A SURVEY OF THE BIRDS OF MONGOLIA

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INTRODUCTION

THE PRESENT CONTRIBUTION is a survey of the birds of Mongolia[1] and a report on those that were collected in that country by the Central Asiatic Expeditions of the American Museum of Natural History in 1919, 1922, 1923, and 1925.

The survey lists all the birds that are known to me from Mongolia and allocates them to the various zones in which they breed; it also discusses the affinities of the Mongolian avifauna. The list is, therefore, an inventory, or check list, though not a formal one, as trinomials are not used and no bibliographical information is given. It was impossible for me to allocate consistently the birds to subspecies, if any, because much of the list is a compilation and I would have had to rely on varying taxonomic opinions with which I do not necessarily agree. Furthermore, a rather large proportion of the records in the Mongolian literature make no mention of subspecies, as they represent birds that were observed but not collected. Bibliographical information, such as the name of the author, the date when the bird was described, publication, and the type locality of all the birds that occur in Mongolia can be found in my two volumes on the birds of the Palearctic Region (1959, 1964).

My desire to supply such a list was prompted by the fact that no inventory of the birds of Mongolia as a whole had hitherto been published, although important reports on the birds of certain of its regions exist. With the renewed interest in Mongolia, it seems to me that this list will be a useful tool, but, as much ornithological exploration remains to be done in that country, it is certain that the list is incomplete and will be modified extensively as the distribution becomes better known.

ACKNOWLEDGMENTS

I have been helped by Mme. E. V. Kozlova of the Leningrad Museum and by Prof. G. P. Dementiev of Moscow who read and commented on the first draft of the list. Mme. Kozlova also gave me some very rare publications on the birds of Mongolia that were not available to me in America, and she and Professor Dementiev received me in Leningrad and Moscow with the greatest cordiality. I thank them for their help and hospitality. I also wish to express my appreciation to Mme. T. Gidaspova for helping me with the Russian texts that form such a large and important part of the bibliography.

PREVIOUS INVESTIGATIONS

The most important reports on the birds of Mongolia have been published by Kozlova (1930, 1932, and 1933). In the first of these papers, which is the most exhaustive and runs to 396 pages, she reported on the observations made and on the birds collected in southwestern Kentei, Tola River Valley, southeastern Khangai, and in the region of the Orok Nor,[2] that is, in exactly the same regions where the Central Asiatic Expeditions collected nearly all their specimens. Other members of her expedition crossed the Gobian Altai on their way to the Sogo Nor and lower Edzin Gol which, however, are in Inner Mongolia. A total number of 1700 specimens, representing 306 species and subspecies, were collected by Kozlova and her co-workers, and this collection remains by far the largest that has ever been made in Mongolia. In 1932, she reported on her trip through Central Khangai from the foothills of Otkhon Tengri north through the Tarbagatai to Lake Sangin Dalay and the southern shore of the Koso Gol; 520 specimens were collected. In 1933, she gave an account of her expedition in the valley of the upper Kerulen River in eastern Kentei during which she collected 200 specimens.

These papers are in Russian and difficult to obtain; they are lacking, for example, in such a highly important and representative natural history library as that of the American Museum of Natural History, but in 1932–1933 she published in the "Ibis" an excellent and lengthy résumé of her 1930 paper in

[1] The term "Mongolia" as used in this paper refers only to the country known as Outer Mongolia or, officially, as the Mongolian People's Republic.

[2] The Mongol term "Nor," sometimes transliterated as "Nur," signifies lake, but some lakes are referred to as Gol (i.e., Koso Gol), although the term "Gol" usually signifies river.

which she added new information. This résumé necessarily omitted much of the valuable data given in the Russian original (notably the list of specimens) but is nevertheless the most instructive paper in English on the birds of Mongolia.

The avifauna of the regions mentioned above is the best known, thanks chiefly to Kozlova, but Tugarinov (1932) has also published a useful report on the birds of northeastern Mongolia, and he (in 1916) and Sushkin (1925, 1938) have reported on those of the borders of northwestern Mongolia in papers that deal primarily with the Russian districts on the frontiers of this region, namely, the Tannu Ola and the Russian Altai.

The regions that remain the least known are northern Khangai, the Mongolian Altai, Gobian Altai, Transaltai Gobi, and most of western and eastern Mongolia with the exception of narrow belts along the Russian and Manchurian frontiers. In recent years, a short paper mentioning 59 species, observed chiefly in the region of Ulan Bator, was published by Grummt (1960). A list of 87 species from the Transaltai Gobi that were observed by Dementiev was published by him in 1962. Tarasov (1962) also reported on 129 species that he saw in the southeastern Mongolian Altai and its foothills.

Mention must be made also of a paper by Lönnberg (1909) that reported on a collection made in 1908 in southern Transbaicalia and in northern Mongolia, chiefly along the route from Kyakhta to Ulan Bator. But some of the species were misidentified by Lönnberg, as Kozlova mentioned, and the itinerary that he gave is virtually useless. I cannot find many of his localities; they may be either in Transbaicalia or in Mongolia.[1]

My list is based on the papers that are mentioned above and on specimens that I examined in various museums, but I know of the existence of several other papers in the Russian literature which I was not able to procure. Some were called to my attention by Dementiev in the course of correspondence, and others were mentioned by Kozlova in the introduction to her English résumé. In that account she also mentioned some older expeditions, dating back to those of Przhevalsky, which made the first contributions to our knowledge of the birds of Mongolia.

[1] Lönnberg's report apparently does not add any species to the list of the birds of Mongolia, with the possible exception of *Alauda gulgula*. One specimen of this species, which is in the Stockholm Museum and the identity of which I have verified, was taken on May 25, 1908, at "Kiran," which may be situated near Kyakhta, Transbaicalia, or between that locality and Yoro, Mongolia, which is about 65 kilometers due south of Kyakhta. This record, which I have discussed before (1951, p. 524), undoubtedly represents a stray but is nevertheless extraordinary, as the nearest locality where *A. gulgula* is known to breed is some 1500 kilometers to the west in the region of Zaïsan Nor.

PHYSIOGRAPHY AND PHYTOGEOGRAPHY OF MONGOLIA

THE BRIEF ACCOUNT of the physiography and phytogeography of Mongolia that follows is based chiefly on the German translation of the good general text of Murzaev (1954). Much information concerning certain regions was supplied also by the basic reports of Kozlova, enumerated above, and in the narrative of the explorations of the Central Asiatic Expeditions by Andrews (1932). The geology of Mongolia was very ably discussed by Berkey and Morris (1927).

Mongolia is a large, isolated, and landlocked country in central and eastern Asia, bounded on the north by the Soviet Union and on the south by China. It lies, in round numbers, between longitudes 88° and 120° E. and latitudes 41° 30′ and 52° N., the nearest seacoast being about 730 kilometers distant in the Gulf of Chihli near Tientsin. The land area is about 1,530,610 square kilometers and the greatest distances from west to east and north to south are, respectively, about 2420 and 1280 kilometers.[1]

The country is decidedly mountainous, with the exceptions of the relatively flat and uniform eastern plateau and some lowlands in the center, the average height being 1580 meters (5183 feet), the land tilting down from west to east and north to south. In the west, the Mongolian Altai reaches an elevation of 4653 meters (15,262 feet).

The climate is extremely continental, the annual amplitude in the temperature being about 90° C. The temperature may drop as low as −52° C. during January, the coldest month, and rise to 40.5° C. in the shade during July, the warmest month (or from −61.5° F. to 104° F.). The precipitation is low, and most of it comes as rain which falls almost entirely (80% to 90% of the annual total) during the months from May to September, the wettest months being July and August. The annual average varies from only 60 mm. in the south to about 300 mm. in the east and 400 mm. or more in the north, being only 200 mm. to 220 mm. for the country as a whole. Snowfall is usually scanty, the humidity is very low in the more open regions, the skies are very clear as a rule, and the winds are very strong, especially in the south.

Murzaev (1954) divided Mongolia into five main regions (the present paper, fig. 1): the Altai, the basin of the Great Lakes, Khangai and Kentei, the eastern plateau, and the Gobi. In order to study the avifauna, it seems preferable to me to adopt a different division. This division, which is also in five regions or zones, corresponds in the main to the vegetation cover; it is shown as figure 2, which was based chiefly on the vegetation map as well as other data published by Murzaev in 1954. The vegetation map of Murzaev, which was compiled by Junatov, is, however, far more complex than my semidiagrammatic map. Stands of larches, poplars, or other trees are found in otherwise treeless regions, alkali flats are widely dispersed in the grassy and arid steppes, and, on the latter, there are more or less extensive patches of true desert. Moreover, the five zones blend more or less gradually into one another in most regions.

ZONE A, THE FORESTED ZONE

This zone, which covers perhaps 15 per cent of the area of Mongolia, consists of the northern and higher parts of Kentei and of a large part of Khangai. Its forests are the southern extension of the Siberian taiga and, according to Kozlova, are very dense in the north and composed chiefly of pine-cedar (*Pinus sibirica*), but become more open farther south or at lower elevations and are made up of fir (*Abies*), pine (*Pinus sylvestris*), and larch (*Larix dahurica*), with tracts of birch (*Betula verrucosa*). The more open forests have a rich undergrowth of bushes such as rhododendrons, but this undergrowth is lacking in the dense and dark forests of the north where the ground is covered with a carpet of moss and bilberry.

Khangai is a vast plateau with a complex orography which reaches an altitude of 4031 meters at the peak of Otkhon Tengri near Uliassutai, and is connected on the north to

[1] These figures correspond to an area of about 591,000 square miles and about 1471 miles in length by 782 miles in width or approximately, in Europe, the distances from Paris to Moscow and Hamburg to Rome and, in North America, from New York to Denver and Minneapolis to Dallas.

the Eastern Sayan on the Russian border by a series of ranges interspersed with valleys. A large part of the basin of the Selenga River, the western and the southern parts of Khangai, and southern Kentei belong in Zone B. In southeastern Khangai the transition to the arid steppes (Zone D) is rather abrupt.

Zone B, the Mountain Steppes

These steppes occupy the region mentioned above, a part of the valley of the Tola River, and most of the Mongolian Altai except at its highest elevations where the steppe is replaced by alpine meadows. The region of the Ureg Nor is best included in this zone, but, according to Sushkin (1925), the region of the Achitu Nor and the basin of the Kobdo River are much more arid, and, I believe, are best included in Zone D. The forest is virtually absent in Zone B, but groves of larches, aspens, poplars, and hawthorns, and dense thickets of willows grow in favored localities. There are also some small gallery forests that are important to the avifauna, such as exist along the Kharya River which drains into the Ureg Nor.

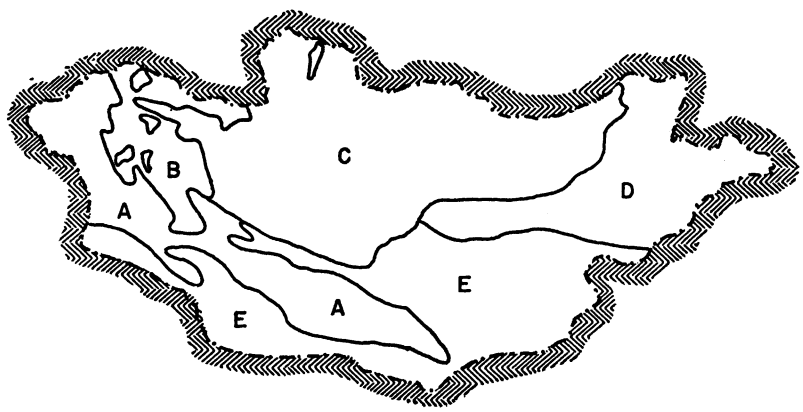

Fig. 1. The five physico-geographic divisions of Mongolia according to Murzaev (1954). A. The Altai. B. The basin of the Great Lakes. C. Khangai and Kentei. D. The eastern plateau. E. The Gobi.

Zone C, the Grassy Steppes

These steppes, and the arid steppes farther south, form the dominant and typical "*Landschaft*" of Mongolia, occupying a little more than half of the area of Mongolia according to Murzaev, the grassy steppes occupying 26.1 per cent and the arid steppes 27.1 per cent of the country. Various grasses dominate in Zone C but are replaced chiefly by sagebrush (*Artemisia*) and halophytic plants in Zone D. A tongue of the grassy steppes follows northward the course of the Tola River. Narrow and small gallery forests, or stands of trees, and meadows are found also along some rivers, such as the Khalka and lower Kerulen in the east, and the Tesin River which drains into Ubsu Nor in the northwest.

Zone D, the Arid Steppes

In this zone, the region that lies south of Khangai and north of the Altai is a large depression occupied by many scattered and more or less permanent brackish or saline lakes and swamps. Many species of water and shore birds breed in this region as do also a few land birds in the reeds or tamarisks that fringe the lakes and swamps. The avifauna of the Great Lakes (one of the five major divisions of Murzaev) is scarcely known, but this region is predominantly arid and, with the Achitu Nor mentioned above, is best included in Zone D. The Gobian Altai is also included in Zone D. This last range is high, varying from an elevation of about 4000 meters in the west to one of about 2200 in the east, but it is very arid, although some small groves of willows and poplars grow in its more sheltered gullies and valleys, as do low

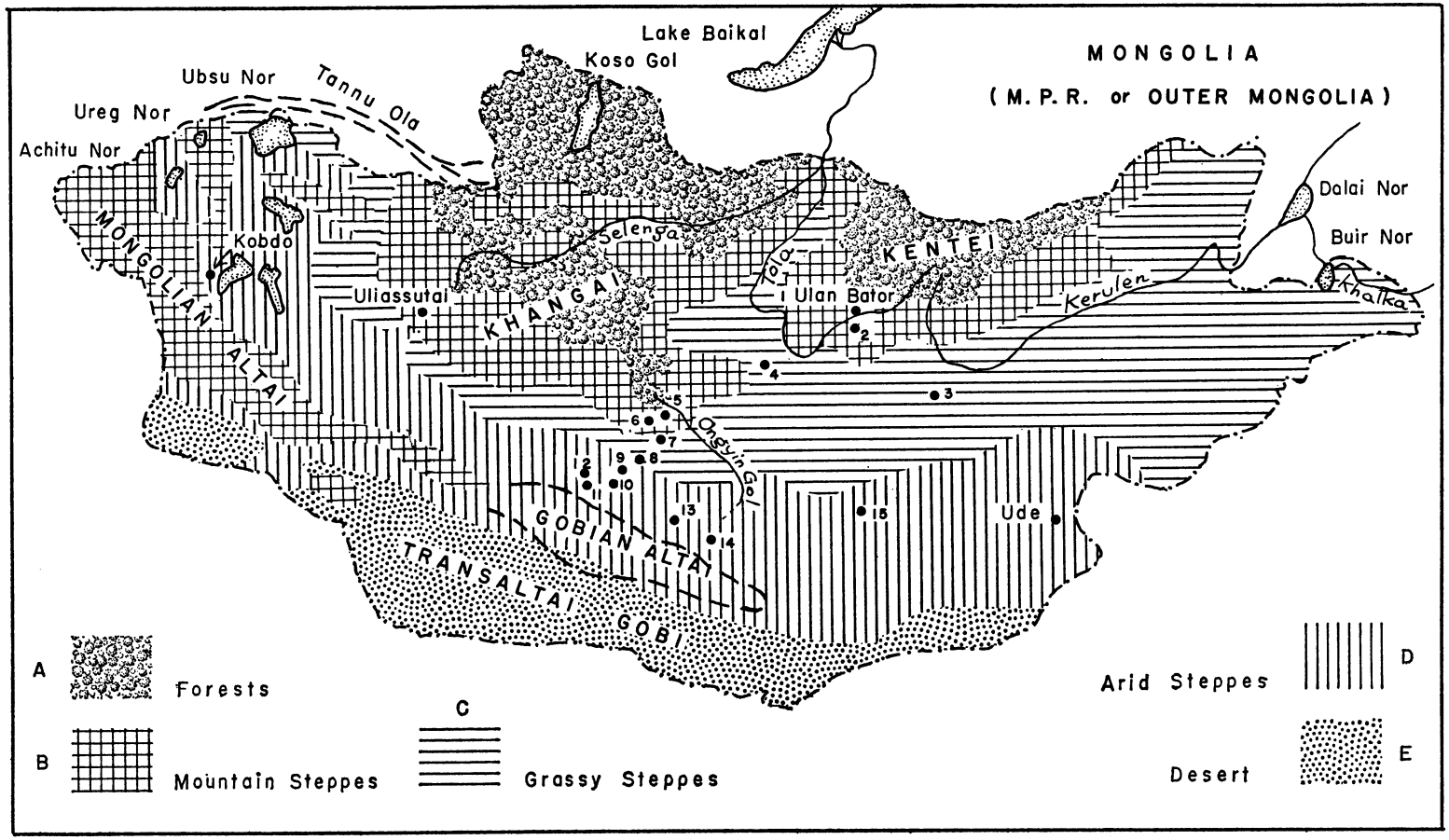

FIG. 2. The five phytogeographic and faunistic zones of Mongolia advocated in the present paper.

bushes and creeping junipers at higher elevations.

