The Age of Dinosaurs in Russia and Mongolia

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The fossil reptiles and amphibians of the Russian Permo-Triassic are world famous. The first specimens were recorded in the eighteenth century from the Permian of the Urals, during the reign of Peter the Great and, since then, some 150 species of small and large terrestrial tetrapods have now been recorded from a well-dated succession of faunas. The faunas include some Gondwanan forms, comparable with animals from South Africa, but others are unique to Russia. Marine reptiles have been found at many localities in the Russian marine Jurassic, but they are little known in the West. The dinosaurs and associated animals from the Cretaceous of Russia, Middle Asia, and Mongolia, are equally important. Some of the dinosaurs are like those from North America, but there are a number of important groups unique to Asia. Russian and Mongolian scientists have carried out a great deal of work on these ancient tetrapods, and yet they are little known in the West. Much of the work was published only in the Russian language, and the books and papers have rarely been translated.

Following glasnost and perestroika, true collaboration between Russian and Western scientists has again been possible, after a break of 75 years. One of the first major collaborations in palaeontology was the Joint Vertebrate Palaeontology Research Programme between the Palaeontological Institute, Moscow, and the University of Bristol, UK. This Programme was sponsored by the Royal Society and the Russian Academy of Sciences from 1993 to 1997, and some 25 palaeontologists took part. This book is one of the fruits of that collaboration. There are accounts of the history of collecting, the relevant stratigraphy and geological setting, and full accounts of the major animal groups, prepared by a mixture of Russian, Mongolian, Polish, and Western experts.
Introduction

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There are many rich faunas of fossil amphibians, reptiles, birds, and mammals in the Permian and Mesozoic sediments of Russia, Mongolia, and the various republics of the Former Soviet Union (FSU). These include one of the best, or perhaps even the best, succession of Permo-Triassic continental tetrapods, consisting of some 150 described species known from 15 or more horizons. Many of the amphibians and reptiles may be compared with Gondwanan forms, from South Africa and elsewhere, but others are unique to Russia. These faunas have been described and summarized many times in Russian, but only sporadically in the Western literature (e.g. Efremov, 1940; Olson, 1957; Ochev and Shishkin, 1989; Nesov, 1992; Sennikov, 1996). The classic Permo-Triassic sequences of the Urals and of the Moscow Platform are treated in Chapters 1–9, and the unusual small forms from the Middle–Late Triassic of Kirgizstan in Chapter 10.

The record of marine tetrapods from Russia and surrounding countries of the FSU is extensive, but has never been reviewed, either in Russian or in any other language. Dozens of isolated finds of crocodilians, ichthyosaurs, and plesiosaurs have been reported from the banks of the Volga, and from marine Jurassic and Cretaceous sediments elsewhere, but these are sorely in need of revision (see Chapter 11).

The dinosaurs and other tetrapods from the Cretaceous of Mongolia, and contemporaneous units in Middle Asia and Russia, have been collected and studied by American, Russian, Polish, and Mongolian teams, since their discovery in the 1920s. Many of the available general accounts focus on the history of collecting and the arduous field conditions (e.g. Andrews, 1932; Rozhdestvenskii, 1960; Colbert, 1968; Kielan-Jaworowska, 1969; Lavas, 1993; Novacek, 1996). Numerous papers and monographs have been devoted to the Mongolian faunas, and an enormous literature has developed. The chapters in this volume covering the Mongolian dinosaurs, and associated tetrapods, are the first comprehensive overview of these important faunas. Accounts of the various expeditions are given (Chapters 12 and 13), then a Russian and a Western view of the stratigraphy and geological setting of the dinosaur beds (Chapters 14 and 15), followed by accounts of the various tetrapod groups, from salamanders to mammals (Chapters 16–30).

References


Introduction


Conventions in Russian and Mongolian palaeontological literature

MICHAEL J. BENTON

Introduction

We encountered a large number of problems in rendering Russian names of people, places, and geological units into English. We felt we should seek to standardize these throughout the book, and to do so according to a logical explicit system. (No doubt the astute reader will find some inconsistencies, despite all our best efforts.) At a basic level, standards of transliteration (rendering the Russian alphabet in Western letters) and translation had to be selected. However, the need for agreed standards goes beyond simple translation and transliteration, and includes standardization of spellings of place names, names of geological units, and names of journals.

We soon discovered that places, units, and people are not fixed entities when transliterated. As examples of the complexities that we faced, it is normal practice in Russian to treat the names of stratigraphic units as adjectives, and hence their endings are modified in agreement with the noun they qualify and their role in a sentence. The titles of journals are also debatable: the older ones went through many title changes, sometimes every two or three years, and from the nineteenth century until as late as the 1950s, many of them had both a Russian and a Western (French or German) title. Even the names of people are not fixed. Some palaeontologists have as many as three or more valid transliterated names. For example, Vitalii Ochev chose a Germanic transliteration of his surname, Otschev, for taxonomic usage, and his name is also transliterated in semi-Germanic fashion as Otchev or Otshar, while Ochev is the literal transliterated form that we choose. Traditionally, Russian scientists felt a strong affinity with Germans and the German language, hence these forms of transliteration. We have, however, adopted English conventions which are now becoming the norm.

The rules of transliteration can be selected and fixed, and hence the transliterated names of Russian people and places are predictable. Journal titles can also be agreed and fixed. However, there is a further layer of complexity in rendering Russian stratigraphic terminology into English: the fundamental concepts of dividing up rock successions and spans of geological time into units are different from those used in the non-Russian-speaking world. This subject requires careful consideration.

Transliteration

We have selected a modern English-language system of transliteration in which the letters of the Cyrillic alphabet are given equivalents that, where possible, have the closest sound. There is little problem for the consonants, but the vowels and uniquely Russian characters are a little more difficult. The system here is based on that recommended by Zofia Kielan-Jaworowska (1993) and others, but with some modifications, and it has the advantage that the original Cyrillic spelling of a word can be reconstructed from the transliterated version. This will help in trying to trace specific publications, people, or places.

The scheme used here is not entirely unambiguous, recording the Russian letters 'E', 'Ê' and 'Ә' as 'e', 'i', and both the soft and hard signs 'B' and 'B' as 'b', implying a modification to the preceding consonant. However, it is less ambiguous than the US
Library of Congress System, where, for example, 'Ю' is rendered as 'iu' and 'Я' is 'ia'. Our scheme involves some modifications to familiar forms of transliterated Russian names. For example, 'Yeltsin' becomes 'EI'tsin' (it is spelled 'ErIbqI1H').

As a result of these changes, Russian stratigraphic systems in Russia and the FSU are evolving and are approaching the international system (compare the 1959, 1977, and 1992 Russian stratigraphic codes). The current code (Zhamoida et al., 1992) emphasizes the separation of geochronological and stratigraphic units, and distinguishes global, regional, and local systems. Many Russian stratigraphers work on international committees, and they interpret the Russian code in an international way. However, the pre-1990 literature, and some working Russian stratigraphers still apply the classic Russian system, and this must be outlined.

The classical Russian approach to stratigraphy was outlined in the 1959 code of practice (Interdepartmental Stratigraphic Committee, 1959, p. 26):

A uniform stratigraphic scale ought to be accepted, based on the complex of historical-geological principles, on the distinction of definite steps in the history of the geological development of the Earth, and not on separate, arbitrarily selected characters of the rocks.

