A bibliography of the scientific work of Boris V. Skvortzov (1896–1980) with commentary on the publications concerning diatoms (Bacillariophyta)

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SYNOPSIS. This paper presents a full bibliography for the naturalist Boris V. Skvortzov. Special attention has been given to his diatom (Bacillariophyta) studies. Skvortzov was fortunate to have had access to material from many areas which had never been studied for their diatom flora. In this paper we present a detailed list of those localities.

INTRODUCTION

The scientific career of Boris Skvortzov [Skvortsov, Skvortzov] (1896–1980) spanned nearly 70 years: he published his first paper in 1916 when just 20 years old and his last papers appeared posthumously between 1981 and 1985. As far as we have been able to establish, during that period Skvortzov published some 434 papers, notes and popular botanical accounts mostly relating to the area of Manchuria in north-east China. Skvortzov was predominantly interested in microalgae, particularly diatoms, but published a great deal in many other botanical areas.

Contemporary reaction to Skvortzov’s work, at least from the perspective of phycologists, is somewhat mixed. Skvortzov did indeed have a penchant for naming many new taxa – indeed most of his floristic diatom accounts are predominantly descriptions of new taxa. Yet this in itself is not the largest obstacle to understanding and coming to some informed judgement of Skvortzov’s work. He was able to examine material from parts of the world that had hardly, if ever, been studied before, but practically none of his material is available for study today, and very little has found its way into existing herbaria. Why not, then, simply consign his work to history, regard his new taxa as unverifiable and rely on current accounts made from the same areas? We believe that this option seems a little premature, although it is worth noting that some researchers studying flagellates have opted for that approach (Patterson, 1994: table 5). We have developed a slightly different view and this contribution is a preliminary start on gaining an understanding of Skvortzov’s work and will ultimately contribute to a greater understanding of diatom diversity in north-east China.

Our specific interest in Skvortzov developed from recent studies on Lake Baikal, Siberia under the auspices of a ‘Darwin Initiative for the Survival of Species’ study (Flower & Williams, 1999). The Darwin Initiative (DI) allowed us to make a systematic collection of diatom samples from the entire lake at regular intervals and regular depths. In addition, we had the opportunity to revisit and re-sample the localities Skvortzov examined. Skvortzov was not the first to write about and describe the many diatoms of Lake Baikal, but he was the first to recognize and identify many of its taxa as endemic. His diligence, with the deep water Lake Baikal sample at least, can
be appreciated by his comment that 'I have examined about a hundred microscopic slides from this place...,' (Skvortzov, 1937:297). It would be surprising if anyone working today dealt with such large numbers of preparations from a single site. (Skvortzov (1936: 9) notes the same approach for his study of Kizaki Lake in Japan: 'I have examined a hundred microscopic slides...Half a year was spent in the study of this collection'.)

Our own studies suggest that far from being rather optimistic concerning the diversity of Lake Baikal diatoms, Skvortzov may have under-estimated Lake Baikal's benthic diatom diversity (see Mann, 1999). If Skvortzov was reasonably accurate in this study, there seems no reason to doubt his work elsewhere -- or at least until such time as relevant material becomes available and can be examined.

A second aspect that we felt required attention was that as Skvortzov had written some of the first accounts of north-east Chinese diatoms, and we were struggling to understand the biogeographic relations of the area relative to our Lake Baikal samples, a survey of the areas he did study was of significance. Considerably more attention is now being paid to the idea of regional diversity of diatoms and to their significance in biogeographic studies (Kociolek & Spaulding, 1999).

Bearing these ideas in mind, in this paper we have tried to achieve three things that may act as a baseline for further examination and evaluation of Skvortzov's diatom studies. It is of some significance that Chin (1951:151) wrote: 'During the past hundred years Skvortzov was the most ardent worker.'

(1) The biggest outstanding problem when dealing with Skvortzov's work is that very little of his original material is available. To address this issue, we have compiled a list of the material Skvortzov examined. A good deal of this material was given to him by other collectors and the possibility remains that some still exists in various herbaria around the world. We have been able to trace some original material in the diatom collections at the BM and are aware that other sub-samples exist in the California Academy of Science, Bremerhaven in Germany, and the Department of Paleobotany, Swedish Museum of Natural History. A list of geographical areas may allow new or recently collected material to act as neotypes should Skvortzov taxon names be confirmed. We have begun this process by designating neotypes from the DI material for some Lake Baikal diatoms we have examined in detail (Reid & Williams, submitted).