Zone E, the Desert

This region lies south of the Altai and in the extreme southeast and occupies about 14.5 per cent of Mongolia, but, as stated above, some patches of true desert are found also in Zone D. This desert is characterized by being stony or covered with gravels and pebbles, and it has relatively little sand. These factors have an important bearing on the composition of the avifauna, as was emphasized by Dementiev (1962). The soil map of Murzaev (1954) shows only a few and relatively small tracts of sand, the sandy tracts being, in fact, more extensive in the region of the Great Lakes in Zone D. The vegetation of the desert is very scanty and, in some districts, is lacking altogether. It consists normally of isolated clumps of woody plants or of herbs, although there are also good groves of saxaul trees (*Haloxylon ammodendri*) in some localities and, in the few small oases, reeds and poplars.

LIST OF THE BIRDS OF MONGOLIA

IN THE FOLLOWING LIST, migrants, winter visitors, or vagrants are designated by an asterisk. The capital letters, A–E, refer to the various zones that are described in the foregoing section.

GAVIIDAE

1. *Gavia arctica* (Black-throated Diver). B, region of Otkhon Tengri, Khangai; D, Achitu Nor.

PODICIPEDIDAE

2. *Podiceps nigricollis* (Black-necked Grebe). B, southeastern Khangai; and reported from the Tola River Valley.
3. *Podiceps auritus* (Horned Grebe). B, Ureg Nor; and migrant in Khangai and Orok Nor.
4. *Podiceps cristatus* (Great Crested Grebe). D, Orok Nor, Achitu Nor.

PELECANIDAE

5. *Pelecanus crispus* (Dalmatian Pelican). D, Orok Nor.

PHALACROCORACIDAE

6. *Phalacrocorax carbo* (Cormorant). B and C, valleys of the Khara and Tola rivers, Ureg Nor, and probably Buir Nor where it is reported in August; D, lake region of the Orok Nor, and Achitu Nor.

ARDEIDAE

7. *Botaurus stellaris* (Bittern). D, lake region of the Orok Nor, and Achitu Nor.
8. *Egretta alba* (Great Egret). D, Lake Khara Usu.
9. *Ardea cinerea* (Grey Heron). D, Achitu Nor and lake region; perhaps also southern Khangai; and reported from the Kerulen River in early August.

THRESKIORNITHIDAE

10. *Platalea leucorodia* (Spoonbill). D, Orok Nor and other lakes in this region; and migrant in Khangai; reported also from Buir Nor.

CICONIIDAE

11. *Ciconia nigra* (Black Stork). A, Kentei; B, Ureg Nor; C, valleys of the Tola, Kerulen, and Khalka rivers; D, Achitu Nor and Gobian Altai.

ANATIDAE

12. *Anser anser* (Greylag Goose). B, southern Khangai, Ureg Nor, and probably western Mongolian Altai; D, Orok Nor; reported also from Buir Nor.
13. *Anser fabalis* (Bean Goose). B, western Mongolian Altai; D, lake region of the Orok Nor; reported as a migrant from Khangai, Kentei, and the valleys of the Khara and Tola rivers, and northeastern Mongolia.
14. *Anser indicus* (Bar-headed Goose). A, Khangai and Kentei; B and C, valleys of the Tola River and upper Kerulen, southern Khangai, western Mongolian Altai, and Ureg Nor; D, Achitu Nor; a migrant at the Orok Nor and in southeastern Mongolian Altai.
15. *Anser cygnoides* (Swan Goose). A, Kentei and Koso Gol in Khangai; B and C, valleys of the Kerulen, Tola, and lower Selenga rivers, Buir Nor, southern Khangai, western Mongolian Altai, and Ureg Nor; D, Achitu Nor; reported also as a migrant from Khangai.
16. *Cygnus cygnus* (Whooper Swan). B and C, Buir Nor, valley of the Tola River, and western Mongolian Altai; D, Achitu Nor and Orok Nor.
17. **Cygnus bewickii* (Bewick's Swan). Tola Valley and Orok Nor.
18. *Tadorna ferruginea* (Ruddy Shelduck). A, Kentei; B, Selenga River, southern Khangai, western Mongolian Altai, and Ureg Nor; C, Tuerin and eastern Mongolia; D, Achitu Nor, Orok Nor, lake region, and Gobian Altai; reported also as a migrant from Khangai, Tola Valley, Orok Nor, and southeastern Mongolian Altai.
19. *Tadorna tadorna* (Common Shelduck). B, southern Khangai and Ureg Nor; C, valley of the Tola River; D, Orok Nor and other lakes in the region.
20. *Anas platyrhynchos* (Mallard). B, region of Ulan Bator, southern Khangai, western Mongolian Altai, and Ureg Nor; D, Orok Nor.
21. *Anas poecilorhyncha* (Spotbill Duck). C, nests on the Kerulen River, but rare; reported also from Khangai, Khalka River, and Transaltai Gobi.
22. *Anas crecca* (Green-winged Teal). A, Kentei; B and C, Tola River Valley and western Mongolian Altai; D, lake region of the Orok Nor, and Achitu Nor; reported as a migrant from the Kerulen Valley, and Buir Nor.
23. *Anas falcata* (Falcated Teal). Breeds prob-

ably in northeastern Mongolia, and reported as a migrant from the Okor Nor and the region of Ulan Bator.

24. *Anas strepera* (Gadwall). A, Khangai; B and C, Tola River Valley; D, Achitu Nor and perhaps Orok Nor.
25. *Anas penelope* (Eurasian Widgeon). D, lake region of the Orok Nor, and Achitu Nor; and reported on migration from Khangai, the Tola River Valley, and northeastern Mongolia.
26. **Anas acuta* (Pintail). Northeastern Mongolia and Orok Nor.
27. *Anas querquedula* (Garganey). A, Kentei; B and C, Tola River Valley; D, Achitu Nor and Orok Nor.
28. *Anas clypeata* (Shoveler). D, Achitu Nor and Orok Nor; and reported as a migrant from northeastern Mongolia.
29. *Netta rufina* (Red-crested Pochard). D, Orok Nor and other lakes in the region.
30. *Aythya ferina* (Common Pochard). D, Orok Nor.
31. *Aythya fuligula* (Tufted Duck). D, lake region of the Orok Nor, and Achitu Nor; possibly also in the Tola River Valley; reported as a migrant from northeastern Mongolia.
32. **Bucephala clangula* (Common Goldeneye). Khangai, Tola River Valley, north of Ulan Bator, northeastern Mongolia, and Orok Nor.
33. **Mergus albellus* (Smew). "Northern Mongolia."
34. *Mergus merganser* (Goosander). A, Kentei and Khangai; B, western Mongolian Altai and Ureg Nor; D, Achitu Nor; reported also during the summer from the Kerulen River and as a migrant in northeastern Mongolia.

PANDIONIDAE

35. *Pandion haliaetus* (Osprey). A, Kentei; B and C, Tola River Valley.

ACCIPITRIDAE

36. *Milvus migrans* (Black Kite). A, Kentei and Khangai; B, southern Khangai, Ureg Nor, and southeastern Mongolian Altai; D (Achitu Nor and Gobian Altai; E, Transaltai Gobi.
37. *Accipiter gentilis* (Goshawk). A, Kentei; B, western Mongolian Altai; and perhaps in the Tola River Valley; seen also on the Khalka River.
38. *Accipiter gularis* (Japanese Sparrow Hawk). A, Kentei; C, region south of the Tola River Valley and reported from the Khalka River where the observer believes it probably breeds; and perhaps the Gobian Altai where it has been collected on May 30 at Ikhe Bogdo.
39. *Accipiter nisus* (Sparrow Hawk). A, Kentei and Khangai; perhaps also at the Achitu Nor; reported as a migrant in the Transaltai Gobi.
40. **Buteo lagopus* (Rough-legged Buzzard). Khangai on the Selenga River.
41. *Buteo hemilasius* (Upland Buzzard). A, Khangai; B, southern Khangai, western and southeastern Mongolian Altai and Ureg Nor; C, northeastern Mongolia; D, Achitu Nor and probably at Ikhe Bogdo in the Gobian Altai; and possibly in E in the Transaltai Gobi; occurs on migration in Kentei and southeast of Ulan Bator; widely distributed in Mongolia except in the desert.
42. *Buteo rufinus* (Long-legged Buzzard). D, sporadically in the region of Kobdo; a migrant in Khangai.
43. *Buteo buteo* (Buzzard). A, Khangai and Kentei.
44. *Hieraaëtus pennatus* (Booted Eagle). A, Khangai.
45. *Aquila rapax* (Tawny and Steppe Eagle). In all steppes, semi-deserts, and river valleys, also in western and southeastern Mongolian Altai, and perhaps in the Transaltai Gobi.
46. *Aquila clanga* (Spotted Eagle). Breeds probably in Kentei.
47. *Aquila chrysaëtos* (Golden Eagle). A, Kentei; B and C, Tola River Valley and western Mongolian Altai, and probably southeastern Khangai; E, Transaltai Gobi.
48. *Haliaeetus leucoryphus* (Pallas' Fishing-eagle). A, Khangai at the Koso Gol; B and C, southern Khangai, Tola River Valley, southeastern and probably western Mongolian Altai, valleys of the Kerulen and Khalka rivers and Ureg Nor; D, lake region and probably at the Achitu Nor.
49. *Haliaeetus albicilla* (White-tailed Eagle). D, Achitu Nor; and occurs as a migrant in the Tola River Valley.
50. *Circaëtus gallicus* (Short-toed Eagle). A, possibly in Kentei where it has been collected on June 1.
51. *Circus cyaneus* (Hen Harrier). A, Kentei and perhaps Khangai; B and C, northeastern Mongolia on the Kerulen and Khalka rivers, Tola River Valley, and western Kentei; D, lake region of the Orok Nor.
52. *Circus macrourus* (Pallid Harrier). D, prob-

ably at the Achitu Nor; reported as a migrant in Khangai and the Tola River Valley.

53. *Circus melanoleucos* (Pied Harrier). C, northeastern Mongolia on the lower Kerulen, Buir Nor, and Khalka River; reported as a migrant from the Transaltai Gobi.
54. *Circus aeruginosus* (Marsh Hawk). C, northeastern Mongolia on the Khalka River; D, Achitu Nor and lake region of the Orok Nor; also "breeds in northern Mongolia" but no data.
55. *Gypaetus barbatus* (Bearded Vulture). A, Khangai; B, western and southeastern Mongolian Altai and Ureg Nor; E, Transaltai Gobi; perhaps in D, Gobian Altai.
56. *Aegypius monachus* (Black Vulture). B, southern Khangai, western and southeastern Mongolian Altai, and Ureg Nor; D, Achitu Nor and Gobian Altai.
57. *Gyps fulvus* (Griffon Vulture). Occurs during the summer and possibly breeds in the western Mongolian Altai.
58. *Gyps himalayensis* (Himalayan Griffon). Probably occurs in southern Mongolia but status uncertain.

FALCONIDAE

59. *Falco altaicus* (Altai Falcon). B, western Mongolian Altai and region of Otkhon Tengri in Khangai.
60. *Falco cherrug* (Saker Falcon). A, Kentei and probably Khangai; B, southeastern Mongolian Altai; D, region of Kobdo; E, Transaltai Gobi; occurs also and perhaps breeds in northeastern Mongolia; reported as a migrant from southeastern Mongolia, region west of Ulan Bator, and from the Gobian Altai.
61. *Falco peregrinus* (Peregrine Falcon). Probably breeds in northwestern Mongolia, as it breeds on its borders in the Tannu Ola Range, and in the Mongolian Altai, as it breeds south of it in the valley of the Kara Irtysh; reported as a migrant from Khangai and region west of Ulan Bator.
62. *Falco pelegrinoides* (Shaheen Falcon). Probably breeds in the Mongolian Altai, where it has been collected southeast of Kobdo; reported as a migrant in the Gobian Altai, and also (but the birds seen may have been *peregrinus*) in the Kobdo Basin.
63. *Falco subbuteo* (Hobby). A, Kentei; B and C, Tola River Valley and Ureg Nor; D, Achitu Nor; also in Zone E; a migrant in northeastern Mongolia and at the Orok Nor.
64. *Falco columbarius* (Merlin). A, Khangai; B, western and eastern Mongolian Altai; D, Gobian Altai; reported as a migrant in northeastern Mongolia.
65. *Falco (vespertinus) amurensis* (Red-footed Falcon). Probably breeds in the basin of the Onon River in northeastern Mongolia, and reported during the breeding season from the region of Sain Shanda in southeastern Mongolia; reported also as a migrant from Khangai and Kentei.
66. *Falco naumanni* (Lesser Kestrel). B and C, Tola River Valley, Ureg Nor, and perhaps southern Khangai; D, Loh, Artsa Bogdo, and in the southeast in the region of Ude; breeding perhaps also in E in the Transaltai Gobi.
67. *Falco tinnunculus* (Kestrel). A, Khangai and Kentei; B, southern Khangai, western and southeastern Mongolian Altai, and Ureg Nor; C, Kerulen Valley; D, Achitu Nor, lake region, Shabarakh Usu, Gobian Altai, and region of Ude in the southeast; and E, Transaltai Gobi.

PHASIANIDAE

68. *Lagopus lagopus* (Willow Ptarmigan). A, Khangai and Kentei; B, in the same regions, also in the western Mongolian Altai.
69. *Lagopus mutus* (Rock Ptarmigan). B, Khangai, Kentei, and western Mongolian Altai.
70. *Tetrastes bonasia* (Hazel Grouse). A, Khangai and Kentei.
71. *Lyrurus tetrix* (Black Grouse). A, Khangai and Kentei; B, Tannu Ola Range and western Mongolian Altai.
72. *Tetrao parvirostris* (Black-billed Capercaillie). A, Khangai and Kentei.
73. *Tetraogallus altaicus* (Altai Snowcock). A, Khangai; B, western and southeastern Mongolian Altai; D, Gobian Altai; E, mountains in the Transaltai Gobi.
74. *Alectoris chukar* (Chukar Partridge). A, Khangai; B, southern Khangai and possibly Ureg Nor; D, Gobian Altai, Delger Khangai, and sporadically at Achitu Nor; E, Transaltai Gobi.
75. *Perdix dauuricae* (Daurian Partridge). A, Kentei; B, southern Khangai, southeastern Mongolian Altai, and Ureg Nor; D, Achitu Nor, lake region, and Gobian Altai.
76. *Coturnix coturnix* (Common Quail). B, Khara River in western Kentei and Achitu Nor.
77. *Coturnix japonicus* (Japanese Quail). A, B,

and C, breeds from the Khalka River and Buir Nor in the east, west to Kentei and the Tola River Valley; the records from northwestern Mongolia (Tesin Gol and the basin of the Ubsu Nor) are doubtful.

78. *Phasianus colchicus* (Common Pheasant). D, basin of the Kobdo River from Achitu Nor to Lake Khara Usu.[1]

GRUIDAE

79. *Grus grus* (Crane). B, western Mongolian Altai and Ureg Nor; D, Achitu Nor; occurring as a migrant in Khangai, the Tola Valley, and Orok Nor.
80. *Grus japonensis* (Japanese Crane). Breeds on the Khalka River on the frontier of northeastern Mongolia.
81. *Grus vipio* (White-naped Crane). A, Kentei on the upper Kerulen River.
82. *Grus leucogeranus* (Siberian White Crane). Said to breed formerly in "northern Mongolia."
83. *Anthropoïdes virgo* (Demoiselle Crane). B and C, steppes of northeastern Mongolia, southern Kentei, Tola River Valley, southern Khangai, and Ureg Nor; D, Achitu Nor and lake region.

OTIDIDAE

84. *Otis tarda* (Great Bustard). All steppes and semi-deserts.
85. *Chlamydotis undulata* (Houbara). D, foothills of the eastern Mongolian Altai, region of Sair Usu in the east, and also northwestern Mongolia; E, Transaltai Gobi.

RALLIDAE

86. *Porzana pusilla* (Spotted Crake). B and C, Tola River Valley; D, Achitu Nor and Orok Nor and other lakes in this region.
87. *Gallinula chloropus* (Moorhen). Possibly in A (one specimen was collected on "June 6" on the Egin River in northern Khangai).
88. *Fulica atra* (Coot). B and C, Tola River Valley; D, Achitu Nor, Orok Nor, and other lakes in the region.

ROSTRATULIDAE

89. **Rostratula benghalensis* (Painted Snipe). A migrant or vagrant obtained at the Tsagan Nor in the lake region on August 13, 1922. See Field Notes, below, for this record.

[1] The race involved is *hagenbecki*. The race *edzinensis* which was reported by Grummt (1961) is restricted to the basin of the lower Etsin Gol in Inner Mongolia and therefore should not occur normally within the limits of the Mongolian People's Republic.

