

American Museum Novitates

PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY
CENTRAL PARK WEST AT 79TH STREET, NEW YORK 24, N.Y.

NUMBER 1786

SEPTEMBER 28, 1956

Systematic Notes on Palearctic Birds. No. 20 Fringillidae: the Genera *Leucosticte*, *Rhodopechys*, *Carpodacus*, *Pinicola*, *Loxia*, *Uragus*, *Urocynchramus*, and *Propyrrhula*

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INTRODUCTION AND ACKNOWLEDGMENTS

The following notes were made during a study of these genera in preparation of a contemplated check list of the Palearctic region. The present paper is longer than the earlier papers that have appeared in the series, because many of the species are not well known or are difficult, and the genus *Carpodacus* alone, with 17 species the majority of which are polytypic, is heavily represented in the Palearctic region. Among the 19 species discussed, those reviewed more in detail are *Leucosticte arctoa*, *Rhodopechys githaginea*, *Carpodacus rhodochlamys*, in which one form (*grandis*) may actually represent a separate species, a question discussed here in detail, *Carpodacus puniceus*, in which two new subspecies are described, *Loxia curvirostra*, and *Uragus sibiricus*. The last-named genus and the curious *Urocynchramus* are believed by me to be related, and this relationship is discussed.

Some of the species discussed, or some of their races, are very rare in collections, and I have had to draw heavily on the kindness of colleagues in various institutions who have been most obliging in lending me material or in furnishing information. I would like to express my gratitude for loans to Dr. Friedmann of the United States National Museum, Mr. Macdonald of the British Museum, Dr. Rand of the Chicago Natural

History Museum, and Dr. Stresemann of the Berlin Museum, and to Dr. Dorst of the Paris Museum for comparing some types, and Mr. Greenway for information from the files of the Museum of Comparative Zoölogy. Dr. Mayr has helped with advice, and Dr. Amadon has, as usual, not only read the manuscript but given me the benefit of his comments. I am very grateful to them, as also to Mme. Tatiana Gidaspova for translating several Russian texts.

Leucosticte arctoa

The Rosy Finch breeds on the Commander Islands, and this population was separated in 1915 as *maxima* by W. S. Brooks from *griseonucha* Brandt, 1842, type locality, Aleutian Islands, on the basis that the birds of the Commanders are larger and are darker on the interscapulars, lower throat, and breast than those of the Aleutians. Most subsequent authors have recognized the validity of *maxima* but apparently on the basis of measurements alone, for example, Hartert (1920, *Novitates Zool.*, vol. 27, p. 156). However, very few individual measurements have been published heretofore from these two groups of islands, and when an adequate series is compared one finds that *maxima* is not larger than *griseonucha* (see below). In view of the fact that in the specimens examined those in comparative plumage are identical in coloration also, one must conclude that *maxima* is a pure synonym of *griseonucha*.

In recent years the populations of the Pribilof Islands and St. Matthew Island have been separated from the population of the Aleutians as *umbrina* by O. J. Murie (1944, *Condor*, vol. 46, p. 122) as being darker. He adds that *umbrina* is darker and smaller than *maxima* which he believed to be larger than *griseonucha*.

The individual wing measurements given below show that *umbrina* averages very slightly smaller, but that the three forms are not separable on this basis because their measurements overlap too much. The race described by Murie is valid nevertheless, the specimens in comparative plumage that I have examined from the Pribilofs being constantly and distinctly darker above and below and on the head and throat than those from the Aleutians and Commanders. As stated above, the last two populations are identical.

Individual wing measurements of adults:

Commanders (Bering Island): Males, 115, 118, 119, 119, 120, 121, 121, 121, 121, 124 (120); females, 113+, 114, 114, 114, 116, 116, 117, 117, 119, 121 (116).

Aleutians (Adak, Atka, and Unalaska Islands): Males, 116, 116, 117, 117, 118, 118, 119, 119, 120, 121, 121, 121, 121, 122, 123, 124 (119.6); females, 112, 112, 112, 113, 113, 113+, 114, 115, 116+, 117, 118 (115).

Pribilofs (St. Paul, St. George, and Otter Islands): Males, 113, 115, 117, 118, 120, 121, 122 (118); females, 111, 112, 112+, 113, 114, (112.5).

The American authors separate the three forms mentioned above from the races of *L. arctoa* of the Old World under the species name *tephrocotis* (*tephrocotis* Swainson, 1832, type locality, Saskatchewan). However, these forms, as well as all the rosy finches of the New World, are geographically representative and may constitute but a single species. If so, the oldest name is *arctoa* Pallas, 1811, type locality, Siberia. The geographical variation of this group is complex and strongly marked and has been discussed in detail by Mayr (1927, Jour. Ornith., vol. 75, pp. 608-619) who believes that all its various forms are probably conspecific.

Rhodopechys githaginea

This species varies geographically, but this variation is slight. The populations at the extremes of the range are well differentiated (the Canaries in the west and southwestern Asia in the east), but they are connected by intervening populations with intermediate characters, nominate *githaginea* Lichtenstein, 1823, type locality, upper Egypt, being such an intermediate. The race of the Canaries is called *amantum* Hartert, 1903, type locality, Canaries, and that of Asia *crassirostris* Blyth, 1847, type locality, Afghanistan. In addition to these, the other forms that have been described are *zedlitzi* Neumann, 1907, type locality, Biskra, Algeria; *bilkewitchi* Zarudny, 1918, type locality, Transcaspia; and *theresae* Meinertzhagen (1939, Bull. Brit. Ornith. Club, vol. 59, p. 64, type locality, Taznakht, Ouarzazate district, southwestern Morocco). The form described by Zarudny is not valid and has already been synonymized with *crassirostris* by Dementiev (1934, L'Oiseau, p. 281). I believe that *theresae* should be synonymized with *zedlitzi*.

The geographical variation affects size and coloration. The individual measurements given below show, however, that size is not a good differentiating character, as these overlap to a greater or lesser extent in all populations. The shape of the bill has been used also for discrimination. Hartert separated *amantum* (along with color differences) on the basis of having a thicker bill than the other races, but this character is completely unreliable, as exactly the same range of individual variation prevails in all populations of the species.

The valid races are separable on the basis of differences in coloration, but the difference separating contiguous races is slight and not very constant and has led authors to conflicting opinions about the subspecific identity of their specimens or to question the validity of some races. For

instance, in the case of *amantum*, *zedlitzsi*, and nominate *githaginea* which replace one another from west to east, Lynes (1925, Mém. Soc. Sci. Nat. Maroc, vol. 12, p. 36) states definitely that the birds of southern Morocco are *amantum*, as was believed by Hartert and Jourdain (1923, Novitates Zool., vol. 30, p. 94), whereas Meinertzhagen (1940, Ibis, p. 131) states categorically that they are *zedlitzsi*. Niethammer (1955, Bonner Zool. Beitr., vol. 6, p. 75) states that *zedlitzsi* is not valid and is a synonym of nominate *githaginea*, adding that the difference between *amantum* and nominate *githaginea* is slight ("nicht bedeutend").

Niethammer was handicapped, however, by having only three specimens of nominate *githaginea*. When large series are compared the four valid races can be distinguished in specimens in comparative plumage as follows: *amantum* is the race most extensively and darkly suffused with rose in males and in both sexes is darker, richer "brown," on the mantle and crown than topotypical *zedlitzsi* which is paler, more "sandy." This latter, although more rosy than nominate *githaginea*, is paler on the mantle and crown, less "earthy" or "clay-brown," while *crassirostris*, although very similar to nominate *githaginea*, averages grayer and paler and is the least rosy. It should be emphasized again that these differences are slight and not very constant. For instance, in the specimens examined two or three out of 11 males of topotypical *zedlitzsi* are as dark and rosy as 15 males of *amantum*, while about half of the specimens in the long series of *crassirostris* scarcely differ from nominate *githaginea*.

It is amply sufficient to recognize nomenclaturally only the four races mentioned, but the populations of *zedlitzsi* available are not all uniform. A small series of seven specimens from Tunisia are less sandy and rosy than topotypical *zedlitzsi*; they are grayer and more or less intermediate between topotypical *zedlitzsi* and nominate *githaginea*. But the most interesting population is found in the Aïr in the southern Sahara. In this well-isolated population, the males are more extensively suffused with darker rose below and on the rump, and the females are more creamy and yellowish on the abdomen than in topotypical *zedlitzsi*. Also, as noted by Niethammer (*loc. cit.*) the rosy edges on the scapulars, upper wing coverts, secondaries [and also the primaries] are darker in the males from the Aïr, a stronger, more reddish rose. Niethammer adds that he suspects that the population of the Aïr is a distinct race, and this receives support from the measurements. In 11 male topotypes of *zedlitzsi* measured by me the wing measures 86–91 (89), tail 47–54 (51.2), tarsus 17–20 (18.1), as against, in my nine males from the Aïr, wing 84–88 (85.5), tail 43–50 (47.2), tarsus 16–18 (16.9). However, the nomenclatural separation of the population of the Aïr from *zedlitzsi* does not seem to be warranted. There is too much

overlap in individual measurements, and the differences in coloration are relatively slight. Further, occasional specimens can be found elsewhere within the range of *zedlitzi* (as at Aïn Sefra in western Algeria) which are identical in coloration with those of the Aïr.

