Syria borealis: Mons Amanus, 5000', VI. 1906 (Haradjian no. 740, Typus in hb. Delessert).

***Mattiastrum scabridum* Rech. fil., n. sp.**

Sect. *Macromattiastrum* Brand — Rhizoma crasse lignosum atro-corticoseum multiceps, caespitans, rosulas foliorum et caules floriferos ± numerosos emittens. Caules floriferi 30—40 cm alti, inferne sat dense foliati, in tertia circiter parte superiore subnudi, breviter furcati et floriferi. Tota planta in vivo certe viridis, in sicco brunescens, laxe longiuscule pilosa glabrescens. Folia rosularia petiolo 2—3 cm longo suffulta; lamina 3—5 cm longa, 7—10 mm lata, lanceolata, basi longe anguste cuneata, plerumque supra medium latissima, apice subrotundata vel breviter acuminate, consistentia crassiuscula, supra demum fere omnino glabrata, subtus et margine pilis longis crispulis nodulis albis insidentibus laxe obsita scabrida, plana integra, costa mediana supra valde immersa subtus tenuiter prominente, nervis lateralibus evanescentibus. Folia caulina omnia anguste lanceolata utrinque longe attenuata, inferiora ± distincte petiolata, superiora basi attenuata sessilia, utrinque longe laxe pilosa. Cincinni breves laxi pauciflori erecto-patentes. Pedicelli floriferi ± 1 cm longi, ± patentes, fructiferi paulo vel vix elongati recurvi. Calyx florifer ± 6 mm longus, laciniis lanceolatis pilis longis nodulis insidentibus obsitus, fructifer vix auctus. Corolla calyce plus quam duplo longior, lobis brevibus late rotundatis, in vivo verosimiliter atrocoerulea, in sicco brunescens. Fornices anguste triangulari-lanceolatae, apice subtrilobae, apicibus bases antherarum vix superantibus. Antherae alte insertae angustissime lineares. Nuculae ± 11 mm diametro, suborbicularis, alis latis membranaceis pallide bruneis obsolete radiatim striatis margine densiuscule apiculato-denticulatis, disco ovato dense breviter aculeolato vix glochidiato. — Species in sectione indumento laxe, pilis tuberculis insidentibus, fornicibus angustis apice trilobis, antheris angustissime linearibus insignis.

Syria borealis: Mons Amanus, 5000', VII. 1906 (Haradjian no. 566, Typus in hb. Delessert).

***Mattiastrum polycarpum* Rech. fil., n. sp.**

Sect. *Modestomattiastrum* Brand — Perenne, rosulas foliorum et caules floriferos plures emittens, collo residuis petiolorum paucis sparse comoso. Caules floriferi erecti, 20—45 cm alti, internodiis numerosis brevibus dense foliati, a medio vel tertia parte furcati fructiferi. Tota planta pilis brevibus mollibus dense velutino-tomentosa albida. Folia rosularia petiolo crassiusculo dimidiam circiter laminam aequante suf-

fulta; lamina 4—10 cm longa, 1,5—3 cm lata, basi cuneata, apice acuta vel subacuminata, in medio vel paulo supra latissima, crassiuscula plana, costa mediana subtus crasse nervis lateralibus tenuiter prominentibus, nervorum par infimum saepe ± productum marginibus parallelum. Folia caulina basi ± distincte cordata sessilia oblongo-lanceolata acuta, erecta vel cauli appressa, quam internodia longiora. Cincinni fructiferi quoque densiusculi, erecto-patentes vel ± recurvi. Pedicelli floriferi ad 2 mm fructiferi 3—4 mm longi, erecto-patentes vel axi appressi. Calyx florifer ± 2 mm fructifer ± 4 mm longus, laciniis linearibus acutiusculis pilis erecto-patulis longiusculis albis dense obsitus. Corolla jam marcescens in vivo?, in sicco brunescens, calyce circiter sesquelongior. Fornices deltoideo-quadratae. Nuculae ± 7 mm diametro suborbicularis, alis tenuiter membranaceis subpellucidis pallide bruneis margine minute remote sinuato-apiculato-denticulatis, disco ovato stylum filiformem 2 mm longum versus protracto breviter glochidiato. — Differt a ceteris speciebus sectionis indumento brevi molli albido foliorum, corollis minutis, nuculis parvis tenuiter membranaceis numerosis approximatis.