CHARADRIIDAE

90. **Charadrius hiaticula* (Ringed Plover). Buir Nor.
91. *Charadrius dubius* (Little Ringed Plover). B, southern Khangai and Ureg Nor; "northern Mongolia"; C, Kerulen Valley and Ongyin Gol; D, Orok Nor and other lakes in the region.
92. *Charadrius alexandrinus* (Kentish Plover). B and C, Buir Nor, Kerulen Valley, Tola River Valley, southern Khangai, and southeastern Mongolian Altai; D, lake region.
93. *Charadrius leschenaultii* (Geoffrey's Plover). B and C, southeastern Khangai and Ongyin Gol, southeastern Mongolian Altai, region southwest of Ulan Bator, and Ureg Nor; D, Achitu Nor, region of Kobdo, Orok Nor, and region of Ude in southeastern Mongolia.
94. *Charadrius veredus* (Oriental Plover). B, alpine Khangai and southern Khangai; C, northeastern Mongolia; D region of Kobdo and southeastern Mongolia.
95. *Eudromias morinellus* (Dotterel). A, Khangai; B, western Mongolian Altai.
96. **Pluvialis dominica* (Asiatic Golden Plover). Buir Nor, Khangai, and Tola Valley.
97. **Pluvialis squatarola* (Grey Plover). Buir Nor, Khangai, and Orok Nor.
98. *Vanellus vanellus* (Lapwing). A, Kentei; B, southern Khangai and Ureg Nor; C, Kerulen Valley; D, Achitu Nor and lake region; reported also from southeastern Mongolia.
99. **Arenaria interpres* (Turnstone). Buir Nor and Kerulen Valley, Khangai, and "northern Gobi."
100. **Calidris minuta* (Little Stint). Buir Nor and Kerulen Valley, Khangai, Lake Tukham, Tatsayn Gol.
101. **Calidris ruficollis* (Red-necked Stint). Transaltai Gobi.
102. **Calidris subminuta* (Long-toed Stint). Buir Nor and Kerulen Valley, southeastern Khangai, lake region, and southeastern Mongolia.
103. *Calidris temminckii* (Temminck's Stint). B, breeds in the eastern Mongolian Altai; reported from Buir Nor and Kerulen Valley, Khangai, and Orok Nor.
104. **Calidris acuminata* (Sharp-tailed Sandpiper). Khangai.
105. **Calidris alpina* (Dunlin). Buir Nor.
106. *Calidris ferruginea* (Curlew Sandpiper). B, breeds in the eastern Mongolian Altai; reported from Khangai, Kerulen Valley, lake region, Achitu Nor.

107. **Philomachus pugnax* (Ruff). Khangai, Tola Valley.
108. **Limicola falcinellus* (Broad-billed Sandpiper). Tola Valley, Ureg Nor, Orok Nor, and "northern Gobi."
109. *Limnodromus semipalmatus* (Asiatic Dowitcher). C and D, probably in the Tola Valley and Orok Nor.
110. **Tringa erythropus* (Spotted Redshank). Basin of the Onon River in northeastern Mongolia.
111. *Tringa totanus* (Redshank). A, Khangai; B, southern Khangai, Otkhon Tengri, Ureg Nor, and perhaps western Mongolian Altai; C, Ongyin Gol, Kerulen River, and southeastern Mongolia.
112. **Tringa stagnatilis* (Marsh Sandpiper). Kerulen and Tola valleys.
113. **Tringa nebularia* (Greenshank). Northeastern Mongolia, Tola Valley, southwestern Kentei, Ureg Nor.
114. *Tringa ochropus* (Green Sandpiper). A, Khangai and Kentei; B, southern Khangai, western and eastern Mongolian Altai, and Ureg Nor; C, Kerulen Valley; D, Achitu Nor and lake region.
115. *Tringa glareola* (Wood Sandpiper). A, Khangai; B and C, southern Khangai, Tola River Valley, and perhaps western Mongolian Altai; said to breed also in southeastern Mongolia and occurs as a migrant at Orok Nor.
116. *Tringa brevipes* (Grey-rumped Sandpiper). A, northern Khangai in the region of the Koso Gol.
117. *Tringa hypoleucos* (Common Sandpiper). A, Khangai and Kentei; B and C, Khalka River, southern Khangai, western and eastern Mongolian Altai and Ureg Nor, and probably the Tola Valley; D, lake region.
118. **Xenus cinereus* (Terek Sandpiper). "Northern Mongolia and Gobi," probably also northwestern Mongolia.
119. *Limosa limosa* (Black-tailed Godwit). A, Khangai; D, Achitu Nor and Orok Nor.
120. **Limosa lapponica* (Bar-tailed Godwit). "Northern Mongolia."
121. *Numenius arquatus* (Common Curlew). A, Kentei; B and C, southern Khangai; D, lake region; reported also from the Kerulen River, and as a migrant at Buir Nor and on the Khalka River.
122. *Numenius madagascariensis* (Far Eastern Curlew). Status uncertain but recorded from the Buir Nor on August 26 and probably only a migrant.
123. **Numenius minutus* (Little Whimbrel). Buir Nor, Khalka and Kerulen rivers, and Khangai, but possibly breeds in the northwest near the Tannu Ola.
124. *Scolopax rusticola* (Eurasian Woodcock). A, probably in the forests of Kentei; also in Tola Valley; a migrant on the Khalka River Valley.
125. *Gallinago gallinago* (Common Snipe). B, southern Khangai; C, Kerulen Valley, D, lake region and Achitu Nor; and recorded as a migrant in Khangai, Tola Valley, and Orok Nor.
126. **Gallinago stenura* (Pintail Snipe). Khangai where it has been met "during the breeding season," and "northern Gobi."
127. *Gallinago megala* (Swinhoe's Snipe). A, northern Kentei.
128. *Gallinago solitaria* (Solitary Snipe). A, Khangai, Kentei; B, western Mongolian Altai.
129. **Lymnocryptes minimus* (Jack Snipe). Recorded as a migrant from the Khalka River, and also (see Field Notes below) from Tsagan Nor on August 13.
130. *Recurvirostra avosetta* (Avocet). All zones south of the Tola Valley wherever there are small lakes.
131. **Phalaropus lobatus* (Red-necked Phalarope). Khangai, Achitu Nor, and Orok Nor.

GLAREOLIDAE

132. *Glareola maldivarum* (Eastern Collared Pratincole). Status uncertain but seen at Buir Nor during the second half of August where the observer believes it breeds, and observed also in the Kerulen Valley.

LARIDAE

133. *Larus ichthyaetus* (Great Black-headed Gull). B, Ureg Nor; D, Kobdo; migrant at Orok Nor; an isolated colony is said to breed also at the Koso Gol in northern Khangai.
134. *Larus minutus* (Little Gull). C, Buir Nor.
135. *Larus ridibundus* (Black-headed Gull). B and C, Buir Nor and Kerulen River, Tola River Valley, southeastern Khangai, and Ureg Nor; D, lake region and Achitu Nor; migrant in Khangai and at the Orok Nor.
136. *Larus argentatus* (Herring Gull). A, Khangai at the Koso Gol; B, Otkhon Tengri in Khangai, western Mongolian Altai, and Ureg Nor; C, Buir Nor, and perhaps lower Kerulen River where it has been observed.
137. **Larus canus* (Common Gull). Khangai, Kentei, Tola and Kerulen valleys, and Buir Nor.
138. *Chlidonias niger* (Black Tern). D, lake region

of the Orok Nor; and reported from the Selenga River on June 10 where it may breed.

139. *Chlidonias leucopterus* (White-winged Black Tern). C, Buir Nor; D, Achitu Nor; probably also in the Tola River Valley.
140. **Gelochelidon nilotica* (Gull-billed Tern). Orok Nor.
141. *Hydroprogne tschegrava* (Caspian Tern). B, probably at Ureg Nor; a migrant at Khangai and Orok Nor.
142. *Sterna hirundo* (Common Tern). A, Khangai; B and C, southern Khangai, Buir Nor, and valleys of the Kerulen and Tola rivers, Ongyin Gol, western Mongolian Altai, and Ureg Nor; D, Achitu Nor, Orok Nor, and other lakes in the region; seen also on the Khalka River.
143. *Sterna albifrons* (Little Tern). D, region of Kobdo; seen at the Buir Nor and a migrant at Orok Nor.

PTEROCLIDAE

144. *Syrrhaptes paradoxus* (Pallas' Sandgrouse). B and C, Buir Nor, Kerulen Valley, region of Ulan Bator, southeastern Khangai, region of Uskuk and "northern Gobi," western Mongolian Altai, and Ureg Nor; D, Achitu Nor, foothills of the southeastern Mongolian Altai, and lake region; E, region of Ude in the southeast, and breeds perhaps also in the Transaltai Gobi.

COLUMBIDAE

145. *Columba rupestris* (Blue Hill Pigeon). A, Khangai and Kentei; B and C, southern Khangai, region of Ulan Bator, "northern Gobi," western and southeastern Mongolian Altai, and Ureg Nor; D, Achitu Nor and Gobian Altai; E, Transaltai Gobi.
146. *Streptopelia turtur* (Turtle Dove). E, Transaltai Gobi, according to Dementiev (1962).
147. *Streptopelia orientalis* (Rufous Turtle Dove). A, forests of Khangai and Kentei; reported as a migrant from northeastern Mongolia.

CUCULIDAE

148. *Cuculus canorus* (Cuckoo). A, Khangai and Kentei; B, southern Khangai and eastern Mongolian Altai; D, Achitu Nor and Gobian Altai; reported as a migrant from the Khalka River.
149. *Cuculus saturatus* (Oriental Cuckoo). A, Khangai, Kentei; B and C, Tola River Valley.

STRIGIDAE

150. *Bubo bubo* (Eagle Owl). A, Khangai and Kentei; B and C, valleys of the Khalka and Kerulen rivers, of the Ongyin Gol, southern Khangai, and eastern and western Mongolian Altai), D, southeastern Mongolia near Ude and lake region; E, Transaltai Gobi.
151. *Asio otus* (Long-eared Owl). A, Khangai and Kentei; B, eastern Mongolian Altai; D, Achitu Nor.
152. *Asio flammeus* (Short-eared Owl). A, Kentei; D, lake region of the Orok Nor.
153. *Otus scops* (Scops Owl). A, probably breeds in northwestern Kentei, as it has been collected from the Chikoy River east of Kyakhta.
154. *Aegolius funereus* (Tengmalm's Owl). A, Khangai and Kentei.
155. *Athene noctua* (Little Owl). A, Khangai and Kentei; B and C, Kerulen Valley, southern Khangai, "northern Gobi," western and southeastern Mongolian Altai, and Ureg Nor; D, Achitu Nor, region of Kobdo, of the Orok Nor, and Gobian Altai; E, southeastern Mongolia, and Transaltai Gobi.
156. *Glaucidium passerinum* (Pygmy Owl). A, Kentei.
157. *Surnia ulula* (Hawk Owl). A, Khangai and Kentei; B, southern Khangai.
158. *Strix uralensis* (Ural Owl). A, Khangai and Kentei.
159. *Strix nebulosa* (Great Grey Owl). Breeds perhaps in Kentei, but only one record during the winter.

CAPRIMULGIDAE

160. *Caprimulgus europaeus* (Nightjar). A, Kentei; B and C, northeastern Mongolia in the Choirin Mountains, Tola River Valley, and southern Khangai; D, Achitu Nor and lake region.
161. *Caprimulgus indicus* (Jungle Nightjar). C, Khalka River in northeastern Mongolia.

APODIDAE

162. *Hirund-apus caudacutus* (White-throated Needle-tailed Swift). Said to breed in "northern Mongolia," but no data.
163. *Apus apus* (Swift). Kentei; B, southeastern Mongolian Altai and Ureg Nor; D, Achitu Nor, Tsagan Nor, Shabarakh Usu, and Gobian Altai; E, southeastern Mongolia.
164. *Apus pacificus* (White-rumped Swift). A, Khangai and Kentei; B, southern Khangai and southeastern Mongolian Altai; D, Achitu Nor, Tsagan Nor, and Gobian

Altai; reported also from the Kerulen Valley and southeastern Mongolia.

ALCEDINIDAE

165. *Alcedo atthis* (Kingfisher). C, Khalka River and perhaps Buir Nor in northeastern Mongolia.

UPUPIDAE

166. *Upupa epops* (Hoopoe). A, Khangai; B, southern Khangai, western and southeastern Mongolian Altai and Ureg Nor, C, northeastern Mongolia; D, Achitu Nor, Gobian Altai, and lake region; and perhaps breeds in E, Transaltai Gobi.

PICIDAE

167. *Jynx torquilla* (Wryneck). A, Khangai and Kentei.
168. *Picus canus* (Grey-headed Woodpecker). A, Khangai and Kentei.
169. *Dryocopus martius* (Black Woodpecker). A, Khangai and Kentei.
170. *Dendrocopos major* (Great Spotted Woodpecker). A, Khangai and Kentei.
171. *Dendrocopos leucotos* (White-backed Woodpecker). A, Khangai and Kentei.
172. *Dendrocopos minor* (Lesser Spotted Woodpecker). A, Khangai and Kentei.
173. *Picoïdes tridactylus* (Three-toed Woodpecker). A, Khangai and Kentei.

HIRUNDINIDAE

174. *Riparia riparia* (Sand Martin). A, Kentei; B and C, valleys of the Kerulen and Tola rivers; reported on migration on the Khalka River.
175. *Hirundo rupestris* (Crag Martin). D, Achitu Nor and Gobian Altai.
176. *Hirundo rustica* (Swallow). A, Khangai and Kentei; B, regions of Ulan Bator and Uliassutai; C, valley of the Khalka River and probably of the Kerulen; D, Achitu Nor; E, Transaltai Gobi.
177. *Hirundo daurica* (Red-rumped Swallow). A, Khangai and Kentei; B, southern Khangai.
178. *Delichon urbica* (House Martin). A, Khangai and Kentei; B, southeastern Mongolian Altai; D, Achitu Nor; reported on migration at the Khalka River.

ALAUDIDAE

179. *Calandrella cinerea* (Short-toed Lark). B and C, southern Khangai, Lake Tukhum, Tola River Valley, and Ureg Nor.
180. *Calandrella rufescens* (Lesser Short-toed Lark). B and C, Tola River Valley, Ureg Nor, and "northern Gobi"; D, Achitu Nor and lake region; E, southeastern Mongolia and Transaltai Gobi.
181. *Melanocorypha mongolica* (Mongolian Lark). B and C, valleys of the Khalka, Kerulen, and Tola rivers, region of Ulan Bator, southern Khangai, and "northern Gobi."
182. *Melanocorypha leucoptera* (White-winged Lark). D, foothills of the southeastern Mongolian Altai.
183. *Eremophila alpestris* (Horned Lark). Breeds in all zones.
184. *Galerida cristata* (Crested Lark). D, near Ude in the southeast; E, Transaltai Gobi, and near Ude in the southeast.
185. *Alauda arvensis* (Skylark). All the steppes of the north and also western and eastern Mongolian Altai and Ureg Nor; D, Orok Nor and lake region.

MOTACILLIDAE

186. *Anthus novaeseelandiae* (Richard's Pipit). "Damp meadows of the north," valley of the Khalka River, and Ureg Nor; D, Achitu Nor and lake region.
187. *Anthus godlewskii* (Godlewski's Pipit). B, southern Khangai and southeastern Mongolian Altai; C, Buir Nor, Kerulen Valley, and mountains of Choirin; D, Gobian Altai.
188. *Anthus campestris* (Tawny Pipit). B, western Mongolian Altai and Ureg Nor; D, Achitu Nor; E, Transaltai Gobi.
189. *Anthus trivialis* (Tree Pipit). A, Tarbagatai Mountains in Khangai; B, southeastern Khangai at Sain Noin Khan, region of Uliassutai, and at the Ureg Nor; observed in D in July in the Gobian Altai but probably a vagrant.
190. *Anthus hodgsoni* (Indian Tree Pipit). A, Khangai and Kentei; perhaps breeding also in the northeast on the Khalka River.
191. **Anthus gustavi* (Pechora Pipit). C.
192. *Anthus cervinus* (Red-throated Pipit). Western Kentei on Khara River, and also Khalka River.
193. *Anthus spinoletta* (Water and Rock Pipit). A, Khangai and Kentei; B, western and southeastern Mongolian Altai; D, Gobian Altai; perhaps in E, Transaltai Gobi.
194. *Motacilla flava* (Yellow Wagtail). B and C, northeastern Mongolia and Tola River Valley, southern Khangai; D, Achitu Nor.
195. *Motacilla citreola* (Yellow-headed Wagtail). B and C, northeastern Mongolia and Kerulen Valley, Tola River Valley, southern Khangai, western and eastern Mongo-

lian Altai, and Ureg Nor; D, Achitu Nor and lake region.

196. *Motacilla cinerea* (Grey Wagtail). A, Khangai and Kentei; D, foothills of the eastern Mongolian Altai; reported as a migrant in northeastern Mongolia.

197. *Motacilla alba* (White Wagtail). A, Khangai and Kentei; B and C, valleys of the Kerulen and Tola rivers, southern Khangai, western and southeastern Mongolian Altai, and Ureg Nor; D, Achitu Nor and lake region; E, Transaltai Gobi.

LANIIDAE

198. *Lanius collurio* (Red-backed Shrike). B and C, forested steppes of Kentei and eastern Khangai and valleys of the Kerulen and Tola rivers; D, Achitu Nor, Gobian Altai, and lake region; E, Transaltai Gobi.

199. *Lanius cristatus* (Brown Shrike). B, forested steppes of Kentei and Khangai; C, Khalka River; D, foothills of the eastern Mongolian Altai, Gobian Altai, and lake region.

200. *Lanius excubitor* (Great Grey Shrike). A, Khangai and probably Kentei; B, southern Khangai and western Mongolian Altai; D, lake region; E, southeastern Mongolia near Ude and Transaltai Gobi.

201. *Lanius sphenocercus* (Chinese Great Grey Shrike). Eastern Mongolia near the Manchurian border.

STURNIDAE

202. **Sturnus sturninus* (Daurian Starling). Tola River Valley, but may breed in the north.

203. *Sturnus roseus* (Rose-colored Starling). E, Transaltai Gobi.