The stratigraphic units used at regional level are the gorizont and the lona, and in local description are, in descending order, complex, seriya, svita, and pachka. According to the Russian Stratigraphic Code (Zhamoida, 1977, Art. IV.3), gorizonts are the main
regional stratigraphic units, identified primarily from their palaeontological characteristics, and they do not pertain to lithostratigraphic units. The gorizont may unite several svitas, or parts of svitas, or deposits of different facies in various districts but clearly contemporaneous on the basis of included fossils. (In addition, and confusingly, the term 'marking gorizont' is sometimes used as a rough equivalent of the international 'horizon', in other words, to refer to a local rock unit that is characterized by a specific lithology or fossil; Zhamoida et al., 1992, Art. VII.5, Recommendation 5A.)

Svitas, on the other hand, are largely lithostratigraphic units (Art. VII.5), given a locality name that is close to their characteristic exposure. The definition of a svita incorporates a mix of field lithological observations and biostratigraphic assumptions: 'In distinguishing a new svita, one ought without fail to establish at least an approximate, sufficiently proved correlation of it with the subdivisions of the unified [international] scale' (Interdepartmental Stratigraphic Committee, 1959, p. 34). The requirement for 'approximate correlation' has been deleted in the 1992 code, and the emphasis is on mappable lithological features (Zhamoida et al., 1992, Art. V.10).

The stratigraphic system outside the Russian-speaking world is sometimes termed the dual classification, since it makes a clear distinction between 'rock units' and 'time units' (O'Rourke, 1976; Prothero, 1990). In other words, lithostratigraphy is quite distinct from chronostratigraphy and biostratigraphy. The normal procedure is for field geologists to name geological groups, formations, and members purely on the basis of mappable lithological features. Hence, the Otter Sandstone Formation in south Devon is a particular unit of red-coloured sandstone with channels and calcretes that may be mapped. It is defined by a type section where its lower contact with the Budleigh Salterton Pebble Bed Formation is observed, and by another type section where the overlying Mercia Mudstone Group caps it. The question of the age of the Otter Sandstone Formation is quite separate, and, in this case, it depends on the study of fossil fishes and tetrapod fossils which suggest a Mid Triassic Anisian age (Benton et al., 1994). The lithostratigraphic definition of the Otter Sandstone Formation is fixed by field criteria, and this is unaffected by any independent chronostratigraphic determinations, where fossils, radiometric dates, and other evidence may be debated and discussed as hypotheses of age are considered. Changes in dating hypotheses do not affect the reality of the defined rock units.

The new understanding of the 'Svita', according to the 1992 code, allows for a closer equation with the 'Formation', since the emphasis is on local lithological and mapping criteria. In the future, as Russian practice more nearly approaches the international code, then equivalence may be assumed. For the present, though, until they are explicitly revised and redefined, classical svitas cannot be assumed to be purely lithostratigraphic units. The Gorizont, although treated in the 1992 code as a regional-scale stratigraphic unit, is largely geochronological, but applicable to particular rocks, a composite group/biochron. It remains problematic.

From a Western viewpoint, the classical Russian system incorporates a circularity. In other words, if stratigraphic units are defined, even in part, by fossils, how can the order of fossils be determined from stratigraphy? The dual approach cuts through the circularity, by defining stratigraphic units, and their relative sequence, in terms of lithological criteria and field relationships. The order of the fossils can then be extracted from the order of the rocks as determined independently of the fossils.

Perhaps the distinction between the two approaches, the Russian and the Western, can be traced to differences in philosophy. In an intriguing analysis, O'Rourke (1976) suggests that the unified Russian stratigraphic approach is a direct application of dialectical materialism in geology. This requires that time units, and the sedimentary rocks deposited in them, are treated as unified entities, material bodies. Dialectical materialism states that every material body originates in time, through a negation of negation, and therefore all rock bodies are chronostratigraphic units (Interdepartmental Stratigraphic Committee, 1959, p. 32). However, the dialectical materialist approach, as O'Rourke (1976, p. 47) notes, 'is ill-prepared to answer queries about how we obtain or verify a certain kind of knowledge'.

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These comments could be seen as utter nonsense. Mikhail Shishkin, who wishes to emphasize the similarity of the current Russian and international stratigraphic approaches, notes that this analysis is quasi-scientific interpretation of a kind formerly touted by Marxist apologists in Russia. Although such arguments were made by philosophers, no practising Russian stratigrapher was ever affected by such considerations.

References


STRATIGRAPHIC UNITS IN THE
PERMO-MESOZOIC OF RUSSIA AND MIDDLE ASIA

In this list, current stratigraphic terms used to refer to major tetrapod-bearing subdivisions of the Permo-Mesozoic of Russia and the Middle Asian republics are included. We have chosen to retain an anglicized adjectival ending for Gorizont and Supergorizont terms. Svita names are given in adjectival form of the place name. Hence, we prefer the term Petropavlovskaya Svita, named after the village Petropavlovka, rather than 'Petropavlovsk', 'Petropavlovskian', 'Petropavlovska', or other variants. An exception to this rule is for names derived from non-Russian languages, such as Bashkir or Kazakh, which remain in the nominative. Examples are the Dunguz Gorizont and the Karabastau and Yushatyr' svitas.

Admiralteistvaya Svita
Alamyshyk Svita
Astashikhian Member
Balabansai Svita
Balobansay (= Balabansai)
Belebeiskaya Svita
Beleuta Svita
Bereznikovskaya Svita
Beshtyube Svita
Beshtubinskaya (= Beshtyube)
Bissekty Svita
Bogdinsk (= Bogdinskaya)
Bogdinskaya Svita
Bostobe Svita
Bostobin (= Bostobe)
Bukobay Gorizont
Bukobay Svita
Bysovsk (= Byzovskaya)
Byzovskaya Svita

Charkabozhskaya Svita
Chodjakul (= Khodzhakul)
Chodjakulaiskaya (= Khodzhakul)
Dabrazinskaya Svita
Darbasa Svita
Donguz Gorizont
Dvuroginskian Gorizont
Eginsai Svita
Elton Gorizont
Fedorovsk (= Fedorovskaya, Fedorovskian)
Fedorovskaya Svita
Fedorovskian Subgorizont
Gam (= Gamskaya, Gamskian)
Gamskaya Svita
Gamskian Subgorizont
Ilekskaya Svita
Inrinsk (= Inrinskaya)
Intinskaya Svita
Intinsk (= Intinskaya)
Jalovatch (= Jalovach)
Jushatyr' (= Yushatyr')
Karabastau Svita
Karakhskaya Svita
Keryamaiolskaya Svita
Khodzhakul Svita
Kopanskaya Svita
Krasnokamenskaya Svita
Kumanskaya Svita
Kutulukskaya Svita
Kzylsaisbya Svita
Lesranshorskaya Svita
Lipovskaya Svita
Madygen Svita
Malokinelskaya Svita
Stratigraphic units

Meshcherskii Gorizont
Mogoito Member
Moskovoretskaya Svita
Murtoi Svita
Nadkrasnoamenskaya Svita
Nizhneustinskaya Svita
Nyadeitinskaya Svita
  Petropavlovsk (= Petropavlovskaya)
Petropavlovskaya Svita
Pizhmomezenskaya Svita
Poldarsinskaya Svita
Ryabinskian Member
Rybinskaya Svita
Rybinskian Gorizont
Salarevskaya Svita
Severodvinskian Gorizont
Sheshminskian Gorizont
  Shilikhinsk (= Shilikhinskaya)
Shilikhinskaya Svita
Sludkinskaya Svita
Sludkian Gorizont

