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Comments on proper type designation for names of taxa validated by Turczaninow in his *Animadversiones*, with case studies

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Abstract. General recommendations regarding proper type designation of names of taxa described by Turczaninow in his *Animadversiones* series of articles (as well as in some other publications) are provided. It is concluded that, as clearly indicated in the protologues, all (or almost all) taxa described in these publications are based on specimens from the private herbarium of Turczaninow which was donated in the 1840s to the Kharkiv University (CWU) and in the 1940s was transferred to the Institute of Botany in Kyiv (KW). Consequently, holotypes and syntypes of these taxa are now almost exclusively in KW. Several cases of correct and incorrect type designations are discussed, specifically of some South American *Brassicaceae*, *Geraniaceae* and *Hypericaceae*, Central American *Malvaceae*, and southern African *Polygalaceae*. Information on the re-discovered holotype (KW) of *Abelmoschus achaniooides* Turcz. (now accepted as *Malvaviscus achaniooides* (Turcz.) Fryxell, *Malvaceae*) is provided, and an earlier lectotypification of that name with a specimen from G is considered ineffective. The holotype of *Stenocalyx involutus* Turcz. (now considered a synonym of *Mezia includens* (Benth.) Cuatrec., *Malpighiaceae*) was originally in the Turczaninow herbarium, but the whole folder with that specimen is now missing in KW (considered lost or destroyed), and it was already missing in the mid-1920s, when the collection was still in CWU. Because of that the lectotype of *S. involutus* is designated here, the specimen from MPU, to replace the lost or destroyed holotype. The need for thorough analysis of protologues, available original material, and associated information for correct type designation/indication is emphasized.

Keywords: bibliography, *Brassicaceae*, *Geraniaceae*, herbarium, *Malpighiaceae*, *Malvaceae*, nomenclature, *Polygalaceae*, taxonomy, type, typification

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Мосякін С.Л.¹, МакНіл Дж.², Бойко Г.В.¹ Нотатки про правильну типіфікацію назв таксонів, описаних М.С. Турчаніновим у серії статей "Animadversiones...", з кількома прикладами. *Український ботанічний журнал*, 76(5): 379–389.

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Реферат. Наведені загальні рекомендації щодо правильного позначення типів назв таксонів, що були описані М.С. Турчаніновим у серії статей "Animadversiones..." (а також у деяких інших його публікаціях). На основі чітких вказівок у протологах зроблено висновок про те, що усі (або майже всі) таксони, описані в цих публікаціях, базуються на зразках з приватного гербарію Турчанінова, який у 1840-х роках був подарований ним Харківському університету (CWU), а у 1940-х роках переміщений до Інституту ботаніки у Києві (KW). Отже, голотики та синтипи цих таксонів зараз знаходяться майже виключно у гербарії KW. Обговорюються декілька випадків правильних та неправильних позначень типів, зокрема, для деяких південноамериканських представників родин *Brassicaceae*, *Geraniaceae* та *Hypericaceae*, центральноамериканських *Malvaceae* та південноафриканських *Polygalaceae*. Наведена інформація про віднайденій у KW голотип *Abelmoschus achaniooides* Turcz. (зараз визнаний під назвою *Malvaviscus achaniooides* (Turcz.) Fryxell, *Malvaceae*), а попередня лектотипіфікація цієї назви зразком з гербарію G визнана недійсною. Голотип *Stenocalyx involutus* Turcz. (нині розглядається як синонім визнаної назви *Mezia includens* (Benth.) Cuatrec., *Malpighiaceae*) раніше знаходився у гербарії Турчанінова, але всієї папки з цим зразком у KW зараз немає; вона вважається втраченою і вже була відсутня у середині 1920-х років, коли колекція ще перебувала в CWU. З цієї причини назва *S. involutus* лектотипіфікована тут зразком з гербарію MPU, на заміну втраченого або знищеного голотипу. Наголошується на необхідності ретельного аналізу протологів, наявного оригінального матеріалу та асоційованої інформації для правильної типіфікації.

Ключові слова: *Brassicaceae*, *Geraniaceae*, *Malpighiaceae*, *Malvaceae*, *Polygalaceae*, бібліографія, гербарій, номенклатура, систематика, тип, типіфікація

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Introduction

Nikolai S. Turczaninow (1796–1863; Николай Степанович Турчанинов in Russian, Микола Степанович Турчанинов in Ukrainian, also sometimes transliterated as Turczaninov, Turchaninov, Turtschaninow, or Turczaninoff), despite his amateur background (professionally he was a government administrator), was a prolific plant taxonomist of the 19th century who described numerous new taxa of plants from almost all parts of the world, especially Asia, South and Central America, southern Africa, and Australasia. Only a few species were described by him from Europe and North America north of Mexico. The number of plant names validated by Turczaninow is estimated at 172 genera and 1563 species (Myakushko, 1976; Myakushko et al., 1979; Shiyani, 2011), but these figures may be incomplete. The search in the *IPNI* database (<https://www.ipni.org/>, accessed 16 May 2019) resulted in 4170 records (including nomenclatural combinations), but some of those records are duplicates.

Many new genera and species were described by Turczaninow in three articles of his *Animadversiones* series published in five issues of *Bulletin de la Société Impériale des Naturalistes de Moscou* (Turczaninow, 1855, 1858a, 1858b, 1859, 1863). The complete bibliography is available from Stafleu and Cowan (1986: 541); however, there are several still remaining bibliographic problems. For example, the first article was probably released as a separate preprint in 1854 before its publication in the journal in 1855. Sometimes these publications are cited incorrectly or incompletely, partly because of a specific and potentially confusing system of pagination used in volumes of the journal in the mid-19th century. In those times each volume of *Bulletin...* often consisted of two **separately paginated** parts, each with two issues ("numbers"). Thus, when citing publications in volumes of *Bulletin de la Société Impériale des Naturalistes de Moscou* with separate pagination of parts, it is important to indicate not just the issue number, but also the part number, and the issue and part numbers should not be confused. For example, the last article of the *Animadversiones* series (Turczaninow 1863) was published in part 1, issue 2 of volume 36, but not in part 2, as it was erroneously indicated in Stafleu and Cowan (1986: 541).