Meinertzhagen separated *theresae* from *zedlitzi* as "Much paler . . . in fresh plumage the mantle is a pale grey-brown instead of a pale earth-brown." *Theresae* is known only from the two specimens collected by Meinertzhagen which in 1940 (*loc. cit.*) he emphasized to be in very fresh plumage. The difference may be a plumage stage, and, as stated above, topotypical *zedlitzi* varies individually. In my series of topotypes, some specimens in fresh plumage are grayish, while others are sandy or brownish. In view of this individual variation and the observations made above on the geographical variation in *zedlitzi*, it would seem that *theresae* requires confirmation based on a sufficiently large series in various plumages.

Individual measurements in adult males:

Rhodopechys githaginea amantum (Canaries): Wings, 82, 83, 83, 83, 83, 83, 83, 84, 84, 84, 85, 86, 87, 87, 88 (84.3). The type, included in this series, measures 83.

Rhodopechys githaginea zedlitzi (from Biskra): Wing, 86, 87, 88, 89, 89, 90, 90, 90, 90, 91 (89); tail, 47, 49, 50, 51, 51, 51, 51, 52, 53, 54, 54 (51.2); tarsus, 17, 17, 17.5, 17.5, 18, 18, 18, 18, 18.5, 20, 20 (18.1). The type, included in this series, measures, respectively, 91, 54, 18.5. (From the Aïr): Wing, 84, 84, 84, 85, 86, 86, 86, 87, 88 (85.5); tail, 43, 45, 46, 47, 47, 48, 48, 50, 50 (47.2); tarsus, 16, 16, 16.5, 17, 17, 17, 17.5, 18 (16.9).

Rhodopechys g. githaginea (Egypt and Sudan): Wing, 80, 82, 82, 83, 83, 84, 84, 84, 84, 85, 85, 86, 86, 86, 88, 89 (84.4).

Rhodopechys githaginea crassirostris (Near East, Iran, and Afghanistan): Wing, 84, 84, 86, 87, 87, 87, 88, 88, 88, 88, 90, 90, 91 (87.6).

SPECIMENS EXAMINED: *Rhodopechys g. amantum*, 27 specimens from the Canaries including the type and paratypes of *amantum*. *Rhodopechys g. zedlitzi*: Morocco, six specimens; Algeria, 24 specimens including the type and paratypes of *zedlitzi*; Tunisia, seven specimens; Aïr, 15 specimens. *Rhodopechys g. githaginea*: Egypt, 19 specimens; Sudan, six specimens. *Rhodopechys g. crassirostris*: Near East, two specimens; Iran, 46 specimens; Afghanistan, five specimens; Sind, four specimens.

Rhodopechys mongolica

Rhodopechys mongolica Swinhoe, 1870, type locality, Nankow Pass [Hopeh], is often treated as a race of *R. githaginea*. I have discussed this question in detail in an earlier paper (1949, Amer. Mus. Novitates, no. 1424, pp. 30–36) and given a map of distribution showing that they are sympatric over a very wide region extending from eastern Afghanistan

westward through eastern and northern Iran to Transcaucasia. The two are superficially similar but are separate species that differ in many details of pigmentation and pattern, including the immature plumage. Available information suggests also that they differ in their habits and ecological preferences.

Carpodacus rubescens

Two races of Blanford's Rose Finch are recognized by some authors: nominate *rubescens* Blanford, 1871, type locality, Sikkim, with range in the Himalayas and Tibet, and *saturatior* Rothschild, 1922, type locality, northwestern Yunnan. The latter was separated as "being much darker and deeper [in] coloration all over." Kinnear (1937, *Ibis*, p. 475) came, however, to the conclusion that *saturatior* is not valid because it had been based on a comparison of freshly collected with faded skins. In subsequent papers, he (1944, *Ibis*, p. 354) and Ludlow (1951, *Ibis*, p. 568) treated the species as monotypic, Kinnear adding that a large series of freshly collected material from southeastern Tibet shows that males vary individually in depth of coloration, and Ludlow stating that two males from Showa [east of the big bend of the Tsangpo] are identical with specimens from Yunnan.

The comparative material available to me was too restricted and much too old on which to base an opinion, but Mr. Macdonald has kindly lent me additional specimens from the Himalayas, southeastern Tibet, and Yunnan in the collection of the British Museum. They include one of the two males from Showa. This material reveals a slight amount of geographical variation. The males from Yunnan are darker, and their red pigments are less bright and rosy, duller, more brownish; the females are darker and duller brown, while specimens from southwestern Tibet are about intermediate between those of Yunnan and the Himalayas. All the differences are very slight, however, and it is probably best not to recognize any subspecies. Mr. Macdonald has also the kindness to compare the material in London and, in his correspondence, made much the same remark as I have done about the different tone in the red pigments.

Carpodacus nipalensis

Kinnear (1937, *Ibis*, p. 475) has expressed the opinion that *intensicolor* Baker, 1925, type locality, northern Yunnan, is not separable from nominate *nipalensis* Hodgson, 1836, type locality, Nepal. He states that it seems that *intensicolor* was based on a comparison of fresh with old and faded skins, because his specimens collected in the Himalayas in Bhutan in 1933 and 1934 cannot be separated from specimens collected in

Yunnan and Tonkin in 1918, whereas older skins collected in 1880 in the Himalayas in Sikkim and Nepal are less dark than the specimens from Bhutan.

In an earlier note on this species (1949, Amer. Mus. Novitates, no. 1424, pp. 44-45) I stated that specimens collected recently in the Himalayas (Darjeeling and Nepal) in 1936 and 1947 are not so deeply saturated as topotypes of *intensicolor* collected in 1921 and 1934. It seemed to me that *intensicolor* was a valid, though but slightly differentiated, race. In the same paper, I remarked that *kangrae* Whistler (1939, Bull. Brit. Ornith. Club, vol. 60, p. 16, type locality, Dharmsala, northern Punjab), described as less intensely saturated than nominate *nipalensis*, required confirmation, as it had been based on a small series, some of the specimens of which had been collected in 1870. The difference noted by Whistler might have been caused by fading. However, since this remark was published, additional specimens have become available to me and show that specimens collected in the western Himalayas in 1948 in Tehri differ from nominate *nipalensis* by being paler and browner in both sexes, but the difference is slight.

While it may be desirable to recognize three subspecies, it should be emphasized that a cline of increasing saturation apparently runs from west (*kangrae*) to east (*intensicolor*), and that although these two are well differentiated from each other they are but poorly differentiated from the nominate race which is not only intermediate in characters but intervenes geographically.

Carpodacus pulcherrimus

The Beautiful Rose Finch has been reviewed by Stresemann (1930, Ornith. Monatsber., vol. 38, pp. 74-75). This reviewer gives the type locality of the subspecies *argyrophrys* Berlioz, 1929, as "Szetschwan, Tatsienlu and Tseku," whereas Peters (1943, Bull. Mus. Comp. Zoöl., vol. 92, p. 99) states that the type is from "Kansu, Mt. Lieuhoashan (between Choni and Titao)," so a comment on the correct type locality seems desirable.

Stresemann accepted the type locality as "Tatsienlu and Tseku," because these were the only localities mentioned by Berlioz when he proposed *argyrophrys* (1929, Bull. Mus. Hist. Nat. Paris, ser. 2, vol. 1, pp. 130-131), but this last author, although he fails to make it clear, was apparently merely providing a new name for *Erythrina* [= *Carpodacus*] *dauidiana* Bangs and Peters (1928, Bull. Mus. Comp. Zoöl., vol. 68, pp. 374-375) which he shows is distinct from *Carpodacus dauidianus* Milne-Edwards, 1865.

Berlioz did not state he had examined the specimens of Bangs and Peters from Kansu, but he apparently did so, as a note by Bangs in Peters (1943) implies. Mr. Greenway, in addition, has kindly informed me that the correspondence between Bangs and Berlioz shows that Bangs had sent specimens to Berlioz but that Bangs had no specimens from "Tatsienlu and Tseku." The type and type locality must therefore agree with the material of Bangs and Peters and accepted as stated by Peters in 1943, Bangs being apparently the one who selected the type locality as Kansu.

