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STEPPE, TAIGA, AND TUNDRA.<sup>1</sup> — Anyone hereabouts contemplating “the magnificent Flora USSR” may have wondered: “But what if some regional botanist within its range should desire to publish a flora of his area? Would that be allowed, and would divergent views in systematic botany be permitted, let alone supported, by national science organizations in the USSR?” That the answer is “yes” is signified by the appearance and contents of this two volume Flora of Central Siberia, by M. G. Popov. In addition to this, floras of the Murmansk, Tadzhik, Caucasus, Yakut, and Northern Mongolia regions have appeared during the 1950’s.

The territory covered by this flora, as defined by the author, is 2000 kilometers east to west, and 1000 kilometers north to south. Westward its limit is 92° east longitude in the Enisee area, and eastward it extends to 122° east 1., or the Olekmoi line; northward to the 60th parallel, and southward to about the 48th parallel, or the border of the Mongolian Peoples’ Republic. A glance at a map of Canada will show that Alberta, Saskatchewan, and Manitoba, with southeastern British Columbia east of 120°, form a block almost exactly the same size, occupying almost the same territory latitudinally and longitudinally in the western hemisphere. In both territories the drainage is northeastern and northwestern, and within them eastern and western floristic elements of their respective continents meet.

The author, Popov, defines therein 6 principal areas: 1. The Eniseian; 2. The Saian Mountain Taigan area, mountains with a rich alpine flora, and a pine — larch taiga; 3. The Central Siberian Taigan area, mostly high plateau, with

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<sup>1</sup>The Flora of Central Siberia by Mikhail Grigorevich Popov. Vol. I, 1957. pp. 1-556. Pls. 1-65. Vol. II, 1959. pp. 557-920. Pls. 66-104. Published by the East Siberian Affiliate of the USSR Academy of Sciences, Moskow — Leningrad. Foreword by Boris K. Shishkin, editor. Price approximately \$4.00 per volume in US currency.



considerable steppe vegetation; 4. The Baikal Taigan area, the lake shore and the mountains bordering it, which have an extensive alpine tundra flora above a pine taiga; 5. The Daurian Steppe area, mostly plains, bordered northward by pine — larch taiga and southward by the Mongolian steppes; and 6. The Vitim — Patomsk Taigan area, with mountain ranges having an alpine flora above a Daurian larch taiga.

The political capital of this area is Irkutsk; and Baikal, the largest freshwater lake in Asia, and sixth largest in the world whose geological history extends back to Jurassic times, and whose hundreds of unique animal species are famous in zoology, is the center of geographical interest.

The author dedicates the flora to “the great botanist and man, Nikolai Stepanovich Turczaninov” or Turchaninov by modern transliteration, who was the leading botanist of past-century czarist Russia. The help of eleven individuals, ranging from the president of the Siberian Affiliate of the National Academy to two student assistants is acknowledged. No families or other groups were relegated to specialists; Popov is the sole author. There is a frontispiece portrait of Turczaninov, and a picture of the author at his work desk. Of the approximately 2000 numbered species in the flora, 143 are of “Turcz.” authorship, while one genus and 11 species are named after him. The names Pallas, Bunge, and Willdenow appear frequently. However Linnaeus is the author of 682 of the species according to my count, and of about 300 genera in addition. *Sibiricus* (*a-um*) is the name of 50 taxa, while 20 species are *baicalenses*, and *daurica* or *dahurica* is the designation of 36.

Certain past-century travelers in Siberia had occasion to note in Irkutsk (“the Paris of Siberia”) a spirit of political and religious independence from Moskow and Petersburg. Some such individuality is evident in the present volumes. In the introduction to what he designates “our conspectus” or “our conspectus flora” the author Popov writes: “Fundamentally only one system exists for Angiosperms, that outlined in 1818-1820 by Pyramus DeCandolle,” . . . . . “I categorically reject the concept of (phylogenetic) family relationships in vogue among other botanists.” However, out



of respect to "the custom established for us by Russians and Germans brought up on the Engler system" he places the Monocotyledons before the Dicotyledons. "I wish in no way to convey the idea that Monocotyledons preceded the Dicotyledons in evolution; both are of simultaneous origin." he writes.

The author's stand in regard to species is conservative, with only a moderate number of varieties being recognized. With genera he is more liberal. Thus, *Ranunculus salsuginosus* is *Halerpestes salsuginosa*, and *Potentilla fruticosa* is *Dasiophora fruticosa*, for example.

Except for certain cases noted below there are no keys to higher groups, families, genera, or species. In genera of several to many species there are key characters interlined between species or groups of species, in the style of the older Grays Manuals. The bulk of the 900 plus pages is occupied therefore by brief to prolonged descriptions of families, genera, species and ranges. The details of regional distribution are numerous and satisfyingly thorough. With the paragraph on the range of an acceptable, i. e. numbered species, one will find a descriptive line and locality or two for what the author considers inconsequential, or doubtful micro-species. Thus, *Carex*, inevitably the largest genus, has 94 numbered species, with 58 additional receiving more or less honorable mention. Similarly, while an approximate 2000 is the total number of species per the author's statement and the reviewer's check as well, the total treated or touched upon in some way is 2620 according to the index count.

