Made in United States of America

Reprinted from JOURNAL OF MAMMALOGY
Vol. 8, No. 2, May, 1927, pp. 140–157

A SYNOPSIS OF THE RUSSIAN BATS

BY S. I. OGNEV

The Russian Chiroptera hitherto have not been well known. Our knowledge has not only been deficient concerning the biology of these interesting mammals, but also as to the number of species found in Russia and their distribution. K. A. Satunin in his "Conspectus Mammalium Imperii Rossicae" (1914) enumerates thirty-nine species and subspecies of Chiroptera which are found in this country. Nevertheless in Satunin's list it is doubtful whether some of the bats can be regarded even as weak subspecies, for example *Rhinolophus ferrum-equinum colchicus* Satun. and *R. euryale nordmanni* Satun.; the systematic relations of different species of *Barbastella*, etc., are also not clear. If we take into consideration all this the list of bats in Satunin's book must be shortened to thirty-five species and subspecies.

In the interesting little paper by W. L. Bianchi (Notes préliminaires sur les chauve-souris ou Chiroptera de la Russie, Annuaire du Musée Zoologique de l'Académie des Sciences, Petrograd, vol. 21, 1916, pp.

lxxiii–lxxxii) thirty-eight species and subspecies of Russian bats are enumerated. If we delete from this list the wrongly included *Otonycteris cinereus* Satunin[1] and *Barbastella walteri* Bianchi, the synopsis contains only thirty-six forms.

Having examined a very considerable collection of bats, I estimate that in Russia (considering the borders as they were at the time of the past Russian Empire) we meet with forty-nine species and subspecies. It is very possible that new investigations will essentially complete this sufficiently long list, in which I have included some quite new species and subspecies.

Three families of these animals are found in Russia, as follows: Rhinolophidae, Vespertilionidae, and Molossidae, the distinctive peculiarities of which are well known.

FAMILY RHINOLOPHIDAE

The Rhinolophidae includes a number of forms; these I shall list and indicate their geographical distribution in Russia.

I. GENUS RHINOLOPHUS

I. *Rhinolophus ferrum-equinum ferrum-equinum* Schreber (1774). Very common in some places in the caves of Crimea; found in Ciscaucasia; common in

[1] *Otonycteris cinereus* was described by K. A. Satunin (1901), for the study of which he had only one specimen, No. 5444 (191, 1901), from the collection of the Zoological Museum of the Academy of Sciences of St. Petersburg (See Mitteilungen des Kaukasischen Museum, vol. 4, 1909, p. 281). According to Satunin the specimen, which came from the Ga country (the Persian Beluchistan) and which was obtained on March 23, 1901, by N. A. Zarudny, differs from the typical form in its pale brownish gray fur. However, remarked Satunin, the upper part of the body of *O. cinereus* is conspicuously darker than in the very dull colored *O. hemprichii*. In the collection of the Zoological Museum of the Academy of Sciences of St. Petersburg only one specimen is to be found, *O. cinereus* (No. 5444), with remarks in the enlisting-book coinciding with those in Satunin's paper (191, 1901). Unfortunately the other remarks in the enlisting-book are quite different. In this book we find the *O. cinereus* following the geographical district from which the specimen must have come, namely, the Zyrkouch country, near the Bamrudsky-aryk, Chorassan, July 21, 1901. Evidently this Chorassan specimen is the actual type described by Satunin. It is vexing that the author as a consequence of some mistake gives quite wrong indications as to the place where *O. cinereus* can be found. The Ga country is in the southeastern part of Persia opposite Chorassan in the most northern province of that country. *O. cinereus* is certainly a good species, which has not yet been found in Russia.

The *Barbastella walteri* (nomen nudum!), which Bianchi attributes to Tachtabasar, on the right border of the Murgab River (Transcaspian region), is probably a synonym of *Barbastella caspica* Satunin.

West Transcaucasia. In Transcaspia this species is met with near Kushka and in the Kopet-Dagh Mountains. In Turkestan only one specimen was found, near Tashkent.

2. *Rhinolophus ferrum-equinum bocharicus* Kastsch. and Akimov (1917). Extensively found in Bucharia, Ferghana and Samarkand regions, and near Tashkent.

3. *Rhinolophus hipposideros hipposideros* Bechstein (1800). Gov. of Charkov (near Slavjansk), gov. of Tambov? (after Assmus); gov. of Kiev, Bessarabia, Crimea, Caucasus (Ciscaucasia and Transcaucasia), Turkestan (Samarkand district).

4. *Rhinolophus euryale euryale* Blasius (1853). This species is found in the districts around the middle part of the Arax River and in Ordubad. In the caves of Abchasia and Cebelda it has a peculiar dark colored form, *R. e. nordmanni* Satunin.

5. *Rhinolophus blasii* Peters (1866). The Arax Valley near Ordubad; Durun and Baharden caves near Curt-Su (Transcaspia).

KEY TO RUSSIAN SPECIES OF RHINOLOPHUS[2]

A. Second upper premolar borders directly upon the canine tooth, because the very small first premolar is moved outwards; sella, viewed from the side, forms two round projections, of which the upper is somewhat larger than the lower one.
  a. Dimensions great; forearm, 56.3–61 mm.; total length of skull, 22–25.1.
    a^1. Horse-shoe narrow, its width 7.7–8; length of tail, 31.5–34.....*R. f.-equ. proximus* Anderson* (This species is described from Gilgit; it may possibly be found in the Pamir country.)
    b^1. Horse-shoe wider, 8.5–9 mm.; length of tail, 32.5–43. *R.f.-equ. ferrum-equinum*
    c^1. Horse-shoe very large, 9–10.2 (M. 9.5); length of tail, 31–39.1.
      a^2. Total length of skull, 25–25.1; forearm, 59.9–61. **Rhinolophus ferrum-equinum mikadoi** subsp. nov.* (The type from Yokohama; the paratype from Nagasaki. It is possible that this subspecies may be found near Vladivostok.[3])

[2] The forms that have not been found in Russia but the discovery of which is possible, are marked in this list with an asterisk (*).