(2) We have compiled a bibliography of all his writings as far as we have been able to establish. A number of the entries have not been seen by us but have been taken from bibliographies Skvortzov published himself. Tracing Skvortzov's published work is a complex business simply because many of the places he chose to publish at that time were small local natural history societies whose existence was sometimes rather short, exaggerated by the volatile nature of Manchuria during the years he was living and working there. Fortunately for us, many of these publications are held in the various libraries of The Natural History Museum, London (BM). We have numbered all the items in the bibliographic section and refer to these numbers in the remaining text. For instance, Skvortzov's three bibliographies can be found under items 300, 396 and 418. References to work not written by Skvortzov appear at the end of the paper and are referenced in the usual way. With respect to Skvortzov's publications, two articles have been published that review his contributions. Unfortunately, we have been unable to trace copies of either (Uedo, 1940; Baranov, 1959).

(3) As our area of interest is diatoms, we have marked those publications which mention or list diatom species, new or otherwise. We have resisted the temptation to list all of Skvortzov's taxonomic names at this stage, simply because the large amount of Chinese literature needs to be taken into account and it would serve no immediate purpose other than to highlight various permutations of names.

A SHORT BIOGRAPHY

Although Skvortzov lived most of his life in Harbin, north-east China (he was born in Warsaw in 1896, moving to Harbin in 1902), he travelled to St. Petersburg during the years 1914 to 1917 to train as a diatomist under R.W. Kolbe (Selling, 1962) and S. Wislouch. With the exception of some time spent collecting material and learning English in Fuzhou, Fujien, China (1918–1919), Skvortzov remained in Harbin until 1962 when he departed for Brazil where he spent his remaining years.

During his time at Harbin, he was actively involved in the Manchurian Research Society and was in charge of their cryptogamic plants (Review of the Manchurian Research Society, 1926:13). On his return to Harbin from Fuzhou, Skvortzov noted that from 1919 to 1935 he taught botany. He was heavily involved with the Manchurian Research Society, acting as their secretary, which he probably undertook on a voluntary basis: 'the shortage of funds did not permit to engage a special personnel for the station, and all work was carried on voluntarily by a few members of the Manchuria Research Society in their leisure hours' (Pavlov, 1925:9). From 1923 to 1928, the period covered by written reports, Skvortzov gave numerous presentations, especially to the 'Young Archaeologists, Naturalists and Ethnographers Association of Harbin' (he gave two presentations in 1923, six in 1924 and seven in 1925). Skvortzov published most of his diatom studies between 1919 and 1939. After that time, and especially while living in Brazil, he worked and published mainly on flagellates. We have no expertise with those organisms and leave any evaluation of that work to those who do.

We were unaware of any existing portraits until recently when we discovered a number in the various publications of the Manchuria Research Society. The reports of the society include a number of group photographs that include Skvortzov. In the Review of the Manchurian Research Society (1926, tables 2 and 3), Skvortzov appears in a group photograph of the 'Members of the M.R.S. committee presided over by Doctor Wang Tsin-Tschung. (1924)' and a group photograph of 'Members of the M.R.S. committee presided over by Doctor Hei-Show-Djen (1925)'. Other photographs include Skvortzov with 'The American explorer prof. [sic] Hansen, seated amid the members of the Natural History section attached to the M.R.S.' (Fig. 2) and a portrait of Skvortzov partially hidden by a giant water lily (Figs 1 & 3).

In a later report, there are group photographs of the Manchurian Research Society that includes Skvortzov; 'Vice-president of the Chinese Eastern Railway Board of Directors Mr. Lasheviich surrounded by members of the Manchuria Research Society Committee after having viewed the Museum' and 'Manchuria Research Society Members of the Committee and Revisional Committee, elected in 1927' (Review of the Manchurian Research Society, 1928: tables 2 and 6).

1The Journal of the North China Branch of the Royal Asiatic Society (50:259) listed Skvortzov as a member, giving his address as 'c/o C.M. customs, Foochow'.

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A SUMMARY OF THE DIATOM MATERIAL SKVORTZOV STUDIED

The majority of Skvortzov's material came from the area known as Manchuria which has been largely understood as north-east China. Manchuria can be separated from the Russian Federation largely by the Amur, Argun, and Ussuri rivers, from North Korea by the Yalu and Tumen rivers, and from Mongolia by the Da Hinggan (Great Khingan) Mountains. Manchuria also includes the Liaodong peninsula. Provincial divisions have changed frequently and since 1956 Manchuria has comprised Jilin, Heilongjiang, and Liaoning. Much of the region is mountainous. The Da and Xiao Hinggan (Great and Lesser Khingan) in the north and the Changbai in the east are the greatest ranges. Material has been grouped to largely correspond to modern geographical areas.

Each entry below is identified by the relevant published reports and a collecting date if given. Future work will concentrate on the new taxa Skvortzov named and the possible material that can be, or has been, used for typification.

China

Fujian (Fukien)

FUZHO (FOOCHOW, MINHOW). Skvortzov studied several collections from Fuzhou most of which he collected himself in 1918 and 1919 (item 418:389); Chung (1929:125) gives a brief account of Skvortzov's visit.