204. *Sturnus vulgaris* (Starling). B, sporadically at the Ureg Nor; D, sporadically at the Achitu Nor; E, Transaltai Gobi; reported on migration in eastern Khangai and at the Orok Nor.

205. *Sturnus cineraceus* (Grey Starling). Reported from northeastern Mongolia in the basins of the Buir Nor and Khalka River by Tugarinov at the beginning of September, and where Tugarinov believes it breeds.

CORVIDAE

206. *Perisoreus infaustus* (Siberian Jay). A, Khangai and Kentei.

207. *Garrulus glandarius* (Jay). A, Khangai and Kentei.

208. **Cyanopica cyanus* (Azure-winged Magpie). Reported from Khangai and Tola Valley near Ulan Bator, but may breed in these regions and also in the northeast.

209. *Pica pica* (Magpie). All zones south to the Gobian Altai, not in E.

210. *Podoces hendersoni* (Henderson's Ground Jay). D, Achitu Nor, Orok Nor, lake region, foothills of the southeastern Mongolian Altai, and lower Ongyin Gol; E, Transaltai Gobi.

211. *Nucifraga caryocatactes* (Nutcracker). A, Khangai and Kentei.

212. *Pyrrhocorax pyrrhocorax* (Chough). B and C, northeastern Mongolia, open valleys of Khangai and Kentei, region of Ulan Bator, southern Khangai and Tola Valley, western and southeastern Mongolian Altai, and Ureg Nor; D, Achitu Nor, Gobian Altai, and lake region; E, Transaltai Gobi.

213. *Corvus monedula* (Jackdaw). B, southeastern Mongolian Altai; probably breeds also in northwestern Mongolia near the Tannu Ola; and reported from the Transaltai Gobi.

214. *Corvus dauuricus* (Daurian Jackdaw). A, Khangai and Kentei; B and C, Tola River Valley, region of Ulan Bator, southern Khangai, and Ureg Nor; D, Achitu Nor, and lake region.

215. *Corvus frugilegus* (Rook). B and C, Tola River Valley, valley of the Kerulen River in Kentei, southern Khangai, southeastern Mongolian Altai, and Ureg Nor; D, Achitu Nor; E, Transaltai Gobi, according to Dementiev.

216. *Corvus corone* (Carrion Crow). A, Khangai and Kentei but avoids the more densely forested regions; B and C, Khalka River, Tola River Valley, southern Khangai, southeastern Mongolian Altai, and sporadically at the Ureg Nor; D, Achitu Nor, and perhaps in the lake region.

217. *Corvus corax* (Raven). Common in all zones.

BOMBYCILLIDAE

218. **Bombycilla garrulus* (Waxwing). Khangai and Kentei, where it is a winter visitor.

CINCLIDAE

219. *Cinclus cinclus* (Dipper). B, breeds in southeastern Mongolian Altai; probably in Khangai and Kentei.

PRUNELLIDAE

220. *Prunella collaris* (Alpine Accentor). A, Khangai and Kentei; D, Gobian Altai.

221. *Prunella himalayana* (Himalayan Accentor). B, Khangai in the region of Otkhon Tengri, and western Mongolian Altai.

222. *Prunella fulvescens* (Brown Accentor). A, Khangai and Kentei; B, eastern Khangai

and western and southeastern Mongolian Altai; D, Achitu Nor and Gobian Altai; E, Transaltai Gobi.

223. **Prunella montanella* (Siberian Accentor). Tola Valley and Ongyin Gol.

224. *Prunella koslowi* (Kozlov's Accentor). B, southeastern Khangai; D, Gobian Altai.

MUSCICAPIDAE (SYLVIINAE)

225. *Bradypterus tacsanowskius* (Chinese Bush Warbler). A, southwestern Khangai and probably Kentei where it has been collected on June 18, 1924; B and C, Tola River Valley.

226. **Locustella fasciolata* (Gray's Grasshopper Warbler). A migrant in northeastern Mongolia on the Khalka River.

227. *Locustella certhiola* (Pallas' Grasshopper Warbler). A, northern Khangai near Lake Koso Gol; B or C, Tola River Valley; D, Tsagan Nor and other lakes in the region; reported as a migrant from northeastern Mongolia and at the Orok Nor.

228. *Locustella naevia* (Grasshopper Warbler). D, Achitu Nor; reported as a migrant from the Transaltai Gobi.

229. **Locustella lanceolata* (Lanceolated Warbler). A migrant in northeastern Mongolia on the Khalka River.

230. *Acrocephalus bistrigiceps* (Black-browed Reed Warbler). Tugarinov believes it breeds in the reed beds of the Khalka River, where he collected a bird in juvenal plumage on September 1.

231. *Acrocephalus agricola* (Paddy-field Warbler). D, Achitu Nor and possibly Orok Nor.

232. *Acrocephalus dumetorum* (Blyth's Reed Warbler). B and C, Ubsu Nor.

233. *Acrocephalus stentoreus* (Southern Great Reed Warbler). E, Transaltai Gobi.

234. *Acrocephalus arundinaceus* (Great Reed Warbler). B and C, Kerulen and Tola river valleys; D, lake region of the Orok Nor.

235. *Acrocephalus aëdon* (Thick-billed Reed Warbler). A, Kentei; B and C, southeastern Khangai and Tola River Valley.

236. *Hippolais caligata* (Booted Warbler). D, Achitu Nor; perhaps Ureg Nor.

237. *Sylvia nisoria* (Barred Warbler). D, Achitu Nor, Orok Nor, and Gobian Altai; perhaps Ureg Nor.

238. *Sylvia communis* (Whitethroat). A, Kentei; possibly eastern Gobian Altai.

239. *Sylvia curruca* (Lesser Whitethroat). A, Kentei; B, Khangai in the region of Uliassutai; C, Kerulen Valley; D, Achitu Nor, lake region, foothills of the eastern Mongolian Altai, and probably Gobian Altai; E, Transaltai Gobi.

240. *Sylvia minula* (Desert Lesser Whitethroat). E, probably near the border of Inner Mongolia.

241. *Sylvia althaea* (Hume's Lesser Whitethroat). E, possibly breeding in Transaltai Gobi.

242. *Sylvia nana* (Desert Warbler). D, Orok Nor and lake region, and foothills of the eastern Mongolian Altai; E, Transaltai Gobi.

243. *Phylloscopus collybita* (Chiffchaff). A, probably in northern Khangai where it has been collected on the Muren River and region of Koso Gol.

244. *Phylloscopus griseolus* (Olivaceous Willow Warbler). B, Khangai in the region south of Uliassutai; D, perhaps in the Gobian Altai.

245. *Phylloscopus fuscatus* (Dusky Warbler). A, Khangai and Kentei; B, southern Khangai and western Mongolian Altai; D, Gobian Altai; reported as a migrant in northeastern Mongolia.

246. *Phylloscopus schwarzi* (Radde's Willow Warbler). Status uncertain but collected by Tugarinov in the Batu Khan Mountains (about latitude 47° N. and longitude 115° E.) of northeastern Mongolia and reported also from Buir Nor.

247. *Phylloscopus inornatus* (Yellow-browed Warbler). A, Khangai and Kentei; B and C, Khalka River and southern Khangai.

248. *Phylloscopus proregulus* (Pallas' Warbler). A, Khangai and Kentei; collected on May 31 at Shabarakh Usu in D; reported as a migrant in northeastern Mongolia.

249. *Phylloscopus borealis* (Arctic Warbler). A, Khangai and Kentei; collected in D at Shabarakh Usu on June 1 and 5; reported as a migrant in northeastern Mongolia.

250. *Phylloscopus trochiloides* (Greenish Warbler). A, Khangai and Kentei; B or C, Tola River Valley and region of Uliassutai in Khangai, southeastern Mongolian Altai, and Ureg Nor; D, Achitu Nor, Shabarakh Usu, and Gobian Altai.

251. **Regulus regulus* (Goldcrest). Khangai and may breed in the extreme north.

MUSCICAPIDAE (MUSCICAPINAE)

252. **Ficedula mugimaki* (Mugimaki Flycatcher). Reported as a migrant on September 2 on the Khalka River, northeastern Mongolia.

253. *Ficedula parva* (Red-breasted Flycatcher). A, Khangai and Kentei; B and C, Tola River Valley; reported also from the Kerulen and Khalka rivers.

254. *Ficedula zanthopygia* (Korean Flycatcher).

Status uncertain but collected on Septempber 7 on the Khalka River by Tugarinov who believes it may breed.

255. *Muscicapa striata* (Spotted Flycatcher). B, Khangai in the valleys of the Tchire and Ider rivers, and possibly in the valley of the Kerulen River in eastern Kentei; also in D along the foothills of the Mongolian Altai.

256. *Muscicapa sibirica* (Sooty Flycatcher). A, Khangai and Kentei; C, valleys of the Khalka and Kerulen rivers; perhaps D where it was collected on June 5 at Shabarakh Usu.

257. *Muscicapa latirostris* (Brown Flycatcher). A, Kentei; reported also from the Kerulen River on August 15, and as a migrant from the Gobian Altai.

MUSCICAPIDAE (TURDINAE)

258. *Saxicola torquata* (Stonechat). A, Khangai and Kentei; B, sporadically at Ureg Nor; C, northeastern Mongolia on the Khalka River; D, sporadically at Achitu Nor.

259. *Saxicola insignis* (Hodgson's Stonechat). B, Khangai in the region of Otkhon Tengri, and western Mongolian Altai.

260. *Oenanthe oenanthe* (Wheatear). All zones, including perhaps E in the Transaltai Gobi.

261. *Oenanthe pleschanka* (Pied Wheatear). A, Khangai and Kentei; B, southern Khangai, western Mongolian Altai, and Ureg Nor; C, Choirin Mountains in northeastern Mongolia; D, Achitu Nor, Gobian Altai, and lake region.

262. *Oenanthe deserti* (Desert Wheatear). B, southern Khangai, western Mongolian Altai, and Ureg Nor; C, "northern Gobi"; D, southeastern Mongolia in the region of Ude, Achitu Nor, Gobian Altai, foothills of the eastern Mongolian Altai, and lake region; E, Transaltai Gobi.

263. *Oenanthe isabellina* (Isabelline Wheatear). Common in all steppes, semi-deserts, and deserts.

264. *Monticola saxatilis* (Rock Thrush). A, Khangai and Kentei; B, Tola River Valley, southern Khangai, western and southeastern Mongolian Altai, and Ureg Nor; C, northeastern Mongolia in the Choirin Mountains; D, Achitu Nor and Gobian Altai.

265. **Monticola gularis* (White-throated Rockthrush). Collected on September 7, on the Khalka River.

266. *Phoenicurus erythronotus* (Eversmann's Redstart). A, Khangai; widely distributed elsewhere as a migrant.

267. *Phoenicurus ochruros* (Black Redstart). A, western Khangai in the basin of the Muren River; B, Khangai in the region of Uliassutai, southeastern Mongolian Altai, and sporadically at Achitu Nor.

268. *Phoenicurus phoenicurus* (Redstart). A, Khangai and Kentei; B, southeastern Mongolian Altai.

269. *Phoenicurus auroreus* (Daurian Redstart). A, Kentei; B or C, Tola River Valley; perhaps D, where it was collected on June 3 at Shabarakh Usu.

270. *Phoenicurus erythrogaster* (Güldenstädt's Redstart). A, Khangai; B, southeastern Mongolian Altai.

271. *Luscinia calliope* (Siberian Rubythroat). A, Khangai and Kentei; collected on May 25 in D at Shabarakh Usu, and reported as a migrant in northeastern Mongolia.

272. *Luscinia svecica* (Bluethroat). A, Khangai; B, sporadically in western Mongolian Altai; D, Achitu Nor; reported as a migrant on the Khalka River in northeastern Mongolia.

273. **Luscinia cyane* (Siberian Blue Robin). Reported as a migrant in northeastern Mongolia on the Kerulen River and at Buir Nor.

274. **Pseudaëdon sibilans* (Swinhoe's Pseudorobin). A migrant on the Khalka River, northeastern Mongolia.

275. *Tarsiger cyanurus* (Red-flanked Bluetail). A, Kentei and possibly Khangai; a migrant in eastern Mongolia.

276. *Turdus obscurus* (Eye-browed Thrush). A, breeds probably in Kentei; a migrant in northeastern Mongolia.

277. *Turdus ruficollis* (Black-throated and Red-throated Thrush). A, Khangai and Kentei; B and C, Tola River Valley, southern Khangai, western Mongolian Altai, and Ureg Nor.

278. *Turdus naumanni* (Dusky and Naumann's Thrush). Breeds in "northern Mongolia" and reported from southern Khangai and Kentei.

279. **Turdus sibiricus* (Siberian Thrush). Northeastern Mongolia, southern Khangai, and Orok Nor.

280. **Zoothera dauma* (White's Thrush). Northeastern Khangai.

MUSCICAPIDAE (TIMALIINAE)

281. *Panurus biarmicus* (Bearded Reedling). B and C, probably in the Tola River Valley; D, in the lake region.

AEGITHALIDAE

282. *Aegithalos caudatus* (Long-tailed Tit). A, Khangai and Kentei; B or C, Tola River Valley.

PARIDAE (PARINAE)

283. *Parus palustris* (Marsh Tit). A, Khangai and Kentei.
284. *Parus montanus* (Willow Tit). A, Khangai and Kentei; B and C, Tola River Valley; D, Achitu Nor.
285. *Parus cinctus* (Siberian Tit). A, Khangai.
286. *Parus ater* (Coal Tit). A, Kentei and perhaps Khangai; reported also from the Tola River Valley.
287. *Parus cyanus* (Azure Tit). A, Khangai; B, Ureg Nor; D, Achitu Nor.
288. *Parus major* (Great Tit). A, Khangai and Kentei; B and C, Tola River Valley.

PARIDAE (SITTINAE)

289. *Sitta europaea* (Nuthatch). A, Khangai and Kentei; B, in Khangai, and in the Tola River Valley.

PARIDAE (TICHODROMADINAE)

290. *Tichodroma muraria* (Wall Creeper). B, southeastern Mongolian Altai; D, Gobian Altai.

CERTHIIDAE

291. *Certhia familiaris* (Tree Creeper). A, Khangai and Kentei.

REMIZIDAE

292. *Remiz pendulinus* (Penduline Tit). A, Khangai and Kentei; D, Shabarakh Usu; perhaps E in the Transaltai Gobi, according to Dementiev.

PLOCEIDAE

293. *Passer domesticus* (House Sparrow). B and C, Ulan Bator and villages in the Tola River Valley; also E, in the Transaltai Gobi at the Zezeg Nor.
294. *Passer ammodendri* (Saxaul Sparrow). D, Shabarakh Usu and Gobian Altai; E, Transaltai Gobi.
295. *Passer montanus* (Tree Sparrow). A, Khangai and Kentei; B and C, Khalka River Valley, region of Ulan Bator, and southern Khangai; D, lake region and near Ude; E, Transaltai Gobi.
296. *Petronia petronia* (Rock Sparrow). B and C, valleys of the Kerulen and Tola rivers, southern Khangai, "northern Gobi," western and southeastern Mongolian Altai, and Ureg Nor; D, region of Ude in southeastern Mongolia, Achitu Nor, Gobian Altai, lake region; E, Transaltai Gobi; frequents barren hils.
297. *Montifringilla nivalis* (Snow Finch). B, western and southern Khangai, and western and southeastern Mongolian Altai; D, Gobian Altai.
298. *Montifringilla davidiana* (Père David's Snow Finch). B, barren ridges of southeastern Khangai, southeastern Mongolian Altai, and hilly steppes of the "northern Gobi"; D, Gobian Altai.

FRINGILLIDAE

299. **Fringilla montifringilla* (Brambling). Kentei, and the valleys of the Khalka and Kerulen rivers.
300. **Carduelis spinus* (Siskin). South of Ulan Bator.
301. *Acanthis flavirostris* (Twite). B, Tola River Valley in the mountains, southeastern Khangai, western and southeastern Mongolian Altai, and Ureg Nor; C, Kerulen Valley in the foothills of Kentei, and mountains of Choirin; D, Gobian Altai lake region; E, Transaltai Gobi.
302. **Acanthis flammea* (Redpoll). Kentei, Khangai, and Gobian Altai.
303. **Acanthis hornemanni* (Arctic Redpoll). Kentei and Khangai.
304. *Leucosticte brandti* (Brandt's Rosy Finch). B, western and southeastern Mongolian Altai.
305. *Leucosticte arctoa* (Rosy Finch). B, alpine tundra of Khangai and probably of Kentei.
306. *Rhodopechys mongolica* (Mongolian Trumpeter Finch). B and C, Kerulen River in southeastern Kentei, Choirin Mountains, "northern Gobi," southeastern Khangai, western Mongolian Altai, and Ureg Nor; D, Achitu Nor, region of Ude in southeastern Mongolia, Orok Nor, and Gobian Altai; E, Transaltai Gobi.
307. *Carpodacus erythrinus* (Common Rose Finch). A, Khangai and Kentei; B and C, Tola River Valley; a young was taken also at the Buir Nor on August 27; reported migrating through the Khalka Valley.
308. *Carpodacus pulcherrimus* (Beautiful Rose Finch). B, southwestern Khangai in the valley of the Shire River; D, Gobian Altai.
309. *Carpodacus roseus* (Pallas' Rose Finch). A, probably in eastern Kentei.
310. *Carpodacus rhodochlamys* (Red-mantled Rose

Finch). A, western Khangai and western Kentei.