[3] A short description of this bat follows:

Type.—No. 4238, ♂; April, 1890; Yokohama; Dr. Isaev, collection of the Zoological Museum of Moscow University.

Diagnosis.—Size greater than *Rhinolophus f.-e. ferrum-equinum*. Total length of skull, 25–25.1 mm.; condylobasal length, 22.6–22.9; zygomatic width, 12.1–12.3; interorbital constriction, 3.2; greatest width of skull, 11–11.1; greatest height, 9.8–9.9; upper tooth row, 9 mm. Forearm, 59.9–61; tail, 37.6–39.1; breadth of sella, 9.8–10.2. Color bright with a tawny tint.

    b^2. Total length of skull, 22.9–23.7; forearm, 57.2–59.3.....*R.f.-equ. nippon* Temm.* (Japan).
  b. Dimensions medium; forearm, 49.9–52.6; total length of skull 19.9–20.5; breadth of horse-shoe, 6–6.5.....*R.f.-equ. bocharicus*
B. First upper premolar not large, but disposed in a row with the other teeth; it very conspicuously separates second premolar from canine. The sella, viewed from the side, forms one or two sharp projections.
  c. Dimensions small; forearm 36.2–40.4; total length of skull, 15.2–16.2; sella viewed from the side forms an upper rounded blunt projection and a lower long and thin one, sharp at the point, inclining downwards and flattened below....*R. hipposideros*
  d. Dimensions of medium size; forearm 44.6–51.4; total length of skull, 19–20.
    d^1. Sella viewed from the side, forms sharp long upper projection, which is only slightly raised and inclined forwards; this projection is visibly longer than the lower one, which is rounded and flattened below.
      c^2. Condylobasal length, 16.4–17.8; forearm, 45.4–49. Length of first phalange of fourth wing digit (IV^1) slightly greater than ½ of IV^2 (the correlation between IV^1 and IV^2 = .38).[4] *R. euryale*
    d^2. Condylobasal length, 17.4–18; forearm, 48–51.4; IV^1 shorter (the correlations in the length of it and IV^2 are 44).....*R. mehelyi* Matschie* (Roumania, France, Spain, and Sardinia. It is possible that this species can be found in Bessarabia and the southwestern part of Russia.)
    e^1. Sella forms an upper sharp projection which viewed from the side is hardly raised upwards; this projection is visibly larger than the lower one, which is short, round and flat below. Condylobasal length, 17.4–17.6; forearm, 44.6–47; length of IV^1 is greater than half of IV^2.....*R. blasii*

Systematical remarks.—From *Rhinolophus ferrum-equinum tragatus* Hodgs. this subspecies differs: 1, by its comparatively narrow zygomatic arches (in *R. f.-equ. tragatus* the width is 12.8–13.3 mm.); 2, by comparatively short upper tooth row (in *R. f.-equ. tragatus* the same is 9.3–9.9 mm.).

From *Rh. f.-equ. nippon* Temm. the new subspecies differs: 1, in larger skull; 2, in width of skull capsula; 3, longer forearm; and 4, broader horse-shoe.

[4] For brevity I mark the metacarpal bones of the wing by I, II, III, etc.; the Arabic numbers which are written above designate the number of the phalanx of the finger, as for instance, IV^1, IV^2, IV^3, etc.

FAMILY VESPERTILIONIDAE

The very large family Vespertilionidae includes in the Russian fauna three subfamilies, namely Vespertilioninae, Miniopterinae and Murininae, and contains eleven genera.

Subfam. Vespertilioninae

II. Genus MYOTIS

6. *Myotis myotis* Borkhausen (1797). Bessarabia, near Odessa, gov. of Kiev and of Charkov, Courland, Estonia, Livonia, in Crimea, Caucasus, Transcaspia, the Seven Rivers country (Semirechie, Turkestan).

The geographical distribution of this species is not sufficiently clear; all the preceding authors confuse it with the following form.

7. *Myotis oxygnathus* Monticelli (1885). I found a very great number of this species in the Crimea, Caucasus, (Ciscaucasia, Transcaucasia), Transcaspia (near Ashabad, the Kopet-Dagh Mountains), near Tashkent, in the Seven Rivers country.

8. *Myotis bechsteinii* Kuhl (1818). Courland, Estonia, Livonia; district of Eletz, gov. of Orel (after Danilov, 1868; this record should be confirmed). The district Olgopol, gov. Podolia (according to A. Brauner).

9. *Myotis nattereri nattereri* Kuhl (1818). Courland, Livonia, Estonia, gov. of St. Petersburg, the forest of Bialovesh, Poland, near Warsaw, the district of Kishenev (Bessarabia), Crimea, gov. of Orenbourg, Caucasus (Dagestan, gov. of Tiflis, and Kutaiss).

10. **Myotis nattereri amurensis subsp. nov.**

Type.—No. 1317, ♂, Amour River; cotype No. 4176, ♀, Vladivostok, Dr. Isaev. Both specimens are in the collection of the Zoological Museum of Moscow University.

Diagnosis.—Resembling *M. nattereri* type, but differs: 1, in its shortened ear and tragus (length of the ear, 16.2–17.2; length of tragus, 9.7–9.8; in general in the typical form, 16.6–18.1; 10.2–13.3); 2, in the peculiarity of the ear extending slightly beyond the nostril when laid forward (as in *M. mystacinus*); in the typical form the ear, which is much longer and relatively narrower, extends conspicuously beyond nostril (about 5 mm.) when laid forward; 3, in its more convex skull in the frontal region, which is abruptly raised over the nasal part.