Carpodacus vinaceus

In this species, Greenway (1933, Bull. Mus. Comp. Zool., vol. 74, p. 164) has separated as *rubidior*, type locality, To La, the population of northern Yunnan from nominate *vinaceus* Verreaux, 1871, type locality, Szechwan, as being darker in both sexes. The material examined by me suggests, however, that *rubidior* is a pure synonym of nominate *vinaceus* and that only one race occurs on the continent (the only other and valid race is *formosanus* Ogilvie-Grant, 1911, which is restricted to the mountains of Formosa and is distinctly larger and darker). This material consists of one male and two females from northern Yunnan collected from July to September which are identical in every way with nine males and eight females collected during the breeding season in southern Shensi and seven males and six females collected during the fall and winter at Wahnsien and Sungpan in Szechwan. The material available to Greenway consisted of two males and two females collected from July to October or November in Yunnan and eight of both sexes from Szechwan and Hupeh, some of which had been collected in May and December. This species is not known to be migratory. This is confirmed by the dates above which show, however, that, as reported by Schäfer (1938, Jour. Ornith., vol. 86, Sonderheft, p. 306) and by the specimens collected at Wahnsien, it moves altitudinally, coming down to lower elevations in winter.

Carpodacus thura

In 1936 and 1938, Ludlow collected a very fine series of this species in southeastern Tibet, on which Kinnear (1940, Bull. Brit. Ornith. Club, vol. 60, p. 56) based a new subspecies which he called *charmensis*, type localities Kyimpu and Le La. The new race differs distinctly from nominate *thura* Bonaparte and Schlegel, 1850, type locality, Sikkim, but whether or not it differs sufficiently and constantly from *femininus* Rippon, 1906, type locality, northwestern Yunnan, is open to question. Kinnear stated that the males of *charmensis* and *femininus* were not separable,

but that female *charmensis* was whiter below and not so brown above as female *femininus*. In a subsequent paper by Ludlow and Kinnear (1944, Ibis, p. 351) where *charmensis* was inadvertently renamed *chayulensis*, Kinnear stated that he found upon reëxamination that both sexes are paler in *charmensis* than in *femininus*.

No specimens of *charmensis* are available to me but, judging by an independent note on this form published subsequently by Ludlow (1951, Ibis, p. 567), it does not seem to differ very distinctly or constantly from *femininus*. Ludlow states that *charmensis* is only "somewhat" paler than *femininus* and that the difference is one of average only, as individual specimens of both are identical. In view of the fact that all the other races of *C. thura* are very distinct, it seems to me that the recognition of an additional race that is not well differentiated can serve only to confuse the geographical variation of the species as expressed in the nomenclature. It seems best therefore to synonymize *charmensis* with *femininus*.

The differences between female *charmensis* and female nominate *thura* expressed by Kinnear (lack in *charmensis* of chestnut-brown on the throat and breast, paler edges on the feathers of the upper parts, and a creamy white rather than brown postocular streak) are not relevant to the validity of *charmensis*, because these are precisely the same differences by which female *femininus* differs from female nominate *thura*.

Carpodacus edwardsii

Mayr, in a note on this species (1941, Ibis, p. 359), has shown that *saturatus* Blanford, 1872, type locality, Sikkim, is a valid subspecies. It had been synonymized with nominate *edwardsii* Verreaux, 1871, type locality, eastern Sikang, by Kinnear (1937, Ibis, p. 473). My examination of the material used by Mayr confirms his findings (but see note on nomenclature below), and, as he states, the entire plumage in male *saturatus* is more heavily suffused with red and is less brownish on the under tail coverts and on the center of the belly than in nominate *edwardsii*. He adds that the back is more heavily streaked in *saturatus* but the crown less so than in nominate *edwardsii*. This is correct as far as the mantle goes, but in my opinion the comparative streaking of the crown is not a good character. The streaking on the crown varies individually, and, although it averages less heavy in *saturatus*, the same or about the same range of variation prevails in both subspecies. Mayr did not discuss the females, but a good series of both shows that female *saturatus* is more heavily streaked above and below and, besides, is more heavily saturated with brown throughout in skins of comparative age collected in fairly recent years (1934 to 1939). There is a slight difference

in average measurements. For instance, in adult males the wing length measures 79, 80, 80, 80, 81, 81, 81 (80.3) in nominate *edwardsii* as against 79, 81, 82, 83, 83, 85, 86, (82.7) in *saturatus*.

In the same paper, Mayr states that a series of paratypes of *rubicunda* Greenway (1933, Bull. Mus. Comp. Zool., vol. 74, p. 163, type locality, Su Wa Tong on the Salween-Irawaddy Divide, Tibet [= Tuwa in south-western Sikang]) shows that this name is a pure synonym of *saturatus*.

Two remarks may be made upon the range. In the paper by Stresemann, Meise, and Schönwetter (1937, Jour. Ornith., vol. 85, pp. 434-443) this species is not included in a list of the birds known to occur in northwestern Kansu, although Hartert (1903, Die Vögel der paläarktischen Fauna, p. 104) had included Kansu within the range of the species. Two specimens in the Rothschild Collection, one adult of each sex, collected by Berezowsky in 1886 in "Kansu" in the region of "Si-gu" [= Si ku, at about latitude 33° 30' N., longitude 104° 20' E.], southern Kansu, confirm Hartert, and it seems worth while to mention this record, as the authoritative paper of Stresemann and his co-authors summarizes virtually all that we know about the birds of Kansu, and it seems desirable to mention that the species may occur there. The species is found also in northern Yunnan and has been collected south to the Likiang Range, but all the records from this region seem to be of birds collected before or after the breeding season. However, the Rothschild Collection does contain specimens from the Likiang Range collected in July and August, and it seems probable that it breeds there.

NOMENCLATURE: The name *saturatus* Blanford, 1872, is unfortunately preoccupied in the genus *Carpodacus* by *Linota saturata* Blyth, 1842, a synonym of *Carduelis nipalensis* Hodgson, 1836 [= *Carpodacus nipalensis* (Hodgson) 1836]. The name *rubicunda* Greenway, 1933, is next available. Wolters (1953, Bonner Zool. Beitr., vol. 3, p. 279), apparently unaware of the existence of *rubicunda*, has supplied a new name for *saturatus* Blanford, renaming it *tongluensis*. In this paper Wolters merges the genus *Carpodacus* Kaup, 1829, with *Carduelis* Brisson, 1760, but I do not believe this action to be warranted. The correct names of the two races of this species will then stand as nominate *edwardsii* Verreaux, 1871, and *rubicunda* Greenway, 1933.

Carpodacus rhodochlamys

This interesting rose finch inhabits the mountains of Mongolia, Russian and Chinese Turkestan, and northern Afghanistan, and the northwestern Himalayas. Some of these regions are very complex in their topography, and its distribution is not too well known. It consists of two very well-

differentiated forms which virtually all authors have considered to be conspecific, but which Korovin (1934, Bull. Univ. Asie Centrale, Tashkent, vol. 19, pp. 67-74) believes are separate species. Other forms have been described and are briefly discussed below.

In view of the possibility that two species may be involved, the morphological differences that separate them may be described in some detail with remarks on the distribution. These two are *rhodochlamys* Brandt, 1843, type locality, "Russian Altai" but probably Tarbagatai¹ (hereafter called nominate *rhodochlamys*) and *grandis* Blyth, 1849, type locality, above Simla, northern Punjab.

The males of nominate *rhodochlamys* are more richly and brightly colored than male *grandis*. They are more strongly suffused with red above, less brownish, and more heavily striated with blacker streaks. The difference on the rump is particularly sharp; it is very bright carmine rose in nominate *rhodochlamys* but comparatively very dull rose in *grandis* and invaded with brownish. The red pigments on the face and under parts are somewhat different; they are redder in nominate *rhodochlamys* in the superciliary stripe, on the lores, cheeks, chin, and throat, and brighter rose with a very faint suggestion of orange on the rest of the under parts, these being duller and more vinaceous rose in *grandis*. In nominate *rhodochlamys*, but not in *grandis*, a band of small rosy feathers with silvery tips extends across the forehead at the base of the bill but silvery-tipped feathers are more conspicuous in *grandis* (fig. 1) on the ear coverts and in the superciliary stripe. These differences on the forehead, stripe, and ear coverts are not perfectly constant and are discussed below as they are of interest. Finally, male nominate *rhodochlamys* has blacker quills in the wings and tail. The females of both are virtually identical in coloration; the only difference, and that not very evident, is that nominate *rhodochlamys* is more sharply streaked above.