Syria borealis: Akher Dagh, 6000', VII. 1907 (Haradja n no. 1602, Typus in hb. Delessert).

*Mattiastrum pygmaeum* Rech. fil., n. sp.

Sect. *Modestomattiastrum* Brand — Rhizoma verticale atrocorticosum pluriceps collo comosum, caules floriferos plerumque plures pumilos 5—8 cm altos et rosulas foliorum nonnullas proferens. Caulis erectus uni- vel paucifoliatus, in cincinnos saepius binos furcatus, dense breviter canescenti-hirsutus. Folia rosularia petiolo 5—10 mm longo suffulta; lamina 12—22 mm longa, 5—9 mm lata, oblongo- usque oblanceolato-elliptica basi breviter cuneato-attenuata, apice rotundata rarius subacuta, costa mediana crassiuscula nervis lateralibus indistinctis utrinque pilis rigidulis patulis dense hirsuto-pubescentis primum albida deinde canescens. Folia caulina valde diminuta, oblongo-lingulata sessilia. Cincinni ab initio laxiusculi pauci- (5—8-) flori, fructiferi elongati arcuato-deflexi. Pedicelli floriferi subnulli usque 0.5 mm longi, fructiferi paulo elongati et incrassati, 1—4 mm longi. Calyx florifer vix 2 mm longus, ad basin fere in laciniis anguste lanceolatas acutas divisus, breviter canescente hirsuto-villosus, fructifer stellato-patens usque reflexus parum auctus. Corolla ca. 3 mm longa, in vivo sordide purpureo-violacea, tubo brevi crasso, limbo patulo in lobos breves late rotundatos diviso. Fornices trapezoideae basi parum emarginatae, longitudine distincte latiores. Nuculae submatura 7—8 mm longae, 5—6 mm latae, disco plano anguste ovato-lanceolato basi rotundato supra basin latissimo apice acutiusculo atrobruneo latiuscule marginato sparsissime breviter glochidiato, alis latis membranaceis laevibus brunescensibus breviter remote sinuato-denticulatis minute glochidiatis. Stylus in statu fructifero tenuis, vix

1.5 mm longus. — Differt a *M. minuto* (Lipsky) Brand mihi e descriptione tantum noto pedicellis brevissimis non recurvis, nuculis 6—8 mm latis, verosimiliter quoque nucularum forma. — Fig. 3.

Persiae prov. Gorgan (Asterabad): Montes Shahvar, in saxosis calc. supra Ostameidan, 3500 m, 28. VII. 1948 (Rech. fil. no. 6022, Typus in hb. Mus. Wien).

### *Eritrichium gracillimum* Rech. fil., n. sp.

Sect. *Coleoloma* DC. — Perenne, collo squamis bruneis membranaceis tunicato. Caules floriferi 6—10 cm longi filiformes, e rosulis foliorum densiusculis orti arcuato-ascendentes vel flexuosi vel subrecti, subsimplices vel superne furcati, internodiis mediis saepe ultra 1 cm longis laxè paucifoliati. Tota planta pilis albidis rigidulis appressis obsita, imprimis in regione inflorescentiae canescens. Folia rosularia longiuscule (5—14 mm) petiolata; lamina oblongo-lanceolata usque spathulata, 6—10 mm longa, 2—3 mm lata, supra medium latissima antice rotundata, basi sensim longe cuneato-attenuata, utrinque subappresse pilosa canescens, pilis in petiolo ± patulis. Folia caulina valde decrescentia, anguste oblanceolata, inferiora ± petiolata, apice obtusiuscula, superiora sessilia ± acuta. Cincinni floriferi quoque laxiusculi, fructiferi valde elongati laxissimi. Flores tenuiter brevissime pedicellati, pedicelli fructiferi patulo-recurvi, infimi 3—4 mm longi, bracteati; bracteae lanceolatae acutae minutae, quam flores breviores. Calyx florifer ± 1.5 mm longus, usque ad basin in lacinias lineares fissus, fructifer paulo accretus. Corolla ± 3 mm longa, tubus brevissimus in calyce inclusus, in vivo pallide coerulea fauce flava (e collectore), lobis brevibus rotundatis. Fornices breviter trapezoideae antice rotundatae emarginatae, basi truncatae vel leviter sinuatae. Antherae oblongo-ellipticae truncatae, in dimidio superiore corollae tubi insertae. Stylus brevissimus crassus; stigma clavatum. Nuculae submaturaee planatae, latiuscule marginatae, crebre breviter sinuato-dentatae, dentibus triangularibus minute glochidiatis. — Differt ab affinibus combinatione characterum sequentium; planta tenella pumila, flores mutui pallide coerulei, pedicelli breves, nuculae minutae, breviter sinuato-dentatae, dentibus minute glochidiatis. — Fig. 2.