311. *Carpodacus rubicilla* (Great Rose Finch). B, western and southeastern Mongolian Altai; also one record on July 19 from the alpine zone of Khangai near Otkhon Tengri.
312. *Pinicola enucleator* (Pine Grosbeak). A, northern forests of Khangai and Kentei.
313. *Loxia curvirostra* (Crossbill). A, Khangai and Kentei; occurs also as a vagrant in the Gobian Altai during the summer.
314. *Loxia leucoptera* (White-winged Crossbill). B, eastern Mongolian Altai.
315. *Uragus sibiricus* (Long-tailed Rose Finch). A, Khangai and Kentei; D, Achitu Nor.
316. *Pyrrhula pyrrhula* (Bullfinch). A, probably in northern Khangai and Kentei.
317. *Coccothraustes coccothraustes* (Hawfinch). A, Kentei and perhaps Khangai.

EMBERIZIDAE

318. **Emberiza citrinella* (Yellowhammer). Kentei.
319. *Emberiza leucocephala* (Pine Bunting). A, Khangai and Kentei; B, valley of the Tola River and near Ulan Bator.
320. *Emberiza cia* (Rock Bunting). B, southern Khangai; D, Gobian Altai.
321. *Emberiza cioides* (Long-tailed Bunting). A, Khangai and Kentei; D, Gobian Altai.
322. *Emberiza buchanani* (Grey-necked Bunting). B, southeastern Mongolian Altai; C, "northern Gobi"; D, Gobian Altai; E, Transaltai Gobi.
323. *Emberiza hortulana* (Ortolan Bunting). A, Khangai; D, sporadically at Achitu Nor.
324. *Emberiza fucata* (Grey-hooded Bunting). B, southwestern Kentei.
325. **Emberiza pusilla* (Little Bunting). Basin of the Kerulen and Buir Nor, Kentei, Tola River Valley, southeastern Khangai, and collected also on June 2 at Shabarakh Usu.
326. **Emberiza chrysophrys* (Yellow-browed Bunting). Northeastern Mongolia in the basin of the Buir Nor and valley of the Khalka River.
327. **Emberiza rustica* (Rustic Bunting). Northeastern Mongolia and Transaltai Gobi.
328. *Emberiza aureola* (Yellow-breasted Bunting). A, Khangai and Kentei; B and C, valleys of the Kerulen and Tola rivers, southern Khangai, and sporadically at Ureg Nor; D, foothills of the Mongolian Altai, and sporadically at Achitu Nor and Orok Nor.
329. *Emberiza rutila* (Chestnut Bunting). A, probably in Kentei.
330. **Emberiza spodocephala* (Black-faced Bunting). Northeastern Mongolia and Kentei.
331. *Emberiza pallasii* (Pallas' Reed Bunting). A, Khangai in the Tarbagatai; C, southeastern Khangai near Kholt; and *lydiae*,[1] D, Orok Nor and lake region.
332. *Emberiza schoeniclus* (Reed Bunting). E, Transaltai Gobi; reported as a migrant in northeastern Mongolia, Tola River Valley, and from Khangai.
333. **Calcarius lapponicus* (Lapland Bunting). Winter visitor to northeastern Mongolia, Khangai, Kentei, and "northern Gobi."

[1] The form *lydiae* may represent a distinct species.

BIRDS OF NORTHWESTERN MONGOLIA (SOUTHERN TANNU OLA, TESIN VALLEY, AND UBSU NOR)

AFTER HAVING WRITTEN the final draft of the list of the birds of Mongolia, I discovered a paper by Tugarinov (1916) on the birds of the Tannu Ola Range which has an important bearing on the avifauna of northwestern Mongolia.

The Tannu Ola, which rises to an altitude of nearly 3000 meters, extends eastward from the Altai for a distance of about 570 kilometers, and the Mongolian frontier runs along its southern foothills, the north shore of the Ubsu Nor, and, for some distance, the lower course of the Tesin River which drains into Ubsu Nor. The region bounded by the Tannu Ola in the south and the Sayan Mountains in the north was formerly a part of Mongolia and called Uriankhailand. It passed under Russian influence in 1911, and in the 1920's became known as the Republic of Tannu Tuva until 1945 when it was incorporated in the Soviet Union to form the Tuva Autonomous Oblast. Its avifauna is very little known but appears to be transitional between that of the mountains of southern Siberia and that of more arid northwestern Mongolia.

Tugarinov crossed the western part of this region from north to south in the summer of 1915, starting from Krasnoyarsk. He seems to have arrived in the northern foothills of the Tannu Ola about June 20 and, after spending about 10 days or more on the northern slopes of this range and around the Dzhegattai Kul, ascended the valley of the Shurmak River, reaching Samagaltay about July 6. From Samagaltay, which is situated in the southern foothills of the Tannu Ola at longitude 95° 01′ E., latitude 50° 39′ N., he followed the valley of the Tesin River and the southern foothills and slopes of the Tannu Ola westward to the north shore of the Ubsu Nor, leaving this region by the first week of August to recross the Tannu Ola above Khandagayty.

He collected or observed 136 species of birds during this trip, but, as some of these were found only on the northern slopes of the Tannu Ola or at high altitudes on this range, they cannot be included in a list of the birds of northwestern Mongolia. In fact, Tugarinov seems not to have set foot on Mongolian territory, but we must consider that any bird that occurs at low elevations on the southern slopes of the Tannu Ola, the foothills, in the valley of the Tesin, and at Ubsu Nor, very probably occurs also in neighboring Mongolia. Nevertheless, it seemed best to me to list them separately below.

A short description of the Tannu Ola, the valley of the lower Tesin, and the north shores of Ubsu Nor is in order, as the conditions that prevail in these regions have not been described in the ornithological literature other than by Tugarinov whose report is obscure and not readily available. According to Tugarinov, the northern foothills of the Tannu Ola are rather arid steppes, crossed by narrow gallery forests that consist chiefly of willows and birches and also of larches which become more abundant with rise in altitude. The taiga[1] begins at about 1500 meters, and from about 1800 to 2200 meters consists almost entirely of cedars. Higher, it gives way to dwarfed trees with much underbrush, and eventually to alpine meadows. The southern slopes of the Tannu Ola are much more arid and are virtually bare of trees, except in the upper reaches of the cañons. The plain below is a stony or pebbly desert, or semi-desert, crossed by the green ribbon of the Tesin River with its borders of good stands of larches, birches, poplars, and especially willows, with many flooded meadows that have a very rich vegetation. The coast of the Ubsu Nor is fringed with reeds where it is low, especially in the east, but with stands of birch, poplar, and larch where it is more elevated.

The list below comprises 98 species, and one of these (*Carduelis carduelis*) is a new record, raising the total of the birds reported so far from Mongolia to 334. Tugarinov did not always indicate whether the birds were breeding or not, but, with the exception of *Xenus*

[1] The word "taiga," which is so widely used to denote the boreal coniferous forest, apparently originated in this region, according to Mirov (1951), as it is the name by which the Turkic natives call the wooded mountain ridges, or primeval forest.

cinereus and perhaps two or three others, probably they do. If so, the status of three species on the main list must be changed from migrant or winter visitor to breeder. These are *Bucephala clangula* and *Larus canus*, both of which Tugarinov reported with young from the Ubsu Nor, and *Luscinia cyane.*

Phalacrocorax carbo
Ardea cinerea
Platalea leucorodia
Ciconia nigra
Anser anser
Anser cygnoides
Cygnus cygnus
Tadorna ferruginea
Anas platyrhynchos
Anas crecca
Anas penelope
Bucephala clangula
Milvus migrans
Accipiter nisus
Hieraaëtus pennatus
Haliaeetus leucoryphus
Haliaeetus albicilla
Circus aeruginosus
Falco subbuteo
Falco vespertinus
Falco naumanni
Falco tinnunculus
Lyrurus tetrix
Alectoris chukar
Perdix dauuricae
Coturnix coturnix
Grus grus
Anthropoïdes virgo
Otis tarda
Fulica atra
Charadrius alexandrinus
Tringa totanus
Tringa ochropus
Tringa hypoleucos
Xenus cinereus
Limosa limosa
Gallinago gallinago
Larus ridibundus
Larus argentatus
Larus canus
Sterna hirundo
Sterna albifrons
Syrrhaptes paradoxus
Streptopelia orientalis
Cuculus canorus
Bubo bubo
Caprimulgus europaeus
Upupa epops
Riparia riparia
Hirundo rustica
Delichon urbica
Calandrella cinerea
Eremophila alpestris
Alauda arvensis
Anthus novaeseelandiae
Anthus campestris
Anthus trivialis
Motacilla cinerea
Motacilla alba
Lanius collurio
Pica pica
Pyrrhocorax pyrrhocorax
Corvus monedula
Corvus dauuricus
Corvus frugilegus
Corvus corone
Locustella naevia
Acrocephalus agricola
Hippolais caligata
Sylvia communis
Sylvia curruca
Phylloscopus collybita
Phylloscopus inornatus
Phylloscopus trochiloides
Muscicapa striata
Muscicapa sibirica
Saxicola torquata
Oenanthe oenanthe
Oenanthe pleschanka
Oenanthe isabellina
Phoenicurus ochruros
Phoenicurus phoenicurus
Luscinia svecica
Luscinia cyane
Turdus ruficollis
Aegithalos caudatus
Parus montanus
Parus cyanus
Sitta europaea
Passer montanus
Carduelis carduelis
Acanthis flavirostris
Carpodacus erythrinus
Uragus sibiricus
Emberiza cioides
Emberiza hortulana
Emberiza aureola
Emberiza pallasii

FAUNISTIC ANALYSIS OF THE AVIFAUNA OF MONGOLIA

THE NUMBER OF SPECIES reported from Mongolia in this survey is 334. Of these, about 50 appear to be migrants, winter visitors, or vagrants, but the correct status of some species is still unknown. Some birds that appear to be migrants only may actually breed in Mongolia, the nests of some that are believed to breed remain to be discovered, and the distribution of the breeding birds outlined in this survey is certain to be modified.

These 334 species represent only about 29 per cent of those that breed in the Palearctic Region, a number that seems low for a country so relatively large as Mongolia. But a mere numerical comparison is misleading, as the country is not favorably situated or varied enough to support a rich avifauna. It is too isolated by deserts and mountains to receive many of the species of Oriental origin which form such a large and important element of the avifauna in the eastern part of the Palearctic Region. Another faunal subdivision of this region (the European) is too remote to have contributed many species, although another subdivision that is equally remote (the Mediterranean) has contributed an important element of the Mongolian avifauna, but in a modified form (see below).

Mongolia is also well landlocked, a fact that excludes the true sea birds, and it lacks also other habitats that are important to birds, as it has no true deciduous forest and is not extensively cultivated. (Cultivation on any appreciable scale started only in the late 1950's.) Its climate is extremely continental, always severe, and more than one-half of its area is inhospitable to many birds, as it consists of largely barren mountains, arid steppes, and deserts. Even the more favored regions from the point of view of the vegetation cover, such as the northern forests and the grassy steppes, are too homogeneous to support a varied bird life.

Some orders and families are lacking from the Mongolian avifauna, and others are very poorly represented. On the other hand, some groups are surprisingly abundant in species, such as the waders and diurnal birds of prey. The representation of each group in Mongolia is best visualized by a tabular list. I have omitted from this list the Palearctic groups that are not found in Mongolia. The first number indicates the total of the species that breed in the Palearctic Region; the second (in parentheses), the number in Mongolia.

Gaviidae, 5 (1)
Podicipedidae, 5 (3)
Pelecanidae, 2 (1)
Phalacrocoracidae, 9 (1)
Ardeidae, 22 (3)
Threskiornithidae, 7 (1)
Ciconiidae, 3 (1)
Anatidae, 54 (23)
Pandionidae, 1 (1)
Accipitridae, 45 (23)
Falconidae, 15 (9)
Tetraoninae, 9 (5)
Phasianinae, 41 (6)
Gruidae, 8 (5)
Otitidae, 4 (2)
Rallidae, 15 (3)
Rostratulidae, 1 (1)
Charadriinae, 20 (10)
Scolopacinae, 48 (30)
Recurvirostrinae, 3 (1)
Phalaropodinae, 2 (1)
Glareolidae, 6 (1)
Larinae, 25 (5)
Sterninae, 19 (6)
Pteroclidae, 8 (1)
Columbidae, 22 (3)
Cuculidae, 9 (2)
Strigiformes, 26 (10)
Caprimulgiformes, 10 (2)
Apodiformes, 8 (3)
Alcedinidae, 7 (1)
Upupidae, 1 (1)
Piciformes, 25 (7)
Hirundinidae, 10 (5)
Alaudidae, 24 (7)
Motacillidae, 20 (12)
Laniidae, 13 (4)
Sturnidae, 9 (4)
Corvidae, 27 (12)
Bombycillidae, 3 (1)
Cinclidae, 2 (1)
Prunellidae, 12 (5)
Sylviinae, 97 (27)
Muscicapinae, 18 (6)
Turdinae, 93 (23)
Timaliinae, 54 (1)
Aegithalidae, 5 (1)
Parinae, 19 (6)

Sittinae, 9 (1)
Tichodromadinae, 1 (1)
Certhiidae, 5 (1)
Remizidae, 3 (1)
Ploceidae, 21 (6)
Fringillinae, 3 (1)
Carduelinae, 65 (18)
Emberizidae, 33 (16)

Gulls, terns, and waders breed in Mongolia, but there are no marine species, and no Palearctic representatives of other groups that are of tropical or semitropical origin, such as the Phoenicopteridae, Anhingidae, Numidinae, Turnicidae, Jacanidae, Haematopodidae, Dromadidae, Burhinidae, Rynchopinae, and Psittaciformes.

Among the Passeriformes, the following families or subfamilies, which are also of tropical or semitropical origin, are lacking: Pittidae, Oriolidae, Dicruridae, Campephagidae, Pycnonotidae, Rhipidurinae, Monarchinae, Dicaeidae, Nectariniidae, and Zosteropidae. It is difficult, however, to explain the absence of the Wren (*Troglodytes troglodytes*) which breeds in Transbaicalia on the frontier of Kentei and also in neighboring Manchuria, other than by surmising that this very small and furtive species may have been overlooked.

The Palearctic Timaliinae are represented in Mongolia only by the very widely ranging *Panurus biarmicus*. About 25 species of this subfamily are endemic in the Palearctic Region, but, generally speaking, this subfamily, which is of Oriental or Ethiopian origin, has not penetrated deeply into the Palearctic Region.

The Alaudidae seem to be unusually reduced in species, but the representatives of this family, which seems Eremean (including species that are more widely distributed in the boreal zone such as *Alauda arvensis*), dwindle as this region extends eastward, Mongolia and neighboring northwestern Manchuria constituting its extreme outposts. We find 17 species in Palearctic Africa, 11 in Kazakhstan and Turkestan, but only seven in Mongolia. Probably the ground is not sandy enough in Mongolia, as the country lacks such "sand-loving" genera as *Eremalauda*, *Eremopterix*, *Ammomanes*, and *Alaemon*. This interpretation may also explain the lack of the typical sandgrouse (*Pterocles*) and sand partridges (*Ammoperdix*) in Mongolia.

The forests of the north and some mountainous regions account for a good representation among the Tetraoninae, Strigiformes, Parinae, and Carduelinae, but the groups that are best represented in Mongolia, such as the Anatidae, Accipitridae, Falconidae, Gruidae, Otitidae, Charadriinae, Scolopacinae, Sterninae, Motacillidae, Corvidae, Prunellidae, and Emberizidae, generally tend to frequent open regions. In these groups, the Mongolian representatives number from one-third to one-half or more of the total species in the Palearctic Region. The number of Falconiformes in Mongolia (33) is outstanding when we consider that it almost equals the number that breed in the Nearctic Region.

Distribution in Mongolia

The distribution of the birds that breed, or appear to breed, in Mongolia is correlated, of course, with their ecological requirements. Species with strict requirements, such as the woodpeckers, can breed only in the zone that supplies the necessary habitat, but the majority are less rigidly adapted and breed in more than one zone. The following discussion is based on the preceding lists, but our knowledge is still very incomplete, as I wish to emphasize.

The species that appear to breed in only one zone number 110. This number drops sharply to 56 for two zones, 51 for three, 50 for four, and only 12 in the case of all five zones. The species that breed in all the zones are in every case birds that are noted for their wide distribution and their ability to nest successfully in almost any type of country, including human settlements or their vicinity when not molested. They are: *Falco subbuteo*, *F. tinnunculus*, *Columba rupestris* (the Central Asiatic counterpart of *C. livia*), *Bubo bubo*, *Athene noctua*, *Upupa epops*, *Hirundo rustica*, *Eremophila alpestris*, *Motacilla alba*, *Corvus corax*, *Sylvia curruca*, and *Passer montanus*.

The number of each species breeding in each zone, and of those restricted to the zone, is given in table 1.