Almost all new taxa described by Turczaninow in his *Animadversiones* articles were based, unless noted otherwise, on specimens from his personal herbarium

that he donated in the late 1840s to the Imperial Khar'kov [Kharkiv] University (now V.N. Karazin National University of Kharkiv, CWU¹) in exchange for a modest annual pension from the University (unfortunately, soon cut down and then cancelled by the university authorities) and the possibility to continue his studies and curation of the herbarium. The fact that Turczaninow used exclusively (or almost exclusively) the specimens from his collection is properly reflected even in the titles of his articles: *Animadversiones ad primam partem herbarii Turczaninowiani, nunc Universitatis Caesariae Charkowiensis* (Turczaninow, 1855), *Animadversiones in secundam partem herbarii Turczaninowiani, nunc Universitatis Caesariae Charkowiensis* [*Animadversiones* Part 2, published in three issues] (Turczaninow, 1858a, 1858b, 1859), and *Animadversiones ad catalogum primum et secundum herbarii Universitatis Charkowiensis* [Addenda to *Animadversiones* Parts 1 and 2] (Turczaninow, 1863). Thus, Turczaninow in fact explicitly stated that his *Animadversiones* constitute an annotated catalogue of selected (most interesting from his viewpoint) specimens from his personal herbarium, since the 1840s kept in CWU and in the 1940s transferred to KW.

The Turczaninow historical collection (informally referred to as KW-TURCZ) is now deposited at the National Herbarium of Ukraine in Kyiv (KW). It was transferred from Kharkiv (CWU) to Kyiv at the end of World War II (for history of the Turczaninow herbarium, see Myakushko, 1976; Myakushko et al., 1979; Marchant, 1990; Kamelin, Sytin, 1997; Shiyani, 2011; Mosyakin et al., 2018; and references therein). The specific circumstances of this transfer from CWU to KW remain insufficiently known.

The collection is kept separately from other KW collections and is estimated to contain at least 150 000 (more probably 170 000 or more) specimens representing ca. 53 000 plant taxa from all parts of the Globe (see Shiyani (2011), and references therein). The exact number of specimens is difficult to estimate because the main part of the collection remains unmounted, kept as it was originally maintained by Turczaninow (which is important for maintaining the original arrangement of plant material and associated labels and folders for further research), and many sheets contain two or more specimens with associated labels.

¹ Herbarium acronyms are given following *Index Herbariorum* (Thiers 2008–onward).

In the 1970s the curatorial staff of KW led by Taisia Ya. Myakushko [Omel'chuk-Myakushko] started activities aimed at inventory, cataloguing, and mounting of types of taxa validated by Turczaninow. By 1979 the managed and mounted part of the type collection contained ca. 1120 specimens, also systematized in a card catalogue. The plant families best represented in the catalogue were *Myrtaceae* (128 species), *Asteraceae* (109), *Fabaceae* (78), *Verbenaceae* (72), *Sterculiaceae* (62), *Malvaceae* (44), *Tiliaceae* (39), *Rutaceae* (39), *Apocynaceae* (38), *Apiaceae* (22), etc. (Myakushko et al., 1979, 1981).

Since then, additional type specimens were revealed and added to the type collection, and all these specimens were digitized and databased in the course of implementation of three projects supported by The Andrew W. Mellon Foundation during 2007–2016 within the framework of the African Plants Initiative, Latin American Plants Initiative, and the Global Plants Initiative. Now these digital images and associated data are available through *JSTOR Global Plants* (<https://plants.jstor.org>), as well as other identified type specimens from KW.

It should be noted that in older literature the Turczaninow types were often cited as definitely or supposedly held in St. Petersburg (LE) or Moscow (MW). Those herbaria indeed contain numerous specimens collected by Turczaninow, especially the main part of his Siberian collection, which is best represented in LE (see Lipschitz, Vasilchenko, 1968; Myakushko et al., 1979; etc.). The LE and MW herbaria also contain many duplicates of worldwide gatherings, specimens of which (those kept in his herbarium) were used by Turczaninow, but not the holotypes or syntypes of the names validated in *Animadversiones* and some other Turczaninow's publications; those holotypes and syntypes are now almost exclusively in KW. Seregin (2010: 71) commented on that as follows: "There is a misbelief (see, for instance, the web-version of *Cyclopaedia of Malesian Collectors*), that MW or/and LE possess Turczaninow's holotypes. In the case of MW this belief is largely based on the fact, that his protologues were published in *Bulletin de la Société Impériale des Naturalistes de Moscou* (this serial is still continued as *Byulleten' Moskovskogo Obshchestva Ispytatelei Prirody, Otdel Biologicheskii*). The personal collection of Turczaninow with numerous authentic specimens was conserved for a long time in the Kharkov University. Nazi decided to move this treasure to Germany as a war trophy in 1940s, but due

to a logistic mistake the railway carriage had not arrived to the destination point. Turczaninow's herbarium was completely returned by restitution to Kiev soon after the end of World War II. Now this historic collection is conserved in the Kholodny Botanical Institute, Kiev (Ukraine) as a separate unit, and the holotypes should be searched for there" (see also comments in Mosyakin, de Lange, 2019).

Mosyakin and co-authors have already briefly discussed the problem of the type status of original specimens and type designation for plant names validated by Turczaninow in his *Animadversiones*, using the case of two names in *Celastraceae* considered in our proposal to conserve the name *Tontelea attenuata* Miers (1872: 384) against *Maytenus amygdalina* Turczaninow (1858b: 451) (Biral et al., 2019), and the cases of four taxa of *Geraniaceae* described by Turczaninow from New Zealand and Australia (Mosyakin, de Lange, 2019).