The differences in coloration are correlated with several differences of structure. The proportions are very different. In *grandis* the wing is longer, but the tail is absolutely as well as proportionately shorter. In 10 males of each the measurements are: nominate *rhodochlamys*, wing, 86, 87, 88, 88, 88, 89, 89, 89, 90 (88.2), tail, 79, 79, 80, 80, 81, 82, 82, 83, 84, 84 (81.4), wing/tail ratio, 92; *grandis*, wing, 91, 92, 93, 93, 93, 95, 96, 96, 96, 97 (94.2), tail, 70, 70, 70, 71, 72, 72, 73, 73, 73, 75 (71.9),

¹ Brandt's type specimens have disappeared, according to Korovin and also Johansen (1944, Jour. Ornith., vol. 92, pp. 48-49), but Korovin believes that they probably had been collected in the Tarbagatai. Johansen states that the species is not known to breed in the Russian Altai and that it is known in that region only from a single specimen collected in the fall along the southern border of the Altai, probably a stray.

wing/tail ratio, 77. The wing tip is shaped differently. It is distinctly rounder in nominate *rhodochlamys*, where the outermost primary tends to be shorter than in *grandis*, and the fifth is distinctly longer and subequal to the outermost, whereas in *grandis* the fifth is always shorter than the outermost, sometimes very distinctly so by as much as 5 or 6 mm. In both forms the second, third, and fourth are subequal. These differences in the shape of the wing tip cannot be accounted for by altitude or migratory movements. Both live in high mountains, probably at similar altitudes, and are not migratory, their movements being altitudinal, to and from the neighboring plains with the season. The bill of nominate *rhodochlamys* is slightly more massive and highly arched, very slightly shorter, differences which are best shown in a photograph (fig. 1). Finally, the tarsus

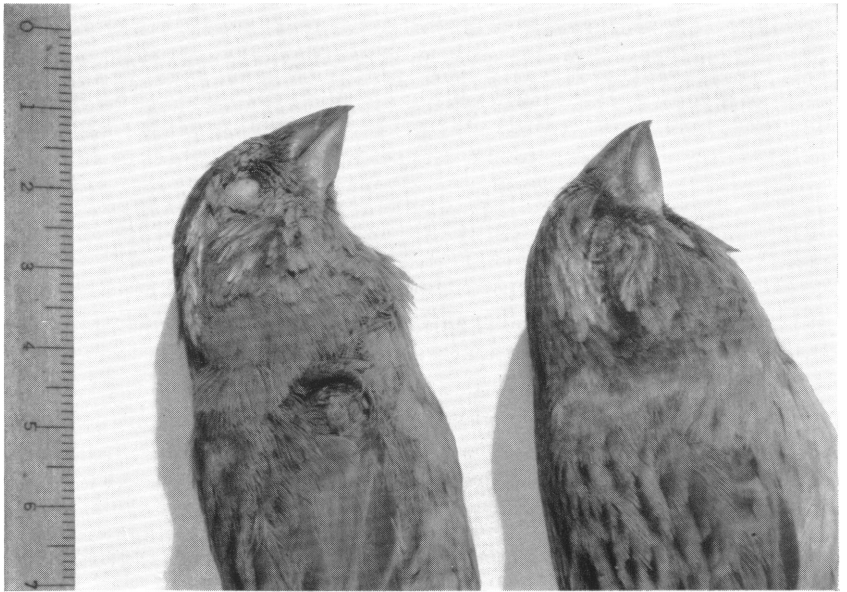


FIG. 1. Shape of the bill of *Carpodacus rhodochlamys*, natural size. Left, *C. r. grandis* from Kashmir; right, nominate *rhodochlamys* from Russian Turkestan. Both specimens are adult males.

of nominate *rhodochlamys* tends to be slightly or distinctly heavier, and the toes and claws average very slightly stronger.

Our present knowledge of the distribution seems to show that the two forms are allopatric and approach each other only in Russian Turkestan in the western and central Tian Shan in the mountains which surround the Vale of Ferghana, nominate *rhodochlamys* breeding in the mountains to the northwest (Chatkal Tau), north (Talas Ala Tau), and northeast

(Ferghana Range) of the valley and *grandis* in the mountains (Alai Range) that close in the valley in the south. This has been questioned. The statement of Korovin (*loc. cit.*), in the French résumé where he says that the range of *grandis* is "au Sud de l'aire de *E. rhodochlamys*," seems to show that he believes they are allopatric, but seemingly this is contradicted in the Russian text. There he places *grandis* within the range of nominate *rhodochlamys* and the latter within the range of *grandis*. He says that *grandis* occurs in the Ferghana Range (Chaty Pass), Kuksarai Mountain (not located), at Lake Sary and in the Patsha Ata River Basin (both in the Chatkal Tau), and possibly in the basin of the Chirchik River (west of the Chatkal Tau). All these localities or regions are within the range of nominate *rhodochlamys*.

Concerning the occurrence of the latter within the range of *grandis*, he says that [nominate] *rhodochlamys* occurs "in southwestern and southern Ferghana," stating that it is known from Gulcha, and from the eastern Alai at Sufi Gurgan and from "Agatchar" (not located). It is not clear whether these statements are based on original data or on the statements of Zarudny, quoted by Korovin. Zarudny, according to Hartert (1921, *Die Vögel der paläarktischen Fauna*, pp. 2057-2058) had stated in the description of *kotschubeii* (1913, type locality, the mountains surrounding Ferghana Valley) that "typical *rhodochlamys* occurs in isolated colonies in the southern mountain range . . . namely in the eastern Alai," but Hartert comments "but probably not during the breeding season." The question whether or not the two forms are sympatric must await further collecting during the breeding season.

Korovin states that there are no intermediates between the two forms. I did not examine specimens that were intermediate in a strict sense, but some that I have seen suggest that some interbreeding occurs. I mention above differences in coloration about the head that were not constant. Six of the 25 males of nominate *rhodochlamys* available to me from Russian Turkestan lack the band of rosy feathers on the forehead characteristic of this form, or it is barely suggested, while three of the 12 males of *grandis* available show a suggestion of this band, and several specimens of nominate *rhodochlamys* show just about as many silvery-tipped feathers on the ear coverts and in the superciliary stripe as do the most typical specimens of *grandis*.

The original description of *kotschubeii* is not available to me, but according to Hartert (*loc. cit.*) this form was described as being intermediate in some characters between nominate *rhodochlamys* and *grandis*, namely, larger than nominate *rhodochlamys* but smaller than *grandis*, with the back colored as in nominate *rhodochlamys* but similar to *grandis*

in that it lacks a band of rosy feathers on the forehead. Two male specimens that I have examined from Ferghana¹ correspond more or less to this description. They are similar to *grandis* in structure (with the same bill, wing tip, proportions, and measurements, measuring, wing 93, 93.5, and tail 75, 75) but are more strongly suffused with red above, on the crown, back, and rump, and very slightly brighter carmine below and tend also to be more sharply streaked on the mantle. One has no frontal band, but in the other a few tiny silvery feathers are barely suggested. These two males, while still much closer to *grandis* in general coloration, are beginning to show an approach to the pigmentation of nominate *rhodochlamys*.

Three females have been examined from Ferghana, one collected on May 19 at Zardali, one at 13,300 feet on the "Tash Kuh" on May 27, and the third at Margelan on December 12. This last locality is in the bottom of the Vale, and at this date and altitude the bird was not on its breeding grounds. In females the difference in coloration is too slight to be truly diagnostic, especially in the two spring birds which are in worn plumage. All three specimens have the typical bill of *grandis* and the ones from Zardali and Margelan its wing tip and measurements (i.e., long wing but short tail, measuring, wing 92, 95+, tail 70, 71), but the bird from Tash Kuh, which at this date and altitude was probably on its breeding grounds, has the typical wing formula of nominate *rhodochlamys* and its measurements (wing 86, tail 80+). If it were not for the shape of its bill, one would be tempted to identify this bird as nominate *rhodochlamys*.

The problem as to whether we are dealing with one or with two species cannot be solved by the data presented above, but they are given in detail in view of the importance of the question. The data can be summarized by the statement that the sharp morphological differences suggest two species but that there is some evidence of interbreeding. Until the distribution becomes better known it is probably best to recognize only one species.

The additional forms that have been described in addition to *kotschubeii* are two by Korovin in the paper cited (*obscurata*, type locality, Talas Ala Tau, western Tian Shan, and *kashgarica*, type locality, Kokche Darya, Chinese Turkestan) and one by Koelz which he called *bendi* (1949, Auk, p. 209, type locality, Bend i Turkestan Range, western Afghanistan).

The "Birds of the Soviet Union" (1954, vol. 5, pp. 254-256) has synonymized *kotschubeii* with *grandis* and *obscurata* with nominate

¹ Collected at "Zardali" on May 25, and at 10,000 feet at "Kara Karyn," localities I cannot find but which from the dates and localities of other specimens from the same collection are in Ferghana.

rhodochlamys. In my opinion, however, it is probably desirable to retain *kotschubeii*, if only to call attention to the problem discussed above, although it is very poorly differentiated from *grandis*, and there is some question about its range.

I follow the "Birds of the Soviet Union" in considering *obscurata* to be a synonym of nominate *rhodochlamys*, and I believe *kashgarica* is probably best synonymized with it also. It is possible that a cline of decreasing saturation runs from west to east in Turkestan and that Korovin's races are valid, but their recognition must await comparison with an adequate series of nominate *rhodochlamys*. Korovin says he had trouble in obtaining "typical" specimens of nominate *rhodochlamys*, as its type locality is uncertain. According to him, *obscurata*, which he says is darker and more richly colored than nominate *rhodochlamys*, breeds in the Tian Shan from Przhevalsk westward to the Transilian Ala Tau and the Talas Ala Tau, and also in the Dzungarian Ala Tau, occurring in Semirechia, Djarkent, and Tashkent, etc., in the winter. The 25 males that I have examined from Russian Turkestan are from these regions and should be *obscurata* if this race is valid. They are richly colored, but a lone male from northern Mongolia, included by Korovin within the range of nominate *rhodochlamys*, is not paler. Specimens from Chinese Turkestan, the population of which Korovin described as *kashgarica* on the basis that it is paler than nominate *rhodochlamys*, are not available to me.