Systematical remarks.—It is interesting that the Amour subspecies differs widely from *M. nattereri bombinus*, which was described by O. Thomas from Japan (Tano, Miasaki, Kin-Siou, 32°).[1] In its subspecies, according to Thomas, the ear is much longer than in the typical race, and the tragus is turned more backwards; also, the skull is more flattened in the frontal region.

11. *Myotis emarginatus emarginatus* Geoffroy (1806). The Crimea (near Simpheropol, Salgir River), Transcaucasia (in the low districts along midstream of the Cura River). It is possible that the specimens from the latter locality belong to the following subspecies.

12. *Myotis emarginatus turkomanicus* Bobrinskoy. Near Ashabad, the Kopet-Dagh Mountains, the districts Tedgen and Merv; valley of Mougrab River; in central Bucharia; Tsheleken Island (southern districts of the Caspian Sea.)

[1] See: The Duke of Bedford's Zoological Exploration in Eastern Asia, Proc. Zool. Soc. London, 1905, p. 337.

13. *Myotis mystacinus brandtii* Eversmann (1845). Governments of Moscow, Kaluga, Smolensk, Charkov, the region of the Don River, near Akkerman; governments of Symbirsk, Saratov, Orenburg, Ufa, Kazan, Perm, the center of Ural Mountains. Near St. Petersburg, gov. Archangel, the Baltic provinces, Caucasus, Transcaucasia, Transcaspia, Bucharia, Turkestan, gov. of Tomsk, Altai Mountains, the region of Semipalatinsk.

Systematical remarks.—This form is apparently larger than the typical race.

14. **Myotis mystacinus gracilis subsp. nov.**

Type.—Collected near Vladivostok, by N. P. Krilov; collection of S. I. Ognev.

Diagnosis.—Skull noticeably shorter than that of *M. m. brandtii*; total length, 12.2–13.4; interorbital constriction, 4.1; length of upper molar row, 5–5.3; forearm, 32.3–36 mm. Color dark, nearly as dark as in the so called "var. *nigricans*" Koch.

Systematical remarks.—In the structure of the small skull this subspecies resembles the typical form, but the exact difference from the typical form must be based on a greater number of specimens. The specimens from Turkestan and Transcaucasia are not identical with the described subspecies.

Geographical distribution.—East Siberia, Saghalien, Kamtchatka, the Amour region, as far west as Lake Baikal.

15. *Myotis ikonnikovi* Ognev (1911). The Ymanski district, Ussuri region.

16. **Myotis longicaudatus sp. nov.**

Type.—No. 4157; ♂; June, 1891. Vladivostok, Dr. Isaev; collection of the Zool. Mus., Univ. of Moscow.

Diagnosis.—Size small; total length of skull, 13.5 mm.; interorbital constriction, 4.7; length of upper tooth row, 5.2; forearm, 38.9.

The ear (length of each, 12.9) is very peculiar in general shape; it has a conspicuous emargination on the median part of the posterior border, and the extremity is narrow as compared with the broad proximal part. In comparison to the short ear, the tragus is very long, much more than half the height of the conch. The tragus sharply and unevenly narrows rapidly to the apex; in the middle part it is hardly narrower than at the base; its point does not turn backwards. The transverse palatal ridges are seven; it is interesting that the three first are not interrupted in their middle part; they are faintly bow-shaped forward; the three following ridges are interrupted in the middle and have a semi-bow-shaped form; the hindermost ridge is the shape of an obtuse angle.

The membrane is inserted at the base of the outer toe.

The second lower premolar is only one-third the length and two-fifths the width of the first. It is quite set aside in the inner part of the tooth row and not visible from outside. The second upper premolar is very short and completely removed in the inner part of the tooth row and it also is not visible from the outside.

The skull is unusually short and very concave in the occipital region. The frontal region rises abruptly above the nasal part, which is extraordinarily enlarged forwards.

The tail is very long (47 mm.; in *M. mystacinus brandtii* it is only 30–40 mm.). Its color is dark, almost as in the *M. mystacinus* form "*nigricans*."

Systematical remarks.—This species resembles *M. davidi* Peters from China, especially as regards the shape of the second upper premolar, but the tail of *M. davidi* is much shorter. According to Dobson the length of the body is 43 mm.; tail, 33; ear, 14; tragus, 7.5; forearm, 31.5; hind foot, 9.

17. *Myotis dasycneme dasycneme* Boie (1825). It is very possible that this species will be found in the Baltic provinces of the past Russian Empire.

18. *Myotis dasycneme major* Ognev (1924). Sporadically distributed in European Russia, in west Siberia, the Altai Mountains, Enissei region.

19. *Myotis daubentonii volgensis* Eversmann (1840). This subspecies is extensively spread over all European Russia and western Siberia.[5] It is possible that the typical *M. daubentonii daubentonii* Kuhl. inhabits the Baltic provinces and Poland.

20. **Myotis daubentonii ussuriensis** subsp. nov.

Type.—Collected near Vladivostok, by N. P. Krilov; collection of S. I. Ognev.

Diagnosis.—Size slightly less than that of *M. d. volgensis;* total length of skull, 14.2–14.7; condylobasal length, 13.2–14; zygomatic width, 8.9–9.3; length of upper tooth row, 5.1–5.6; forearm, 35–38.6; hind foot, 7.9–10. The terminal part of the ear is visibly narrower than in the typical race; the emargination on the hind (outer) ear border is more conspicuous; the tragus is sharply narrow at the tip. The ear, when laid forward extends about to the tip of muzzle. Color darker than that of *M. d. volgensis*.

Systematical remarks.—In a large series this subspecies is well marked.