Persiae prov. Mazaranderan: Kuh-i Kakashan, 10000', on dry slope, flowers pale blue with yellow eye, 18. VII. 1940 (Koelz no. 16391, Typus in hb. Nation. Arbor. Beltsville, fragm. in hb. Mus. Wien).

### *Eritrichium afghanicum* Rech. fil., n. sp.

Sect. *Coleoloma* D.C. — Suffrutescens gracile, collo residuis caulum emortuorum comoso. Caules numerosi tenuissimi radiato-expansi arcuato-ascendentes simplices vel subsimplices polyphylli, internodiis mediis 5—10 mm longis. Tota planta strigulis appressis laxiuscule ob-

sita, in regione inflorescentiae subcanescens, exsiccando facile brunescens. Folia caulina inferiora et media 10—15 mm longa, 1.5—2 mm lata, erecto-patentia, lamina anguste oblanceolato-linearis, basi perlonge cuneato-attenuata in petiolum insensibiliter transiens, semper supra medium latissima, apice acuta. Folia caulina superiora sensim decrescentia. Inflorescentia laxiuscula. Pedicelli infimi ex axillis foliorum 3—5 superiorum orti, tenues, primum erecto- demum angulo fere recto patentes, fructiferi elongati, infimi ad 10 mm longi, flores superiores breviter usque brevissime pedicellati ebracteati. Calyx ad basin fere in lacinias lineares acutas ad 1 mm demum ad 1.5 mm longas fissus. Corolla in vivo coerulea fauce lutea, calyce minus quam duplo longior, ad medium fere in lobos late rotundatos divisa. Fornices breviter squamiformes longitudine duplo fere latiores, antice leviter emarginatae, basi leviter bisinuatae. Antherae complete inclusae late ellipsoideae utrinque leviter emarginatae. Stylus brevissimus, stigma paulum clavatum. Nuculae minutissimae, margine subalternatim glochidiis earum diametrum superantibus apice breviter patule trisetulosis et denticulis brevissimis basi confluentibus pectinatae.

— *E. fruticuloso* Klotzsch (Syn. *E. strictum* Decaisne var. *fruticulosum* Hook., Fl. Brit. Ind. 4: 164, 1885) mihi ex iconе tantum noto habitu simile, sed foliis angustioribus brevioribus, corolla calyce manifeste longiore, nuculis margine alternatim longissime glochidiatis et breviter denticulatis glochidiis apice trisetulosis nec margine breviter aequaliter glochidiato-pectinatis glochidiis apice bisetulosis diversum.

A f g h a n i s t a n: Paghman, 9000', clumps, flowers baby blue with yellow eye, 27. VI. 1937 (Koelz no. 12121, Typus in hb. Mus. Wien, Isotypus in hb. Beltsville).

Zu dieser Art gehört wahrscheinlich auch ein unvollständiges Exemplar von folgendem Fundort: Badrami, Nedjerau-Tal, nasser Fels im Gras am Ufer, 27. VI. 1951 (Neubauer no. 329, hb. Mus. Wien).

### *Anchusa iranica* Rech. fil. & Esfandiari, n. sp.

Radix tenuis perpendicularis paucifibrosa annua. Folia rosulata in vivo ut videtur herbaceo-carnosa, nodulis setigeris albido-maculata (e collectore), setis patulis nodulo insidentibus ad 2 mm longis et setulis minutis hispidula, in sicco tenuiter membranacea, lanceolata, lamina 7—9 cm longa, 2—3 cm lata, in medio latissima, plana, integra vel levisime obsolete subsinuata, apice acuta, basi in petiolum alatum lamina breviorem sensim longe attenuata, costa mediana crassiuscula in sicco brunescens, nervi laterales tenuissimi evanidi. Folia caulina valde decrescentia breviter petiolata usque sessilia plerumque pauca. Flores in axillis foliorum singuli pedicellati; pedicelli floriferi breves erecti, fructiferi inferiores quoque erecto-patuli vel subrecurvi valde elongati ad 15 mm longi. Calyx florifer ca. 5 mm fructifer valde elongatus 10 mm longus, ad basin usque in lacinias anguste lineares acutas herbaceas dense albo-