I have examined all the specimens from western Afghanistan which were separated as *bendi* from *grandis* as "very similar" to, but "slightly paler" and less conspicuously streaked than, *grandis*. In an earlier note on this species (1949, Amer. Mus. Novitates, no. 1424, pp. 47-49) I recognized *bendi* but emphasized that its characters are very slight. After studying the species in detail, I am now convinced that it would be misleading to recognize *bendi*. It is even less differentiated from *grandis* than is *kotschubeii*.

Carpodacus rubicilloides

Colonel and Mrs. Meinertzhagen (1926, Bull. Brit. Ornith. Club, vol. 46, p. 83) have described two races of this species, namely, *lucifer*, type locality, southern Tibet, and *lapersonnei*, type locality, eastern Ladak. The first was said to be slightly darker above and with the crimson on the head and lower parts more intense in males than in nominate *rubicilloides* Przevalski, 1876, type locality, Kansu. The second was said to be paler above and below than nominate *rubicilloides*. Kinnear subsequently remarked (1937, Ibis, p. 474) that the differences observed by the Meinertzhagens between the two new races were due to the fact that the specimens they described as *lucifer* were in worn plumage while those

described as *lapersonnei* were in fresh or slightly worn plumage. Kinnear accepts only *lucifer*, stating that it is larger than nominate *rubicilloides* but "practically identical" in coloration.

I had unfortunately overlooked this remark in preparing my earlier note on this species (1949, Amer. Mus. Novitates, no. 1424, pp. 52-53), accepted *lapersonnei* as valid and made no mention of *lucifer* because my material from Tibet was insufficient, consisting of only one specimen in worn plumage. My series from the northwestern Himalayas (northern Punjab, Ladak, and Kashmir) measured larger than a series of topotypes of nominate *rubicilloides*, and, while the specimens in worn plumage in both series (as well as the specimens from Tibet) were identical in coloration, specimens from the northwestern Himalayas in fresh unworn plumage were paler.

Since my note was published, Ludlow (1951, Ibis, p. 568) has revised the species again, working with a very much larger series from Tibet and the Himalayas than the one available to me and which apparently contains specimens in all plumages. He restates the conclusion reached by Kinnear, namely, that only one slightly larger race is recognizable from Ladak to Tibet, adding that there is "no appreciable difference" in color between this race and nominate *rubicilloides*. He states that this race "must bear the name *lucifer*," because this name has line priority over *lapersonnei*. Kinnear, the first reviser, also chose *lucifer*, so the name *lapersonnei* becomes a synonym.

The color difference that I noted between my specimens in fresh plumage from the northwestern Himalayas and Kansu is apparently not well shown by the much larger material available to Kinnear and Ludlow. Nevertheless, my specimens suggest that at the western end of the range the population tends to be slightly paler in fresh plumage and perhaps slightly larger (see below) though not sufficiently so for the recognition of *lapersonnei* to be warranted.

Measurements of the length of the wing are:

Nominate *rubicilloides* from Kansu, according to Meise (1937, Jour. Ornith., vol. 85, p. 467), 20 males 102-107 (105.0), 13 females 98-102 (100.4); according to Ludlow, six males 102.5-107 (105.0), five females 98-103 (101.5); according to Vaurie (1949), five males 103-105 (104.0), two females 100, 100.

Carpodacus rubicilloides lucifer from Ladak to southeastern Tibet, according to Ludlow, 23 males 107-112.5 (109.5), 18 females 97-107 (104.5); from the northwestern Himalayas ("*lapersonnei*") according to Vaurie (1949), 10 males 108-114 (110.7), five females 103-109 (106.4).

Carpodacus rubicilla

Koelz (1939, Proc. Biol. Soc. Washington, vol. 52, p. 74) has separated the population of the northwestern Himalayas as *ebilis*, type local-

ity, Rupshu, Kashmir, from *severtzovi* Sharpe, 1886, type locality, Karakoram, on the basis that *ebilis* is darker and larger. Whistler (1942, Jour. Bombay Nat. Hist. Soc., vol. 43, p. 36) has rejected *ebilis* as invalid, stating that he, as well as several other workers including Hellmayr (1929, Field Mus. Nat. Hist., zool. ser., vol. 17, pp. 47-48), has found that the populations of the northwestern Himalayas and Turkestan are not separable. In my earlier note on this species (1949, Amer. Mus. Novitates, no. 1424, pp. 49-50) I stated that I agreed with these authors that there was no difference in coloration but accepted *ebilis* as valid because my measurements showed that it was larger, a position I no longer hold.

In 1949 I gave measurements that showed no overlap between *ebilis* and *severtzovi*, though the difference was slight enough and the series so small that some overlap could be taken for granted. I now find that overlap does occur, having measured additional specimens of *severtzovi* with a wing length of 120 and a tail length of 91, the average wing length in *ebilis* being 120 and the average tail length 91 and 116 and 86.5, respectively, in *severtzovi*. In view of the fact that the alleged color characters of *ebilis* do not hold (see above) it becomes at best a very ill-defined race and is probably best not recognized.

The question whether or not *altaicus* Dementiev (1934, L'Oiseau, p. 285, type locality, central Altai) is valid is still open to question. I believe, as stated in 1949, that pending confirmation this name is best synonymized with *kobdensis* Sushkin, 1925, type locality, northwestern Mongolia. The recently published "Birds of the Soviet Union" (1954, vol. 5, pp. 249-253) makes no mention of *altaicus* and includes the Altai within the range of *kobdensis*.

The question of the type locality of *severtzovi* has seen many vicissitudes, but it must be accepted now as the Karakoram. Sharpe gave it as "Turkestan and Yarkand," but Kinnear (1933, Ibis, p. 663) has shown that the only male available to Sharpe came from the Hume Collection and had been collected at Toghrasu, near Shadulla, in the Karakoram. Prior to this, Kinnear (1922, Ibis, p. 523) had restricted the type locality to Kashgar. Sushkin (1925, Proc. Boston Soc. Nat. Hist., vol. 38, p. 12) had restricted it to Yarkand, and Hellmayr (*loc. cit.*) to Tam Karaul, upper Sanju River.

Carpodacus puniceus

The Red-breasted Rose Finch inhabits wild, open, rocky country well above the tree line from about 12,000 to 17,000 feet altitude and is not a well-known species. Specimens from the Himalayas and Sikang are fairly well represented in collections, but they are very scarce from both

extremes of the range: western Sinkiang in the west, northeastern Tsinghai, Kansu, and northern Szechwan in the east. Four races are currently recognized which, ranging from west to east, are: *humii* Sharpe, 1888, type locality, "Interior of N. W. Himalayas," and here restricted to Kotgarh in northern Punjab, the first locality cited by Sharpe in his list of three specimens, the others being "Borenda Pass" and "Thibet"; nominate *puniceus* Blyth, 1843, type locality, "Himalaya" but the type of which is from Nepal in the Hodgson Collection, according to Sharpe (1888, Catalogue of the birds in the British Museum, vol. 12, p. 433); *szetschuanus* Bianchi, 1907, type locality, southeastern Kansu and northern Szechwan, here restricted to Lungau (now Pingwu) in northern Szechwan, one of the localities cited by Bianchi¹; and *longirostris* Przevalski, 1876, type locality Gadjur, a locality that, according to Przevalski (1876, Mongol i Strana Tangut, vol. 2, p. 96), is "in the mountains south of the river Tetung" in "Kansu," a region that on current maps is shown in northeastern Tsinghai near the border of Kansu.

The distribution of the specimens that I have examined and the type localities are shown in figure 2. In this figure, nominate *puniceus* is omitted.