Geographical distribution.—In eastern Siberia this subspecies inhabits the Amour and Ussuri region, Kamtchatka, Saghalien. Westward it is found in Transbaikalia as far as Irkutsk.

KEY TO RUSSIAN SPECIES OF MYOTIS

A. Size large; forearm, 53–64 mm.; total length of skull, 21–24; condylobasal length, 19–23.4; upper tooth row, 8.2–10.2.
  1. Membrane inserted at median part of side of metatarsus (sometimes nearer to the distal part of it).
    a. Size large; total length of skull, 22.5–24; condylobasal length, 21.5–23.4; zygomatic width, 14.1–15.8; upper tooth row, 9–10.2; forearm, 57.3–64....*M. myotis myotis*
    b. Size shorter; total length of skull, 21–21.9; condylobasal length, 19–21.1; zygomatic width, 13–14.4; upper tooth row, 9.2–9.4; forearm, 53–58.....*M. oxygnathus*

B. Size small or medium; forearm, 30–48; total length of skull, 12.7–18.1; condylobasal length, 12.2–17.3; upper tooth row, 5.1–6.8.
  2. Membrane inserted at proximal side of metatarsus.
    c. Size larger; condylobasal length, 16–17.3; zygomatic width, 10.8–12; upper tooth row, 6–6.8; forearm, 43.6–48. The hind (outer) ear border with conspicuous emargination; tragus half as high as conch; apex of tragus slightly contracted and bluntly rounded. (General shape of tragus like that of a sickle.) Palatal ridges eight.

[5] I believe that *M. petax* Hollister is identical with *M. d. volgensis*.

    a¹. Size comparatively large; condylobasal length, 16.6–17.3; zygomatic width, 11.4–12; upper tooth row, 6.4–6.8; forearm, 45.1–48; hind foot, 10–12.6.....*M. dasycneme major*
    b¹. Size shorter; condylobasal length, 16–16.8; zygomatic width, 10.8–11.2; upper tooth row, 6–6.4; forearm, 43.6–44; hind foot, 11.4. *M. dasycneme dasycneme*[*]
    d. Size shorter; condylobasal length, 14–14.8; zygomatic width, 9–9.8; upper tooth row, 5.4–6; forearm, 38.8–43. The hind (outer) ear border with a conspicuous emargination; tragus more than half as high as conch, apex of tragus sharply contracted and turned backwards. (General shape of tragus like that of a sabre). Palatal ridges seven.....*M. capaccinii* Bonap.[*] (Possibly this species inhabits Bessarabia and Crimea.)
  3. Membrane inserted at first third of metatarsus (seldom in the middle of it).
    e. Size short; condylobasal length, 13.2–14.5; zygomatic width, 8.2–9.8; upper tooth row, 5–5.7; forearm, 37–40. The back (outer) ear border usually has a slender emargination; tragus a little shorter than half the height of conch, and conspicuously narrow only in the terminal third; in middle outer border the width of tragus is approximately equal width at base; tip of tragus not turned backwards. Palatal ridges seven. P_2 is one-half as long as p_1, and one-half as thick in its basal diameter; c not longer than p_3.
      c¹. Ear slightly narrow at the tip; emargination on its outer border slight; tragus slightly contracted at apex.
        a². Size smaller; condylobasal length, 13.2–13.8; zygomatic width, 8.2–9; upper tooth row, 5–5.2; forearm, 37–38. *M. daubentonii daubentonii* Kuhl.[*]
        b². Size greater; condylobasal length, 13.9–14.5; zygomatic width, 8.6–9.8; upper tooth row, 5.2–5.7; forearm, 35.6–40.....*M. daubentonii volgensis*
      d¹. Ear narrower at the tip; emargination on its outer border deeper; tragus sharply contracted at apex.
        c². Size smaller; condylobasal length, 13.2–14; zygomatic width, 8.9–9.3; upper tooth row, 5.1–5.6; forearm, 35–38.6. *M. daubentonii ussuriensis*

4. Membrane inserted at base of outer toe.
   f. Ear very long (21–25.6 mm.); it extends about 8 mm. beyond nostril when laid forwards; inner surface of conch with about 9 or 10 transverse ridges near posterior border. Forearm, 39–44.....*M. bechsteinii*
   g. Ear shorter (greatest length 18 mm.); it extends about 5 mm. (usually less) beyond nostril when laid forwards; inner surface of conch with 4 to 7 transverse ridges.
      e^1. Tragus very long, considerably longer than half the length of ear conch.
         d^2. Ear rather long (16.6–18 mm.); tragus proportionately narrow in its distal half; general form of tragus sabre-like; a slight emargination on the outer ear border; forearm, 36–40.6; length of tail less than length of body; free margin of the interfemoral membrane fringed with elastic hairs; p^2 one-half as long as p^1; transverse diameter of p^2 only one-fifth less than that of p^1; p^2 clearly visible in lateral profile of tooth row.
            a^3. Ear comparatively long (16–18 mm.); laid forwards, the ear extends about 5 mm. beyond nostril; tragus long (10.2–13.3); frontal region of skull slightly extended beyond nasal part..*M. nattereri nattereri*
            b^3. Ears a little shorter (16.2–17.2); ear extending scarcely beyond nostril when laid forwards; tragus comparatively short (9.7–9.8 mm.); frontal region slightly extended upon the nasal part.*M. nattereri amurensis*
         e^2. Ear relatively short (12.9 mm.); tragus sharply and unequally narrow towards the terminal part, its tip not turned backwards; outer margin of conch with very conspicuous emargination; forearm, 38.9; length of tail greater than that of body; free margin of interfemoral membrane not fringed; p^2 almost completely removed inwardly from the tooth row and not visible from the outside..*M. longicaudatus*
      f^1. Tragus moderately long, only half the length of ear conch.