setosas divisus. Corolla radiata, pallide flava fauce albida, tubo calyce circiter sesquilongiore, limbo quinquelobo horizontaliter expanso. Fornices angustae longe exsertae apice dilatatae et hamato-recurvae. Antherae latitudine circiter sesquilongiores, utrinque emarginatae, paulo infra faucem altius partim et profundius insertae. Stylus quam calycis laciniae brevior. Stigma clavato-capitatum emarginatum. Nuculae (immature) quaternae, rectae, hylo lato, longitudinaliter elevatim costato-lineatae, inter costas minute elevate punctulatae, antice obliquae. — Pertinet ad subgenus *Buglossoides* Gusul.; affinis *A. Milleri* Willd., sed corolla flava (nec albo-rosea vel incarnata), limbo regulari latiore, fornicibus multo longioribus et magis exsertis, antheris supra medium tubum insertis diversa. — Fig. 1.

Persia e prov. Khusistan: Bebehan, Gebirge, 22. III. 1948 (Esfandiari 76 E, Typus in hb. Mus. Wien). Prov. Fars: Takht-i Jamshed, on marble mountain, semidecumbent, flowers pale yellow, whitish in the throat, spines on leaves make white spots when fresh, attractive, 12. III. 1940 (Koelz no. 14473, hb. Beltsville). Jahrum, on dry lime mountain, fl. pale yellow, 21. III. 1940 (Koelz no. 14616, hb. Beltsville).

Auf der beigegebenen Textabbildung ist die Stellung der Antheren unrichtig dargestellt; die beiden höher inserierten Antheren stehen tatsächlich nebeneinander.

### *Alkanna leptophylla* Rech. fil., n. sp.

Basi leviter lignescens pluricaulis (e collectore). Caulis 45 cm longus, arcuato-ascendens, in tertia parte superiore furcato-pauciramosus et florifer, prope basin 4 mm crassus, internodiis mediis  $\pm$  4 cm longis tota longitudine regulariter foliatus, strigis 1.5—2 mm longis laxe et pilis brevibus glanduliferis omnibus patentibus dense obsitus. Folia omnia in vivo verosimiliter molliter herbacea, margine crispato-crenata ceterum plana, in sicco tenuissime papyracea laete flavescenti-viridia, utrinque strigis patentibus nodulo minuto insidentibus laxe et pilis brevibus glanduliferis densius obsita; folia caulina inferiora ad 10 cm longa ad 3 cm lata, in medio circiter latissima, basi attenuata sessilia apice valde acuta; folia caulina media basi cordata sessilia, infra medium latissima, ceterum inferioribus similia. Bracteae inferiores a foliis caulinis vix diversae iisque paulo tantum minores apice minus acutae superiores sensim paulo decrescentes, omnes flores plures superantes. Inflorescentia ab initio laxa elongata. Pedicelli inferiores ad 3 cm longi. Calyx ad basin fere in lacinias lineares basi leviter dilatatas divisus, sub flore ca. 8 mm, demum ad 12 mm longus, quam folia densius strigosus et glanduloso-pilosus. Corolla 15—18 mm longa, in vivo aurea (e collectore) in sicco brunescens, glabra, tubo calycem superante. Antherae

elliptico-oblongae. Nuculae non complete maturaæ, ca. 3 mm diametro, valde curvatae, rostro deflexo, sinu angusto, sculptura dense minute granulato-tuberculata. — Differt ab *A. orientali* (L.) Boiss. foliis amplis pluribus latioribus eximie crispato-crenatis, in sicco tenuissime papyraceis, indumento praeter pilos glanduliferos breves e setis rigidis longis consistente, bracteis multo maioribus minus acutis, calyce maiore, nucularum sculptura granulato-tuberculata nec sublamellato-confluente.

Persiae prov. Fars: Jahrum, on dry lime rocks, in clumps, 18 inches high, flowers gold, 20. III. 1940 (Koelz no. 14603, Typus in hb. Mus. Wien, Isotypus in hb. Nation. Arbor. Beltsville).