Here we provide general recommendations regarding type designation for the names published by Turczaninow, specifically those validated in his *Animadversiones*. These recommendations should not, however, be applied uncritically to taxa described by Turczaninow in his other publications in which no clear statement of the usage of specimens from his own herbarium was present, such as his *Flora-Baicalensis-Dahurica* [see details and bibliography in Stafleu (1969) and Stafleu and Cowan (1986)], and to taxa based on his own field collections in Siberia because it is documented that the author during that period of his activities widely shared his duplicates with many persons and institutions, and his original specimens are now present in many other herbaria, especially G, LE, K, MW, etc. (see Stafleu, Cowan, 1986). Also, it is evident that, for example, in his *Decas...* series (e.g., Turczaninow, 1843, 1847, 1852, etc.; see bibliography in Stafleu, Cowan, 1986) Turczaninow used mainly or exclusively material from his herbarium; however, there is no explicit statement on that in the protologues, with some exceptions. For example, when describing *Holopetalum pumilum* Turczaninow (1843: 51) he cited "Reseda n. 7533 in Drège coll. pl. Capens.", and Drège collections from southern Africa are present in many herbaria. However, Turczaninow (1843: 52) also indicated that seeds in **his** specimens are immature ("Semina in speciminibus meis immatura"), which can be viewed as a reference to his herbarium.

General guidelines for identification of the type status of original specimens and for typification of plant names validated by Turczaninow in his *Animadversiones*

The following general guidelines provide more detailed recommendations and are based on relevant provisions of Art. 9 of the ICN [here and below the ICN articles refer to the *Shenzhen Code* (Turland et al., 2018), unless noted otherwise], and also explanations and recommendations by McNeill (2014) specifically for holotypes.

(1) For all taxa described by Turczaninow in his *Animadversiones* and some other publications that were explicitly based, unless noted otherwise in the protologue, on specimens from Turczaninow's private herbarium donated first to CWU (in the 1840s) and then transferred to KW (in the 1940s), all (or almost all) types (holotypes or syntypes) are now in KW. Exceptions are very few, and for those exceptional cases Turczaninow usually clearly indicated that he has seen also specimens from other herbaria.

(2) If Turczaninow indicated or mentioned in the protologue just one specimen, and if there is just one corresponding specimen in KW-TURCZ, that specimen should be considered the holotype and that type designation is final (Art. 9.1 of the ICN).

(3) However, "the possibility that the author used additional, uncited specimens or illustrations (which may have been lost or destroyed) must always be considered" (Art. 9.1, Note 1 of the ICN). For such specific cases McNeill (2014: 1113), to ensure validity of type designations on or after 1 January 2001, recommended the following: "It is, therefore, wise for authors who are doubtful as to whether or not a particular specimen in one herbarium is the holotype to cite it as: "Lectotype, designated here (or perhaps holotype)". Thus, if Turczaninow indicated in the protologue just one gathering, and if there is just one corresponding extant specimen in KW-TURCZ, that specimen is most probably the holotype. If that KW specimen was cited/designated as the holotype, lectotype, or just "type" prior to 1 January 2001, that type designation should stand even if an additional original specimen or specimens studied by Turczaninow is/are found in KW. In that case the specimen first designated as the "holotype" or "type" should be corrected to "lectotype" following Art. 9.10 of the ICN. However, if no type designation for a particular Turczaninow's taxon has been made prior to 1 January 2001, it is possible (or in some cases even advisable) to cite the only existing

original specimen from KW-TURCZ with the type designation as "Lectotype, designated here (or perhaps holotype)", following the recommendation of McNeill (2014).

(4) If Turczaninow indicated in the protologue one gathering but there are two or more corresponding specimens in KW-TURCZ, these specimens are syntypes (Art. 9.6 of the ICN). The lectotype should be selected preferably from these syntypes (Art. 9.11 and 9.12 of the ICN). However, if two or more corresponding sheets in KW-TURCZ have just one **original** label, are clearly **cross-referenced** (for example, as "Sheet 1" and "Sheet 2", or "I" and "II", or "a" and "b", etc.), and belong to one taxon (i.e., do not represent a mixed collection), they may constitute one specimen mounted on two or more sheets (Art. 8.2 and 8.3 of the ICN). Such cross-references, and often also additional curatorial labels (copies of original labels), were usually added by the curatorial staff of KW in the 1970s–1980s (and occasionally later) when the Turczaninow type specimens were pulled out from his mainly unmounted original collection, catalogued on paper cards, and mounted (see Myakushko et al., 1979). If there is just one original specimen in KW-TURCZ mounted on two or more sheets, that specimen is the holotype (but see paragraph (3) above). Examples of such type specimens mounted on two sheets are *Maytenus amygdalina* Turcz. (holotype on KW001001094 and KW001001095; see Biral et al., 2019) and *Erodium peristeroides* Turcz. (holotype on KW001001021 and KW001001022; see Mosyakin, de Lange, 2019).

(5) If Turczaninow indicated in the protologue two or more gatherings, all corresponding specimens in KW-TURCZ are syntypes (9.6 of the ICN). The lectotype should be preferably selected from these syntypes (Art. 9.11 and 9.12 of the ICN). The possibility that one of the original gatherings present in KW-TURCZ is in fact one specimen mounted on two or more sheets should be also critically considered (see paragraph (4) above).

(6) If no original material (as defined in Art. 9.4 of the ICN) is currently present in the Turczaninow herbarium at KW (i.e. presumably lost or destroyed), a lectotype may be selected from other original material that is extant in other herbaria (usually isotypes or isosyntypes, i.e., duplicates of the types or syntypes indicated by Turczaninow in the protologue and belonging to the same gathering or gatherings). However, if the lost holotype is rediscovered, the lectotypification will have no standing because the holotype always takes precedence over a lectotype.