         f^2. Ear comparatively long (16.6–17.7); tragus proportionately narrow towards distal half, its general shape sabre-like; on the outer ear border is a very conspicuous angular emargination; forearm, 40–41; length of tail less than length of body; p^2 one-third as long as p^1, and one-sixth in transverse diameter; often p^2 is so removed in the inner tooth row that it is not visible from the outside.
            e^3. Tip of the tragus turned outwards; general shape of tragus sabre-like; free margin of membrane fringed with numerous soft hairs the length of which is 1 to 1.5 mm.; color, light pale yellowish with a brownish admixture; ears and wing membrane dull pale brownish.
               M. emarginatus emarginatus
            d^3. The straight tragus tip is directed upright and not curved outwards; free margin of interfemoral membrane nearly devoid of hairs (where the hairs are visible they are very sparsely distributed); color lighter; pale yellowish, with a slight ochraceous shade; ears and wing membrane a dull pale sandy color.
               M. emarginatus turkomanicus
         g^2. Ears comparatively shorter (12.6–17; usually about 14.5); tragus proportionately narrow at its distal half; its tip more or less turned outwards; outer ear border with a slender emargination; forearm, 30–37.2; length of tail conspicuously less than length of body; p^2 a little shorter than p^1; transverse diameter of p^2 one-fourth less than in p^1; p^2 clearly visible in lateral profile of the tooth row.
            e^3. Ear comparatively long (13.5–17; usually about 14.5); conch conspicuously narrow in ter-

minal part; inner ear margin faintly convex; total length of skull, 14.3–15; condylobasal length, 13.9–14.3; upper tooth row, 5.6–5.9; forearm, 33.5–37. . *M. mystacinus brandtii*

f³. Ear as in preceding form; but skull smaller in all dimensions; total length of skull, 13.3–14; condylobasal length, 12.2–13.4; upper tooth row, 5–5.3; forearm, 3.3–3.6. *M. mystacinus gracilis*

g³. Ear short (12.6–13); not so narrow at the tip as in preceding forms; inner margin of ear more convex; total length of skull, 12.7; condylobasal length, 12.2; upper tooth row, 5.1; forearm, 30–31. *M. ikonnikovi*

III. Genus PIPISTRELLUS

21. *Pipistrellus kuhlii* Kuhl (1819). Crimea, Transcaucasia, Chiva.

22. *Pipistrellus nathusii* Keyserling and Blasius (1839). Widely spread over European Russia; north as far as Wiatka, south as far as Akkerman, gov. of Charkov, Woronesh, Astrachan. Not found in Crimea. In the Caucasus it was caught in the Kura Valley and in the Djevad district of the gov. of Baku.

23. *Pipistrellus pipistrellus* Schreber (1775). Extensively distributed over the south of European Russia. It is doubtful whether it lives farther north than the southern districts of the government of Smolensk. The flitter-mause is very common in the Caucasus (Ciscaucasia and Transcaucasia) and in Crimea.

24. *Pipistrellus pipistrellus bactrianus*[7] Satunin (1905). The most common bat of Turkestan and Transcaspia.

KEY TO RUSSIAN SPECIES OF PIPISTRELLUS

a. Outer unicuspid upper incisor shorter than half the height of the inner one, which has only a single cusp (without an additional outer cusp); transverse diameter of outer incisor approximately equal to half the inner one; second (great) upper premolar is approximate to the canine, first premolar being deeply moved to the inner of the tooth row and not visible from the side (or scarcely visible), lower canine approximately three times as long as neighboring premolars; great digit of the wing moderately long (not less than 5 mm.); border of wing membrane (from the foot to the fifth fore finger) whitish; forearm, 34–36; palatal ridges eight. . . . . *P. kuhlii*

b. Outer unicuspid upper incisor more than half the height of the inner one, which has two cusps; transverse diameter of outer incisor approximately 1½ times that of the inner one; second (large) upper premolar far removed from the canine; first premolar not moved to inner of tooth row and quite visible from the side; lower canine long and slender, and three times as long as the neighboring premolar; main digit of the wing long (not less than 5.2 mm.); border of the wing membrane (from foot to the fifth fore finger) uniformly dark (not whitish); forearm, 33–36; palatal ridges seven. . . . . *P. nathusii*

c. Outer unicuspid upper incisor half as high as inner bicuspid; second accessory cusp of the inner incisor commonly higher than the outer unicuspid; transverse diameter of outer incisor approximately equal diameter of inner one (or slightly less); first upper premolar not moved to inner of tooth row and clearly visible from the side; lower canine approximately twice as long as neighboring premolar; main digit of the wing short (not longer than 5 mm.); forearm, 28.2–32.5; palatal ridges seven.

a¹. Color of back almost dark brownish often with a castaneous tint (some specimens have a palish admixture) in general tone; lighter below, with a pale tint; ears and wing membrane grayish brown; border of wing membrane uniform color, dark without whitish edge. . . . . *P. pipistrellus pipistrellus*

b¹. Color of back visibly lighter, a pale brownish gray; below whitish; ear and wing membrane pale brownish gray; border of wing membrane with narrow whitish edge. *P. pipistrellus bactrianus*

IV. Genus NYCTALUS

25. *Nyctalus noctula noctula* Schreber (1775). Probably inhabits Poland and the Baltic provinces.

26. *Nyctalus noctula princeps* Ognev (1924). Widely distributed in all European Russia from Finland to the Crimea and Caucasus. It also inhabits western Siberia, Turkestan and the Seven Mountains country.

27. *Nyctalus siculus* Palumbo (1868). The districts of Charkov, Koupjansk, and Smiev in the gov. of Charkov; districts of Woronesh and Bobrov in the gov. of Woronesh; district of Busuluk in the gov. of Samara, Bessarabia, the Tauric gov., regions of Kuban and Terek.