Staritskaya Svita
  Sukhonsk (= Sukhonskaya)
Sukhonskaya Svita
  Syninsk (= Syninskaya)
Syninskaya Svita
Syusyuskaya Svita
Taikarshin Beds
Talkhabskaya Svita
Teryutekhskaya Svita
Ubukunskaya Svita
Urzhumian Gorizont
Ust'nylian Gorizont
Vetlugian Supergorizont
Vokhminskaya Svita
Vokhmian Gorizont
Vyatskian Gorizont
  Wetlugian (= Vetlugian)
Yalovach Svita
Yareskian Gorizont
Yushatyr' Svita
Names of places and stratigraphic units are based on standard versions used by informed Mongolian and Western authors, especially Gradziński et al. (1977), Jerzykiewicz and Russell (1991), and Dashzeveg et al. (1995). These works incorporate a number of changes in the transliterated forms of Mongolian place names, and these may look a little odd to people who have become accustomed to the older spellings. For example, 'Bayn Dzak' becomes 'Bayan Zag', 'Ulan Bator' becomes 'Ulaanbaatar', 'Dzun Bayan' becomes 'Züünbayan', 'Genghis Khan' becomes 'Chingis Khan'. Some, fortunately, do not change: Choibalsan, Djadokhta, Gobi, Nemegt. In any case, we felt it was essential to attempt to standardize names, since different authors have evolved quite different systems. Who, but an expert, is to know that Hobur, Khoboor, Khoobur, Khöövör, and Khovboor are one and the same place? Why the changes?

There are a number of reasons for the difficulties in transliterating Mongolian names. First is the fact that there are several Mongolian languages, second that there has been no single standardized alphabet for writing Mongolian, and third transliteration methods have sometimes proceeded directly from the Mongolian to English, but frequently have gone from Mongolian to Russian, and then to English.

Mongolian is the language spoken by most people in Mongolia and in inner Mongolia (Neri Mongolia), part of China. By origin it is one the languages of the Mongolian group of the Altaic family. In Mongolia today, one language is spoken, Mongolian, but many dialects, including Khalh, Buryad, Dörvöö, and Khööimag, while other languages of the Mongolian group are used in neighbouring regions of China, Russia, and Afghanistan. Much of the history of the Mongolian language has been oral, with constant evolution of local dialects, even though the population of Mongolia has never been large (it is just over 2 million today). The modern Mongolian language developed after the communist revolution in 1921 on the basis of the Khalh dialect. It consists of 46 phonemes (identifiable sounds), including 22 vowel phonemes.

Ten different scripts have been used to represent Mongolian on paper, and even today there is debate about which is most appropriate. The broad range of scripts, and their constant evolution reflect attempts by Mongolians to match the written language to the oral as closely as possible. Written texts on monuments from the seventh and eighth centuries are generally given in Chinese scripts, involving hundreds or thousands of individual ideograms. The Old Mongolian script, which evolved about 1000 years ago, and was perhaps borrowed by the Mongolians in the thirteenth century from an Aramaic source, the Uigur script, has letters that represent sounds, and which change depending on their position in a word. The script is written from the top downwards and from left to right. It has proved useful in representing words from all Mongolian dialects, and is still in use today. The Square script (hP'ags-pa) was invented between 1269 and 1368, on the order of Khubilai Khaan, for recording formal documents from a variety of languages, Tibetan, Sanskrit, Chinese, and Turkish. It consists of 44 letters, of which 30 are consonants. Further scripts include the Clear (Oirad) script invented in 1648, a modification of the Old Mongolian; the Soyombo and Horizontal-square scripts invented in 1686 to record holy texts in Mongolian, Tibetan, and Sanskrit; and
the Vaghintara script invented in 1905, a further
simplification of the Old Mongolian script, consisting
of 36 letters, including eight vowels.

After the communist revolution in 1921, Mongolia
came firmly under the influence of the USSR.
Initially, the Mongolian script was used, but in the
1940s, a strong attempt at standardization was made
with the introduction of a modified Cyrillic script,
especially the same as used in Russia, but with two
additional letters for ö and ū, making a total of 35. The
Cyrillic alphabet is still widely used, but after the
democratic revolution in the early 1990s, official
moves were made to reintroduce the classical
Mongolian script.

In the face of continuing instability, it is no wonder
that confusion reigns. Nevertheless, we have selected
a single standard for transliteration, based on two
works, the major official publication, Information
Mongolia, prepared by the Mongolian Academy of
Sciences, and published in 1990 [the book was pub­
lished by the Pergamon Press in Oxford, and its owner,
Robert Maxwell, is thanked for his ‘far-sightedness’],
and A Modern Mongolian–English Dictionary compiled
by Altangerel Damdinsuren (1998). These books were
recommended by Mongolian colleagues. In them, all
Mongolian words and names are transliterated
directly into English, using standard English conso­
nants and vowels, but with the addition of the vowels
‘ö’ and ‘ü’, for the sounds ‘een’ as in ‘early’ (but shorter,
something between English ‘o’ and ‘ü’) and ‘o’ as in
‘öö’, ‘uu’, and ‘üü’, indicate long vowels; these are ren­
dered properly in the system adopted here. Additional
consonants include ‘kh’, ‘ts’, ‘ch’ and ‘sh’, but the
consonant often given as ‘dz’ (Russian spelling) is here
rendered simply as ‘z’.

Some standard geographic terms used in place
names are listed, with the older transcription in paren­
theses: Aimag (aimak), major administrative division;
Barun (barun), right, Bulag (bulak), spring; Gol,
river; Khudag (khudak), well; Nuruu (nuru), moun­
tain range; Nuur (nur), lake; Ovoo (obo), heap, pile;
Sum (somon), an administrative unit subordinate to an
aimag; Teeg (teg), landform, any device to prevent
things sliding; Tsagaan, white; Tsav (tsab), gorge;
Ulaan (ulan), red; Uul (ula), mountain; Zoo (zzo),
badland; Züün (dzun), left. Place names may take the
form of several words. When these are converted into
names of svitas or formations, the names are rendered
as a single word.