(7) If no original material (as defined in Art. 9.4 of the ICN) is known to be present in the Turczaninow herbarium at KW and in other herbaria (i.e., if all original material is presumably lost or destroyed), a neotype may be selected (Art. 9.8 and 9.13 of the ICN). However, a neotype serves as the nomenclatural type only as long as original material is missing. If any part of the original material is found to exist (rediscovered), a lectotype should be designated from it because a lectotype always takes precedence over a neotype [Art. 9.13 of the ICN, except as provided by Art. 9.16 and 9.19(c)].

Consequently, any lectotype of a Turczaninow's taxon name validated in *Animadversiones* (as well as in some other publications by Turczaninow) that was designated by any author not from specimens housed at KW-TURCZ but from another herbarium without considering Turczaninow specimens will have no standing if it is demonstrated that the holotype ("the one specimen... either (a) indicated by the author(s) as the nomenclatural type or (b) used by the author(s) when no type was indicated"; Art. 9.1 of the ICN) of that taxon is extant in KW. If there are two or more syntypes in KW, a lectotype should be preferably selected from those syntypes.

However, the current wording of Art. 9.12 of the ICN makes syntypes and isosyntypes in fact equal in lectotype designation: "In lectotype designation, an isotype must be chosen if such exists, or otherwise a syntype or isosyntype if such exists". Thus, formally, if an isosyntype from some herbarium (but not a syntype from KW) has been designated by some author(s) as a lectotype of Turczaninow's taxon described in *Animadversiones*, that designation should stand. In our opinion, the specimens cited in the protologue (syntypes; see Art. 9.6) should be always preferred in lectotype designation over uncited specimens (isosyntypes; see Art. 9.4, footnote).

It would be also advisable to formalize that provision in the next edition of the *Code* and to ensure that **a syntype should always take precedence over an isosyntype**. In our opinion, it can be achieved through a proposal to amend the first sentence of Art. 9.12 of the ICN as follows: "In lectotype designation, an isotype must be chosen if such exists, or otherwise a syntype if such exists, or otherwise an isosyntype if such exists" (as compared to the current wording: "In lectotype designation, an isotype must be chosen if such exists, or otherwise a syntype or isosyntype if such exists"). The relevant proposal to amend the *Code* has been prepared, and it will be formally submitted as soon as

the procedures and timetable are published in *Taxon* (expected late 2019 or early 2020).

Thus, we urge all plant taxonomists working on type designation for taxa described by Turczaninow (especially those validated in his *Animadversiones* series definitely and explicitly based on his private herbarium, now in KW) to consult first the specimens available in KW-TURCZ and/or their digital images (mainly available from JSTOR Global Plants: <https://plants.jstor.org>).

Additional explanation should be provided for specific cases of lectotypification of taxa validated by Turczaninow. If in KW-TURCZ there is just one original specimen of a particular Turczaninow's taxon originally described in the protologue with an indication of Turczaninow's herbarium, that specimen is most probably the holotype (see details above). However, both before and after 1 January 2001 **lectotypifications** of names with such specimens are not erroneous (see the South American *Geranium* case discussed below).

Consequently, for the cases considered above, all duplicates of the KW holotypes (or probable holotypes that were indicated or designated as lectotypes by typifying authors) belonging to the same gathering but housed in other herbaria are in fact isotypes (or isolectotypes, if formal lectotypifications based on KW specimens have been done).

Taking into consideration the above arguments, we provide below the nomenclatural examples (with some corrected typifications) for selected plant names validated by Turczaninow in his *Animadversiones*.

Selected case studies

Brassicaceae: South American Draba

An example of the correct type designation/indication of Turczaninow's plant names is the recent treatment of South American taxa of *Draba* Linnaeus (1753: 642) by Al-Shehbaz (2018), who in all cases accepted unique specimens from KW-TURCZ as holotypes of the names validated by Turczaninow (1855). However, if, for any particular taxon of *Draba* currently represented in KW-TURCZ by just one specimen, any additional original specimen definitely studied by Turczaninow is found in KW (which is rather improbable), lectotypification will be necessary because the holotype indication was made by Al-Shehbaz (2018) after 1 January 2001, and there is currently no option in the ICN for automatic correction of the indication of a supposed holotype to the designation of a lectotype, unless the words "designated here", "hic designatus", or an equivalent

(Art. 7.11 and Art. 9 Note 6 of the ICN) were used by the typifying author after 1 January 2001 (see McNeill, 2014).

Geraniaceae: South American *Geranium*

Four currently recognized South American taxa of *Geranium* described by Turczaninow (1858b) were **lectotypified** by Aedo et al. (2003; see also Aedo, 2012) with the specimens from KW, based on images (photographs) studied. For each of these four names, only one original specimen currently exists in the Turczaninow herbarium, and thus these four specimens can be considered holotypes of the four names. These lectotype designations with the words "here designated" made by Aedo et al. (2003) instead of indications of holotypes are, however, acceptable and correct under the current *Shenzhen Code* (Turland et al., 2018), as they were also under the previous *Melbourne Code* (McNeill et al., 2012; see also McNeill, 2014) and earlier *Codes*. Digital images of these four lectotypes (or, in fact, holotypes – cf. Art. 9.1 and 9.10 of the ICN) of *Geranium* names are now available online from JSTOR Global Plants: ***Geranium lindenianum*** Turczaninow (1858b: 417; <https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw001000002>); ***G. multiceps*** Turczaninow (1858b: 417; <https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw001000001>); ***G. subnudicaule*** Turczaninow (1858b: 418; <https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw001001017>), and ***G. velutinum*** Turczaninow (1858b: 417; <https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw001001018>).