28. *Nyctalus leisleri* Kuhl (1819). Gov. of Moskow, Smolensk, Toula, Yaroslav, Pensa, Saratov, Astrachan, Charkov, Woronesh, Kiev, Crimea, and the Baltic states.

KEY TO RUSSIAN SPECIES OF NYCTALUS

A. Condylobasal length more than 17 mm.; forearm more than 47 mm.; back hairs without dark roots (almost unicolored), straight but not wiry.

[7] I keep to this name, because Satunin gives the exact type locality. O. Thomas (Ann. and Mag., Nat. Hist., 1909, p. 58) affirms that the correct name of this bat must be *P. p. lacteus* Temm., but in the Monographie de Mammalogie (1838) Temminck brings forward a very questionable consideration, namely, that the type species of *Vespertilio lacteus* came from South America.

a. Condylobasal length more than 21 mm.; forearm greater than 60 mm.

a¹. Size large; condylobasal length, 22.2–22.9; zygomatic width, 15.4–16.1; upper tooth row, 9.1; forearm, 65.5–69; length of head and body, 88–106.4 mm.....*N. siculus*

b¹. Size somewhat smaller: condylobasal length, 21.2; zygomatic width, 14.9; upper tooth row, 8.5–8.7; forearm, 60.5–62; length of head and body, 85 mm.
N. aviator Thomas*
(Japan, Corea; probably this species can be found in the Ussuri region.)

b. Condylobasal length less than 21 mm.; forearm less than 60 mm.

c¹. Size comparatively large; condylobasal length, 19.1–20.1; zygomatic width, 13–14.5; upper tooth row, 7.4–8–3; forearm, 52–58; length of head and body, 70.0–85.
N. noctula princeps

d¹. Size slightly smaller; condylobasal length, 17.4–19.4; zygomatic width, 12.4–13.8; upper tooth row, 6.8–7.4; forearm, 51–54; length of head and body, 69–79
N. noctula noctula

B. Condylobasal length less than 17 mm.; forearm less than 47 mm.; back hairs bicolored, variable, with dark bases.

c. Condylobasal length, 15.2–16; zygomatic width, 10.1–11; upper tooth row, 5.8–6.3; forearm, 42.6–46.8; length of head and body, 53–62.....*N. leisleri*

V. Genus EPTESICUS

29. *Eptesicus serotinus serotinus* Schreber (1775). Southern part of European Russia from the gov. of Kiev, Charkov, Ekaterinoslav, and Orenberg. Very abundant in Crimea, Ciscaucasia and Transcaucasia.

29a. **Eptesicus serotinus intermedius** subsp. nov.

In the region of Terek (near Vladikavkaz, Murtasovo station), and probably in all the Kislar division where this form occurs, it does not differ in color from the typical *serotinus*, but has a markedly smaller skull and tooth row. This bat is an intermediate type between the *E. s. serotinus* and the following subspecies, *E. s. turcomanus*.

Diagnosis.—Skull shorter than that of the *E. s. serotinus*; total length of skull, 18.9–19.9; zygomatic width, 13.3–14; interorbital constriction, 4.3–5; upper tooth row, 7.1–7.3. Color as in the typical race.

Type.—No. 169, ♂, collected March 16, 1923, near Vladikavkaz, region of the Terek; collection of S. I. Ognev. A total of seventeen specimens were examined.

30. *Eptesicus serotinus turcomanus* Eversmann (1849). Gov. of Astrachan, Ust-Urt, Transcaspia, Turkestan, Bucharia.

31. *Eptesicus sodalis ognevi* Bobrinskoy (1918). Bucharia, Transkaspia (Aschabad), Seven Mountains region.

KEY TO RUSSIAN SPECIES OF EPTESICUS

A. Forearm less than 47 mm.; condylobasal length less than 18 mm.; upper tooth row less than 7 mm.; condylobasal length, 16.5–17.1; zygomatic width, 11–11.8; upper tooth row, 6.4–6.7; forearm, 45–46.6; color very pale, the back sandy gray sometimes with a chestnut tint; below white
E. sodalis ognevi

B. Forearm more than 47 mm.; condylobasal length more than 18 mm.; upper tooth row more than 7 mm.

a. The general color of the back varies from Prout's brown to clove brown; lighter below; naked parts (ear, nose, and membrane) blackish; condylobasal length, 19–21.6 mm.; zygomatic width, 14–15.4; forearm, 51.1–54.8; upper tooth row, 7.4–8
E. serotinus serotinus

b. Color much lighter; back a pale sandy gray; below white or with a delicate pale tint; ear and membrane light sandy grayish; condylobasal length, 18.1–20; zygomatic width, 12.1–13.9; forearm, 47–54.2; length of upper tooth row, 7.2–8
E. serotinus turcomanus

VI. Genus AMBLYOTUS

32. *Amblyotus nilssonii* Keyserling and Blasius (1839). Very common in the northern part of European Russia (Gov. St. Petersburg, Olonetz, Novgorod), northward as far as Ostfinmarken (70°) and in Russian Lapland to 60°; also in the western part of European Russia (Baltic states, Smolensk, near Ljublin). Not found in the central and southern governments. Occurs in the eastern part of European Russia: gov. Samara (near Samarskaja Luka), provinces along the lower part of the Volga River, gov. of Orenburg, southern foothills of Ural (as far north as 60°). It is very remarkable that *A. nilssonii* is found near Tiflis and in the district of Lenkoran. In western Siberia it occurs in gov. of Tobolsk, Tomsk, Altai Mountains, Tarbagatai; in eastern Siberia in the Apple Mountains, Stanovoy Mountains, and Amour region.

33. *Amblyotus caucasicus* Satunin (1901). Specimens have been found at different times in the winter season (November to April) near Tiflis. Probably *caucasicus* is a mountain species which descends in winter to lower places.