***Alkanna amana* Rech. fil., n. sp.**

Rhizoma verticale tingens, rosulas foliorum et caules floriferos plures emittens. Caules erecto-ascendentes, 10—15 cm longi, internodiis mediis 1—2 cm longis laxiuscule foliati, setis patulis ± 1 mm longis hispiduli et pilis glanduliferis brevioribus obsiti. Folia rosularia 5—9 cm longa, 7—9 mm lata, anguste lanceolato-linearia, supra medium latissima, valde acuta, non vel indistincte petiolata, setis erecto-patentibus ad 1.5 mm longis hispida. Folia caulina inferiora oblongo-lanceolata, basi attenuata vel rotundata, superiora e basi cordato-dilatata triangulari-lanceolata, omnia patentia vel recurva, hispidula. Bracteae inferiores foliis caulinis summis similes, calyce usque duplo longiores, superiores sensim breviores et proportione angustiores. Inflorescentia primum densiuscula floribus ± contiguis, demum imprimis inferne laxiuscula. Flores breviter pedicellati. Calyx florifer ± 8 mm longus, ad basin usque in lacinias anguste lineares acutas divisus, setis erecto-patentibus dense hispidus nitidulus. Corolla 12—15 mm longa, in vivo ut videtur intense coerulea, glabra, tubo calycem ineunte anthesi paulo demum manifeste superante, sensim in limbum amplum dilatato, limbus in lobos late rotundatos in sicco valde complicatos divisus; tubus intus supra antheras minute papillosus. Antherae circiter 2—3 mm supra basin tubi insertae. Stylus 1.5 mm longus. Stigma minute capitatum subintegrum. Nux ignota. — Differt ab *A. megacarpa* DC. (Kotschy, no. 203 in hb. Mus. Wien) foliis rosularibus angustis, corollae limbo multo ampliore, antheris maioribus 2—3 mm nec 4—5 mm supra basin tubi insertis, stylo breviorre.

Syria borealis: Mons Amanus, 5500', VI. 1906 (Haradjian, no. 728, Typus in hb. Delessert).

***Mertensia nuristanica* Rech. fil., n. sp.**

Planta pumila caespites vel pulvinos minutos formans (e collectore), surculis numerosis abbreviatis vel ± elongatis, residuis foliorum numerosis elongato-squamiformibus brunescensibus flexuosis obsitis. Folia omnia rosulata; petiolus tenuis quam lamina brevior usque eam aequans;

lamina 7—16 mm longa, 2—4 mm lata, lanceolata, basi longe anguste cuneata, apice subbrevis angustata acuta, consistentia tenui, costa mediana tenui percursa, supra setulis appressis albis nodulis minutis insidentibus laxiuscule obsita, subtus costa mediana et margine excepta subglabra vel valde glabrescens. Scapus 2—4 cm altus tenuis aphyllus erectus simplex appresse setulosus. Cincinnus simplex terminalis pauciflorus ± congestus usque laxiusculus. Pedicelli brevissimi. Calyx 2—3 mm longus, ad basin usque in laciniis anguste lineares acutas divisus, laciniis imprimis margine longiuscule setoso-ciliatis facie subglabris. Corolla 11—15 mm longa, in vivo coerulea glabra, tubo calyce ± triplo longiore, superne subito in limbum erecto-patentem in lobos quinque aequales rotundatos divisum ampliato. Fornices breviter plicato-squamiformes transversaliter dilatatae, antice leviter emarginatae, cum antheris linearibus contiguae et alternantes. Stylus filiformis corollae tubum subaequans, stigma stylo vix latius rotundatum indivisum. Nuculae ignotae. — Differt a *M. primuloide* (Decaisne) Clarke habitu humiliore densius caespitoso, surculis dense squamatis, foliis angustius lanceolatis, corollae tubo multo longiore 10 mm nec 6 mm longo, limbo proportione angustiore erecto-patente nec horizontali.

A f g h a n i s t a n: Nuristan, Urura-Paßhöhe, beiderseits oberhalb der Waldgrenze, 2900 m, kleine rasige Polster bildend, 9. VIII. 1951 (Neubauer, no. 574 et 601, Typus in hb. Mus. Wien).