Malpighiaceae: *Stenocalyx involutus*

The generic name *Stenocalyx* Turczaninow (1858b: 393) and the species name *Stenocalyx involutus* Turczaninow (1858b: 394) were validated by a single description (*descriptio generico-specifica*, Art. 38.5 of the ICN; Turland et al., 2018).

Unfortunately, the generic name proposed by Turczaninow is a latter homonym of *Stenocalyx* O.Berg (1856: 309) belonging to *Myrtaceae*, and thus the currently accepted name for the genus of *Malpighiaceae* proposed by Turczaninow as *Stenocalyx* is *Mezia* Schwacke ex Niedenzu (1890: 58); see further taxonomic and nomenclatural details in C. Anderson and W.R. Anderson (2018) and Cuatrecasas and Croat (1980).

The following provenance was cited for *Stenocalyx involutus* in the protologue: "In provincia Caraboba Venezuelae, prope St.-Estevan, alt. 1000 ped. Funck et Schlim n. 518". Judging from the handwritten

Turczaninow's catalogue of his herbarium currently held at KW (see Diachenko et al., 2015), the corresponding specimen (or specimens?) was (were) held in Folder 83. However, this whole folder is missing, and it was already missing in 1924–1925, when an inventory of the Turczaninow herbarium has been done in CWU by E.M. Lavrenko and others (Diachenko et al., 2015: 276, 278).

C. Anderson and W.R. Anderson (2018: 355) assumed that the type of *Stenocalyx involutus* is deposited in KW (which is not the case, as reported above) and provided the following type information: "Type: Venezuela, Carabobo, 'St. Estevan' [San Esteban, 10°26' N, 68°00' W], 1845–46, *Funck & Schlim* 518 (holo KW?; iso G, MPU*)".

Thus, they indicated the presence of other original specimens in herbaria of Geneva and Montpellier, and, since the holotype from KW cited by Turczaninow is lost or destroyed, a lectotype should be selected from other extant original material (Art. 9.12 of the ICN), in that case an isotype (or isosytype). We thus designate here the specimen from MPU (barcode MPU021273) as the lectotype of *Stenocalyx involutus*.

Mezia includens (Benth.) Cuatrecasas (1958: 450) ≡ *Tetrapteryx includens* Bentham (1848: 133) ≡ *Diplopteryx includens* (Benth.) Niedenzu (1928: 226).

Type: FRENCH GUIANA: 'Cayenne': Martin s.n. K – Bentham Herbarium [*vide* Anderson and Anderson (2018: 355), cited as the holotype; isotype in K – Hooker Herbarium], *non vidi*.

= *Stenocalyx involutus* Turczaninow (1858b: 394) ≡ *Diplopteryx involuta* (Turcz.) Niedenzu (1928: 226).

Type: VENEZUELA: "No. 518 | *Stenocalyx involutus* | Turczan. [identification probably added later, in another hand] | fl. jaunes | San Estevan (Caraboba) | Funcke [Funck] & Schlim | Coll. 1845–6", MPU, barcode MPU021273 (**lectotype, designated here** to replace the lost or destroyed holotype originally held at CWU; image available from <https://plants.jstor.org/stable/10.5555/al.ap.specimen.mpu021273> and <https://herbier.umontpellier.fr/zoomify/zoomify.php?fichier=MPU021273>).

Malvaceae from Central America

Dorr (2017: 25) cited the following type information for the name ***Cybiostigma sidifolium*** Turczaninow (1852: 155, as "*sidaefolium*"), the basionym of the currently accepted name ***Ayenia sidifolia*** (Turcz.) Hemsley (1979: 135): "*Cybiostigma sidifolium* Turcz., Bull. Soc. Imp. Naturalistes Moscou 25(3):155. 1852. *Ayenia*

mexicana Turcz., Bull. Soc. Imp. Naturalistes Moscou 36(2):569. 1863, nom. superfl. Type: Mexico. Oaxaca: savannah near the Pacific, 3000 ft, 1840 (fl), *H. Galeotti* 326 (lectotype, as "tipo" designated by Cristobal 1960: G [G00358304 as image!]; isolectotypes: BR [BR0000005423101 as image!], K [K000543778]!, K [K000543779]!, KW [KW001000156 as image!], P [P02286136 as image!]).

Thus, he accepted the type (in fact, the lectotype, image available from <https://plants.jstor.org/stable/10.5555/al.ap.specimen.g00358304>) designated by Cristóbal (1960), and formally did it correctly, even despite the fact that the unique original specimen studied and annotated by Turczaninow is present in KW (image available from <https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw001000156>), because there was no explicit indication of a particular specimen or herbarium in the protologue (one of Turczaninow's *Decas...* articles, see above). However, this case is not the best typification practice: the KW specimen was evidently the best option for designation of a lectotype because it bears the annotation by Turczaninow, belonged to his personal herbarium, and was definitely studied by him.

Fryxell (1979: 253) proposed a new combination *Malvaviscus achanioides* (Turcz.) Fryxell based on *Abelmoschus achanioides* Turczaninow (1858a: 196) and cited the type as deposited in Geneva: "*Linden 838* [938] (G as photo NY)". Indeed, the G herbarium has two supposedly original specimens (one mounted on two sheets) of probably the same gathering, but with the collection number reported as *Linden 9381*, and/or 938 on an envelope on one sheet (images available from <https://plants.jstor.org/stable/10.5555/al.ap.specimen.g00353129> and <https://plants.jstor.org/stable/10.5555/al.ap.specimen.g00353130>). However, the holotype (Fig. 1) was recently found by the first author (Sergei Mosyakin) in the general unmounted part of the Turczaninow collection in KW; it is well preserved and rather complete (a branch with four leaves, one flower, and buds). That specimen has not been added earlier to the collection of mounted types, most probably because Turczaninow's original identification "*Abelmoschus achanioides* Turcz." was written directly on the folder but not on a label. Such identifications on the folder only were sometimes practiced by Turczaninow, especially during later years of his life. The collection number on the original label is clearly given as *Linden 838*, exactly as in the protologue. It is thus definitely the one specimen cited in the protologue. The proper type designation is provided below.