The geographical variation affects coloration and size, the differences in size that are the most clear cut being those in the length of the bill. The authors who have discussed this variation so far have been handicapped by not having specimens of *longirostris* and *szetschuanus*. For instance, in the only two specimens (a pair) available to me from Sikang, the population of which has always been referred to *szetschuanus*, it was obvious that the male did not match at all the male paratype of *szetschuanus* mentioned above. These two specimens were originally part of the very fine series collected by Rock which Riley (1931, Proc. U. S. Natl. Mus., vol. 80, art. 7, pp. 78-79) had assigned to *szetschuanus*, stating, however, that "the present series was taken a long way south of the known range of *szetschuana* and it may not represent the race at all, but only a direct comparison can decide." I had also a lone female from the small series of two adult females and two adult males collected by Abbott in western Sinkiang which Richmond (1896, Proc. U. S. Natl. Mus., vol. 18, pp. 576-577) had identified, more or less tentatively, as "nearer" *longirostris*, stating that he had not examined specimens of the latter. In view of the fact that this female differed from the females of all

¹ *Carpodacus puniceus szetschuanus* was based by Bianchi on specimens collected by Berezowsky, and one of these, an adult male, which I consider therefore to be a paratype, found its way into the Rothschild Collection. It was collected near Lungau on June 6, 1893.

the other populations available to me and the population of Sikang seemed also to be distinct, I applied to Dr. Friedmann of the United States National Museum who very kindly lent me the specimens to reconstitute the series of Rock and Abbott. Dr. Stresemann, in turn, was also very kind and lent me two of the three adult males in the Berlin Museum collected by Beick at Kimar and Mantuse in northeastern Tsinghai on the watershed of the Tatum and Sining rivers and which are therefore vir-

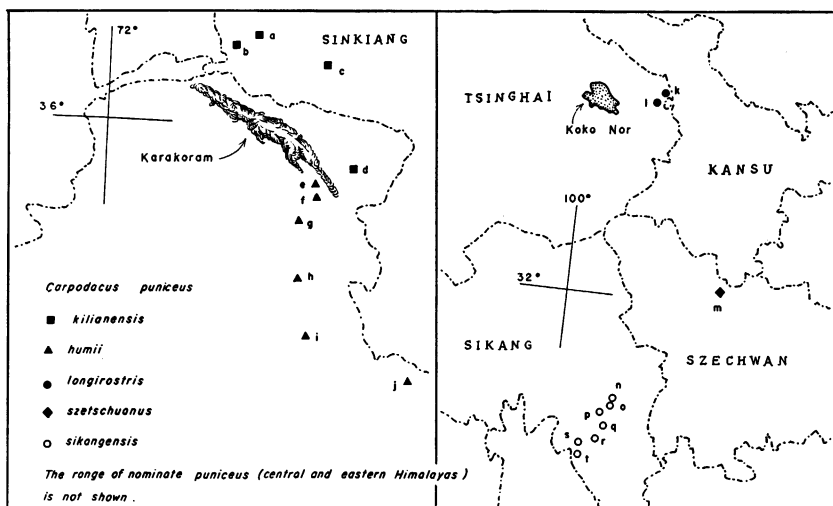


FIG. 2. Distribution of *Carpodacus puniceus* at western end of its range (left) and at eastern end (right). Localities: a, Terek Pass, 13,300 feet; b, Tagdumbash Pamir, 14,000 feet; c, Kilian Pass, 15,000 feet; d, "above Tar Sar," 12,000 feet (not located but, according to the collector's itinerary, not far from Sumdo); e, Numbra Valley, below the Saser Pass, 16,000 feet; f, Khardung, 16,000 feet, north of Leh; g, Bok, Zaskar; h, Kulang, Lahul; i, Kotgarh; j, Sumdu-Ralam Pass, northern Kumaon; k, Gadjur; l, Kimar and Kimar Pass; m, Lungan (now Pingwu); n, Chengtze, between 14,500 and 15,900 feet; o, Chiprin La, 16,500 feet; p, Bruolokong Valley, north of Druduron Pass, between 13,000 and 15,900 feet; q, Mt. Konka, between 16,000 and 16,500 feet; r, Yankongran Pass, 15,500 feet; s, Mt. Mitzuga above Muli, between 15,200 and 15,600 feet; t, Mt. Gibboh, between 13,000 and 14,000 feet.

tual, if not actual, topotypes of *longirostris*. These specimens were of critical importance to determine whether or not the population of western Sinkiang differs from *longirostris*. The material as gathered unfortunately lacks females of *longirostris* and *szetschuanus* but shows clearly that six rather than four subspecies should be recognized. The two additional ones I propose to separate as follows:

Carpodacus puniceus kilianensis Vaurie, new subspecies

TYPE: A.M.N.H. No. 258994; adult female; north side of the Kilian Pass at 15,000 feet, western Kun Lun, Sinkiang; August 5, 1893; W. L. Abbott, collector.

DIAGNOSIS: Adult female differs very sharply from adult females of the races examined in which female specimens are available (*humii*, nominate *puniceus*, and the new race described from Sikang) by having the feathers of the lower throat and breast broadly margined with maize yellow and with narrow lanceolate brown shaft streaks, whereas in the other females the ground color of the throat and breast is buffy, brownish, or whitish, with very broad flowing brown shaft streaks. The rump and shorter upper tail coverts in female *kilianensis* are of the same comparatively bright yellow color as the breast, contrasting very sharply with the brown of the back, not concolorous with the back as in *humii* or nominate *puniceus*. In the female of the new race described from Sikang the rump and tail coverts are tinged to a varying extent with yellow, but this color is not nearly so bright and pure. General coloration of female *kilianensis* (other than the yellow parts) paler, and streaking more reduced than in the other three races.

Male *kilianensis* approaches male *longirostris* in general coloration and is therefore a pale bird, but it is generally darker, with the abdomen and flanks darker and browner, the flanks more heavily streaked, and with the red pigments on the head and under parts darker, more carmine, less rosy (all color comparisons in this study refer to birds in worn breeding plumage), and extending farther down onto the abdomen and upper flanks. In addition, in male *kilianensis* the red band on the forehead is only about half as broad as in *longirostris* (or *szetschuanus* which differs from *longirostris* only by being slightly darker), and the mesial end of the outer web of the primaries tends to become more conspicuously margined with white with wear than in any other race.

In size (see below) *kilianensis* has the long wing of *longirostris* and *szetschuanus* but the short bill of *humii* and nominate *puniceus*. In the new race from Sikang the bill is long. I propose to separate this latter as follows:

Carpodacus puniceus sikangensis Vaurie, new subspecies

TYPE: A.M.N.H. No. 292130; adult male; Mt. Konka between 16,000 and 16,500 feet, southeastern Sikang; June, 1928; J. F. Rock, collector.

DIAGNOSIS: Adult male differs from male *szetschuanus* by being very much darker on the back, abdomen, and flanks, the abdomen and flanks

much more heavily streaked, red pigments darker, width of the frontal band variable individually but averaging much narrower, bill shorter, and wing and tail probably averaging shorter. Differs in both sexes from nominate *puniceus* by being paler, especially below, including both red and brown pigments; in males, width of frontal band averages broader; in females, ground color of the under parts less buffy or brownish, much whiter, and with the rump and upper tail coverts tinged with a variable amount of dull yellow, this pigment lacking altogether in nominate *puniceus* (or *humii*). Larger, including the bill.

DISCUSSION OF *kilianensis* AND *sikangensis*: The female of *longirostris* is not available, but if the color plate given by Przevalski (*loc. cit.*) is reliable, female *longirostris* is not, or is much less, yellow on the breast and rump, and it is darker on the forehead, around the eye, and on the ear coverts, than female *kilianensis*. One cannot judge as to the amount of streaking on the breast, as the female of *longirostris* is depicted in profile.

The surprising and very sharp reduction of the streaks on the breast of female *kilianensis*, together with the yellow pigments, suggests that the two specimens may not have been correctly sexed and that these possibly are immature males. In other finches discussed in this paper, such as *Pinicola enucleator*, young males are yellowish on the breast rather than red, and in some races of *Loxia curvirostra* the majority of even fully adult males remain in yellow plumage. Richmond (*loc. cit.*), to whom this possibility occurred, states "Dr. Abbott's care in determining the sex of his specimens, and his close attention to details in their preparation, renders it very improbable that the examples here regarded as females are immature males." The fact remains that very little is known about the plumage sequence in this species. Ludlow and Kinnear (1937, *Ibis*, pp. 470-472; 1944, *ibid*, pp. 349-351), who have made a few remarks on plumages in this bird, note that immature males are indistinguishable from females and are, if anything, a little more heavily streaked below, and that such birds apparently molt directly from brown into red plumage. In 1944, they mentioned, however, some brown specimens sexed as males which were tinged with buff on the breast. Buff is not maize yellow, and apparently these birds were streaked on the breast, or Ludlow and Kinnear would have mentioned it if they were not. All the brown specimens sexed as females or males that I have examined were heavily streaked on the breast (with the exception of *kilianensis*, of course). The plumage sequence requires further study, but, at any rate, male *kilianensis* in red plumage is clearly separable from *longirostris* or any other race.

The specimens that Ludlow and Kinnear reported in 1944 were collected in "southeastern Tibet," at approximately longitude 93° E. (or on the border of southwestern Sikang as the boundary of this province is given on my maps), and these apparently are no longer typical of nominate *puniceus* but already intermediate between this race and *szetschuanus* as understood by Kinnear, who states, however, that he has not examined this latter. These specimens should be considered intermediate between nominate *puniceus* and *sikangensis*, because, as shown above, the population of Sikang is distinct from that of northern Szechwan.

The six races are listed below with a few remarks.

1. *Carpodacus p. kilianensis*: The range of this race is restricted to western Sinkiang and northernmost Kashmir, as far as is known, from the eastern Pamirs (Tagdumbash Pamir) eastward to the western Kun Lun, and north of the Karakoram and the Pangong Range in northern Kashmir, south of which it appears to be replaced by the smaller and darker *humii*.