Zone A contains the greatest proportion of species that are restricted to a single zone, and, as we might expect, nearly all are birds

TABLE 1

DISTRIBUTION OF THE AVIFAUNA OF MONGOLIA (BREEDING BIRDS ONLY)

Zone	Number of Species	Restricted to the Zone
A (forest)	142	47
B (mountain steppes)	163	17
C (grassy steppes)	119	14
D (arid steppes)	158	25
E (desert)	48	7

that are typical of wooded regions, chiefly coniferous forest. They represent the southernmost extension of the Siberian taiga, and among them we may list such typical species as *Tetrastes bonasia, Tetrao parvirostris;* some owls, such as *Aegolius funereus, Glaucidium passerinum,* and *Strix uralensis;* all the woodpeckers; *Perisoreus infaustus* and *Nucifraga caryocatactes* in the Corvidae; *Phylloscopus collybita* and *P. borealis* in the leaf warblers; *Tarsiger cyanurus, Turdus obscurus,* and *T. naumanni* in the thrushes; *Parus ater* and *P. cinctus* in the tits; *Certhia familiaris;* and some finches, such as *Carpodacus roseus, Pinicola enucleator,* and *Loxia curvirostra;* and also *Emberiza rutila* which inhabits the undergrowth of mixed larch and birch forest.

Zone B is much less homogeneous than Zone A, a fact that is reflected in the greater number of species and much smaller proportion of birds restricted to this zone. Typical of the alpine zone and high plateaus are *Falco altaicus, Lagopus mutus, Prunella himalayana, Leucosticte brandti,* and *L. arctoa.* The small ponds on the alpine tundra contribute also the sandpipers *Calidris temminckii* and *C. ferruginea.* The Altai Snowcock (*Tetraogallus altaicus*) is one of the striking birds of Zone B, but it is not restricted to it, as it breeds also in the mountains of Khangai and the Gobi.

Zone C is very homogeneous and has an impoverished fauna, but 10 of the 14 species that have been reported only from this zone are worthy of note, because they are, or seem to be, of Oriental origin. They are *Anas poecilorhyncha, Circus melanoleucos, Grus japonensis, Glareola maldivarum, Caprimulgus indicus, Lanius sphenocercus, Sturnus cineraceus, Acrocephalus bistrigiceps, Phylloscopus schwarzi,* and *Ficedula zanthopygia.* Nine or 10 other species which seem to be also of Oriental origin (such as *Phasianus colchicus, Cuculus saturatus,* and *Apus pacificus*) breed also in Mongolia, about half of them in Zone C.

The concentration of these Oriental species in Zone C, especially at its eastern extremity from whence nearly all were reported by Tugarinov (1932), led him to propose the recognition of a separate faunistic region which he would call "*Regio aemodo-serica.*" I believe, however, that the splitting of the Palearctic Region into various faunistic subregions has been much overdone, and I see no necessity for recognizing such a region.

Zone D is rich in species. This seems to be a paradox because much of this zone is a subdesert, but it has innumerable lakes, swamps, and reed beds which provide the necessary habitat for many species of water birds or birds of the reeds which appear to breed nowhere else in Mongolia. Twenty-two of the 25 species that are restricted to this zone belong to these two groups. Among them we may list: *Podiceps cristatus, Pelecanus crispus, Botaurus stellaris, Egretta alba, Ardea cinerea,* and *Platalea leucorodia;* several ducks, such as *Anas penelope, A. clypeata, Netta rufina, Aythya ferina,* and *A. fuligula;* and, of the smaller birds of the reeds, *Locustella naevia, Acrocephalus agricola,* and *Hippolais caligata.* The Common Pheasant (*Phasianus colchicus*), which in many parts of Asia breeds only in reed beds, has been reported to breed only in this region in Mongolia.

The list of birds that have been reported only from Zone E is very short, but some of them require comments. These seven birds are *Gyps himalayensis, Streptopelia turtur, Sturnus roseus, Acrocephalus stentoreus, Sylvia minula, S. althaea,* and *Emberiza schoeniclus.*

The record of *Gyps himalayensis* was mentioned to me by Dementiev, but I am not sure that this bird breeds in southern Mongolia, although quite possibly it does, because it breeds in neighboring Inner Mongolia. The record of *Sturnus roseus* is unusual; it was published by Tarasov (1962), but he does not state whether he found the birds breeding or merely saw them. This species is likely to turn up almost anywhere, as it is a notorious

wanderer, with very erratic breeding habits. Dementiev (1962) stated that *Streptopelia turtur* breeds in the Transaltai Gobi, but Kozlova questioned this in the comments she made to me. I believe, however, that Dementiev was probably correct, because Lönnberg (1931, p. 14) reported a specimen that was collected nearby on June 22, 1929, in Inner Mongolia. The northern part of Inner Mongolia and Zone E are similar; the frontier that separates them is purely political. *Sylvia minula* and *S. althaea* breed in the desert or very barren regions, but, *a priori*, there is no reason why *Acrocephalus stentoreus* and *Emberiza schoeniclus*, which breed in reed beds, should be restricted to Zone E.

The most interesting record from this zone is perhaps that of *Passer domesticus*, contributed by Tarasov (1962) who said that it breeds at the Zezeg Nor. This represents a great extension of range. If the Zezeg Nor of Tarasov is the lake of the same name in the Transaltai Gobi, which is situated at about longitude 96° E., latitude 45° N., the range of *Passer domesticus* is extended into Central Asia by about 750 kilometers. The nearest colonies of this bird known to me are in the villages on the Tola River in the region of Ulan Bator.

Faunal Affinities of the Avifauna

The avifauna of the Palearctic Region is relatively impoverished when compared to that of the Ethiopian, Oriental, and especially Neotropical regions, and is characterized also by a low degree of endemism. Not a single family is endemic, not even the Prunellidae which zoogeographers usually mention as its only endemic family. This statement is true also at the generic level, when we consider that the 1142 species of birds that breed in the Palearctic Region have evolved into only 42 endemic genera. Moreover, this region shares a large proportion of its species with the Nearctic Region, about 23 per cent in the case of the non-passerine birds. I believe also that most of its birds were derived from the tropical regions of the Old World, although some groups, such as the Phasianidae, Corvidae, and Emberizidae, underwent considerable subsequent radiation in its favorable temperate and boreal climates.

With these reservations in mind, a large proportion of the birds that breed in the Palearctic Region can, nevertheless, be allocated to several faunistic "types" that seem characteristic of "subregions." But this subdivision, if it is to be meaningful, must be held to a minimum. I cannot, for instance, share the opinion of a well-known European author who has classified the birds of Europe alone into 25 "faunal types" in a widely publicized book recently published. Europe is but a relatively small peninsula of Eurasia, and such extreme "splitting" serves only to confuse the basic divisions of its avifauna.

Most of these zoogeographic dissections of the Palearctic avifauna have been done by Russian authors and have been criticized by another Russian, namely, Stegmann, who, in a very valuable analysis (1938), recognized only six "faunal types," excluding quite correctly the species of arctic Eurasia which form an indivisible whole with those of arctic America.

Stegmann's six "faunal types" are:

1. Siberian (or taiga)
2. European (deciduous forest)
3. Mediterranean (maquis, steppes, and desert)
4. Mongolian (xerophilic)
5. Tibetan (alpine)
6. Chinese (mixed and deciduous forests of eastern Asia)

It is not my purpose here to discuss Stegmann's paper in detail, but I prefer to refer to his "Chinese" type as "Oriental," a term that has wider currency and is more correct. I believe also that his "Mongolian" type represents only a somewhat modified and impoverished extension of his "Mediterranean" type and that the two should be combined in one, for which the term "Eremean" exists. The Tibetan Plateau has some distinct genera and species, but the significance of this "subregion" has not been properly evaluated to date.

Any analysis into "faunal" types or "subregions" is bound to be subjective, but I believe that the 334 species reported from Mongolia can be allocated as follows:

Widely distributed (not diagnostic), 165
Siberian, 59
Oriental, 27
European, 16

Eremean, 49
Tibetan, 18

About half of the species cannot be allocated satisfactorily to any faunal type, as their breeding ranges are much too extensive, or, in the case of three or four, such as *Circus melanoleucos* and *Motacilla citreola*, their faunal affinities are not clear to me. The widely distributed species consist of a Transpalearctic group of 61, and one of 100 composed of birds that breed in two or more of the major zoogeographic divisions of the world; among these 100 species, 47 are Holarctic only.

The Holarctic group includes many well-known species, such as *Anas platyrhynchos*, *Mergus merganser*, *Aquila chrysaëtos*, *Falco columbarius*, *Lagopus lagopus*, *Larus argentatus*, *Sterna hirundo*, *Asio otus*, *Hirundo rustica*, *Corvus corax*, and *Loxia curvirostra*. Among the other 53 species, some are cosmopolitan or virtually so, such as *Phalacrocorax carbo*, *Egretta alba*, *Pandion haliaetus*, *Falco peregrinus*, *Charadrius alexandrinus*, and *Sterna albifrons*.

The Transpalearctic group also includes many well-known species, such as *Anser anser*, *Cygnus cygnus*, *Buteo buteo*, *Tetrastes bonasia*, *Vanellus vanellus*, *Scolopax rusticola*, *Larus ridibundus*, *Apus apus*, *Dendrocopos minor*, *Delichon urbica*, *Alauda arvensis*, *Corvus frugilegus*, *Regulus regulus*, and *Parus montanus*. The range of some of these is continuous across the Palearctic Region, or more or less interrupted, and a number of them, such as *Cygnus cygnus*, *Anas penelope*, *Aquila clanga*, *Tetrastes bonasia*, *Tringa nebularia*, *T. ochropus*, and *T. glareola*, are restricted to the boreal zone and chiefly to the taiga. According to Stegmann's concept, they should perhaps be called "Siberian," but the taiga extends to Sweden in Europe and the present distribution may be recent. It seems to me also that we are on safer ground when we consider as truly Siberian only the species that seem to have originated east of the Yenisei, because the affinities of the birds of western Siberia are chiefly with Europe.

The Siberian element is naturally quite important in the composition of the avifauna of Mongolia. Some of its species are listed above in the discussion of Zone A, but, although all these birds were typical of the taiga, they are not all "Siberian." Among the truly Siberian birds of Mongolia, we can add the following: *Prunella montanella; Bradypterus tacsanowskius; Locustella lanceolata;* several leaf warblers, such as *Phylloscopus inornatus*, *P. proregulus*, and *P. borealis;* the flycatchers *Ficedula mugimaki* and *Muscicapa sibirica;* more thrushes, such as *Luscinia calliope*, *L. cyane*, *Pseudaëdon sibilans*, *Turdus ruficollis*, *T. sibiricus*, and *Zoothera dauma;* and, among a group of buntings, *Emberiza leucocephala*, *E. pusilla*, *E. chrysophrys*, *E. rustica*, *E. aureloa*, and *E. pallasii*.

The Oriental element is represented in Mongolia by 27 species. A list of 13 of these is given in the discussion of Zone C. It seems sufficient to add half a dozen more: *Lanius cristatus*, *Sturnus sturninus*, *Acrocephalus aëdon*, *Uragus sibiricus*, and the two buntings *Emberiza fucata* and *E. spodocephala*.

The European element is weakly represented in Mongolia by only 16 species, the most characteristic of which seem to me to be: *Streptopelia turtur*, *Capimulgus europaeus*, *Sturnus vulgaris*, *Corvus monedula*, *Locustella naevia*, *Sylvia nisoria*, *S. communis*, *S. curruca*, *Muscicapa striata*, *Phoenicurus phoenicurus*, *Carduelis carduelis*, *Emberiza citrinella*, and *E. hortulana*.

The Eremean species, which number 49, are the most interesting from the point of view of this study, because they include all those that are most characteristic of Mongolia. The latter seem to me to number only 13, but Stegmann adds nine others. His list and mine are given below. It seemed undesirable to change Stegmann's sequence, but I did change three generic names and added the name of the species to which I believe three of the birds in his list belong; these changes and additions are enclosed in brackets.

It is strange to find *Podoces biddulphi* on Stegmann's list, because this species is known only from western Chinese Turkestan and not from Mongolia. Stegmann gave no reason for including this species, although he did comment on some of the other birds. Possibly its inclusion is an error.

I cannot grant that the other eight species that are not on my list are "Mongolian," as they are much too widely distributed. *Eremophila alpestris* breeds virtually throughout

VAURIE (13 SPECIES)

Anser cygnoides
Falco altaicus
Grus vipio
Charadrius leschenaultii
Charadrius veredus
Syrrhaptes paradoxus
Melanocorypha mongolica
Podoces hendersoni
Prunella fulvescens
Prunella koslowi
Saxicola insignis
Phoenicurus erythronotus
Rhodopechys mongolica

STEGMANN (21 SPECIES)

[*Anser*] *cygnoides*
Haliaeetus leucoryphus
Aquila [*rapax*] *nipalensis*
Buteo rufinus
[*Grus*] *vipio*
Charadrius leschenaultii
Charadrius veredus
Columba rupestris
Syrrhaptes paradoxus
Podoces hendersoni
Podoces biddulphi
[*Rhodopechys*] *mongolica*
Eremophila alpestris brandti
Melanocorypha mongolica
Anthus [*novaeseelandiae*] *richardi*
Emberiza [*cia*] *godlewskii*
Oenanthe isabellina
Saxicola insignis
Phoenicurus erythronotus
Prunella fulvescens
Prunella koslowi

northern Eurasia, including some islands in the Arctic Ocean, such as Franz Josef Land, and it breeds also in North America and northern South America. *Anthus novaeseelandiae* breeds virtually throughout the Ethiopian Region and from Indo-Malaya east to Australia and New Zealand. Opinions may differ as to the limits of this species, but, even if we exclude the populations that breed from Malaya to New Zealand, the *richardi* group of its subspecies breeds also in the Ethiopian Region and semitropical China. *Haliaeetus leucoryphus* and *Oenanthe isabellina* range west to the lower Volga, and the former ranges south to India. *Aquila rapax* breeds south to the southern tip of Africa; *Buteo rufinus*, west to southeastern Europe and North Africa; *Columba rupestris*, south to Shantung and west to Afghanistan; and *Emberiza cia*, all the way from the Pacific to southern Europe and south to northwestern Africa and Yunnan.

It would take too much space to outline the ranges of the 12 species that are common to my list and Stegmann's, but not a single one is endemic to Mongolia. The three that come nearest to doing so are *Charadrius veredus*, *Prunella koslowi*, and *Saxicola insignis*. But they breed also in Inner Mongolia, *veredus* breeding also in eastern Transbaicalia and *insignis* in northeastern Kazakhstan. Some of the other 12 species breed as far west as Armenia and Transcaucasia (*Charadrius leschenaultii* and *Rhodopechys mongolica*), the Kirghiz Steppes (*Syrrhaptes paradoxus*), and western Afghanistan (*Prunella fulvescens*), or south to Kansu (*Melanocorypha mongolica* and *Phoenicurus erythronotus*).

In other words, the avifauna of Mongolia is so poorly characterized that it seems impossible to grant the existence of a "Mongolian faunal type" consisting of only three or four species, or to recognize Mongolia as a major "subregion" of the Palearctic Region. The weakness of this concept is more or less acknowledged by Stegmann. He is aware that the affinities of his "Mongolian faunal type" are with the "Mediterranean," but he adds [my translation], "Although this fauna has so few species, it is impossible for it to have sprung from the Mediterranean fauna (as the latter certainly did not spring from the Mongolian)." This difficulty is overcome, however, if we combine the so-called "Mongolian" and "Mediterranean" types into a single Eremean "type."

Among the many species that seem to have originated in the western part of the Eremean region and that have penetrated to Mongolia are the following: *Pelecanus crispus*, *Tadorna ferruginea*, *T. tadorna*, *Netta rufina*, *Falco naumanni*, *Alectoris chukar*, *Anthropoides virgo*, *Chlamydotis undulata*, *Athene noctua*, *Calandrella rufescens*, *Galerida cristata*, *Stur-*

nus roseus, *Pyrrhocorax pyrrhocorax*, *Sylvia nana*, *Oenanthe deserti*, *Monticola saxatilis*, *Phoenicurus ochruros*, and *Petronia petronia*.

The avifauna of Tibet is far better characterized than that of Mongolia by a number of distinctive genera and species. Among the genera are *Lerwa*, *Pseudopodoces*, *Grandala*, *Kozlowia*, *Urocynchramus*, and *Propyrrhula*, and, among the species, a few, such as *Crossoptilon crossoptilon*, *Perdix hodgsoniae*, *Melanocorypha maxima*, *Phoenicurus frontalis*, *Babax waddelli*, *B. koslowi*, and *Montifringilla adamsi*, *M. taczanowskii*, *M. ruficollis*, and *M. blanfordi*. These do not exhaust the list of Tibetan genera and species which are all specialized alpine forms, and their number may well warrant the recognition of a major Palearctic subregion, a question that must be deferred for further study.

None of the species mentioned extend their range to Mongolia, but among the 18 species breeding in Mongolia which are or seem to be predominantly Tibetan the following can be listed: *Anser indicus*, *Gyps himalayensis*, *Falco cherrug*, *Gallinago solitaria*, *Prunella himalayana*, *Phoenicurus erythrogaster*, *Montifringilla davidiana*, *Leucosticte brandti*, and *Carpodacus pulcherrimus*, *C. rhodochlamys*, and *C. rubicilla*.

BIRDS COLLECTED IN MONGOLIA BY THE CENTRAL ASIATIC EXPEDITIONS

THE CENTRAL ASIATIC EXPEDITIONS of the American Museum of Natural History collected a total of 211 specimens of 79 species in Mongolia. No ornithologist was attached to the expeditions, and the birds were collected by Roy Chapman Andrews, the organizer and leader of the expeditions, or by Walter Granger, the chief paleontologist and second in command. Andrews collected during the period from May 23 to August 1, 1919, in the region of Ulan Bator, whereas the rest of the collection, secured in 1922, 1923, and 1925, seems to have been made only by Granger. All the skins were meticulously prepared.