34. **Amblyotus tauricus** sp. nov.

Type.—From near the Biological Station of Karadagh, Crimea; collection of S. I. Ognev.

Diagnosis.—Size very small, about that of *Pipistrellus pipistrellus*; total length of skull, 12.7; interorbital constriction, 3.3; upper tooth row, 4.5; length of body, 41.5; tail, 9.3; forearm, 9.8; hind foot, 5.5 mm.

Ear conspicuously shorter than in *A. tamerlani*, its length 10.1 mm.; more rounded apically and not so narrow as in *A. tamerlani*.

Outer upper unicuspid incisor approximately two-thirds as high as inner one; transverse diameter of these teeth subequal.

Palatal ridges seven; membrane inserted at base of outer toe; first metacarpal bone of third digit subequal to that of fifth; wings comparatively narrow; the two terminal vertebrae of tail free from membrane.

Epibleme very thin and weak; hairs on the back bicolored, the bases brownish black, and the tips broadly whitish with a pale admixture; below the base of hairs are grayish black, the tips white; ears and lips dark brownish, almost black; wing membrane paler, and near the body it is covered with hair.

Systematical remarks.—This species is very near *A. tamerlani*, and possibly only a subspecies. *A. tauricus* differs from *A. tamerlani:* 1, in its less dimensions, 2, in shorter rounded ears, and 3, in lighter color.

Geographical distribution.—Only one specimen of this remarkable bat was obtained and that by Mr. Wuchetich, May 15, 1912, near the Biological Station of Karadagh (Crimea).

35. *Amblyotus tamerlani* Bobrinskoy (1918). Principality (the bey) of Baisun (Bucharia), Russian Mountains (east Turkestan).

36. **Amblyotus velox** sp. nov.

Type.—From near Vladivostok; collection of S. I. Ognev.

Diagnosis.—Size small; total length of skull, 13.3; condylobasal length, 13.1; zygomatic width, 8.3; interorbital constriction, 4; upper tooth row, 4.8; forearm, 35; hind foot, 7.4.

Ear of medium length (13.9), broadly rounded on upper part; inner border of conch not bow-shaped, but convex as in *A. nilssoni;* greatest width of tragus approximately in middle part; no additional lobe on outer margin of tragus, as in *A. tamerlani*.

Skull short, resembling that of *A. tamerlani*.

Outer upper unicuspid incisor is a third lower than the inner bicuspid and almost equal to the outer cusp of this tooth; in transverse diameter outer incisor approximately equal the inner one; last upper molar (m^3) weakly compressed in the sagittal direction, its frontal diameter being 1½ times greater than the sagittal.

Palatal ridges seven; free margin of wing membrane inserted at base of outer toe; third metacarpal equal to fifth; wings comparatively narrow; only one terminal vertebra free from membrane; epibleme well formed; color above dark brownish black with a pale golden tint on tips of hairs; below, tips of hairs pale grayish; ears, lips, wing membrane brownish black. Externally this bat is like the dark colored *Vespertilio murinus*.

KEY TO RUSSIAN SPECIES OF AMBLYOTUS

A. Forearm, 40–41.3; total length of skull, 14.9–16.1; condylobasal length, 14.1–15.6; zygomatic width, 8.9–10.6; greatest width of tragus is in its middle part, epibleme very narrow; bases of back hairs dark brownish, the tips light pale-golden; below, bases of hairs dark brown, the tips pale yellowish ..... *A. nilssonii*

Forearm shorter than 36 mm.; total length of skull, 13.3–13.7; condylobasal length, 12.4–13.1; zygomatic width, 8.3–8.9.

a. Tragus with only one little rounded lobe at base of outer part; greatest width of tragus in middle; epibleme moderately well developed; only one terminal tail vertebra free; color dark brownish black with a pale-golden tint on back and a pale-grayish on underparts; naked cutaneous parts dark brownish black ..... *A. velox*

b. Tragus with two cutaneous lobes on outer side, one of them near base of tragus greater than other, which is short and rounded in middle of outer border of tragus; greatest width of tragus in middle part; epibleme weakly developed and narrow; two terminal tail vertebrae are free.

a¹. Tragus slightly convex at its outer border; length of ear, 12.9–13 mm.; base of hairs on back blackish brown, the wide light tips pale yellowish; below, bases of hairs grayish black, tips whitish with a palish admixture; ears and lips brownish black; wing membrane slightly lighter ..... *A. tamerlani*

b¹. Tragus dark, convex on its outer border; length of ear, 9 mm.; fur on the back dark brown with a yellow, as though golden, tint; below, grayish brown with a steel sheen; hairs bicolor; base of hairs brownish black, the tips on the back yellowish brown, on the underparts grayish; wing membrane and ears dark brownish-black ..... *A. caucasicus*

VII. Genus VESPERTILIO

37. *Vespertilio murinus murinus* Linnaeus (1758). This bat is very widely distributed and is very common in all European Russia (from Finland to Crimea and Caucasia), and in Siberia to the Amour Gulf, Vladivostok and Corea; Turkestan, Transcaspia, Bucharia, and Seven Mountains country.

VIII. Genus OTONYCTERIS

38. *Otonycteris hemprichii* Peters (1859).

This bat ranges in the southern part of Transcaspia and middle Bucharia. In the collection of the Zoological Museum of Moscow University is the type-specimen (No. 1156) of *Plecotus leucophaeus* Severtzov, obtained near Djan-Bulak at the southern foot of the Kuraminsk Mountains, between Tashkent and Chodgent. This specimen was first described as a new species, but later referred to as *Plecotus auritus* var. *brevimana*. This specimen was attributed to this form by A. A. Tichomirov and A. N. Kortshagin,[8] although it is a typical *Otonycteris hemprichii*.