2. *Carpodacus p. humii*: This race replaces *kilianensis* in the northwestern Himalayas from Gilgit eastward through Kashmir, Ladak, and northern Punjab to Kumaon. It differs from nominate *puniceus* only by being paler and not so heavily streaked and probably grades into the latter in Kumaon or eastern Nepal.

3. *Carpodacus p. puniceus*: This is the darkest race. It grades, or begins to grade, into *sikangensis* at about longitude 93° E.

4. *Carpodacus p. sikangensis*: This race seems to be restricted to Sikang but probably grades into *longirostris* and *szetschuanus* to the north and northeast.

5. *Carpodacus p. szetschuanus*: This race is by far the most weakly differentiated of all, judging by the lone specimen that I have examined. It seems to be similar to *longirostris* in every way, except that it is slightly darker. The specimen that I have examined has a very broad red frontal band, distinctly broader than in the two males of *longirostris* and extending, at the sides, farther beyond the eye. The width of the band varies a good deal individually, however, as shown by the 11 males of *sikangensis* examined.

6. *Carpodacus p. longirostris*: This is the palest race, and probably the largest although this is not shown clearly by the measurements given below. If the range of the species extends north through the Nan Shan and westward through the Astin Tagh, it may be continuous from the Nan Shan to the western Kun Lun. While this may be probable (if so, intermediate populations are to be expected between *longirostris* and *kilianensis*), nothing is known for the present.

From the remarks above, the geographical variation appears to be more or less clinal in character. The six races, with the possible exception of *szetschuanus*, seem to be fairly well differentiated but if, in view of the clinal variation, it is considered to be desirable to eliminate the intermediate races from the nomenclature, *humii* and *sikangensis* should be synonymized with nominate *puniceus*, and *szetschuanus* with *longirostris*.

Measurements follow :

Northeastern Tsinghai (*longirostris*), males: wing, 117, 121; tail, 81, 86; bill (measured from the anterior border of the nostril), 14, 15.5.

Northern Szechwan (*szetschuanus*), male: 118, 86, 15.

Southeastern Sikang (*sikangensis*), males: 115, 115, 116, 117, 117, 118 (type), 118, 119, 119, 120 (117.4); 74, 75, 76, 77, 78, 78, 79, 80, 81, 82, 85 (type) (78.7); 12.5, 12.5, 12.8, 13, 13, 13.2, 13.5, 13.8, 14 (type), 14, 14.5 (13.3); females: 106, 106, 107, 110, 110, 110, 111, 111, 111, 112 (109.4); 68, 70, 71, 72, 73, 74, 78, 78, 80, 80 (74.4); 13.5, 14, 14, 14.2, 14.5, 14.8, 15, (14.3), others broken.

Sikkim (nominate *puniceus*), males: 113, 116; 73, 75; 12, 12; female, 105, 76, 11.

Northwestern Himalayas (*humii*), males: 113, 115, 117; 73, 74, 80; 12, 12, 12; females, 105, 107; 70, 76; 11, 11.5.

Western Sinkiang and northern Ladak (*kilianensis*), males: 119, 119, 122; 78, 78, 83; 12, 12.2, 12.5; females: 115, 117 (type); 75, 84 (type); 13.2 (type), 13.5.

All the measurements are those of specimens in worn plumage, and the wing and tail tips are worn down to an uncertain degree. For additional measurements from the Himalayas and Tibet, see Kinnear (1944, *loc. cit.*).

Pinicola enucleator

Three palearctic races of the Pine Grosbeak can be recognized, which differ from one another only very slightly and only in the shape and size of the bill. The three races are nominate *enucleator* Linnaeus, 1758, type locality, Sweden; *pacata* Bangs, 1913, type locality, Russian Altai; and *kamtschatkensis* Dybowski, 1882, type locality, Kamchatka. Other races have been described which are considered below to be synonyms of these three.

Differences in coloration have been described between the races. For instance, some authors state that in males, *kamtschatkensis* and *pacata* are somewhat brighter red than nominate *enucleator*, and Portenko described a race from northwestern Siberia as *stschur*, type locality, Bere-zovo on the lower Ob, as paler than nominate *enucleator*, especially on the abdomen. These differences in coloration have been questioned, however, by several authors. Stegmann (1931, April, Jour. Ornith., vol. 79, pp. 151-152) states categorically that there are no differences in coloration.

tion (or differences in size other than that of the bill) between the three races. He believes that specimens showing the same degree of wear do not differ in coloration throughout the range of the species, and my own observations support his statement.

Stegmann could not mention *stschur* which was not described until August, 1931, but Johansen (1944, Jour. Ornith., vol. 91, p. 52) considers that this form is very poorly differentiated indeed. He states that the difference between *stschur* and nominate *enucleator* is observable in only half of the specimens, and such difference as exists is extremely slight. The few specimens that I have examined from the range of *stschur* are not distinguishable from nominate *enucleator* from Scandinavia, and I consider it a synonym of that race.

Buturlin in 1915 described two races from the Far East on slight differences in the shape and size of the bill: *sakhalinensis* from Sakhalin and *urupensis* from the Kuriles. Dementiev (1935, Alauda, vol. 7, p. 155) remarked that the validity of *sakhalinensis* seems to be dubious, and Stegmann (*loc. cit.*) says that specimens from Sakhalin appear to be *kamtschatkensis*. Neither of these authors comments on *urupensis* which, however, is stated to be a synonym of *sakhalinensis* by the "Birds of the Soviet Union" (1954, vol. 5, p. 272). In view of the remarks by Dementiev and Stegmann, it seems best to treat both of the forms described by Buturlin as synonyms of *kamtschatkensis*.

The last Palearctic race to be described was *vönöczkyi*, named by Keve (1943, Anz. Akad. Wiss. Wien, vol. 80, p. 19, type locality, Baikal Range). According to its author the new form is intermediate between *pacata* and *kamtschatkensis*, closer in coloration to the first, closer to the second in the shape of the bill. However, as can be seen below, the differences in the shape and size of the bill seem much too slight to allow the recognition of an intermediate and, as stated above, differences in coloration are very questionable. The form described by Keve is from the range of *pacata*, and I consider it to be a synonym of that race.

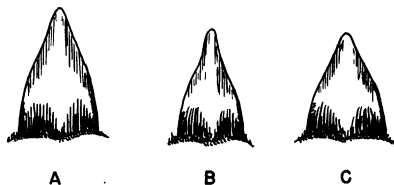


FIG. 3. Shape of the bill from above (natural size) in males of *Pinicola enucleator*. A. Nominate *enucleator* from northern Europe. B. *P. e. pacata* from the Lena River in eastern Siberia. C. *P. e. kamtschatkensis* from Anadyrland.

Bill measurements of males, taken from the anterior of the nostril, in the three valid races are: nominate *enucleator*, 17 specimens, 11–12.5 (11.8); *pacata*, one specimen, 10.5; *kamtschatkensis*, seven specimens, 10–11.5 (10.5). Stegmann states that in his specimens the bill length, measured in the same way, is 11–12.9 in nominate *enucleator*, 10.3–11.8 in *pacata*, and 9.8–10.9 in *kamtschatkensis*. The difference in the shape of the bill can be shown best in a drawing, and I follow the example of Bangs in supplying a figure (fig. 3) of these differences. It should be noticed that the bill of *pacata* is more compressed laterally and attenuated at the tip and that of *kamtschatkensis* is more blunt.

Loxia curvirostra

The Crossbill, or the Red Crossbill as it is called in America, is an interesting species but a difficult one to study, because it varies a good deal individually and is more or less nomadic in its habits. It is treated in several works such as Hartert or Hartert and Steinbacher in "Die Vögel der paläarktischen Fauna" and its supplements (1903–1938), Dementiev (1934, L'Oiseau, pp. 289–292), the "Birds of the Soviet Union" (1954, vol. 5, pp. 272–282), the "Handbook of British birds" (1938, vol. 1, pp. 93–100), and by several other authors. It has been reviewed by Griscom (1937, Proc. Boston Soc. Nat. Hist., vol. 41, pp. 77–210) in a detailed study, but, after studying the literature and the large series available in the Rothschild Collection (which is of course the material studied by Hartert as well as Griscom), I find myself unable to follow some of the conclusions reached by Griscom as regards the Palearctic forms.

The following notes consist merely of a complete list of the Palearctic races that I believe are valid and a discussion of their synonyms. Diagnoses and ranges are omitted.

1. *Loxia curvirostra scotica* Hartert, 1904, type locality, Scotland. In agreement with the "Handbook of British birds," and the official "Checklist of the birds of Great Britain and Ireland" (1952, London, British Ornithologists' Union, p. 93) I prefer to regard this large-billed race as conspecific with *L. curvirostra* rather than with *L. pytyopsittacus*, although a sub-committee of the British Ornithologists' Union has recently recommended (1956, Ibis, p. 167) that it should be removed from *curvirostra* and placed in *pytyopsittacus*. The Scottish bird has a larger bill than that of nominate *curvirostra*, about intermediate in shape and size between that of the latter and that of *pytyopsittacus*, but similar to or even slightly smaller than that of *guillemardi* of Cyprus. The authors who place *scotica* in *pytyopsittacus* have never to my knowledge proposed that *guillemardi* be removed from *curvirostra* and be made conspecific

with *pytyopsittacus*, but if one intermediate is so treated why not the other also?