1917 (item 61): The first article was based on material collected by Mrs W.R. Myers 'in the environs of Fuzhou...the material was examined in the Petrograd Academy of Science in 1917' (item 61:205). Skvortzov examined the material in the Petrograd Academy suggesting that this study may have been under the supervision of Kolbe and Wislouch, leaving open the possibility that this material may still be in St. Petersburg (Petrograd).

1918 (item 139): This was the first account of material collected by Skvortzov during his trip to China: 'Being in Fuzhou in 1918 some observations were made by me during the winter time on the life of the plankton of the fishponds' (item 139:190).

1918 (item 259): Material collected by Skvortzov 'on the seashore of Fukien Province, near Foochow, China, during the winter of 1918' (item 259:151).
1918 (item 427): This material is presumably part of the collection made by Skvortzov in 1918. One collection was noted as the type material for *Porosularia meisteri* Skvortzov and *Porosularia merrilli* Skvortzov ('Hab. in Stagno prope oppidum Foochow, prov. Fukien, China australis, I.g. B. Skvortzov, in 1918', item 427:413) and another for the type material of *Porosularia borgei* Skvortzov ('Hab. in orizetis prope oppidum Foochow, prov. Fukien, China australis, I.g. B. Skvortzov, 1918', item 427:415).

February 1919 (item 140): Material collected by 'Mr. C.R. Kellogg, ... at the end of February 1919 in Kokchiang, 70 miles from Foochow...' (item 140:195).

No date (item 427): Some additional samples were included in this report, the collections probably also dating to 1918: 'River Ming, in the environs of Foochow City, prov. Fukien, South China' (type of *Pinnularia kisselewii* var. *subacuta* Skvortzov) (item 427:400) and '...swamps of Foochow, prov. Fukien, South China' (type material for *Pinnularia meyerii* var. *hinganica* Skvortzov) (item 427:400).

XIAMEI (AMOY) 1924 (items 222, 386, see also item 194 & 427): Material collected by Dr H.H. Chung in the winter of 1924. More details of the locality were given in a later paper by Skvortzov: '...Hab. in stagnis prope oppidum Amoy, prov. Fukien, China australis, Leg. H.H. Chung, a. 1924' (item 386:378, item 427: 412 & 414). This material served as the type for *Porosularia amoyensis* Skvortzov and *Porosularia kolbei* Skvortzov (item 427: 412 & 414).

TIANJIN (TIETSNIN). Collections made by Skvortzov in early 1919 were used for two studies (detailed below). His general botanical work from this period is covered in a series of papers entitled 'Notes on the agriculture botany and zoology of China' (items 59-90, 105-110, 125-132, 138-140).

17 March 1919 (item 138, 190): 'Being in Tientsin in March 17, 1919 a small collection of Algae was gathered by me in the ponds of the Russian Garden and near brick-kilns' (item 138:189; item 190:102).

KULIANG RIVER 1918 (item 228): Material collected by Skvortzov 'at Kuliang, Fukien Province, in South China. This place is 9 kilometers from Foochow, and is 2,400 feet above sea level' (item 228:39).

Jiangsu (Kiangsu) SUZHOU (SOOCHOW). Several samples from Suzhou were noted by Skvortzov in item 330, collected by Dr H.L. Li in 1934. Skvortzov later (item 402) gave descriptions of the same taxa, noting the troubled publication history of this study: '...this manuscript was published by the author in Proceedings of the Harbin Nat. Hist. Sc. in 1946,...' (item 402:59). The 1946 paper (item 330) therefore still has priority in spite of being hard to obtain.

1934 (item 330 & 402): 'China media prope Soochow prov. Kianghsi Dr. H.L. Li, 9/8 34'. Skvortzov described several new taxa from this locality. One locality is given with the date '9/9, 34'. We suspect that the month of collecting in erroneous in one or other of the reports as Skvortzov later states that the new taxa were based on one sample provided by Dr L. Li 'in the lake in the City of Soochow of prov. Kiansu...in 1934' (item 402:59).

POYANG October 1929 (item 287): Material from Rev. Umberto Verdini, 'from the Eastern Lake of the city of Poyang, Hunan, China, on lotus leaves' (item 287:465). While the title refers to Hunan, Chin (1951:156) points out that Poyang Lake is in the northern part of Kiangsu and not in Hunan. The material is referred to again in item 405.

Zhejiang (Chekiang)

HANGZHOU (HANGCHOW) 12 August 1933 (item 297): Material collected from '...a sample of mosses...' by Mr I. Kovalchook-Koval in 'a cave on a rock in the environs of Hangchow...' (item 297:219). Kovalchook-Koval made a number of collections and contributed to the many Manchurian Research Society publications.

Liaoning DALIAN (DAIREN) 1926 (item 226): Material from 'my young friend A. Prosovetsky a small collection of sea mud, from oysters collected at Dairen' (item 226:419).