Alag Teeg [locality]
Alag Tsav [locality]
Algui Ulaan Tsav [locality]
Alguiulaantsav Svita
Altai Sum
Altan Teeg [locality]
Altanteel Sum
Altanulin (= Altanuul)
Altan Uul [locality]
Altanuul Svita
Amtgai [locality]
Andai Khudag [well]
Andai khudag Formation/ Svita
Arts Bogd Ridge
Baga Mod Khudag [locality]
Baganuur [locality]
Baga Tariach [mountain]
Baga Zos Nuur [lake]
Bagazosnuur Svita
Bain Chire (= Bayan Shiree)
Baishen (= Baishin)
Baishin Tsav [locality]
Baishin Tsav depression
Bakhar [locality]
Bambuu Khudag [locality]
Barun (= Baruun)
Barun Bayan cliffs
Baruunbayan Svita
Baruungoyot Formation/ Svita
Baruunurt [locality]
Bayandalai Sum
Bayankhongor
Bayan Mandahu [locality]
Bayan Mandahu basin
Bayanmönkh Sum
Bayan Munkh (= Bayannomkh)
Bayan Ovoo Uul [mountain]
Bayan Shiree cliffs [locality]
Bayanshiree Formation/ Svita
Bayan Tsav
Bayan Zag [locality]
Bayanzag Svita
Bayn (= Bayan)
Bayn Dzak (= Bayan Zag)
Baynshin (= Baishin)
Bayn Shire (= Bayan Shiree)
Begner Nuur depression
Berkh Sum
Berkhe Somon (= Berh Sum)
Böön Tsagaan [locality]
Bööntsagaan Gorizont
Bor Khovil [locality]
Boro Khovil (= Bor Khovil)
Borzongoi Gobi [locality]
Bügiin Tsav [locality]
Bugin Tsav (= Bügiin Tsav)
Builyastyn Khudag
Builyastyn Svita
Bulagantu (= Bulgant)
Buylyasutuin (= Builyastyn)
Bulgan Sum
Bulgant Svita
Bulgan Uul [mountain]
Cav (= Tsav)
Choibalsan [locality]
Choibalsan Series
Choir [town]
Choir depression
Chono Kharaih [locality]
Chuluu Ungas Uul
Chuluut Uul
Chzhirgalantuutin (= Jargalantyn)
Cis-Altai (= Pre-Altai)
Dalandzadgad (= Dalanzadgad)
Dalanshandkhudag Formation/ Svita
Dalanzadgad (town)
Darbi Somon (= Darvi Sum)
Darvi Sum
Davs (settlement)
Djadokhta Formation/ Svita
Dongsheng Formation/ Svita (Chinese)
Dornogov’ Aimag
Dösh Uul (mountain)
Döshuul Formation/ Svita
Dundargalant Gorizont
Dundgov’ Aimag
Dushuul (= Döshuul)
Dzabkhan (= Zavkhan)
Dzagsokhairkhan (= Zogsookhairkhan)
Dzamyn Khond (= Zamyn Khond)
Dzeren (= Zereg)
Dzhikhkhalan (= Javkhlant)
Dzhikhkhalantu (= Javkhlant)
Dzhirgalantum (= Jargalantyn)
Dzost (= Zost)
Dzun Bayan (= Züünbayan)
Dzurumtai (= Zuramtai)
Ehingol depression
Elstiin [locality]
Erdene Uul [mountains]
Erenhot [locality]
Ergelyeen Dzo (= Ergiliin Zoo)
Ergil Ovoo [locality]
Ergiliin Zoo [locality]
Ergilinzoom Svita
Flaming Cliffs (= Bayan Zag)
Galshar Sum
Gashuni (= Gashuuny)
Gashuuny Khudag
Gilbent Ridge
Gobi Altai (= Gov’altai)
Gobi Basin
Gobi Desert
Gov’altai
Guchin depression
Guchinus Sum
Gui Suin Gobi Depression (Chinese)
Guriliin Tsav [locality]
Gurleen (= Guriliin)
Gurvan Erecn Nuruu [ridge]
Gurvanereen Svita
Halhyn (= Khalkhyn)
Halzan Hairhan (= Khalzan Khairkan)
Hanbogd (= Khanbogd)
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<td>Hatan Sudliin (= Khatan Suudal)</td>
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<td>Hentii Mountains</td>
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<td>Hermiin Tsav [locality]</td>
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<td>Hertsii Tsav [locality]</td>
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<td>Hirgis Nuur [lake]</td>
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<td>Hobur (= Hōvör)</td>
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<td>Hōvör [locality]</td>
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<td>Hōvöl[locality]</td>
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<td>Hovd (= Khovd)</td>
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<td>Huachi Formation/ Svitā (Chinese)</td>
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<td>Huanhe Formation/ Svitā (Chinese)</td>
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<td>Hūn-teeg [mountain]</td>
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<td>Hūrendukh Formation/ Svitā</td>
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<td>Ih Ereen (mountain)</td>
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**Mongolian place names**

- Khutoolyin (= Hötöl)
- Khyra [locality] (Chinese)
- Kobdo (= Khovd)
- Kyldzhun [locality] (Chinese)
- Lamawan Formation (Chinese)
- Land Shan massif (Chinese)
- Lehe Formation (Chinese)
- Luohadong Formation (Chinese)
- Mandalgovi' [town]
- Manlai Lake
  - Manlay (= Manlai)
- Mergen [locality]
- Mogoin Ulaagiiin Hets [locality]
- Mongol Altai Mountains
- Mushgai Khudag well
  - Mushugai (= Mushgai)
  - Myangad (= Myangat)
- Myangat Sum
- Nalaikh [locality]
  - Nalaikh (= Nalaikh)
- Naran Bulag [locality]
- Naranbulag Svita
- Naran Gol [locality]
- Nemegt [locality]
- Nemegt Basin
  - Nemegt Formation/ Svita
    - Nilgin (= Nyalga)
    - Nogon (= Nogoon)
- Nogoon Tsav gorge [locality]
- Nogoontsav Svita
  - Noyan (= Noyon)
- Noyon Sum
  - Noyonsum Formation/ Svita
- Nyalga [locality]
- Ölgii Hiid [locality]
  - Olgoi (= Algui)
  - Ologoy (= Algui)
- Ölzii Övoo [mountain]
- Ömnögov' Aimag
  - Ondai Sair (= Andai Khudag)
  - Ondaisair (= Andaikhudag) Formation/ Svita
- Ondaisair Formation/ Svita
- Öndörshil Sum

- Öndör Ukhaa [mountain]
- Öndörkhaa Svita
- Ongon Ulaan [locality]
- Ongon Ulaan Uul [locality]
- Ongong (= Ongon)
- Önjüül [locality]
- Öösh Basin
- Öösh Formation/ Svita
- Ööshiin Nuruu [ridge]
- Ööshiin Nuur [locality]
- Ords Basin
  - Orhon (= Orkhon)
- Orkhon River
  - Osh (= Öösh)
  - Oshih (= Ööshiin)
  - Ovdog (= Övdög)
  - Övdög Khudag [locality]
    - Ovorhangai (= Ööörkhangai)
- Ööörkhangai
  - Pre-Altai Gobi
- Sainsar Bulag [locality]
- Sainshand (town)
- Sainshand Formation/ Svita
  - Sakhlag (= Sakhlag)
- Sakhlag Uul [mountain]
- Sangiin Dalai Nuur depression
  - Sayn Shand (= Sainshand)
  - Shabarakh Usu (= Bayan Zag)
- Shaamar [locality]
  - Shabarakh Usu (= Bayan Zag)
  - Shamar (= Shaamar)
- Shanh Sum
  - Shankh (= Shanh)
- Sharga [locality]
- Shariliin Formation/ Svita
- Shar Teeg [locality]
- Shar Tsav [locality]
  - Shiljust (= Shilüüt)
  - Shilt Uul [locality]
- Shilüüt Uul [locality]
  - Shin Khuduk (= Shinekhudag)
- Shine Khudag [locality]
  - Shinekhudag Gorizont
  - Shine Us Khudag
Mongolian place names