IX. Genus BARBASTELLA

39. *Barbastella barbastellus* Schreber (1774). Baltic provinces, gov. of Grodno (the forest of Bjalovesh), Poland, Crimea, Caucasus.

40. *Barbastella caspica* Satunin (1908). (*Synotus dargelingensis* after Dobson and Blanford, not after Hodgson; *Barbastella blanfordi* Bianchi; *Barbastella walteri* Bianchi.) Eastern Transcaucasia, Transcaspia, Turkestan.

[8] See Izviestiia Imperat. Obshchestva Liubitelei estestvoznaniia, vol. 58, no. 4, p. 11, 1889.

KEY TO RUSSIAN SPECIES OF BARBASTELLA

a. No supplementary lobe on outer border of ear; ear when laid forwards extends 2 to 2½ mm. beyond nostril; terminal vertebra free from membrane; forearm, 40.6–44.5; total length of skull, 15.2.....*B. caspica*

b. A short rounded supplementary lobe on outer border of ear; ear rather short, reaching when laid forwards about tip of muzzle; only the tip of terminal vertebra free from membrane; forearm, 36–39.3; total length of skull, 14.2.....*B. barbastellus*

X. Genus PLECOTUS

41. *Plecotus auritus auritus* Linnaeus (1758). Distributed extensively in European Russia from Finland and the gov. of Olonetz to Crimea and the Caucasus. It inhabits western Siberia, the Altai and Tarbagatai Mountains, and also the region of Semipalatinsk. Probably the typical race ranges east as far as Lake Baikal.

42. *Plecotus auritus wardi* Thomas (1911). The Seven Mountains country (Semiretchie); the mountainous parts of the Bucharia; probably widely distributed in Turkestan.

43. *Plecotus auritus sacrimontis* Allen (1908). Saghalien Island, the Ussuri and Amour regions, Transbaikalia.

KEY TO RUSSIAN SPECIES OF PLECOTUS

A. Bullae very large and convex; length of bullae, 4.6–5 mm.; total length of skull, 16.9–17.8; condylobasal length, 15.8–16.6; forearm, 40.3–45.5; color very light pale-grayish above, whitish below.....*P. auritus wardi*

B. Bullae conspicuously shorter and not so convex; length of bullae, 4–4.5 mm.

a. Total length of skull, males (in females the skull is greater[9]), 17–17.5; condylobasal length, 15.8–16; zygomatic breadth, 8.5–9.1; length of upper tooth row, 5.7–5.9; color darker, more grayish and brownish.....*P. a. sacrimontis*

b. Total length of skull, males, 15.8–16.9 (females, 16.3–17.6); condylobasal length, males, 14.7–15.3 (females, 15–16); zygomatic width, males, 8.6–9.1 (females, 8.8–9.3); upper tooth row, males, 5.4–5.8 (females, 5.6–5.9); color as in preceding form *P. a. auritus*

Subfam. Miniopterinae

[9] It is very interesting that in the genus *Plecotus* there is a remarkable sexual dimorphism; skulls of the females are greater than of the males. It is a pity that all five specimens of *P. a. sacrimontis* in my collection are females, their skulls are greater than those of males of *P. auritus auritus* and approximately equal to the skulls of females of this subspecies.

XI. Genus MINIOPTERUS

44. *Miniopterus schreibersii schreibersii* Kuhl (1819). Crimea and the Caucasus along the coast of the Black Sea.

45. *Miniopterus schreibersii pallidus* Thomas (1907). The districts along the median part of the Arax River, Transcaucasia and Transcaspia.

KEY TO RUSSIAN SPECIES OF MINIOPTERUS

A. Fur above moderately dark brownish gray; pale grayish below *M. s. schreibersii*

B. Fur above pale grayish with a light brownish tint; whitish below *M. s. pallidus*

Subfam. Murininae

XII. Genus MURINA

46. *Murina ognevi* Bianchi (1916). Near Vladivostok.

47. *Murina leucogaster sibirica* Kastsch. (1905). Kusnetzki Alatau.

48. *Murina ussuriensis* Ognev (1913). Ussuri region.[10]

KEY TO RUSSIAN SPECIES OF MURINA

A. Size short; forearm, 31–32 mm.; wing membrane fastened to distal part of outer digit, sometimes to tip of it near claw; first upper incisor slightly greater than second. General color of back pale grayish; below whitish; palatal ridges nine; parietal region considerably convex; occipital region comparatively abruptly flattened.....*M. ussuriensis*

B. Size greater; forearm, 40–42.3; wing membrane fastened to basal third of outer digit; first upper incisor equal to second.

a. Tragus perfectly straight, not turned outwards; only one lobe on basal part of tragus; back fur very bright golden yellowish with a palish tint; nape with a russet collar; palatal ridges 8.....*M. ognevi*

b. Tragus slightly turned outwards at tip; two lobes on the basal part of tragus; general color of back brown, roots of hairs grayish *M. leucogaster sibirica*

FAMILY MOLOSSIDAE

XIII. Genus NYCTINOMUS

49. *Nyctinomus insignis* Blyth (1863). Eastern part of Siberia (Vladivostok, Corea).

In Satunin's "Conspectus Mammalium Imperii Rossici" (1914, p. 44) is a doubtful indication that a bat of the genus *Nyctinomus* inhabits the southern coast of Crimea. Surely this can be only *N. teniotis* Rafinesque, a species of the Mediterranean subregion.

Zoological Museum, Moscow University, Moscow, Russia.

[10] Recently A. de C. Sowerby described a new subspecies, *Murina huttoni fuscus*, from Girin, Manchuria (Journ. Mammalogy, vol. 3, no. 1, pp. 46–47, 1922). This bat probably will be found in the Ussuri region