Shandong (Shantung)

SHANWANG – MIocene FOSSIL 1935 (item 308, 330): Skvortzov reported that this material was 'sent to me some time ago by Drs. C.C. Young and P. Teilhard de Chardin of the Geological Survey of China' (item 308:193). He described the material thus: 'diatomaceous earth forms a thick formation at Shanwang near the city of Linchü, eastern Shantung, about half way between Tsinan and Tsingtao, not far south from the railway' (item 308:193). According to Skvortzov, this was the first Chinese freshwater diatom fossil deposit. In an earlier report, Young (1936) provides more details of the deposit and when it was collected ('A closer examination of the region was evidently necessary, and I carried it out in May 1935', Young, 1936:172). Young adds in a footnote: 'The papyrus shales are a diatomaceous earth, the botanical study of which has been undertaken by Dr. B. Skvortzov. Most abundant are the frustules of *Melosira granulata* (Her.) Ralfs. A paper by Dr. Skvortzov will be published in the Bulletin' (Young, 1936:175, footnote 1). As for the age of the material, 'After careful examination, Hu believes that the age of the flora is probably Miocene...' (Young, 1936:177) and '...we have to consider the Shanwang series as Upper Miocene in age' (Young, 1937:280).

Material we believe to be from the same source was also studied by Voigt (1937). He says of this material, '...a certain quantity was kindly placed at the disposal of the writer by Dr. W.H. Wong of the National Geological Survey of China...' (Voigt, 1937:311). Voigt also states that 'So far only one authentic deposit of diatomaceous earth has been reported in China, namely, that from Shan-wang in the Lin-chu district of Shantung, which was discovered by Dr. C.C. Young of Peiping' (Voigt, 1937:311). Some of Voigt’s material is housed in the BM and some preliminary electron micrographs have been published (see Williams et al., 1998:59, figure 2–5, electron micrographs of *Tetrazyclus emarginatus* var. cf. *parvula* Forti, see also p. 55, footnote 8; BM s.n.). Further examples of this material are housed in the Palaeontological Museum of Stockholm.

Item 330 contains repeat descriptions of two taxa first described as new in item 308.

Sichuan (Szechwan) CHENGDU (CH’ENG-TU) March 1926 (item 317): '...two tubes of diatom material from the environs of that city [Ch’eng-tu], collected in March, 1926' (item 317:479). The material was donated by Dr H.D. Brown of West China Union University, Chengdu, Sichuan. Some further commentary and notes are in item 405.
Heilongjiang (Heilungkiang, Heilungtsiang)

VARIOUS LOCALITIES

1950 item 426: 'Amur prope Oopu', part of A.I. Baranov collecting trips (type material for Pinnularia zabelini var. amurensis Skvortzov).

1951 item 427: Material collected by Skvortzov, 'Had. In lacu alcalini prope Stationem Sun, prov. Heilungtsiang, Manchuria borealis, China, Skvortzov, 15.9.1951' and used as the type material for Porosularia poroides Skvortzov and Porosularia subsalsa Skvortzov.

No date item 405: 'In regionis montanis, Prov. Heilungtsiang, Manchuria borealis, China'.

Harbin

1915-1917 (item 160, 171): Skvortzov lists six samples in item 160 and eight samples in item 171. The samples were collected by various people including Skvortzov: B.R. Arnold, S.W. Schernich, M.A. Hintze, N.A. Schemilewitch and M.G. Dorian. Of these collections, the information given is, in most cases, some of little significance in establishing exact locations and dates of collecting. For instance Skvortzov’s only collecting is given as ‘...from the environs of Harbin collected by me...’ (our translation) between 1915 and 1917. The most precise dates and details are given for B.P. Arnold (during August 1916), N.A. Schemilewitch (July 1916) and M.G. Dorian (August 1916).

1927 item 312: Material collected by Skvortzov. Three samples were examined: (1) Harbin, 20 September 1927, ‘from the bark of Ulmus manshurica Nakai’; (2) from Eastern Harbin, near Maershan Railway Station, 4 July 1927, ‘on mosses on rocks along a mountain river’; (3) from Eastern Maershan, near Mifun Station, 5 September 1927, ‘in mosses on mountain rocks’ (item 312:263).

No date item 66: Material described simply as ‘The algae just described were studied from numerous collections gathered near the railway line in North and Middle Manchuria and mostly in the environs of Harbin...’ (item 66:63).

Songhua (Sungari) River, Harbin

17 March 1923 item 211: Material collected from the Sungari River for a study on winter phytoplankton. The report lists ten species of diatom.

August 1935 item 305: ‘The material was collected 28 August 1935 by one of my enthusiastic collectors Mr. I. Kovalchuk-Koval on a shore of a swumpy lake on the Sungari river plain, three miles from the Sungari railway bridge’ (item 305:783, including a photograph of the site, fig. a). A short account of the expedition is given in Anon. (1936).