Shireegiin Gashuun [locality]
Shireegiin Gashuun Basin
Shirigin Gashuun (= Shireegiin Gashuun)
Shirilin (= Shariilin)
Shulurut Ula (= Chuluur Uul)
Sühbaatar [town]
Sümiin Nuur [lake]
Tabun Tolgoi (= Tavan Tolgoi)
Tamtsag Depression
Tariat Uul Ridge
Taryaru (= Tariat)
Tatal Gol [locality]
Tatal Yavar [locality]
Tavan Tolgoi [locality]
Tchono (= Chono)
Tebshiin (= Tevshiin)
Tebshin (= Tevshiin)
Tegaimiao Formation (Chinese)
Teel Ulaan Uul [mountain]
Tel Ulan Ula (= Teel Ulaan Uul)
Tevsh Formation/ Svita
Tevshiin Gobi gorge
Tögrög [locality]
Tögrög Bulag [locality]
Tögrögiin Shiree [locality]
Tögrögiin Us [locality]
Toogreek (= Tögrög)
Toogreck Shire (= Tögrögiin Shiree)
Tormkhon Formation/ Svita
Trans-Altaii Gobi
Tsagaan Gol [locality]
Tsagaangol Svita
Tsagaan Khushuu [locality]
Tsagaan Nuur depression
Tsagaan Teeg [locality]
Tsagaan Tsav well
Tsagaantsav Formation/ Svita
Tsagaantsav Gorizont
Tsagan Tsab (= Tsagaan Tsav)
Tsagan Ula (= Tsagaan Khushuu)
Tsakhiurt [locality]
Tsast Bogd Mountains
Tsastoo Bogdo (= Tsast Bogd)
Tsatsen Uul [mountain]
Tsogteem (= Tsogtyn)
Tsogtovoo Sum
Tsogtyn Gobi [gorge]
Tugrik (= Tögrög)
Tugriniin (= Tögrögiin)
Tugruugiin Shirhe (= Tögrögiin Shiree)
Töshilge (= Töshleg)
Töshleg [locality]
Töshleg Ula [mountain]
Ubur Khangai (= Övörkhangai)
Udan Sayr (= Üüden Sair)
Uilgan river
Uilgan Svita
Ukhaa Tolgod [locality]
Ulaanbaatar [capital city]
Ulaanbaatar (= Ulaanbaatar)
Ulaan Bulag [locality]
Ulaandel Svita
Ulaandel Uul [mountains]
Ulaan Nuur [lake]
Ulaan Nuur Basin
Ulaan Öösh [locality]
UlaanÖösh Svita
Ulaan Sair (= Üüden Sair)
Ulaan Tolgoi [locality]
Ulaan Tolgoi (= Ulaan Tolgoi)
Ulaanuush (= Ulaan Öösh)
Ulan (= Ulaan)
Ulan Osh (= Ulaan Öösh)
Uldzhei (= Ölzii)
Ülgii (= Ölgii)
Ulugei (= Ölgii)
Ülzii (= Ölzii)
Omnogovi (= Ömnögov’)
Undershil (= Öndörshil)
Under Ukhaa (= Öndör Ukhaa)
Underukhiin (= Öndörukhaa)
Undur (= Öndör)
Undzhul (= Önjüül)
Unjuul (= Önjüül)
Urلجe Khudag [locality]
Üüden Sair [locality]
Övdég (= Övdög)
Mongolian place names

Uvorkhangai (= Övorkhangai)
Yagaan Khovil [locality]
Yagaan Shiree [locality]
Yavar [locality]
Yavor (= Yavar)
Yiginholo Formation (Chinese)
Yijun Formation (Chinese)
Zaalai (= Trans-Altai)
Zamyn Khond [locality]
Zavhan (= Zavkhan)
Zavkhan River
Zereg Depression
Zereg Svita
Zhidan Group (Chinese)
Zoost (= Zost)
Zost Uul
Zuramta Depression
Zurumtai (= Zuramta)
Züün Bayan Cliffs
Züünbayan Svita

References

There follows an alphabetical listing of the Russian journals in which papers on Pennian and Mesozoic tetrapods, and associated geology, have been described. Many of the journals have had a complex history, and it has been impossible to document the title changes in a fully researched bibliographic manner: titles and dates are merely indicative. So far as possible, details have been checked against serials in Russian libraries, and against the catalogues of the U.S. Library of Congress and the British Library. However, we felt that some standardization of nomenclature and spelling might be helpful.

The data have been derived first-hand from copies of journals and papers, from the various volumes of the Bibliography of Vertebrate Paleontology (BFV), and from the list of Serial Titles held in the Library of the Geological Society (London: The Geological Society, 1996). We have adopted the principle of using non-Russian (usually French) journal titles up to 1917. This approximates to the practice in Russia. Many of the key journals continued with double titles, often in Russian and in French, well after 1917, and the BFV tended to retain the use of French journal titles until well into the 1950s. Likewise, Russian sources often use the Russian journal titles for papers published before 1917. Our policy provides a working compromise.

[AN = Akademiya Nauk; RAN = Rossiiskaya Akademiya Nauk.]

Journals

*Annaire Géologique et Minéralogique de la Russie* [St. Petersburg]

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<td>(= Izvestiya Imperatorskoi AN [St. Petersburg], Series 5, Vol. 1 (1894)–Series 6, Vol. 4 (1917)</td>
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Journals and series

(= Izvestiya AN Seriya Biologicheskaya [Moscow], 1992–present day)

Bulletin de la Classe Physico-Mathématique de l'Académie Impériale des Sciences de St. Pétersbourg
Series 1, Vol. 1 (1836) – Vol. 7 (1842)
Series 2, Vol. 1 (1845) – Vol. 17 (1859)
(= Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg, 1860–1894)

Bulletin du Comité Géologique, St. Pétersbourg
(see Izvestiya Geologicheskogo Komiteta [Leningrad])

Bulletin de la Société Impériale des Naturalistes de Moscou
(= Bulletin' Moskovskogo Obschestva Ispytatelei Prirody, Otdel Geologicheskii, 1922–)

Byulleten' Moskovskogo Obschestva Ispytatelei Prirody, Otdel Geologicheskii
Vol. 1 (1922)–present time
(= Bulletin de la Société Impériale des Naturalistes de Moscou, 1829–1917)

Doklady AN SSSR [Leningrad; then Moscow]
(= Doklady Rossii AN, 1922–1925)
(= Doklady RAN, 1992–present time)

Doklady AN Tadzhikskoi SSR

Ezhegodnik po Geologii i Mineralogii Rossii Vol. 1 (1895) – 17 (1917)
(Parallel title = Annaire Géologique et Minéralogique de la Russie [St. Petersburg]) Vol. 1 (1895) – 17 (1917)

Ezhegodnik Vserossiiskogo Paleontologicheskogo Obschestva [Leningrad]
(Parallel title = Annaire de la Société Paléontologique de la Russie)
(= Ezhegodnik Vyssyuznogo Paleontologicheskogo Obschestva, 1932–1991)

Ezhegodnik TsiNIGRI imeni Akademika F.N. Chernysheva [Leningrad]
Vol. 1 (1938)–present time

Ezhegodnik Vsesoyuznogo Paleontologicheskogo Obschestva
(= Ezhegodnik Vserossiiskogo Paleontologicheskogo Obschestva, 1916–1931)
(= Ezhegodnik Vserossiiskogo Paleontologicheskogo Obschestva
Vol 34 (1991)–present time

Geologicheskii Vestnik [St. Petersburg]
Vol. 1 (1915)–

Geologicheskii Zhurnal [Kiev]
Vol. 1 (1934)–present time

Geologicheski Zhurnal
Vol. 1 (?1940)–27 (1967)

Geologia i Geofizika [Novosibirsk]
1961–present time (use year as volume number)

Geopalitologiya, Nauchnye Trudy Khabarskogo Gosudarstvennogo Universiteta

Gornyi Zhurnal [St. Petersburg to 1917; Moscow from 1922]
(parallel title = Journal des Mines, St. Pétersbourg)
(= Izvestiya Vyssibkh Uchebynykh Zavedenii, Gornyi Zhurnal)

Izvestiya Alekseevskogo Donskogo Politeknicheskogo Instituta

Izvestiya AN Gruzinskoi SSR, Seriya Biologicheskaya
(= Izvestiya AN Gruzii. Seriya Biologicheskaya Vol. 16(6) (1990)–present time)

Izvestiya AN Kazakhskoi SSR, Seriya Geologicheskaya
Vol. 1 (1940)–1991
(= Izvestiya AN Respubliki Kazakhstan 1992–present time)

Izvestiya AN SSSR. VII Seriya, Otdelenie Fiziko-Matematicheskikh Nauk [Leningrad]
1928–1930 [no volume numbers, use year and part numbers]
(= Izvestiya AN SSSR. VII Seriya, Otdelenie Matematicheskikh i Estestvennykh Nauk [Leningrad], 1931–1935)
(= Izvestiya AN SSSR. Seriya Geologicheskaya [Moscow], 1936–1962)
Journals and series