### *Moltkia Neubaueri* Rech. fil., n. sp.

Sect. *Lithospermoides* Boiss. (?) — Surculis numerosis saepe columnari-elongatis atratis fibroso-comosis verosimiliter minute pulvinato-caespitosa. Caules floriferi numerosi pumili 4—10 cm longi, internodio inferiore elongato superioribus plerumque duobus abbreviatis, herbacei tenues, brevissime laxe glanduloso-papillosi glabrescentes. Folia basalia et rosularia anguste lineari-lanceolata, in petiolum saepe elongatum sensim attenuata, apice valde acuta, petiolo inclusa 15—50 mm longa, 2—3 mm lata, saepe flaccida vel curvata, laete viridia, crassiuscula, supra et margine ± laxe appresse strigulosa, subtus glabrata, costa mediana crassiuscula, ceterum enervia. Folia caulina plerumque sessilia opposita, anguste lanceolata, infra medium latissima, valde acuta. Cinnami terminales capitato-congesti ebracteati. Pedicelli 1,5—3 mm longi, tenues, minute appresse glanduloso-papillosi. Calyx 4—5 mm longus, ad basin fere in laciniis lineares acutas divisus, laciniis margine sparse apice subdensius minute ± appresse setulosis. Corolla ± 9 mm longa, tubulosa, glabra, superne paulum ampliata, in sicco atropurpurea, inferne pallens, limbo erecto late breviter rotundato-crenato. Antherae exsertae, 2 mm fere longae; filamenta tubo longe adnata, in parte suprema (vix 2 mm) tantum libera. Nuculae ignotae. — Habitu caespitoso, foliis angustis

glabrescentibus caulinis oppositis, cincinnis ebracteatis, corolla superne atropurpurea inferne pallida insignis; *M. parviflorae* Clarke aliquantum similis, quae autem corollis brevibus, habitu laxè surculososo-caespitoso longe differt.

A f g h a n i s t a n: Zentraler Gebirgsstock, Baraki Nawor, Hesaredschad, an Schneeflecken, 11. V. 1949 (Neubauer, no. 835, Typus in hb. Mus. Wien).

***Macrotomia Lindbergiana* Rech. fil., n. sp.**

Rhizoma verticale crasse lignosum tingens atrocorticose pluriceps caespitosans. Caules floriferi ad 8 cm longi erecti, basi residuis foliorum emortuorum densissime comosi. Indumentum totius plantae e setis rigidis patentibus numerosis ± 3 mm longis et e setulis brevibus numerosissimis consistens canescens. Folia plurima basalia 3—5 cm longa, 2—3 mm lata, angustissime linearia, uni- vel indistincte trinervia, acuta erecta inflorescentiam attingentia, basin versus insensibiliter attenuata. Inflorescentia capitato-congesta, calycis laciniis virescentibus comosa. Pedicelli 2—4 mm longi. Calyx ad 25 mm longus, quam corolla tertia usque quinta parte longior, ad basin usque in laciniis lineariformes divisus, omnino strigis laciniarum diametro pluries longioribus erecto-patentibus et strigulis brevibus numerosissimis densissime obsitus. Corolla ad 20 mm longa, anguste tubulosa, in vivo verosimiliter coerulea vel violacea, in sicco brunescens, extus dense pubescens. Antherae late lineares, inclusae, utrinque rotundatae, in parte summa tubi insertae. Stylus breviter bifidus, tertiam partem corollae circiter aequans. Nuculae ignotae. — Differt a *M. Benthamii* (Wall.) DC. rhizomate crasso lignoso, habitu humili caespitoso, foliis angustissime linearibus plurimis basalibus inflorescentiam attingentibus inflorescentia capitato-congesta, calycibus multo brevioribus flavescentibus, corollis brevioribus.

A f g h a n i s t a n: Bamian, Ajdaha, 24. V. 1947 (K. Lindberg, no. 118, Typus in hb. Mus. Wien, Isotypus in hb. collectoris).

Die Gattung *Macrotomia* im engeren Sinn ist nach Johnston in Contrib. of the Gray Herb. 73: 48 (1924) bisher monoypisch und nur durch *M. Benthamii* vertreten gewesen.