This collection is not large but is quite an achievement when we consider that it was made by the two men who shared the burden of directing the expeditions. At times the technical staff alone numbered as many as 60 men in the field, and the moments that could be spared for birds were few. Andrews tried to enlist an ornithologist when organizing the expeditions, but unfortunately no one was free to go, and he was also unable to secure the services of a bird collector.

A few additional specimens were taken also at Ehrlien and Ula Usa, but they are not included in my list, as these localities are in Inner Mongolia. Seventeen of the 211 specimens are not available for comparison, because they were included in a habitat group of the birds of Mongolia in the American Museum of Natural History. These and the few from Inner Mongolia, do not, however, represent additional species.

The habitat group (pl. 1) is a representation of the shores of Tsagan Nor, with the northern foothills and slopes of the Gobian Altai in the background.

LIST OF LOCALITIES AT WHICH BIRDS WERE COLLECTED

Most of the localities at which birds were collected are shown in figure 1, where they are numbered from 1 to 15. The true position of some of these localities may vary slightly from the position that is indicated in figure 1, because the coordinates compiled at the time that the birds were catalogued do not in every case coincide exactly with the locality that is shown on maps that were subsequently published.

1. Ulan Bator, longitude 106° 52′ E., latitude 47° 54′ N.
   15 miles north of Ulan Bator
   45 miles northeast of Ulan Bator
2. Bolkuk Gol [camp at], longitude 106° 40′ E., latitude 47° 40′ N.
   Tola River Valley near Ulan Bator
   Tola River Valley, 60 miles "northwest" [*sic*] of Ulan Bator
   Tola River Valley, 50 kilometers southwest of Ulan Bator
3. Tuerin, longitude 108° 20′ E., latitude 46° 30′ N.
4. Tse Tzen Wang [now apparently called Doltse Gegen], longitude 104° 15′ E., latitude 47° 15′ N.
   30 miles southwest of Tse Tzen Wang
   40 miles southwest of Tse Tzen Wang
5. Hurum Tu, longitude 102° 30′ E., latitude 46° 15′ N.
6. Sain Noin Khan, longitude 101° 50′ E., latitude 46° 10′ N.
   Ongyin Gol
7. Gun Burte, longitude 102° 20′ E., latitude 46° N.
8. Uskuk, longitude 101° 49′ E., latitude 45° 29′ N.
9. Loh, longitude 101° 45′ E., latitude 45° 16′ N.
10. Tsagan Nor, longitude 101° 20′ E., latitude 45° 05′ N.
11. Orok Nor, longitude 100° 45′ E., latitude 45° 00′ N.
12. Kholobolchi Nor, longitude 100° 45′ E., latitude 45° 10′ N.
13. Artsa Bogdo [10 miles north of it], longitude 102° 30′ E., latitude 44° 30′ N.
14. Shabarakh Usu, longitude 103° 30′ E., latitude 44° 15′ N.
15. Sair Usu, longitude 106° 50′ E., latitude 44° 45′ N.

LIST OF THE SPECIMENS COLLECTED

Species that are marked with an asterisk are discussed below in either the Field Notes or the Taxonomic Notes.

Podiceps nigricollis nigricollis

One female, Gun Burte, June 19, 1922.

Habitat group of the birds of Mongolia in the American Museum of Natural History. The scene represents the shores of Tsagan Nor, with the northern foothills and slopes of the Gobian Altai in the background

Anser indicus

Two males, one female, Tola River Valley near Ulan Bator, June 12, 1919; one male, Tola River Valley, 50 kilometers southwest of Ulan Bator, May 21, 1922; four downy young, not sexed, small lake 50 kilometers southwest of Tse Tzen Wang, June 2, 1922; one male, three downy young, not sexed, Gun Burte, June 19, 1922.

Anser cygnoides

One male, Tola River Valley near Ulan Bator, June 12, 1919; two downy young, not sexed, Ulan Bator, June 15, 1919; one female, Tola River Valley, 50 kilometers southwest of Ulan Bator, May 21, 1922.

***Tadorna ferruginea**

One downy young, not sexed, Ulan Bator, June 15, 1919; one male, Tuerin, May 15, 1922; two downy young, not sexed, Hurum Tu, June 15, 1922.

Tadorna tadorna

Two males, two females, Tse Tzen Wang, May 26, 27, 1922.

***Milvus migrans lineatus**

One male, Ulan Bator, May 28, 1919; one male, Bolkuk Gol, May 15, 1922.

Accipiter gularis

One male, 40 miles southwest of Tse Tzen Wang, May 31, 1922.

Buteo hemilasius

Three half-grown young, not sexed, Sain Noin Khan, June 8, 1922.

Aquila rapax nipalensis

One adult, not sexed, Uskuk, June 21, 1922.

Haliaeetus leucoryphus

One adult, not sexed, Uskuk, June 21, 1922.

***Aegypius monachus**

One male, Hurum Tu, June 16, 1922.

***Falco columbarius lymani**

One male, Sain Noin Khan, June 9, 1922.

Falco naumanni

One male, Loh, June 30, 1922; one female, Artsa Bogdo, August 19, 1922.

Falco tinnunculus tinnunculus

One male, Shabarakh Usu, May 25, 1925.

***Lagopus mutus nadezdae**

Two males, one female, one immature male, 45 miles northeast of Ulan Bator, August 1, 1919.

***Tetrao parvirostris**

Two females, one immature male, 45 miles northeast of Ulan Bator, July 20, 1919.

Grus grus lilfordi

One male, Sain Noin Khan, June 5, 1922.

***Anthropoïdes virgo**

Three males, one female, two adults, not sexed, one downy young, not sexed, Ulan Bator, May 23, 1919; two females, Tola River Valley, May 19, 1922.

Otis tarda dybowskii

One male, Ulan Bator, May 29, 1919.

Chlamydotis undulata macqueenii

One female, Sair Usu, July 3, 1923.

Fulica atra atra

Three downy young (two males, one female), Orok Nor, July 2, 1925.

Charadrius dubius curonicus

One male, Ongyin Gol, June 1, 1922.

Charadrius alexandrinus alexandrinus

One adult, not sexed, Tsagan Nor, August 11, 1922.

Vanellus vanellus

One female, Gun Burte, June 19, 1922.

Calidris subminuta

One adult, not sexed, Tse Tzen Wang, May 27, 1922.

Calidris temminckii

Two females, Tse Tzen Wang, May 27, 1922.

Tringa totanus eurhinus

One female, Tse Tzen Wang, May 24, 1922; two males, Ongyin Gol, June 1, 1922.

Tringa glareola

One female, Tse Tzen Wang, May 24, 1922.

Recurvirostra avosetta

One female, Tsagan Nor, June 15, 1922.

Phalaropus lobatus

One male, Gun Burte, June 19, 1922.

***Sterna hirundo minussensis**

Two females, Ulan Bator, May 29, 1919; one female, two adults, not sexed, Bolkuk Gol, May 15, 1922; one male, two females, Tola River Valley, 60 miles northwest of Ulan Bator, May 21, 1922.

Syrrhaptes paradoxus

One female, Uskuk, June 21, 1922; two females, Tsagan Nor, August 9, 1922; one male, 10 miles north of Artsa Bogdo, August 30, 1922; one male, one female, Tsagan Nor, June 22, 1925.

Columba rupestris rupestris

One female, Shabarakh Usu, May 31, 1925.

Streptopelia orientalis orientalis

One male, Sain Noin Khan, June 4, 1922.

Cuculus canorus canorus

One male, Tse Tzen Wang, May 27, 1922; three males, two females, Sain Noin Khan, June 9–12, 1922.

***Bubo bubo yenisseensis**

One male, 30 miles southwest of Tse Tzen Wang, May 22, 1922; one female, one downy young, female, 40 miles southwest of Tse Tzen Wang, May 30, 1922.

***Bubo bubo tarimensis**

One immature male, one immature female, Kholobolchi Nor, June 30, 1925.

Athene noctua plumipes

One male, Tse Tzen Wang, May 24, 1922; one female, one adult, not sexed, Kholobolchi Nor, July 7, 1925.

Apus apus pekinensis

One female, Shabarakh Usu, June 3, 1925; one male, Tsagan Nor, June 11, 1925.

Apus pacificus pacificus

One male, Shabarakh Usu, June 3, 1925.

Calandrella rufescens seebohmi

One male, Tsagan Nor, June 23, 1925.

***Melanocorypha mongolica**

One male, Tse Tzen Wang, May 27, 1922.

Eremophila alpestris brandti

One female, Ongyin Gol, June 1, 1922.

Anthus novaeseelandiae dauricus

One female, 40 miles southwest of Tse Tzen Wang, June 1, 1922; one female, Sain Noin Khan, June 3, 1922.

Anthus trivialis trivialis

One male, Sain Noin Khan, June 11, 1922.

Anthus hodgsoni yunnanensis

One male, Shabarakh Usu, June 3, 1925.

Motacilla flava macronyx

One male, Uskuk, June 24, 1922.

Motacilla citreola citreola

One male, one female, one adult, not sexed, 40 miles southwest of Tse Tzen Wang, May 31, June 1, 1922; one female, Orok Nor, June 30, 1925.

Motacilla alba baicalensis

One male, one female, Sain Noin Khan, June 3, 1922.

Lanius collurio speculigerus

One male, one female, Shabarakh Usu, May 25, 1925; three males, Shabarakh Usu, June 6, 1925.

Lanius cristatus cristatus

One male, Sain Noin Khan, June 3, 1922.

Lanius excubitor sibiricus

One male, Shabarakh Usu, June 5, 1925.

Pica pica leucoptera

One female, Sain Noin Khan, June 13, 1922.

Podoces hendersoni

One adult, not sexed, Loh, June 30, 1922.

Nucifraga caryocatactes macrorhynchos

One male, one female, 15 miles north of Ulan Bator, end of May or June 1, 1919.

***Pyrrhocorax pyrrhocorax brachypus**

Two males, three females, Ulan Bator, May 30, 31, 1919; one male, Tse Tzen Wang, May 24, 1922.

***Corvus dauuricus**

One male, one female, one immature female, two adults, not sexed, Ulan Bator, May 29 to June 1, 1919; four males, one female, Sain Noin Khan, June 8–11, 1922; one female, Tsagan Nor, June 12, 1925.

Corvus corone orientalis

One male, Ulan Bator, May 29, 1919; one male, one female, Sain Noin Khan, June 8, 1922.

Corvus corax kamtschaticus

One female, Ulan Bator, June 1, 1919.

Locustella certhiola centralasiae

Two females, Tsagan Nor, June 15, 1925.

Sylvia nana nana

Two males, Orok Nor, July 3, 4, 1925.

Phylloscopus fuscatus fuscatus

Two males, one adult, not sexed, Shabarakh Usu, May 25, 31, 1925; one female, Sain Noin Khan, June 8, 1922.

Phylloscopus inornatus humei

One male, one female, Sain Noin Khan, June 9, 10, 1922.

Phylloscopus proregulus proregulus

One male, Shabarakh Usu, May 31, 1925.

Phylloscopus borealis transbaicalicus

Two males, Shabarakh Usu, June 1, 5, 1925.

Phylloscopus trochiloides plumbeitarsus

One male, Shabarakh Usu, June 1, 1925.

Muscicapa sibirica sibirica

One male, Shabarakh Usu, June 5, 1925.

Oenanthe deserti atrogularis

Two males, two females, Shabarakh Usu, May 25, June 2, 1925.

Oenanthe isabellina

One male, Tuerin, April 29, 1922; one male, one female, Tse Tzen Wang, May 23, 24, 1922; one female, Sain Noin Khan, June 4, 1922; one male, Hurum Tu, June 16, 1922.

Monticola saxatilis

One male, 40 miles southwest of Tse Tzen Wang, May 31, 1922; two males, one female, Sain Noin Khan, June 4, 6, 1922.

Phoenicurus auroreus auroreus

One male, Shabarakh Usu, June 3, 1925.

Luscinia calliope

Three males, one female, Shabarakh Usu, May 25, June 1, 1925.

Turdus ruficollis ruficollis

Two males, Sain Noin Khan, June 8, 1922.

Remiz pendulinus stoliczkae

One male, one female, Shabarakh Usu, May 31, June 3, 1925.

***Passer ammodendri stoliczkae**

Four males, Shabarakh Usu, May 25 to June 2, 1925.

Petronia petronia brevirostris

Two males, one female, Sain Noin Khan, June 4, 5, 1922.

Rhodopechys mongolica

One male, Orok Nor, July 3, 1925.

Emberiza pusilla

One female, Shabarakh Usu, June 2, 1925.

Emberiza aureola aureola

One male, one female, 40 miles southwest of Tse Tzen Wang, May 31, 1922.

***Emberiza pallasi lydiae**

One male, one female, Orok Nor, July 1, 2, 1925.

Field Notes

Andrews published a few observations on birds in the narrative of the explorations (1932), but, with two exceptions, no actual notes were made on the specimens that were collected. These observations are interspersed irregularly in the narrative. Some of these are quoted here, because questions that have been asked me show that they have been overlooked in this very bulky publication, which is devoted chiefly to paleontological exploration.

Tadorna ferruginea

Andrews mentioned the Ruddy Shelduck very briefly on several occasions, but at Tuerin he had the opportunity to observe its behavior at the end of April. He commented as follows: "Of all the birds at Tuerin, the one which surprised and interested us most by its unusual habits was the ruddy sheldrake. There is no water, except wells, within many miles of Tuerin, and yet about twenty sheldrakes had taken up their residence among the granite rocks. All day long we could hear their mournful notes as they circled about camp and contested for a favorite roosting place on one of the highest peaks. Often we would see one silhouetted against the sky on the very summit of a ragged pinnacle looking more like an eagle than a water-bird. We found them throughout the desert. There, I suppose, they feed as do cranes upon grasshoppers and other insects, but I am sorry to say that I surprised one pulling lustily at the decaying flesh of a defunct camel. Although we did not actually find their eggs, I am certain that they were nesting among the rocks at Tuerin, for the twenty or more birds were obviously in pairs. Later, in every marsh of

the western Gobi we would see them glowing like molten gold among the green grass and reeds. The sheldrakes seemed to have little fear of the great golden eagles *Aquila chrysaëtos daphanea* which soared about the Tuerin peaks" (Andrews, 1932, p. 49).

Milvus migrans lineatus

This species is ". . . the most abundant [of the raptorial birds of which] Mongolia has a great number. . . . At Tuerin there were literally hundreds of kites nesting among the rocks. . . . The kites were a never-ending source of amusement to us at camp. Thirty or forty of them were usually sitting on the ground or flying about the tents. As soon as one would pick up something and attempt to fly away, the others would attack it like a pack of wolves. One day when there were a great number about we threw out a dozen bits of meat. The kites sat in a row a few yards away for more than an hour. Each time one made an attempt to get a bit of food the others flew at it. As a result none of them got any of the meat, although they all wanted it" (Andrews, 1932, pp. 49, 50, 119).

Aquila chrysaëtos

The expedition did not collect any specimens of this eagle but it was observed often. Andrews stated: "At Loh I observed an interesting habit of the golden eagle. We were driving across a perfectly flat plain with two cars. I saw a full-grown golden eagle crouching behind a small bush with its head stretched out. After we passed, it half rose to its feet, and then it saw the second car. It sank back again and remained motionless until the motor had passed, when it flew away. We observed this same trick by other individuals at two other times during the summer" (Andrews, 1932, pp. 118–119).

Aegypius monachus

This bird was very common. "At every poisoned carcass we got several of the great black vultures. This huge bird is one of the most characteristic and interesting sights of the Gobi. One had a wingspread of nine feet six inches" (Andrews, 1932, p. 117).

Then Andrews related the interesting behavior of a bird that had been captured when it was young and reared, becoming "as tame as a chicken." He wrote: "From the very first we fed this bird upon fresh meat and it absolutely refused to eat carrion of any sort. If meat had the slightest decayed odor it would have nothing to do with it. Viscera seemed particularly distasteful to the vulture and only once or twice did we persuade it to eat a piece of antelope liver, when there was no other meat and the bird had had no food for thirty-six hours.

"The bird cared for itself in the most astonishing manner. If we were camped near a lake, it would wade into the water for a bath two or three times a day and then drowse in the sun with wings half spread while drying its feathers. It was always allowed the freedom of the camp and never attempted to get away. In fact, it got distinctly lonely if most of the men were gone and always preferred to be near someone. Its favorite sleeping-place was in the rear of my tent; my police dog also liked to sleep there and the contests for supremacy were most amusing. The dog was usually worsted in these encounters, for he evidently considered it beneath his dignity to fight with a bird.

"If we were camped near a spot where there were cliffs, the vulture would spend hours sitting on a projecting pinnacle gazing over the country below. If there were no cliffs, the bird seldom left camp. I was much surprised at the amount of water which it consumed. Drinking by itself from a pail was too slow a process. It much preferred to open its great beak, throw its head back and have someone pour water down its throat. It had considerable intelligence. One day I was sitting in my tent writing. A gasoline tin of drinking water was near the door. The vulture came up to the tin and rapped upon it with its beak, significantly. I paid no attention and after three or four raps the bird entered the tent, jerked my coat and returned to the tin. Of course I gave it water. I could hardly credit the performance but there was no mistake; the vulture knew there was water in the tin and that it could not be had without human assistance. As a matter of fact, it had been given water very often from the tin, which was usually kept at the tent door. During the long trip from China to New York, the bird became very much attached to me and would recognize me instantly even when there were other

men about. It was extraordinarily curious and when the men were packing fossils it insisted upon examining every box" (Andrews, 1932, p. 118). This bird was captured in 1925 and died in the New York Zoological Park in April, 1944.