(= Izvestiya AN SSSR. Seriya Biologicheskaya
  [Moscow], 1936–1962)

Izvestiya Biologicheskikh Nauk
Vol. 9 (1986)

Izvestiya Geologicheskogo Komiteta [Leningrad]
Vol. 1 (1882)–48 (1929)
(Parallel title = Bulletin du Comité Géologique, St. Petersburg)

(= Izvestiya Glavnogo Geologo-Razvedochnogo
Upravleniya, Vol. 49 (1930)–Vol. 50 (1931)
(= Izvestiya Vsesoyuznogo Geologo-Razvedochnogo
Ob'edineniya, 1932–)

Izvestiya Imperatorskoi AN [St. Petersburg]
Vol. 1 (1894)–Vol. 17 (1902)
(= Bulletin de l'Académie Impériale des Sciences de St. Pétersbourg, 1860–1894)

(= Izvestiya Imperatorskoi AN. Fiziko-Matematicheskoe
Otdelenie [St. Petersburg], Vol. 18 (1903)–Vol. 25
(1906)

(= Izvestiya Imperatorskoi AN. VI Seriya [St. Petersburg], Vol. 1 (1907)–Vol. 4 (1917)

(= Izvestiya Rossiiskoi AN. VI Seriya [Petrograd], 1917)

(= Izvestiya Rossiiskoi AN. VI Seriya [Petrograd], 1917–1924)

Izvestiya Kazanskogo Filiala AN SSSR, Seriya
Geologicheskikh Nauk
Vol. 1 (1950)–10 (1963)

Izvestiya Rossiiskoi AN. VI Seriya [Petrograd]
1917–1924 [no volume numbers, use year and part numbers]

(= Izvestiya Imperatorskoi AN. VI Seriya [St. Petersburg], Vol. 1 (1907)–Vol. 4 (1917)

(= Izvestiya AN SSSR. VI Seriya [Leningrad],
1925–1927)

Izvestiya Sibirskogo Otdeleniya Imperatorskogo Russkogo
Geograficheskogo Obshchestva [Irkutsk]
Vol. 1 (1870)–8 (1877)

(= Izvestiya Vostochno-Sibirskogo Otdeleniya
Imperatorskogo Russkogo Geograficheskogo Obshchestva
[Irkutsk]
Vol. 9 (1878)–45 (1917)

(= Izvestiya Vostochno-Sibirskogo Otdeleniya Russkogo
Geograficheskogo Obshchestva
Vol. 46 (1921)–57 (1937))

(= Izvestiya Vostochno-Sibirskogo Otdeleniya
Geograficheskogo Obshchestva SSSR

(= Izvestiya Irkutskogo Gosudarstvennogo Nauchnogo
Muzeya

Izvestiya Vsesoyuznogo Geologo-Razvedochnogo
Ob'edineniya
Vol. 51 (1932)–

(= Izvestiya Geologicheskogo Komiteta [Leningrad],
1883–1929)

(= Izvestiya Glavnogo Geologo-Razvedochnogo
Upravleniya, 1930–1931)

Izvestiya Vyssikh Uchebnykh Zavedenii (Geologiya i
Razvedka)
1958–1992 [use year as volume number]

Journal des Mines, St. Pétersbourg (see Gornyi
Zhurnal)

Materialy po Istorii Fauny i Flory Kazakhstana

Mémoires du Comité Géologique de St. Pétersbourg
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Mémoires de l'Académie Impériale des Sciences de St.
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Pétersbourg, Série 6. Sciences Mathématiques,
Physiques, et Naturelles
Vol. 1 (1831)–10 (1859))

Nauchnye Trudy Tashkentskogo, Universiteta
Vol. 237 (1964)

Operativno-Informatsionnye Materialy k Vsesoyuznomu
Soveishcheniyu po Paleontologii
1989 (Moscow)

Otechestvennaya Geologiya (see Sovetskaya Geologiya)
Paleontologicheskii Zhurnal [Moscow]
1959–present time [no volume numbers, use year
and part numbers]

(available in English as Paleontological Journal)

Priroda [Leningrad-Moscow]
1912–present time [no volume numbers, use year
and part numbers]
Journals and series

Problemy Arktiki [Leningrad]
Vol. 1 (1930)—Vol. 9 (1939)

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Vol. 1 (1936)—Vol. 5 (1939)

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Shornik Stati po Inzbenernoi Geologii
Vol. 1 (1962)—

Shornik Trudov Zoologicheskogo Muzeya MGU
[Ulaanbaatar]

Sel'vinia [Almaty]
Vol. 1 (1993)—present time

Soobshcheniya AN Gruzinskoi SSR [Tbilisi]
Vol. 1 (1940)—147 (1993)

Sovetskaya Geologiya [Moscow]
1939—1992 [no volume numbers, use year and part
numbers]
(= Problemy Sovetskoi Geologii, Vol. 1 (1933)—Vol. 8
(1938)
(= Otechestvennaya Geologiya, 1992—)

Teriologiya [Novosibirsk]
Vol. 1 (1972)—present time

Travaux de l’Institut Paléozoologique, Académie des Sciences
de l’URSS
(see Trudy Paleozoologicheskogo Instituta AN SSSR)

Trudy Arkticheskogo Instituta AN SSSR [Leningrad]
Vol. 1 (1930)—Vol. 140 (1939)
(continued as Trudy Arkticheskogo Nauchno-
Issledovatel’skogo Instituta, to Vol. 217 (1959))

Trudy Geologicheskogo Instituta AN SSSR [Leningrad]
Vol. 1 (1932)—Vol. 9 (1939)
(= Trudy Geologicheskogo Muzeya AN SSSR
[Leningrad], 1926—1931)
(= Trudy, Ordena Trudovogo Krasnogo Znameni
Geologicheskii Institut. AN SSSR [Moscow],
1939—1991)

Trudy Geologicheskogo Komiteta
Vol. 1 (1883/4)—Vol. 20 (1902); Novaya Seriya, Vol.
1 (1903)—Vol. 189 (1928)

(Parallel title = Mémoires du Comité Géologique)

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Imperatorskoi AN [Petrograd]
Vol. 1 (1907)—Vol. 8 (1915)
(= Trudy Geologicheskogo i Mineralogicheskogo Muzeya
imeni Imperatora Petra Velikogo Imperatorskoi AN
[Petrograd], 1916)
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[Petrograd], 1918)
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1923—1926)
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[Leningrad], 1926—1931)
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1939—1985)

Trudy Instituta Geologicheskikh Nauk AN SSSR
Vol. 1 (1937)—98 (1948)
Vol. 101 (1948)—165 (1955)

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Vol. 1 (1953)—45 (1990)

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Vol. 1 (1932)—33 (1937)
Vol. 34 (1940)—37 (1948)
Vol. 38 (1949)—44 (1953)

Trudy Obschestva Estestvoispytatelei Kazanskogo
Universiteta
Vol. 1 (1871)—67 (1964)

Trudy, Ordena Trudovogo Krasnogo Znameni Geologicheskii
Institut. AN SSSR [Moscow]
Vol. 9 (1939)—Vol. 398 (1985)
(previously Trudy Geologicheskogo Muzeya imeni Petra
Velikogo Imperatorskoi AN [Petrograd].