August 1936 items 302-304: Plankton samples collected on the 9 August 1936 by Mr N.I. Nikitin, from ‘a marshy branch[es], along sand-dunes’ of the Sungari River (item 302:628). The diatoms are listed in part II of a three part study of this area (item 303). Skvortzov used the material for further taxonomic revisions in a later study (item 330): ‘Hab. Manshuria bor., prope Cheng st. in stagna fl. Ashiho, M. Nikitin, 10/8 1936’.

Beijing Municipality

Beijing (Peking)

March 1926 item 219: Collections made by Prof. N.G. Gee and Dr H.J. Chu ‘in the environs of Peking’ (item 219:43). In all, three lakes were studied. Previously, Gee published a list of diatoms from Suzhou and Ningbo (Gee, 1926). A name change is given in item 330:26 (Nitzschia regula f. pekinensis Skvortzov is replaced with N. regula var. robusta Skvortzov).

Shanghai

June 1918 item 70: Material collected by Skvortzov from a pond near the Public Gardens in Shanghai (item 70:66).

19 May 1933 item 310: Material collected by Mr I. Kovalchuk-Koval ‘a sample of mosses collected by him on the bark of a tree in Shanghai...’ (item 310:443).

Hongkong

August 1957 item 420: Collected by Mrs V.T. Mamchyi ‘from mosses grown on the trunks of a tree in Hong-kong, eastern Asia’ (item 420:407).

Inner Mongolia

Hinggan Ling (Khingan Mountains)


1951 item 426 & 427: Material from the ‘Northern part of Great Khingan Mountains from the western corner of Inner Mongolia, China. Collected during a botanical expedition made in August 1951 by the Botanical Section of the N.E. China Agricultural Institute of Harbin’ (item 426:111). The material is composed of two samples of moss extracts (details are given in item 426:119). The samples were collected by Skvortzov who gives a full description of the collecting trip (item 426:112). The paper makes reference to an unpublished manuscript (Bacillariophyta in Illustrata flora of North-Eastern China, 1957, ‘deposited in Herbarium of Forest Academy in Harbin, China’) which contained the first descriptions of the new taxa subsequently validated in this report.

Argun River, Dalai-Nor

August 1926 item 227: Twelve tubes of material collected by Mr. P.A. Pavlov ‘...in the northern part of Dalai-nor Lake in August, 1926’ (item 227:31).

1927 item 314: Material collected by Mr P.A. Pavlov during the summer of 1927 ‘in the environs of the Chalainor station of the Chinese Eastern Railway, at the source of Argun River, which arises from Dalai-nor or Talaihu Lake’ (item 314:43).


VARIOUS COLLECTIONS

1916, 1918, 1928, 1931 item 289: This paper is divided into four parts. The first part deals with collections made from Bagah Oulan on the 18 September 1918 on Licent’s travels to Kansou and Kou kou noor. Some further details of the expedition are given in Licent (1936:5 & 11). The second part deals with collections made from Yen tché in the province of Chansi in 1916; ‘Chensi Central: vallee du Wei ho, les Alpes chinoises’ (Licent, 1936:5). The third part deals with collections made in the environs of Kangal, near a lake. No specific details are given in item 289 but the material may have been collected during the expedition described by Licent (1936:7), of a visit in 1931 to the Mongolian Interior, Kalgan. The fourth part deals with collections made in the North of Manchuria, in the province of Kirine, to the west of Harbin, on July 1928 (item 289:36; Licent, 1936:7).

River Imingol

Some further are details given in item 330: ‘Mongolia occidentalis, fl. Imingol prope Hailar, J.V. Tokmakov, 1925’.

**Tibet**

1901 (item 69): Material collected by Mr. Ladigin ‘during the expedition in Tibet in 1901...’ The collections mentioned were from three lakes: (1) ‘plankton...freshwater lake Kurlyk-nor [1 June 1901] in the Tsaidam district...’ (2) ‘...salt lake Toso-nor [3 July 1901]... not far from lake Kukunor...’ The samples were ‘...examined in the Petrograd Academy of Science’ (item 69:66). The list of species (containing only two diatoms) was from (3) Khara-nor.

**Russian Federation**

**Jakoutsk**

1912 (item 3): Material collected by Mr G. Dolenko ‘...pendant une expedition, organise par le Comite de migration’ (item 3:19). No further details have been discovered.

**Primorsk**

**Lake Tshla**

5 August 1916 (item 5): Material collected by Lake Tshla ‘se trouve pres de l’embouchure de l’Amour et de la ville de Nikolaevsk’ (item 5:20) [‘close to the mouth of River Amur and the town of Nikolaevsk’].

**Khanka (Hanka) Lake, near Vladivostok**

1924 (5, 16, & 24 July; 4, 11, 15, 20 & 23 September; 15 August) (item 234): Material collected by E.N. Klobukova-Alisova in 1925 and by E.N. Klobukova-Alisova and A.G. Hahima in 1924 during the South Khanka Botanical Expedition made by the Southern branch of the Geographical Society of Nikolsk-Ussurisk. Seventeen species are listed with collection numbers. Some further notes are made in item 330.