"When genera or species are merged, or when a taxon is raised or lowered in rank, or reduced to synonymy," that, so someone wrote me in effect, "should be done only as part and parcel of a thorough study of the group concerned, not in a local list. Reasons should be given and specimens should be cited. The mere indication that the change seems desirable to the author is not enough." This stand has been echoed by others but it has rarely been followed. In the present work it is refreshing to note that there is little if any burial in synonymy without explanation. There are even a number



of resurrections. In the genus *Carex* for example, contrary to the Flora USSR Vol. III, many sectional and subsectional names by Kükenthal, Theodor Holm, Tuckerman, Drejer, et al. are restored, replacing those used by Krechetovich. Moreover "*Carex rigida* Goodenow", and "*Carex Goodenoughii* Gay", long since banished elsewhere (cf. Fernald, *Rhodora* 44: 229, 300. 1942), are back in good company.

Some evidence of editorial liberality is evident in that: (1) there is no definition or discussion of the Eniseian area; (2) there are numerous remarks and comparisons with related species outside the scope of the flora; (3) the table in the introduction lists 42 as the number of genera of Cruciferae, whereas only 39 are treated in the text; (4) notwithstanding "We provide no dichotomous keys for identification but separate genera into sections groups and series", yet keys, mostly extracted from the Flora USSR, for *Alchemilla*, *Hedysarum*, *Myricaria*, *Thymus*, and *Mentha*, and Shishkin's key to the genera of Umbelliferae from the same work are included.

The author notes that in his region endemics are comparatively few. However, two monotypic genera, *Borodinia baicalensis*, a crucifer, and *Tridactylina Kirilovii*, a composite, and 17 additional species are peculiar to the basin of Baikal. In comparison to the great number of animal endemics which have been and are still being described from the waters of the lake, these, obviously are not impressive.

All the geobotanical points of interest may not come within the scope of a review. However, similarities in this flora to that of montane and alpine New England, Canada, and the Rocky Mountains are inescapable. Nearly all of its species of ferns, *Juncus*, and *Potamogeton* are in the above areas. Of the principal formation, the mighty, vast and dense Taiga, the coniferous species are Eurasian, with the exception of the panboreal *Juniperus communis*. And of no little interest is the evidence that the ericaceous species in the shade of the Taiga: *Chimaphila umbellata*, *Moneses uniflora*, *Pyrola incarnata*, *P. minor*, *P. chlorantha*, *Ramischia secunda*, *R. obtusata*, *Monotropa hypopitys*, *Ledum palustre*, *Loiseleuria procumbens*, *Phyllodoce coerulea*, *Cassiope tetra-*



*gona*, *C. ericoides*, *Andromeda polifolia*, *Cassandra calyculata*, *Arctostaphylos uva-ursi*, *Arctous alpina*, *Vaccinium uliginosum*, *V. myrtillus*, *V. vitis-idaea*, *Oxycoccus quadripetalus* (*O. palustris*, *O. oxycoccus* syns.), are individually more pantaigan and panboreal than the coniferous species of the Taiga itself.

The quality of the paper, the printing, the binding, and especially the illustrations are well above that of the volumes of the Flora USSR, and compares very favorably with that of most modern floras.

The numerous instances of typification of boreal plants falling within its territory, and its abundance of distributional details should render this flora a necessity wherever plant systematics and plant geography are seriously studied. Of considerable contemporary interest should be the fact that much is being undertaken and achieved in Siberian science, as is well documented by the material pouring into the Library of Congress. — LEON KELSO, WASHINGTON, D. C.

#### THREE GRASSES APPARENTLY NEW TO MASSACHUSETTS. —

In *Rhodora* 35: 261, 262 (1933), I reported finding a number of interesting adventive plants on the beds of Gray & Cole's Nursery in Ward Hill, Haverhill, Essex County, Massachusetts. In June 1955, I revisited the nursery and found *Poa chapmaniana* Scribn., *Holosteum umbellatum* L. and *Draba verna* L. var. *boerhaavii* Van Hall still persisting after over twenty years. While there, I collected a specimen of what appeared to be *Alopecurus geniculatus* L. but closer examination made me suspect that it might be *A. carolinianus* Walt. Since Hitchcock's Manual of the Grasses did not report the species north of New Jersey, I put the specimen aside for further study. In May 1959 while collecting *Draba verna* in a flower-bed beside a house in Old Deerfield, Franklin County, Mass., I again found the same grass. During a recent trip to Washington I showed the specimens to Dr. J. R. Swallen and he confirmed my identification of *A. carolinianus*. The New Britton and Brown Illustrated Flora lists the species as being found north to Massachusetts but Hitchcock and the 8th edition of Gray's Manual give New Jersey



Kelso, Leon H. 1960. "Steppe, Taiga, and Tundra." *Rhodora* 62, 258–262.

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