***Arnebia nobilis* Rech. fil., n. sp.**

Rhizoma tingens atrocorticose, collo residuis petiolorum basi valde dilatatis (1 cm !) induratis squarroso-comoso. Caulis 35 cm altus, prope basin 5 mm crassus, stricte erectus, basi flavescentis, strigis appressis usque paulo erecto-patentibus et pilis glanduliferis obsitus, tota longitudine fere florifer. Folia plurima basalia, ad 15 cm longa, 8—12 mm

lata, anguste linear-lanceolata, basi apiceque subaequaliter sensim attenuata, valde acuta, erecta, crassiuscula, rigidula, nervis tribus parallelis subtus prominentibus percursa, omnino aequaliter appresse strigosa. Cincinni capitato-conferti, 2—3 mm diametro, pedunculis crassis erecto-patentibus ad 2 cm longis suffulti, ex axillis foliorum lineariorum cincinnos 3—4-plo superantium orti. Bracteae numerosae lineares, calyces paulo superantes vel circiter aequantes, strigis erecto-patentibus pallidis flavescentibus densissime ciliatae. Calyx 15 mm longus, ad basin usque in lacinias lineares acutas divisus, copiose setosus et breviter glanduloso-pilosus. Corolla ± 17 mm longa, verosimiliter aurea, tubo angusto superne in limbum campanulato-infundibuliformem breviter ampliato. Stigma breviter bifidum. Antherae lineares, in parte superiore corollae tubi insertae, inclusae. Nuculae ignotae. — Differt ab omnibus speciebus generis collo copiose late rigide squarroso-comoso, foliis trinerviis appresse strigosis rigidis, caule a basi fere florifero, cincinnis globoso-capitatis stipitatis, foliis pluries longioribus suffultis.

A f g h a n i s t a n: Dscheratu, 7. V. 1949 (Neubauer, no. 836, Typus in hb. Mus. Wien).

*Arnebia argyrea* Rech. fil., n. sp.

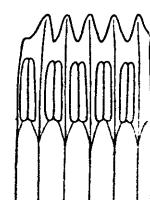
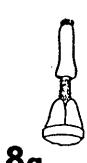
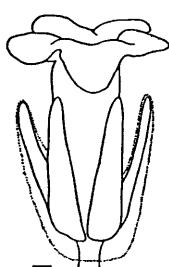
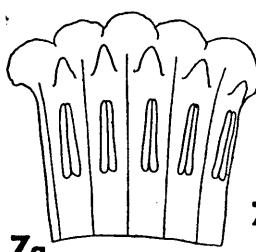
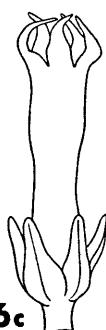
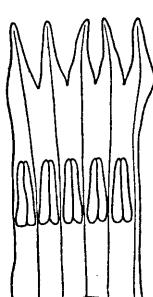
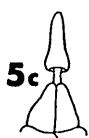
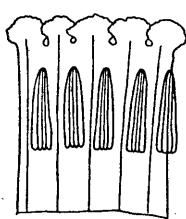
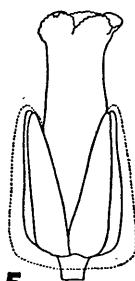
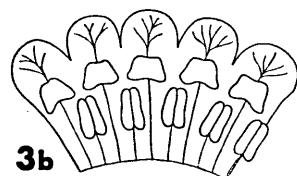
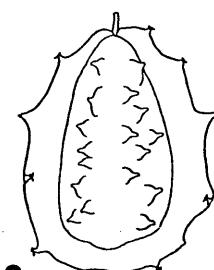
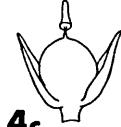
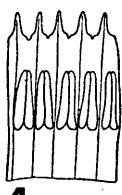
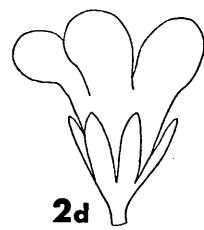
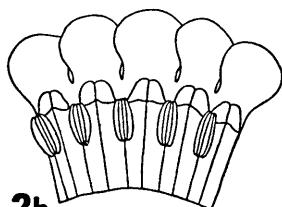
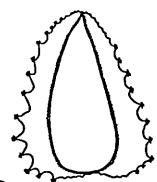
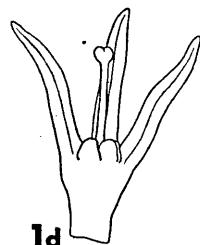
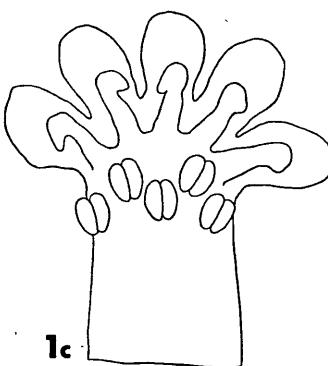
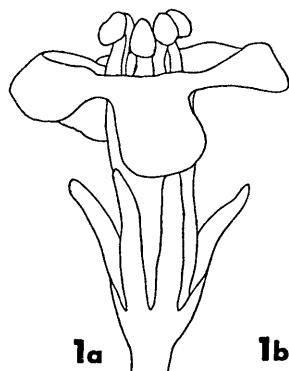
Rhizoma lignosum atrocorticatum tingens, surculos numerosos foliiferos et floriferos emittens, verosimiliter compacte pulvinato-caespitosum, collo residuis foliorum copiose comosum. Caules floriferi 5—10 (—15) cm alti, erecti vel arcuati, foliati, setis longis rigidis erecto-patentibus caulis diametrum aequantibus usque superantibus hispidi setulis numerosis brevibus immixtis. Folia rosularia et basalia ad 4 cm longa, 3—4 mm lata, crassiuscula, costa mediana subtus paulum prominente, strigis longis et setulis brevibus appressis utrinque densissime obsita virescenti-argentea. Folia caulina ± sessilia, decrescentia, ceterum basalibus similia. Inflorescentia in capitulum terminale congesta. Bracteae lineares herbaceae calyces subaequantes, setis et setulis erecto-patentibus dense obsita flavescenti-virescentes. Calyx (10)11—13 mm longus, ad basin fere in lacinias lineares acutas divisus, indumento duplice ut in bracteis. Corolla in vivo pallide flava (e collectoribus), in sicco brunescens vel sordide albida, ± 15 mm longa, tubulosa, extus dense appresse pilosa, limbo erecto brevi subito paulo campanulato-dilatato lobis brevibus rotundatis. Antherae latiusculae lineares, ca. 2 mm infra limbum insertae. Stylus profunde bifidus, stigmatibus breviter clavatis. Nuculae ignotae. — Differt a ceteris speciebus generis combinatione characterum sequentium; Habitu compacte caespitoso, surculis copiose comosis, indumento argenteo, corolla pallide flava extus dense hirsuta, floribus in capitulum unicum terminale congestis, stylo profunde bifido, stigmatibus clavatis.