**Vladivostok**

1928 (item 258): Material collected by Skvortzov during the summer from ‘Golden Horn Bay and from Cape Basargino near the Pacific Fishery Research Station’ (item 259:129) on a visit to Vladivostok.

No date (item 220): Material collected from Vladivostok ‘...from sea-weed Laminaria sp.’ (item 220:57).

No date (item 315): Material received from Mr I.P. Popov, ‘a sample of diatoms collected by him during a botanical survey of Primors Province in a Carex-Sphagnum peaty bog in Lianchilo River Valley, about 40 kilometres east of Vladivostok, not far from the seashore’ (item 315:161).

**Amursk**

**Khabarovsky (Habarovsky)**

1909–1916 (item 40, 43, 66 & 254): Samples collected from the River Amur ‘pendant les expeditions de 1909 á 1916, en Extreme Orient, entreprises par le Departement d’Agriculture’ (item 40:21). In two later reports, Skvortzov adds that the samples were collected by W.K. Soldatov ‘during the expedition of the Department of Agriculture in 1910 to 1914...largely plankton obtained from the Amur river, near Habarovsky’ (item 254:69) and ‘also from collections of the Amur river made by W.K. Soldatov...’ (item 66:63).

**River Amur**

1928 (item 311): Material collected by Skvortzov during the summer ‘in the environs of Okeanskaia station, near Amur Bay, in a forest Hypnum bog’ (item 311:251).


**River Zeya (Zeja)**


**Siberia**

**Lake Baikal**

1916, 1925–1926 (item 210): The material came from several expeditions made by C.I. Meyer. Skvortzov listed 36 samples, nine from 1916, 11 from 1925 and 16 from 1926. Meyer (1930) presented his own detailed account of the algae from the samples he collected during these expeditions, as well as presenting his accounts of the samples Skvortzov studied. Meyer’s descriptions of the samples are somewhat more detailed than Skvortzov’s account.

There has been some debate as to whom was actually responsible for the new taxon names in the 1928 publication (item 210). Much later Skabchekhvskij (1974) established that Skvortzov alone was responsible, as Meyer (1930) presented his own account a few years later in which not only did he differ from Skvortzov in a number of places but also he noted that he was solely responsible for collecting the material (Meyer, 1930:327). A similar statement was made in Skvortzov and Meyer: ‘Since 1926 B.W. Skvortzov has joined prof. [sic] C.I. Meyer to work together on the identification and classification of the Diatoms collected by the latter in the Baikal lake and this work is but a preliminary report of the work’ (item 210:2, italics added). Hence it seems justified to consider the taxonomic work as Skvortzov’s alone. The correct attribution for the new taxa in item 210 should therefore be ‘Skvortzov in Skvortzov & Meyer’ (see also Kociolek & Stoermer 1988:96–97).

29 July 1916 (item 307): Nearly ten years after the first paper on Lake Baikal, Skvortzov re-examined in detail one sample at ‘33 meters near the Ohlon Gate of Baikal Lake...’ (item 307:297). This sample is also listed in Skvortzov & Meyer (item 210:2; ‘7. 29/VII ‘Olhinskie vorota’. Haringari bay, at a depth of 33 metres’).

A number of taxonomic changes are made in item 330. Some of Meyer’s Lake Baikal material is available in the California Academy of Science and Bremerhaven (Kociolek & Stoermer 1988:95–96). New collections from Lake Baikal (housed at BM), made as part of the DI (Flower & Williams, 1999), will be ideal for designating neotypes as many of Meyer’s collecting sites were revisited and are subsequently being re-studied (Reid & Williams, submitted).

No date (item 426 & 427): Some additional material from Lake Baikal was noted in this later report: ‘River Kitschera near Lake Baikal, Siberia’ (type of Pinnularia kisselewii var. attenuata Skvortzov), ‘Lake Baikal’ (type of Pinnularia dorogostajski var. latio Skvortzov) (both in item 427) and ‘River Selenga prope Baikal, Siberia’ (type of Pinnularia lata var. intermedia Skvortzov) (item 426).
Kenon Lake, Transbaikalja
No date (item 313): Material collected by Miss K.V. Okunozova, ‘...near the shore of the lake, from twigs and leaves of Potamogeton sp.’ (item 313:399).

River Kholoy (Choloy)
No date (item 43): Material obtained from ‘l’Amour par l’expedition de Mr. Korotky ... dans le fleuve Choloy en Transbaikalje par l’expedition de Mr. Korotky...’ (item 43:22).