Malvaviscus achanioides (Turcz.) Fryxell (1979: 253) ≡ *Abelmoschus achanioides* Turczaninow (1858a: 196) ≡ *Hibiscus achanioides* (Turcz.) Hemsley (1879: 121). Type: MEXICO: "*Hibiscus* | [shrub sign] fl. rouge | forêt de Teapa | Mexique, Etat de Tabasco | Hauteur 2000 p [feet] | 1839 *Linden 838*", KW, barcode KW001003068 (holotype), Fig. 1.

Several other holotypes and syntypes of Turczaninow's *Malvaceae* that were previously considered lost (e.g., see the list in Fryxell, Krapovickas, 1990) have been recently re-discovered by Sergei Mosyakin and Ganna Boiko among unmounted specimens in the Turczaninow Herbarium (KW-TURCZ), including the holotypes of *Malva mathewsii* Turczaninow (1863: 563), *M. scorpioides* Turczaninow (1863: 562), and *Sphaeralcea galeottii* Turczaninow (1858a: 186). These and some other type specimens of *Malvaceae* newly found in the Turczaninow Herbarium will be considered in a special article.

Polygalaceae: southern African Polygala

In their checklist of southern African taxa of *Polygala* Linnaeus (1753: 701), Figueiredo et al. (2013) correctly indicated the types (holotypes) of Turczaninow's taxa as deposited in KW and corrected the earlier type (lectotype) designation made by Paiva (1998) for the name *P. ciliatifolia* Turczaninow (1855: 347) [considered a synonym of *P. umbellata* L.: Linnaeus (1771: 259)] to the holotype in KW (KW001000268, image available from <https://plants.jstor.org/stable/10.5555/al.ap.specimen.kw001000268>): "Although Paiva designated the M specimen as lectotype (Paiva 1998: 271), it is considered that all types of Turczaninow are at Kiew (KW), Ukraine" (Figueiredo et al. 2013: 5). As we discussed above, not all types of Turczaninow are in Kyiv, but those of almost all taxa described in *Animadversiones* (including *P. ciliatifolia*) are certainly at KW.

Hypericaceae: South American Hypericum

In his taxonomic treatment of *Hypericum* L. (Linnaeus, 1753: 783) sect. *Brathys* (L. fil.) Choisy (1821: 58) [= *Brathys* L.f. (Linnaeus fil., 1782: pl. 43, 268)], Robson (1987) in all cases indicated the types of the names validated by Turczaninow as deposited in LE (as four holotypes and one lectotype). In fact, all these taxa were published in *Animadversiones* (Turczaninow, 1858b) and their types (holotypes, or syntypes if two or more specimens or gatherings were indicated in the protologue) are in KW-TURCZ. Images of most of these KW specimens of *Hypericum* are available online from



Figure. Holotype of *Abelmoschus achanoides* Turcz. (KW001003068), now accepted as *Malvaviscus achanoides* (Turcz.) Fryxell.

JSTOR Global Plants, with some exceptions of a few supposedly missing specimens. We were able to locate recently these previously unaccounted specimens in the unmounted part of the Turczaninow collection, and the herbarium citations with corrected typifications will be published in a separate nomenclatural note (Mosyakin et al., in preparation).

Concluding remarks

Many additional examples of correct and incorrect indications or designations of types of plant names validated by Turczaninow in his *Animadversiones* and in some other publications can be provided. Some specific cases will be discussed in more detail in forthcoming articles. In any case, a critical analysis of the protologue, available original material, and associated information is crucial for correct type designation/indication for Turczaninow's names, as well as names published by any other author. It is much easier now than it used to be before, mainly because of the growing online availability of digitized protologues and herbarium specimens.

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REFERENCES

- Aedo C. 2012. Revision of *Geranium* (*Geraniaceae*) in the New World. *Systematic Botany Monographs*, 95: 1–550.
- Aedo C., Aldasoro J.J., Sáez L., Navarro C. 2003. Taxonomic revision of *Geranium* sect. *Gracilia* (*Geraniaceae*). *Brittonia*, 55: 93–126.
- Al-Shehbaz I.A. 2018. A monograph of the South American species of *Draba* (*Brassicaceae*). *Annals of the Missouri Botanical Garden*, 103(4): 463–590. <https://doi.org/10.3417/2018184>
- Anderson C., Anderson W.R. 2018. Revision of *Mezisa* (*Malpighiaceae*). *Edinburgh Journal of Botany*, 75(3): 321–376. <https://doi.org/10.1017/S096042861800015X>
- Bentham G. 1848. Contributions to the Flora of Guiana. Enumeration of plants collected in British, Dutch, and French Guiana, by Sir Robert and Richard Schomburgk, Dr. Hostmann, M. Leprieur, and others [Part 1]. *London Journal of Botany*, 7: 116–137.
- Berg O. 1856. Revisio myrtacearum americae. *Linnaea*, 27: 1–472.
- Biral L., Mosyakin S.L., Lombardi J.A. 2019. Proposal to conserve the name *Tontelea attenuata* (*Celastraceae*) against *Maytenus amygdalina*. *Taxon*, 68(4) (in press).
- Choisy J.D. 1821. *Prodromus d'une monographie de la famille des hypericinées*. Genève: J.J. Paschoud; Paris: Mème maison de Commerce, ii + 70 pp. + IX tab.
- Cristóbal C.L. 1960. Revisión del género *Ayenia* (*Sterculiaceae*). *Opera Lilloana*, 4: 1–230.
- Cuatrecasas J. 1958. Prima Flora Colombiana: 2. *Malpighiaceae*. *Webbia*, 13(2): 343–664. <https://doi.org/10.1080/0837792.1958.10669680>
- Cuatrecasas J., Croat T.B. 1980. *Malpighiaceae* [in Woodson R.E., Schery R.W. & collaborators (Eds.) *Flora of Panama*, Part VI]. *Annals of the Missouri Botanical Garden*, 67: 851–945.
- Diachenko I.I., Shumilova A.V., Shiyan N.M. 2015. The Catalogue of the herbarium collection of M.S. Turczaninow as a unique scientific and historical manuscript. In: *Contribution of amateur naturalists into biological diversity studies. International Scientific Conference devoted to the 200th anniversary of Lajos Vágner's birthday*. Beregovo; Uzhgorod: Ferenc Rákóczi II Transcarpathian Hungarian Institute, pp. 274–279. [Дяченко І.І., Шумілова А.В., Шиян Н.М. 2015. Каталог гербарної колекції М.С. Турчанінова – унікальна рукописна науково-історична пам'ятка. В зб.: *Внесок натуралістів-аматорів у вивчення біологічного різноманіття. Матеріали міжнародної наукової конференції, присвяченої 200-річчю від дня народження Людвіга Вагнера (14–16 травня 2015 року, Берегово, Україна)*. Берегово; Ужгород: Закарпатський угорський інститут ім. Ф. Ракоці ІІ, с. 274–279].
- Dorr L.J. 2017. Two innovations in Mexican *Malvaceae*. *Journal of the Botanical Research Institute of Texas*, 11(1): 25–28.
- Figueiredo E., Smith G.F., Pavia J. 2013. A checklist of *Polygala* (*Polygalaceae*) in the Flora of Southern Africa region with notes on types. *Phytotaxa*, 155(1): 1–22. <http://dx.doi.org/10.11646/phytotaxa.155.1.1>