Tetrao parvirostris

Andrews noted that one of the females was shot ". . . in heavy spruce forest on top of the mountains and had about six young with her." The immature male was shot from "the same covey . . . of 6 or 7 young . . . in a marshy moss covered flat, interspersed with alder and willow scrub" (Andrews, MS).

Anthropoïdes virgo

"These cranes breed in northern and central Mongolia and they are so unafraid that a man can almost touch them, but when in flocks they are not easily approached. . . . Hundreds . . . were performing their mating antics on the plain [of Tuerin at the end of April] . . . the male strutting about the apparently indifferent female, leaping into the air and doing a veritable dance with wings half spread. These birds lay their eggs in late May or early June but make no nest" (Andrews, 1932, pp. 28, 49).

Otis tarda

Andrews mentioned that this bird ". . . had but recently arrived . . ." at the end of April on the plains of Tuerin where ". . . it breeds in great numbers . . . [it] appears to prefer the grassy plains rather than the more arid regions, but we found it pretty generally distributed all over Mongolia" (Andrews, 1932, pp. 37, 49).

Rostratula benghalensis

This record of the Painted Snipe is the most remarkable that was made by Andrews, although in a highly unorthodox manner. It is the only record for Mongolia and, though not substantiated by a specimen, is undoubtedly valid, because the species is too distinctive to be misidentified and the report is made by a very experienced man who had collected many birds in eastern Asia. Andrews stated that he and his companions left the camp at Tsagan Nor on August 13, 1922, to halt 20 miles away "near two small ponds bordered by marshland. They were alive with ducks and geese and we saw an opportunity to relieve the monotony of our antelope-meat diet. In an hour we got twelve graylag geese, eight mallard ducks, one whooper swan, three jack-snipe, and two beautiful painted snipe, *Rostratula benghalensis benghalensis*" (Andrews, 1932, p. 146). The swan was not wounded seriously and was released after it was photographed, because Andrews considered it too tough to eat, but unfortunately he kept no evidence of the Painted Snipes, as he was not aware that this record was unique. Apparently they ended in the pot with the other birds.

This species breeds from northeastern China (including, very probably, southern Manchuria) and central Japan south to India and the Greater Sundas, and also in Africa from the delta of the Nile south to Cape Province and Madagascar. Its northern populations in Asia are migratory, but their migration is virtually unknown. The two birds that were shot near Tsagan Nor were migrants or, more probably, vagrants, as the Tsagan Nor is very far from eastern China.

Bubo bubo

The female that was collected with one of its downy young had a nest in a niche in a rocky precipice ". . . four feet high, two feet wide and two feet deep. It was unlined but contained many feathers of birds, small bones and pellets. The pellets were cylindrical and four inches long by two inches thick. In them I identified a great number of *Allactaga* bones, a few *Ochotona* and *Mus* and a musteline of some sort" (Andrews, 1932, p. 68). This female had three young, but one had disappeared and the other was carried away by a large hawk, within "the hour which had elapsed" since the nest was discovered and the female shot. Andrews added: "While we were at the nest, and for a long time afterward, the male owl soared like an aëroplane above the rocks" (Andrews, *loc. cit.*).

Pyrrhocorax pyrrhocorax

The Chough is abundant in Mongolia and the expedition had two of them as pets. Andrews wrote that they were "as tame as chickens and flying all about the tents. They were intensely curious. I have a photograph of one sitting on Granger's head while in-

vestigating his ear; a few moments later it even put its bill into the bowl of the pipe he was smoking" (Andrews, 1932, p. 75). One of them subsequently broke faith with Granger by swallowing one of his precious fossil bones when his back was turned. Kozlova (1933, p. 64) stated: "Out of the breeding season they feed all day long in parties in the streets of Ulan Bator. They place their nests on the attics and under the roofs of wooden houses, and associate with Sparrows and Doves."

Melanocorypha mongolica

Andrews wrote (1932, p. 49) that at the end of April at Tuerin, this lark "filled the air with song . . . [it] is a favorite cage bird of the Chinese, in fact, thousands of nestlings are caught yearly to be sold in the markets of north China. Not only does it have a charming song, but it is a mimic of no mean ability. Several larks that I had at Peking could imitate the mewing of a cat so perfectly that I was often deceived, and my police dog, Wolf, was kept in a state of constant excitement."

Taxonomic Notes

Falco columbarius lymani Bangs

This well-differentiated race inhabits the mountains of central Asia and is very rare in collections. It is pale and resembles the population of eastern Siberia (*insignis* Clark) in coloration, but has a considerably longer wing than *insignis* or any other race. The wing of the bird that was collected was worn and measures 232 mm., and that of four other males that I have been fortunate to see was 226–242, the wing length of these five birds averaging 231. In 10 males of *insignis* it measures 199–206 (203.2), and in 10 of *pallidus* Sushkin, 206–214 (209.5); *pallidus* is the largest race after *lymani* and inhabits the steppes of western Siberia and of Kazakhstan.

Lagopus mutus nadezdae Serebrovsky

This race is not well represented in the museums of western Europe and America. The only specimens that are known to me, other than those in Russia, are the specimens reported, plus two others in the British Museum. *Nadezdae* inhabits the mountains of northern Mongolia and of southern Siberia (the Sayans and Altai) and differs from the very widely distributed *nelsoni* Stejneger of northwestern America and Siberia by being very distinctly darker, browner, and more heavily patterned. One of the adult males retains a single conspicuous white feather among its dark brown upper wing coverts.

Sterna hirundo minussensis Sushkin

This race has occasioned considerable confusion, as it is intermediate to a varying degree between nominate *hirundo* Linnaeus of North America and Europe, *longipennis* Nordmann of northern and eastern Siberia, and *tibetana* Saunders of high central Asia. During the breeding season, the bill of nominate *hirundo* and *tibetana* is red, tipped with black, whereas it is wholly black in virtually all individuals of *longipennis;* the legs and feet are red in the first two, but vary from dark brown to black in *longipennis. Tibetana* differs from nominate *hirundo* by being darker above and distinctly larger, although it has a shorter bill.

The geographical variation is clinal throughout Eurasia, and as a result some individuals of *minussensis* (of which I have seen a large series in addition to those collected) are very difficult to distinguish from the other three races. In typical *minussensis,* however, the bill is always much more extensively invaded with black than is that of nominate *hirundo* or *tibetana,* but is not wholly black as is that of *longipennis;* its legs and feet are brownish rather than red or black; its wing length is intermediate between that of nominate *hirundo* and that of *longipennis;* and its bill is relatively short, as is that of the latter.

The variations in size, as shown by the lengths of the wing and bill of males, are best visualized in tabular form:

Nominate *hirundo* from eastern North America, 20 males, 255–278 (265), 42–49 (45)
Nominate *hirundo* from western Europe, 20 males, 260–285 (269.5), 43–49 (45.3)
Minussensis from Mongolia, 10 males, 265–287 (276), 40–48 (43)
Longipennis from southeastern Siberia, 10 males, 273–284 (279.5), 40–48 (43.5)
Tibetana from Tibet, 18 males, 263–285 (276.7), 40–45 (42.1)

In short, *minussensis* is not very well differentiated, but it seems convenient to have a

name for this very widely distributed intermediate form. Its breeding range extends from about the basin of the upper and middle Ob east to about the basin of the Chona River, or about longitude 111° 30′ E. (a distance of some 2000 kilometers), and south to southeastern Russian Altai, Mongolia, Transbaicalia, and northwestern Manchuria.

Bubo bubo

In earlier papers (1960, 1963) I discussed the birds taken near Tse Tzen Wang and at the Kholobolchi Nor. The former are best referred to *yenisseensis* Buturlin, 1911, and the latter to *tarimensis* Buturlin, 1928, *tarimensis* differing from *yenisseensis* by being much yellower and less heavily marked and streaked. I have not been able to compare the two birds from the Kholobolchi Nor directly to *tarimensis*, however, as the only specimens of the latter are six, which are in Russia.

The specimens of *tarimensis*, the two from Kholobolchi Nor, and the two reported by Kozlova (1930, p. 158) from the Ongyin Gol, seem to be similar, to the best of my recollection, but the four from Mongolia require further study. They may represent a distinct and unnamed race. It seems best, however, to refer them to *tarimensis* until more material is collected. The type locality of *tarimensis* is Lop Nor in Sinkiang, a locality some 1200 kilometers distant from the Kholobolchi Nor and Ongyin Gol but situated in a region which is arid and does not seem to be essentially different from the region of the two other localities in Mongolia.

Bubo bubo is one of the most geographically variable of all Palearctic birds. In my first study of this species (1960), based on about 220 specimens, I recognized 16 subspecies, but, after examining about another 300 birds in 1961, I revised the first study drastically, which led to the recognition of four more subspecies in my second review (1963). Only six other species, out of a total of 1142 that breed in the Palearctic Region, have as many subspecies, or more.

Corvus dauuricus

This species exhibits a well-known and common variant (*neglectus* Schlegel) in which the white areas of the plumage of *dauuricus* (nape, sides of the neck, breast, flanks, and abdomen) vary individually from dark slaty gray, or smoky gray, to blackish. This dark form was believed to be a distinct species until 1910 or thereabouts, although Hartert (1903–1922, p. 19) had already questioned this belief. In 1912, Sushkin expressed the opinion that *neglectus* was the young of *dauuricus*, but Hartert (1903–1922, p. 2025) commented that Sushkin was certainly incorrect, because the birds breed in the *neglectus* plumage and apparently always retain it. Kozlova (1933, p. 62) remarked also that the two forms are found in "family parties . . . [I] saw the parents feed the grey [*dauuricus*] and the dark [*neglectus*] young as well. Thus I am quite sure the different colouring of these birds is due to individual variation only, and *Coloeus neglectus* must be considered no more than a phase of *C. dauricus* [*sic*]."

"*Neglectus*" is found throughout the range of *dauuricus*, which is not migratory and probably represents a color phase or a mere melanistic variant, but its frequency has never been investigated, nor have the pair formation and mutual behavior of the two forms, although such a study would be very interesting.

Among the 11 specimens collected by the Central Asiatic Expeditions, three from Ulan Bator, including one that is unquestionably adult, two from Sain Noin Khan, and the specimen from Tsagan Nor are in the "*neglectus*" plumage. In other parts of the range of the species whence the American Museum of Natural History has series, the frequency of dark and white birds is as follows:

Northeastern Korea, 2 *dauuricus*, 4 "*neglectus*"
Southern Shensi (Tsinling Range), 23 *dauuricus*, 9 "*neglectus*"
Southern Yunnan, 3 *dauuricus*, 6 "*neglectus*"

Passer ammodendri

The specimens collected by the Central Asiatic Expeditions were discussed by me in a paper published in 1956; in that paper I called them *timidus* Sharpe, 1888. I now consider that that form is not sufficiently well differentiated from *stoliczkae* Hume, 1874, to be recognized. The type locality of the latter is Kashgar; that of *timidus* is the Gobi.

In the 1956 paper, and in my survey of the Palearctic fauna (1959), I divided this species into four subspecies: *stoliczkae* and *timidus*,

ranging from Sinkiang to Mongolia; nominate *ammodendri* Gould, 1872; and *korejewi* Zarudny and Härms, 1902, ranging from Transcaspia to Russian Turkestan. The type locality of nominate *ammodendri* is Dzhulek, above Kzyl Orda, on the Syr Darya, and that of *korejewi* is eastern Transcaspia; these two forms differ from *stoliczkae* and *timidus* by being "cool" sandy-gray above, as against "warm" sandy-buff, verging on cinnamon.

A new revision of the species by Stepanyan (1961), which was based on entirely different material from mine, has prompted me to revise the species again. I now agree completely with Stepanyan who recognized only three subspecies. He synonymized *timidus* with *stoliczkae*, *korejewi* with nominate *ammodendri*, and his third subspecies is a new one, based on birds from the Ili River, which he named *nigricans*.

Stepanyan showed his material to me when I was in Moscow and I also saw the large series in Leningrad. I am also grateful to him for lending me one of the two specimens which he had chosen as cotypes of *nigricans*, so that I could compare it to the type of nominate *ammodendri* which is in the collection of the British Museum in London.

The males of *nigricans* differ from male nominate *ammodendri* by being spotted with black on the rump and upper tail coverts (whereas these parts are not spotted in nominate *ammodendri*), and by averaging slightly blacker on the mantle and somewhat larger (table 2). I mentioned the differences in the color of the rump and tail coverts (the most important character) in my former papers, but, misled by insufficient material from the lower Syr Darya, I erroneously combined this population with that of the Ili River, which resulted in a confusion in names. In other words, *korejewi* (*sensu* Vaurie, 1956, 1959) is equal to nominate *ammodendri* Gould, and nominate *ammodendri* (*sensu* Vaurie, 1956, 1959) is equal to *nigricans* Stepanyan.

The three subspecies that are now recognized are not uniform, however, but the differences are too slight to warrant subdivision. *Korejewi* of Zarudny and Härms represents the palest and most grayish birds which inhabit the deserts of Transcaspia rather than the valley of the middle and lower Syr. *Timidus* of Sharpe represents the populations of Outer and Inner Mongolia which differ from those of Kashgaria (typical *stoliczkae*) by averaging a little paler. The birds of Mongolia show also a tendency to have a thicker and larger bill, although this is scarcely shown by actual measurements. In *nigricans*, the darkest and most heavily spotted birds are those of the Ili Valley. A small series from the Manas River in Dzungaria, and a few individuals from the Issyk Kull and Ferghana which are similar to those of Dzungaria, are less heavily spotted with black than the birds of the Ili, but are certainly more similar to *nigricans* than they are to nominate *ammodendri*.

The geographical variation is not well shown by females. Females of nominate *ammodendri*, "*korejewi*," and *nigricans* appear not to differ in coloration, nor do those of *stoliczkae* and "*timidus*." Those of the first group differ, of course, from those of the second by being grayish rather than "cinnamon." Females of *nigricans* do, however, average slightly larger than the females of nominate *ammodendri*, their wing length measuring 76.5–81 (78.3) in five, as against 73.5–78 (75.8) in five of nominate *ammodendri*.

I am also indebted to Dr. Stepanyan for sending me a long list of individual measurements, which unfortunately were not taken in the same manner that I take mine and therefore are not given here.

Emberiza pallasi lydiae Portenko

The two specimens collected by the Central Asiatic Expeditions were taken at the type locality of *lydiae*. This form, which was named by Portenko (1929), resembles nominate *pallasi* Cabanis but is paler above, and, in males in worn plumage, the upper wing coverts and the streaks on the back differ from those of nominate *pallasi* by being brownish rather than black with paler buffy edges.

The two forms are certainly similar, and the differences mentioned, which are relatively slight, would appear to be of no more than subspecific importance, but the two birds are said to have different ecological preferences and to differ conspicuously in their song. Kozlova (1933, p. 77), who col-

TABLE 2

MEASUREMENTS OF ADULT MALES OF *Passer ammodendri*

Form and Region	*N*	Wing	Tail	Bill[a]
Nominate *ammodendri*				
Syr Darya	6[b]	77–82 (79.8)	60–62.5 (61.6)	13.5–15 (14.2)
"korejewi"				
Southern Transcaspia	11	76–79 (77.8)	58–63 (60.8)	13.5–15 (14.5)
nigricans				
Ili River Valley	7[c]	82–85 (83.4)	60–68 (63.2)	14–15 (14.5)
Dzungaria[d]	5	81.5–83 (82.5)	62–71 (65.4)	14–15 (14.6)
Issyk Kul	2	81, 82	60, 62.5	14.5, 15
Ferghana	1	79	60	14.5
stoliczkae				
Kashgaria	13	77–82 (79.3)	56–66 (59.7)	13–15 (14)
"timidus"				
Mongolia	14	77–83 (79.2)	57–66 (61.8)	13.5–15.5 (14.5)

[a] Measured from the skull.
[b] Type of *ammodendri*, 80, 61, 15.
[c] Cotype of *nigricans*, 84, 61.5, 14.5.
[d] Collected on the Manas River.

lected the material on which *lydiae* was based, stated that the "voice [of *lydiae*] sounds something like a low whisper—'tsissi-tsissi-tsissi'—and differs conspicuously from the voices of other birds of the same species."

The significance of this difference is not clear. It may represent only an instance of geographical variation or signify that the two birds are not conspecific. A field comparison of the Mongolian population of nominate *pallasi* to *lydiae* should be undertaken to decide this question.

Kozlova (*loc. cit.*) and Portenko (*loc. cit.*) call the Mongolian population by the name *montana* Sushkin, but *Cynchramus pallasii* [*sic*] *montana* Sushkin, 1925, type locality, Chulyshman Plateau, southeastern Russian Altai, is not valid in my opinion (and of other authors also), and is a synonym of nominate *pallasi* Cabanis, 1851, type locality, western Transbaicalia near the Selenga River. At any rate, this name cannot be used in the genus *Emberiza*, as it is preoccupied by *Emberiza montana* Gmelin, 1788, a synonym of *Plectrophenax nivalis* Linnaeus, 1758. The preoccupation came to the attention of Grote (1931) who renamed it *Emberiza pallasi suschkiniana*.

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