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(= Trudy Paleozoologicheskogo Instituta AN SSSR,
1932—1937)

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(= Trudy Paleontologicheskogo Instituta AN SSSR, Vol. 250 (1992)—present time)

Trudy Paleontologicheskogo Instituta AN SSSR
[Leningrad]
Vol. 1 (1932)—Vol. 7 (1937)
(Parallel name = Travaux de l’Institut Paléontologique, Académie des Sciences de l’URSS)
(= Trudy Paleontologicheskogo Instituta AN SSSR, 1937–1991)

Trudy Sankt-Peterburgskogo Obshchestva Estestvoispytatelei
Vol. 1 (1870)—48 (1916), 91 (1994)
(= Travaux de la Société des Naturalistes de Leningrad, 1924—)

(= Trudy Petrogradskogo Obshchestva Estestvoispytatelei, 1922–1924)
(= Trudy Leningradskogo Obshchestva Estestvoispytatelei, 1924–1994)

Trudy Sovmestnoi Sovetskogo-Mongol’skoi Nauchno-Issledovatel’skoi Paleontologicheskoi Ekspeditsii

Trudy Sovmestnoi Sovetskogo-Mongol’skoi Paleontologicheskoi Ekspeditsii

Trudy VNIGRI (Vsesoyuznogo Nauchno-Issledovatel’skogo Geologo-Razvedochnogo Instituta) [Leningrad]
(= Trudy TsinGRI (Tsentr’vogo Nauchno-Issledovatel’skogo Geologo-Razvedochnogo Instituta
[Leningrad and Moscow], Vol. 1 (1934)—Vol. 130 (1939)

Trudy Zoologicheskogo Instituta AN SSSR
(= Annuaire du Musée Zoologique de l’Académie des Sciences de l’URSS, — 1931)

Uchenye Zapiski Moskovskogo Universiteta, Otdel
Estestvenno-Istoricheskii
Vol. 1 (1880)—43 (1917)
Novaya Seriya, vol. 2 (1934)—197 (1958)

Vestnik AN SSSR
Vol. 1 (1948)—present time
Vestnik Geologicheskogo Komiteta [Leningrad]
vol. 1 (1925)—present time
Vestnik Leningradskogo Universiteta. Seriya 3, Biologiya
[Sankt-Peterburgskogo, after 1992]
Vol. 1 (1956)—present time
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[Sankt-Peterburgskogo, after 1992]
Vol. 1 (1956)—present time
Vestnik Zoologii [Kiev]
Vol. 1 (1967)—present time
Voprosy Geopetologii
Voprosy Geologii Azii
Voprosy Geologii Yrachnogo Urala i Povolzh’ya
Voprosy Paleontologii
Numbered series in 1930s. After 1938, use year as number.
Yezhegodnik (see Ezhegodnik)
Zapiski Imperatorskogo Novorossiiskogo Universiteta
[Odessa]
Vol. 1 (1867)—104 (1906)
Zapiski Kievskogo Obshchestva Estestvoispytatelei
Vol. 1 (1870)—Vol. 27 (1929)
Zapiski Odesskogo Obshchestva Estestvoispytatelei
Vol. 1 (1872)—42 (1918)
(= Zapiski Novorossiiskogo Obshchestva
Estestvoispytatelei [Odessa])
Zapiski Sankt-Peterburgskogo Mineralogicheskogo Obshchestva
Vol. 1 (1830)—present time
Zapiski Vserossiiskogo Mineralogicheskogo Obshchestva
[Moscow]
Vol. 62 (1933)—Vol. 67 (1938)
(= Trudy Mineralogicheskogo Obshchestva Vol. 1 (1830)—Vol. 2 (1842))
(= Verhandlungen der Russisch-Kaiserlichen
Mineralogischen Gesellschaft zu St. Petersburg, 1842–1867)
Journals and series

(= Verhandlungen der Kaiserlichen Gesellschaft für die Gesammte Mineralogie zu St. Petersburg, 1862–1864)
(= Zapiski Rossiiskogo Mineralogicheskogo Obschestva, Vol. 1 (1866)–Vol. 50 (1915))
(= Zapiski Imperatorskogo Sankt-Peterburgskogo Mineralogicheskogo Obschestva [Petrograd], Vol. 51 (1918)–vol. 61 (1932))
(= Zapiski Vsesoyuznogo Mineralogicheskogo Obschestva [Moscow and Leningrad], vol. 68 (1939)–vol. 123 (1994))

Zoologieiskii Zhurnal AN SSSR [RAN after 1990] Vol. 1 (1916)–present time

Publishers

Izdatel’stvo Akademii Nauk SSSR (Moscow)
Izdatel’stvo ‘Metsniereba’ Tbilisi
Izdatel’stvo Sankt-Peterburgskogo Universiteta
Izdatel’stvo Saratovskogo Universiteta

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TRANSLITERATED NAMES OF RUSSIAN AND MONGOLIAN PALAEOONTOLOGISTS AND GEOLOGISTS

In this list, we have followed a strict system of precise transliteration, using the system indicated earlier. This means that the spelling of names may differ from established forms, even forms preferred by the people themselves. However, it seemed preferable to adopt a single predictable system of transliteration, rather than to have many different schemes. The only exception is that certain forms used in formal taxonomic designations are retained, but only in such cases of attribution of authorship to a taxon name, even if they break the rules. These 'taxonomy-only' forms of names are indicated with an asterisk (*).

Afanasiev, G.D.  
Afanasiyev (= Afanasiev)  
Alifanov, V.R.  
Amalitskii, V.P.  
Amalitskiy (= Amalitskii)  
Amalitsky (= Amalitskii)  
*Amalitzky (= Amalitskii)  
Aref'ev, M.P.  
Arefiev (= Aref'ev)  
Arkhangel'skii, M.S.  
Auerbach, I.B.  
Averianov (= Aver'yanov)  
Aver'yanov, A.O.  
Badamgarav, D.  
Bakhurina, N.N.  
Bannikov, A.F.  
Barsbold, R.  
Bayarunas, M.M.  
Bazhanov, V.S.  
Belyaeva, E.I.  
Blagonravov, V.A.  
Blom, G.I.  
Bogachew, V.V.  
Bogdanova, T.N.  
*Bogoljubow (= Bogolyubov)  
*Bogolubov (= Bogolyubov)  
*Bogolyubov (= Bogolyubov)  
Bogolyubov, N.N.  
Borissiak (= Borisyak)  
Borisyak, A.A.  
Borkin, L.J.  
Brattseva, G.M.  
Bugaenko, D.V.  
Burakova, L.T.  
Butsura, V.V.  
Bystrov, A.P.  
*Bystrow (= Bystrov)  
Cherepanov, G.O.  
Chkhikvadze, V.M.  
Chudinov, P.K.  
Danilov, A.I.  
Darevskii, I.S.  
*Darevsky (= Darevskii)  
Dashzeveg, D.  
*Davidov (= Davydov)  
Davydov, V.A.  
*Devyatkin (= Devyatkin)  
*Devyatkin, E.B.  
Dmitriev, G.A.  
Dmitriev, V. Yu.  
Dmitrieva, E.L.  
Dobrushkina, I.A.
Doludenko, M.P.
Dombrovski, B.S.
Dombrovsky (= Dombrovski)
Dovchin, N.
Dubeikovskii, S.G.
Durante, M.V.
Dzhaldalov, M.P.
Efimov, M.B.
Efimov, V.M.
Efremov, I.A.
Efremova, T.I.
Eichwald, E.I. von
Eremin, A.V.
Fahrenkohl, A.
Favorskaya, T.A.
Fedorov, P.V.
Filin, V.R.
Fischer de Waldheim (= Fischer von Waldheim)
Fischer von Waldheim, G.F.
Flerov, K.K.
Florentsov, N.A.
Frikh-Khar, D.I.
Gabunia, L.K.
Garjainov (= Garyainov)
Garyainov, V.A.
Gavrilov, V.M.
Gekker, E.L.
Gekker, R.F.
Gerashinov, M.M.
Getmanov, S.N.
Glazunova, A.E.
Glazunova, K.P.
Glikman, A.L.
Glikman, L.C.
Golovneva, L.B.
Golubev, V.K.
Golubeva, L.P.
Goman’kov, A.V.
Gorbakh, L.G.
Gorbatkina, T.E.
Grishin, G.L.
Gubin, Y.M.
Gureev, A.A.
Hartmann-Weinberg, A.P.