A f g h a n i s t a n: Nozi, 10000', lime rock, in clumps, flowers pale yellow, 22. VI. 1937 (Koelz, no. 12015, Typus in hb. Mus. Wien, Isotypus in hb. Beltsville). Jagdalek, 7000', dry slope, fl. pale yellow, plant 6 inches high, 19. V. 1937 (Koelz, no. 11485, hb. Mus. Wien et Beltsville). Tscharikar, Top Tara, polsterbildend, Blüten hellgelb, 12. V. 1950 (Neubauer, no. 610, hb. Mus. Wien).

Neubauer no. 610 ist vom Typus durch niedrigen Wuchs und kürzere Blätter verschieden.

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Fig. 1. *Anchusa iranica* Rech. f.; Koelz no. 14473: a Blüte, b Frucht, c Korolle geöffnet, d Stempel. — Fig. 2. *Eritrichium gracillimum* Rech. f.: Koelz no. 16391: a Frucht, b Korolle geöffnet, c Stempel. — Fig. 3. *Mattiastrum pygmaeum* Rech. f.; Rech. f. no. 6022: a Frucht, b Korolle geöffnet. — Fig. 4. *Heliotropium oliganthum* Rech. f. Aell. Esf.; Rech. f., Aell., Esf no. 3910: a Korolle geöffnet, b Blüte, c Stempel. — Fig. 5. *Heliotropium multiflorum* Rech. f. Aell. Esf.; Rech. f., Aell., Esf. no. 4006: a Blüte (punktiert: Kelchumriß im Fruchtzustand), b Korolle geöffnet, c Stempel. — Fig. 6. *Heliotropium taftanicum* Rech. f. Aell. Esf.; Rech. f., Aell., Esf. no. 4058: a Stempel, b Korolle geöffnet, c Blüte. — Fig. 7. *Heliotropium makranicum* Rech. f. et Esf.; Salavatian no. 512 E: a Korolle geöffnet, b Stempel, c Blüte (punktiert: Kelchumriß im Fruchtzustand). — Fig. 8. *Heliotropium nodulosum* Rech. f. Aell. Esf.; Rech. f., Aell., Esf. no. 3999: a Stempel, b Blüte, c Korolle geöffnet.



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Artikel/Article: [Boraginaceae novae orientalis. \(Rechingeri iter iranicum secundum - No. 24\). 44-61](#)