Tyva
River Yenissei
1925–1926 (item 386, 403): Material collected by P.J. Usachow and described as ‘...Hab. In fl. lenissei prope oppidum Krasnojarski, Siberia, Leg. P.J. Usachow, 1925–1926’ (item 386:376). Many years after receiving the material Skvortzov noted: ‘The author received the diatom samples from Yenissei River in 1927 while he was working in Harbin, China from the Hydrobiological station of Krasnojarsk City, Siberia. A series of slides was prepared by the author from these collections and preliminary studies made in 1930–1931’ (item 403:57). The material was used for some taxon descriptions in item 399, which provides more precise dates. The collections include material for Pinnularia viridis var. tubensis Skvortzov, P. viridis var. minuta Skvortzov, (‘lenissei prope oppidum Krasnojarski, Col. 17, 11.’) and P. viridis var. tumida Skvortzov (‘In fl. Yenissei, Siberia media, lg. 26.6.’).

The Altai Mountains
The Altai Mountains in southern Siberia form the major mountain range in the western Siberia region and provides the sources of the rivers Ob and Irtysh. The main areas of the region are Altaysky, Zapovednik and an area surrounding Teletskoye Lake. The entire area is enormous and Skvortzov’s samples are limited especially as most of his reports lack useful details.

1897 (item 41): Material collected by Mr Silantiev ‘...from the sources “Rachmanovsky” de l’Altai.’ (item 41:21).

Koolingze
15 July 1926 (item 316): Material collected by Skvortzov, on 15 July 1926 ‘...in the mountain ranges near Koolingze station of the Chinese Eastern Railway, about 300 miles east from Harbin, I collected a sample of diatoms from a little mountain bog of forest mosses’ (item 316:343). The material was probably used in item 427 as the type material for Pinnularia fritschianna Skvortzov.

Kazakhstan
Akmolinsk
Kurgal’dzin Lake. These early collections were probably studied in St. Petersburg and may have been retained in that institute.

June 1899 (item 42): Samples of Chaetoceras wighanii Brightwell from ‘le bassin du lac Kurgaldjin de la province d’Akomolisk.’ As noted in item 252, ‘The presence in the Kokai Lake and Nura River of Chaetoceras Wighanii Brightwell...is interesting’ (item 42:33). The collecting date for Nura River is given as 8 June 1899 and for Kokai Lake is given as 23 June 1899.

June 1912 (item 7): Collected by Mr Ganeshin (Ganesin) ‘provenant du lac Kurgaldjin’ (item 7:128).

Various Lakes Including Teletskoi (Teletskoe) and Kurgal’dzin
1899, 1901 (items 252, 246): Material provided by Prof. G.I. Vereshagin, collected by P.T. Ignatow ‘...in lakes of the Akmolinsk district of Siberia in 1899 and 1901’ (item 252:33). There were 20 samples, all listed. Item 246 is a short report on a sample from Lake Teletskoi taken in 1901 by Ignatow.

Blackhach (Balkache) Lake
No date (item 42): Material collected from ‘...lac salin d Ala-Koul, situé dans le partie ouest du lac Balkache’ (item 42:22).

Zaysan (Zaisan) Lake
1905 (items 193, 203): Material collected by A.N. Sedelnikoff (Sedelnikov) ‘...in lakes of the Altai Mountains of South Siberia. All the samples were gathered in the environs of Zaysan Lake...’ (item 193:249). Further comments on the material can be found in item 203. There is some overlap of material studied in these accounts but they are largely complementary suggesting they are all from the same source. Skvortzov refers to a detailed account of Zaysan Lake written by Sedelnikoff (1905), a book we have been unable to trace.

Markakol’ (Marka-Kul) Lake
8 July 1912 (item 8): Material collected by Mr A.N. Sedelnikov ‘...dans le grand lac Marka-Kul...’ (item 8:128).

1914, 1916 (item 253): Material collected by Sedelnikov from ‘...several mountain lakes of the Altai district in the summers of 1914 and 1916’ (item 253:36).

South Korea
Seiko Lake
1917 (item 223): Material collected from ‘...leaves and stems of Trapa natans received from Chosen (Korea)...’ from ‘Seiko lake near Suigen, II, 1917’ and received by Skvortzov from the Director of the Agricultural Experimental Station, in Suigen, Keiki-Do (item 223:9). Some further taxonomic revisions are undertaken in item 406.

Seiriori Lake
March–July 1926 (item 225): Collections made by Prof. Tamezo Morii ‘...in the lake at Seiriori near Seoul between March and July, 1926’ (item 225:283). Some further taxonomic revisions are undertaken in item 330 and 406.

Korean Strait
1925–26 (item 256): Five samples obtained from Dr Yojiro Wakiya.

Various Fossil Material
1927 (item 292): Material received from Sigetaro Kawasaki, labelled ‘diatom earth from the younger Tertiary, Bunzan-Men, Ampen-Gun, South Kanky-Do’ (item 292:9).