Hofstein, I.D.
Holtman, E.D.
Ignat’ev, V.I.
Ignatiev (= Ignat’ev)
Il’ichev, V.D.
Ivakhnenko, M.F.
Ivanov, A.Kh.
Ivanov, A.O.
Ivanov, V.G.
Jakovlev (= Yakovlev)
Jarlov (= Yarkov)
Jaroshenko (= Yaroshenko)
Julinen (= Yulinen)
Kabanov, V.A.
Kalie, A.
Kalandadze, N.N.
Kalantar’, I.Z.
Kalugina, N.S.
Karhu (= Karkhu)
Karkhu, A.A.
Kazanski, P.
Kaznyshkin, M.N.
Kaznyshkina, L.F.
Khakimov, F.Kh.
Khand, E.
Khimlenkov, V.G.
Khisarova, G.D.
Khosbayar, P.
Khozatskii, L.I.
Kiesielewski, F.Y.
Kiprianoff (= Kipriyanov)
Kiprianoff (= Kipriyanov)
Kipriyanov (= Kipriyanov)
Kipriyanov, W.A.
Klimov, P.N.
Kolesnikov, Ch.M.
Konjukova (= Konzhukova)
Konzhukova, E.D.
Korabel’nikov, V.A.
Kordikova, E.
Kovaleva, N.P.
Kovalevskii, V.O.
Kramarenko, N.N.
Krasilov, V.A.

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Transliterated names

Krasovskaya, T.B.
Krasilov (= Krasilov)
Krasovskaya (= Krasovskaya)

Krupina, N.I.
Kuleva, G.V.
Kupletsik, B.M.
Kurochkin, E.N.
Kurzanov, S.M.
Kusmin (= Kuz'min)

Kutorga, S.S.
Kuz'min, T.M.
Kuznetsov, V.V.

Kyansep-Romashkina, N.P.

Larischchev, A.A.
Lazarin, D.V.
Lebedev, O.A.
Lebedev, V.D.
Lebedeva, Z.A.
Leonova, E.M.
Lopatin, A.V.
Lopato, A.Yu.
Lozovskii, V.R.
Lozovskiy (= Losovskii)
Lozovsky (= Lozovskii)
Luchitskaya, A.I.

Makarova, I.S.
Makulbekov, N.M.
Maleev, E.A.
Marinov, N.A.

Martinene (= Mertinene)
Martinson, G.G.
Mashchenko, E.N.
Mazarovich, A.N.
Meien, S.V.

Menner, V.V.
Merkulova, N.N.
Mertinene, R.A.

Meyen (= Meien)
Mikhailov, K.E.
Minikh, A.V.
Minikh, M.G.
Mitra, V.V.

Moiseenko, V.G.
Mokshantsev, K.B.

Molostovskii, E.M.
Mossakovskii, A.A.
Movshovich, E.V.

Murzaev, E.M.
Nagibina, N.S.
Naidin, D.P.
Nalbandyan, L.A.
Namsrai, T.N.

Narmandakh, P.
Nazarkin, M.V.
Nesov, L.A.
Nikitin, S.N.
Nikolaeva, T.V.
Novikov, I.V.
Novodvorskaya, I.M.
Novokhatskii, I.P.
Novozhilov, N.I.
Nurumov, T.N.

Obruchev, V.A.
Ochev, V.G.
Orlov, Yu.A.

Orlovskaia, E.R.
Otchev (= Ochev)
Otschev (= Ochev)

Otschev (= Ochev)

Panteleev, A.V.

Panteleyev (= Panteleev)

Perle, A.

Polubotko, I.V.
Ponomarensko, A.G.

Popov, Yu.A.
Potapov, A.Yu.
Potapov, D.O.
Potapova, O.P.

Pravoslovlev, P.A.
Prizemlin, B.V.
Rachevskii, I.P.
Rasnitsyn, A.P.
Rautian, A.S.
Reshetov, V.Yu.

Riabinin (= Ryabinin)
Rjabinin (= Ryabinin)

Rogovich, A.S.

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Romanova, E.V.
Romanovskaya, G.M.
Rozanov, V.I.
Rozhdestvenskii, A.K.
Rozhdestvenskiy (= Rozhdestvenskii)
Rozhdestvensky (= Rozhdestvenskii)
Ryabinin, A.N.
Rychkov, P.I.
Sablin, M.B.
Saidakovskii, L.J.
Samoilov, V.S.
Selezneva, A.A.
Semeikhan, T.
Semenova, E.V.
Sennikov, A.G.
Sharov, A.G.
Shatkov, G.A.
Shelekhova, M.N.
Shilin, P.V.
Shimanskii, V.N.
Shishkin, M.A.
Shishkin (= Shishkin)
Shtrukenberg (= Stuckenber)
Shuvalov, V.F.
Sinitsa, S.M.
Sinitsyn, V.M.
Sinitsza (= Sinitsa)
Sintsov, I.F.
Sintsov (= Sintsov)
Sinzow (= Sintsov)
Sinzoff (= Sintsov)
Skutschas, P.P.
Smagin, B.N.
Smirnov, V.N.
Sochava, A.V.
Sokolov, B.S.
Solonenko, V.P.
Solovev, V.K.
Solovev, A.N.
Solovev, N.S.
Solov’ev (= Solovev)
Stankevich, V.S.
Strok, N.I.

Stuckenber, A.A.
Stukenberg (= Stuckenberg)
Sukhanov, V.B.
Sukhoi, I.
Sushkin, P.P.
Suslov, Y.V.
Sychevskaya, E.K.
Sytchevskaya (= Sychevskaya)
Tatarinov, L.P.
*Tchudinov (= Chudinov)
Trautscold, H.
Trostmov, B.A.
Trusova, E.K.
Tsamgradskii, V.
Tsybin, Yu.I.
Tumanova, T.A.
Turishchev, I.E.
Tverdokhlebov, V.P.
Tverdokhlebova, G.I.
Vakhrameev, V.A.
Vasil’ev, V.G.
Vavilov, M.N.
Venjukov (= Venyukov)
Venyukov, P.N.
Vergai, I.F.
Vergay (= Vergai)
Verzilin, N.N.
Vetrov, F.E.
Vislobokova, I.A.
*Vjuschkov (= V’yushkov)
Vjushkov (= V’yushkov)
Voinstvenskii, M.A.
Volkhonin, V.S.
Vorob’eva, E.I.
Vorobjeva (= Vorob’e)
Vorobyeva (= Vorob’e)
Voronin, Yu.I.
V’yushkov, B.P.
Yakobson, L.N.
Yakovlev, N.N.
Yanovskaya, N.M.
Yarkov, A.A.
Yaroshenko, O.P.

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Transliterated names

<table>
<thead>
<tr>
<th>Name</th>
<th>Transliterated Name</th>
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<tbody>
<tr>
<td>Yazikhov, P.M.</td>
<td>Zaklinskaya, E.D.</td>
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<tr>
<td>Efimov, M.B. (= Efimov)</td>
<td>Zaytsev (= Zaitsev)</td>
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<td>Efremov, I.A. (= Efremov)</td>
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