- Fryxell P.A. 1979. Taxonomic notes on Chiapas *Malvaceae*. *Systematic Botany*, 4(3): 253–256.
- Fryxell P.A., Krapovickas A. 1990. The *Malvaceae* published by Turczaninow. *Contributions from the University of Michigan Herbarium*, 17: 173–182.
- Hemsley W.B. 1879. *Malvaceae, Sterculiaceae*. In: Hemsley W.B. *Biologia Centrali-Americana; or, contributions to the knowledge of the fauna and flora of Mexico and Central America* edited by F. Ducane Godman and Osbert Salvin. *Botany*, vol. 1(2). London: R.H. Porter & Dulau & Co., pp. 98–136.
- Kamelin R.V., Sytin A.K. 1997. Nikolai Stepanovich Turchaninow (on the occasion of his bicentenary). *Botanicheskiy Zhurnal*, 82(9): 123–137. [Камелин Р.В., Сытин А.К. 1997. Николай Степанович Турчанинов (к 200-летию со дня рождения). *Ботанический журнал*, 82(9): 123–137].
- Linnaeus C. 1753. *Species Plantarum*, vols. 1–2. Holmiae [Stockholm]: Laurentius Salvius, 1200 pp.
- Linnaeus C. 1771. *Mantissa Plantarum* [vol. 2] *Altera, Generum editionis VI & Specierum editionis II*. Holmiae [Stockholm]: Impensis Direct. Laurentii Salvii, pp. 143–588.
- Linnaeus C. fil. 1782 (dated "1781"). *Supplementum Plantarum Systematis Vegetabilium editionis decimae tertiae, Generum Plantarum editionis sextae, et Specierum Plantarum editionis secundae*. Brunsvigae [Braunschweig]: Impensis Orphanotrophi, [14 pp. *Praefatio*] + 468 pp.
- Lipschitz S.Yu., Vasilchenko I.T. 1968. *Central herbarium of the USSR*. Leningrad: Nauka, 141 pp. [Липшиц С.Ю., Васильченко И.Т. 1968. *Центральный гербарий СССР*. Ленинград: Наука, 141 с.].
- Marchant N.G. 1990. The contribution of the Russian botanist Turczaninow to Australian plant taxonomy. In: Short P.S. (Ed.). *History of Systematic Botany in Australasia. Proceedings of a symposium held at the University of Melbourne 25–27 May 1988*. Canberra: ASBS, pp. 121–130.
- McNeill J. 2014. Holotype specimens and type citations: general issues. *Taxon*, 63(5): 1112–1113.
- McNeill J., Barrie F.R., Buck W.R., Demoulin V., Greuter W., Hawksworth D.L., Herendeen P.S., Knapp S., Marhold K., Prado J., Prud'homme van Reine W.F., Smith G.F., Wiersema J.H., Turland N.J. (Eds.). 2012. International Code of Nomenclature for algae, fungi, and plants (Melbourne Code): Adopted by the Eighteenth International Botanical Congress, Melbourne, Australia, July 2011. Königstein: Koeltz Scientific Books. *Regnum Vegetabile*, 154: 1–274.
- Miers J. 1872. On the *Hippocrateaceae* of South America. *Transactions of the Linnean Society of London*, 28: 319–432.
- Mosyakin S.L., de Lange P.J. 2019. Notes on typification and nomenclature of four taxa of *Geraniaceae* described by Turczaninow from New Zealand and Australia. *Phytotaxa*, 419(2): 169–181. <http://dx.doi.org/10.11646/phytotaxa.419.2.3>
- Mosyakin S.L., Esser H.-J., Freitag H. 2018. The holotype of *Chenopodium baryosmon* (*Chenopodiaceae*) rediscovered: just one of many type specimens from the private herbarium of Schultes, now in the Turczaninow herbarium at KW. *Phytotaxa*, 334(1): 49–54. <http://dx.doi.org/10.11646/phytotaxa.334.1.7>
- Myakushko T.Ya. 1976. The scientific heritage of M.S. Turchaninow. *Ukrainian Botanical Journal (Ukrayins'kyi Botanichnyi Zhurnal)*, 33(6): 647–651. [М'якушко Т.Я. 1976. Наукова спадщина М.С. Турчанинова. *Український ботанічний журнал*, 33(6): 647–651].
- Myakushko T.Ya., Glagoleva N.G., Mel'nyk S.K. 1979. M.S. Turchaninow's herbarium collection of type specimens of new species. *Ukrainian Botanical Journal (Ukrayins'kyi Botanichnyi Zhurnal)*, 36(1): 85–90. [М'якушко Т.Я., Глаголева Н.Г., Мельник С.К. 1979. Гербарна колекція типових зразків нових видів М.С. Турчанинова. *Український ботанічний журнал*, 36(1): 85–90].
- Myakushko T.Ya., Sirenko I.P., Glagoleva N.G., Mel'nyk S.K. 1981. Information and search system of the herbarium collection of type specimens of M.S. Turchaninow's new taxa *Ukrainian Botanical Journal (Ukrayins'kyi Botanichnyi Zhurnal)*, 38(4): 71–73. [М'якушко Т.Я., Сіренко І.П., Глаголева Н.Г., Мельник С.К. Інформаційно-пошукова система гербарної колекції типових зразків новоописів М.С. Турчанинова. *Український ботанічний журнал*, 38(4): 71–73].
- Niedenau F. 1890. *Malpighiaceae*. In: Engler A., Prantl K. (Eds.). *Die natürlichen Pflanzenfamilien*, Teil III, Abt. 4. Leipzig: W. Engelmann, pp. 41–74.
- Niedenau F. 1928. *Malpighiaceae* [Pars 1]. In: Engler A. (Ed.). *Das Pflanzenreich*, IV, 141, Heft 91. Leipzig: Verlag von Wilhelm Engelmann, pp. 1–246.
- Paiva J.A.R. 1998. *Polygalarum africanarum et madagascariensium prodromus atque gerontogaei generis Heterosamara* Kuntze, a genere *Polygala* L. segregati et a nobis denuo recepti, synopsis monographica. *Fontqueria*, 50: i–vi + 1–346.
- Robson N.K.B. 1987. Studies in the genus *Hypericum* L. (*Guttiferae*) 7. Section 29. *Brathys* (part 1). *Bulletin of the British Museum (Natural History). Botany*, 16: 1–106.
- Seregina A.P. 2010. Collection of Hugh Cuming in the Moscow University Herbarium (MW). *Komarovia*, 7(1–2): 69–88.
- Shiyan N.M. (Ed.). 2011. *Herbaria of Ukraine. Index Herbariorum Ucrainicum*, Kyiv: Alterpress, 442 pp. [Шиян Н.М. (ред.-укл.). 2011. *Гербарії України. Index Herbariorum Ucrainicum*. Київ: Альтпрес, 442 с.].
- Stafleu F.A. 1969. Turczaninow's *Flora Baicalensi-Dahurica*. *Taxon*, 8(5): 563–565. Available at: <https://www.jstor.org/stable/1218386>
- Stafleu F.A., Cowan R.S. 1986. *Taxonomic literature: A selective guide to botanical publications and collections with dates, commentaries and types, vol. 6: Sti–Vuy*. 2nd ed. Utrecht/Antwerpen: Bohn, Scheltema & Holkema & The Hague/Boston: dr. W. Junk b.v., Publishers, 926 pp.
- Thiers B. 2008–onward. *Index Herbariorum*. A global directory of public herbaria and associated staff. New York Botanical Garden's Virtual Herbarium. Available at: <http://sweetgum.nybg.org/science/ih> (Accessed 16 May 2019).