Japan
Honshū Island
Kamagaike
2 October 1930 (item 318): ‘Diatoms collected by Mr. Yoshikazu Okada in a mountain bog from Kamagaike, Mt. Kirigamine, Prov. Sinaro, Central Nippon, October 2. 1930’ (item 318:53).

Kizaki Lake
July 1927 (item 293): Material collected by Mr K. Kiuchi (donated by Prof. T. Kawamura) from Kizaki Lake, Shinano Province. ‘I have examined a hundred microscopic slides...Half a year was spent in the study of this collection’ (item 293:9). Some further details are given in items 330, 404 and 405 along with some taxonomic revisions.

Biwa Lake
No date (item 294): One tube of diatom clay from Biwa Lake, north
of Osaka. Sent to Skvortzov by Prof. Tamiji Kawamura. Further details are given in items 330, 404 and 405 along with some taxonomic revisions.

KANAZAWA OYSTER EXPERIMENTAL STATION
December 1927 (item 257): Material from Dr Juzo Hori (Kanazawa Oyster Experimental Station).

Kyūshū Island
IKEDA LAKE
January 1923 (item 306): Material from 'Ikeda Lake, Satsuma Province, Kiusiu Island, from the southern part of Nippon, collected by Dr. T. Kawamura in January, 1923' (item 306:191). Further details are given in items 330, 404 and 405 along with some taxonomic revisions.

Sea of Japan
1921–1925 (item 273): A series of collections made by the Imperial Fisheries Institute of Tokyo, Japan from the Sea of Japan and donated to Skvortzov by Dr K. Okamura. The collections were made on 10 July 1921, 14 November 1923, 24 November 1925 and 21 December 1925.

Wamura. Nagano Prefecture (Honshu) (item 298) and Saga Prefecture (Kyushu) (item 299)
VARIOUS FOSSIL MATERIAL. Skvortzov examined several samples of Neogene diatoms received from Prof. Tamij Kawamura. Item 406 is a summary article with some taxonomic revisions. Ueyama & Kobayashi (1983) have studied material from Wamura and re-assessed Skvortzov’s work.

North America
January 1936 (item 295): Material from ‘the Field Museum of Natural History at Chicago. The material was obtained by filtering Lake Michigan water from the city mains of Chicago in January, 1936...Type material of new forms is in the author’s personal collection’ (item 295:652).

Australia (Fossil)
Item 301: Material from New South Wales ‘...situated five miles from Cooma, and one and a half miles from Bunyan Platform...’ sent by Mr F.S. Mance of the New South Wales Department of Mines, Sydney (item 301:175).

New Zealand
Item 319: Material from a series of collections sent over a period of years. The notes suggest 12 different localities.

Item 320: Material received from Mr Ian C. Edmundson, ‘The sample consists of greenish masses of immense growth of Scenedesmus brasiliensis Bohlin’ (item 320:411), collected from an aquarium.

Philippines
29 January 1936 (item 309): Sample sent by Dr Eduardo Quisumbing (curator of the Philippine National Herbarium, Manila), ‘based on a sample collected January 29, 1936, from filter No. 8 in Balara, Rizal Province’ (item 309:287).

Africa
1936 (item 330): Material is noted only in the review article (item 330), both localities collected by F. Pringle: ‘Africa australis, in stratum lacustre prope Franzenkop et Pieska, Cape prov.’ and ‘Hab. Africa australis, prope Port Elizabeth, epiphytice in lichenes F. Pringle, 27/5 1936.’

Cuba

Afghanistan
1916 (item 4): Material collected by Mr V. Lagatov ‘dans les canaux de Mourgab près de la frontière d’Afghanistan et de Perse dans le desert salbounne de Kara-Koum’ (item 4:19).

Sri Lanka
1926 (item 235): Material from several collections made by A.H.G. Alston. Much of Alston’s material is in the BM. A search, so far, has revealed nothing of direct relevance.

1926 (item 265): Material collected by A.H.G. Alston, ‘near the sea shore at Gintota from the twigs of Ceramium clavulatum’ on the 16 August 1926.

No date (items 330 & 361): Material donated by Dr N.G. Ball ‘in a swamp in mountain region’.

India
February 1926 (item 288): Two samples from Prof. S.R. Bose; one from mosses and algae from tree bark (15 February 1926), the other from mud in a channel.

B.V. SKVORTZOV’S BIBLIOGRAPHY

As far as we are aware this is a complete listing of Skvortzov’s published work. It is probable that some other publications may be in inaccessible natural history journals and magazines printed in Manchuria. The authorship is Skvortzov unless otherwise stated. An asterisk (*) denotes a publication that includes diatom species. We have not seen the last six entries in this list and presume they were published posthumously.

5. *—— 1917. Materialy po flory vodoroslej Aziatkoj Rossi. III. O fitoplanktony oz. Chla Priamurskoj oblasti, [Contributions à la flore des


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