- Turczaninow N.S. 1843. Decas generum plantarum hucusque non descriptorum. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 16 (No. 1): 51–62.
- Turczaninow N.S. 1847. Decas tertia generum adhuc non descriptorum, adjectis descriptionibus nonnularum specierum Myrtacearum xerocarpicarum atque Umbelliferarum imperfectarum. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 20 (Part 1, No. 1): 148–174.
- Turczaninow N.S. 1852. Decas septima generum adhuc non descriptorum, adjectis descriptionibus nonnularum specierum. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 25 (Part 2, No. 3): 138–181.
- Turczaninow N.S. 1855 (volume of "1854"). Animadversiones ad primam partem herbarii Turczaninowiani, nunc Universitatis Caesareae Charkowiensis [*Animadversiones Part 1*]. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 27 (Part 2, No. 4): 271–372.
- Turczaninow N.S. 1858a. Animadversiones in secundam partem herbarii Turczaninowiani, nunc Universitatis Caesareae Charkowiensis [*Animadversiones Part 2/1*]. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 31 (Part 1, No. 1): 185–250.
- Turczaninow N.S. 1858b. Animadversiones in secundam partem herbarii Turczaninowiani, nunc Universitatis Caesareae Charkowiensis [*Animadversiones Part 2/2*]. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 31 (Part 1, No. 2): 379–476.
- Turczaninow N.S. 1859. Animadversiones in secundam partem catalogi plantarum herbarii Universitatis Charkowiensis [*Animadversiones Part 2/3*]. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 32 (Part 1, No. 1): 258–277.
- Turczaninow [as "Turczaninoff"] N.S. 1863. Animadversiones ad catalogum primum et secundum herbarii Universitatis Charkowiensis [Addenda to *Animadversiones Parts 1 and 2*]. *Bulletin de la Société Impériale des Naturalistes de Moscou*, 36 (Part 1, No. 2): 545–615.
- Turland N.J., Wiersema J.H., Barrie F.R., Greuter W., Hawksworth D.L., Herendeen P.S., Knapp S., Kusber W.-H., Li D.-Z., Marhold K., May T.W., McNeill J., Monro A.M., Prado J., Price M.J., Smith G.F. (Eds.). 2018. *International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017*. Glashütten: Koeltz Botanical Books. *Regnum Vegetabile*, 159: xxxviii + 254 pp. <https://doi.org/10.12705/Code.2018>

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