The real question, of course, is whether all crossbills with the wings not barred are conspecific or not. It would be convenient to admit but one species, but it is a fact that nominate *curvirostra* and *pytyopsittacus* breed in the same regions over a large part of northern Europe. For the present it is probably best to recognize two species, and, everything considered, it seems more likely that *scotica* belongs with *curvirostra* than with *pytyopsittacus*.

2. *Loxia curvirostra curvirostra* Linnaeus, 1758, type locality, Sweden, with the following as synonyms: *hispana* Hartert, 1904, type locality, Spain; *anglica* Hartert, 1904, type locality, England; *caucasica* Buturlin, 1907, type locality, Caucasus and Transcaucasia; *nidificans* Kleinschmidt, 1919, type locality, northern Caucasus; *minussensis* Sushkin, 1925, type locality, central Siberia; *ermaki* Kozlova, 1930, type locality, Tomsk, western Siberia; *taurica* Griscom, 1937, type locality, Crimea; and *vasvárii* Keve, 1943, type locality, northwestern Asia Minor.

This is an imposing list of synonyms for this race. Hartert later (1910, *op. cit.*, p. xx) considered his *anglica* to be a synonym of nominate *curvirostra*, and, as all authors agree with this opinion, this form requires no further comment. In 1932, Hartert and Steinbacher added *caucasica*, *nidificans*, *ermaki*, and *tianschanica* to the synonyms of nominate *curvirostra* and stated that *minussensis* was a synonym of *altaiensis* Sushkin, 1925, type locality, central Altai. I believe, however, in accord with the Russian authors that *tianschanica*, which is discussed below, is a valid race. Griscom criticized Hartert and Steinbacher for synonymizing *caucasica* and *nidificans* with nominate *curvirostra*, stating that they had no specimens from the Caucasus on which to base this opinion. Griscom had three specimens from the Caucasus, but, although he states that these are not separable from nominate *curvirostra*, he adds that he is nevertheless convinced that a distinct subspecies can be recognized in this region. This opinion is not shared by the authors of the "Birds of the Soviet Union" who, with specimens from the Caucasus at their disposal, have vindicated the judgment of Hartert and Steinbacher by synonymizing *caucasica* and *nidificans* with nominate *curvirostra*.

In central and eastern Siberia the populations, according to some authors, are paler and larger than nominate *curvirostra*, and the validity of *ermaki* is recognized by Dementiev (1934) and Johansen (1944, Jour. Ornith., vol. 92, pp. 53-54). No specimens from Siberia are available to me, but the differences must be insufficient to warrant the recognition of *ermaki*, because this name is synonymized with nominate *curvirostra* by

the "Birds of the Soviet Union." Johansen states that the difference in coloration is slight, and his measurements of the wing of adult males show a great deal of overlap, being 96–104 in *ermaki* as against 94–100 in nominate *curvirostra* from Europe (no averages given).

Hartert and Steinbacher, as well as Dementiev, synonymized *minus-sensis* with *altaiensis*. No specimens of either are at hand, but judging by their descriptions, *minussensis*, while apparently intermediate to some degree between *altaiensis* and nominate *curvirostra*, seems closer to the latter. I therefore follow the "Birds of the Soviet Union" in synonymizing *minussensis* with nominate *curvirostra* rather than with *altaiensis*.

The last three synonyms of nominate *curvirostra* to be discussed are *hispana*, *taurica*, and *vasvárii*. The existence of a distinct race in the Iberian Peninsula has been the subject of numerous comments, but it seems to me that no conclusion can be reached until adequate breeding material becomes available. Until then it is best to consider *hispana* to be a synonym of nominate *curvirostra*. The type and paratypes of *hispana* are not helpful, because they are apparently cage birds and are soiled. Witherby (1928, *Ibis*, p. 413) stated that these and his specimens from Spain and Portugal are not separable from nominate *curvirostra*. His specimens, however, were not breeding birds, and, as stated, the origin of the type and paratypes is open to question. Ticehurst and Whistler (1927, *Ibis*, p. 289) observed birds in the eastern Pyrenees in July which may have been local birds, but they reached no conclusion as to the validity of *hispana*, using this name with a query. The specimens from eastern Spain discussed by von Jordans (1933, *Anz. Ornith. Gesell. Bayern*, vol. 2, pp. 252–253) and discussed again by von Jordans and Steinbacher (1942, *Ann. Naturhist. Mus. Wien*, vol. 52, pp. 209–210), as well as the specimens from the same region discussed by Griscom (1937, *Proc. Boston Soc. Nat. Hist.*, vol. 41, p. 178), were collected in the fall or winter. Griscom states that his specimens are nearer *balearica*, but von Jordans states that his are identical with nominate *curvirostra*. In 1942, von Jordans and Steinbacher, commenting upon the statement of Griscom, repeat that their birds are nominate *curvirostra*.

Dementiev (1932, *Alauda*, p. 7) has described the population of the southern Crimea as *mariae* on the basis that it is paler in both sexes than nominate *curvirostra*. Griscom in his comments on the validity of *mariae*, which he rejects, has inadvertently (*supra cit.*, p. 182) validated the manuscript name *taurica* written by Sushkin on the labels of some specimens from the Crimea in the Rothschild Collection. He questioned the validity of *mariae* because he states that there are three specimens in the Rothschild Collection from the Crimea (two males and one immature

female) and these do not correspond to the description of *mariae*. There is, however, only one male (not two) in the Rothschild Collection from the Crimea, to which they came from Sushkin, and the lone male must therefore be considered the type of *taurica*. It was collected in the southern Crimea on "September 16" (Russian calendar corrected to September 29 on the label by Sushkin) and not August 7 as stated by Griscom, and at this date there is no certainty that it was a local bird. It is brightly colored, as stated by Griscom, but can be matched perfectly by topotypes of nominate *curvirostra* in the same plumage. I believe therefore that *taurica* is not valid. Whether or not *mariae* is valid, and it is recognized as such by the "Birds of the Soviet Union," cannot be decided by myself in view of the fact that I lack breeding birds from the Crimea.

The last form to be discussed is *vasvárii* Keve (1943, Anz. Akad. Wiss. Wien, vol. 80, p. 19, type locality, Bolu Dag, northwestern Asia Minor). Keve compared *vasvárii* only to *guillemardi* (the race of Cyprus), stating that it has a large bill and is the "darkest race" [of the species?], the males being "düster dunkelrot," adding that it should therefore (in view of the description of *guillemardi*) be very close to this latter. However, it is difficult to judge as to the relative size of the bill when one lacks comparative material as did Keve, and *guillemardi* is not dark red, or, at any rate, red males seems to be very rare in that race. Guillemard (1889, Ibis, p. 217) confirmed by Lilford (1889, Ibis, p. 327) stated that birds from Cyprus were dark, but neither author mentioned red. Hartert (1904) stated that males from Cyprus were dark cherry red but, although Hartert may have examined other specimens, all 11 males available to him in the Rothschild Collection are neither dark nor red but very heavily tinged with yellow or orange yellow above and below, and Madarász, the author of *guillemardi*, stated (1903, Ornith. Monatsber., vol. 11, p. 6) that his eight males from Cyprus are dark greenish orange above and below. Concerning the size of the bill, Kummerlöwe and Niethammer (1934, Jour. Ornith., vol. 82, pp. 533-534) state that in the specimen they collected in northwestern Asia Minor the bill is similar to that of nominate *curvirostra*.

In short, it seems to me that *vasvárii* requires confirmation. No specimens from northwestern Asia Minor are available to me, but I believe that on geographical grounds at least the population of this region should have been compared to nominate *curvirostra* or "*caucasica*" as well as to the population of Cyprus. Until this can be done I consider *vasvárii* to be a synonym of nominate *curvirostra*.

3. *Loxia curvirostra corsicana* Tschusi, 1912, type locality, Corsica. This race is not a very striking one, but it does seem to be valid, although Griscom states that it is not separable from nominate *curvirostra*. The

material in the Rothschild Collection from Corsica discussed by Griscom consists of three adult males (two of which Griscom states are immature, but this, I believe, is not correct), one female, one unsexed individual molting into adult plumage, and one unsexed immature specimen in streaked plumage. I find that these differ from nominate *curvirostra* by being duller in both sexes, the female and the unsexed individual are distinctly grayer, with only a slight trace of olive on the crown and mantle, and in the immature specimen the streaks below are much broader than in nominate *curvirostra* in similar plumage. In most of these specimens the bill is not perfectly closed, and Griscom denies the difference in the shape of the bill mentioned by Hartert, namely, that it is more massive and higher at the base in *corsicana*. However, if one compares only the upper half of the bill the difference mentioned by Hartert can be seen, although it is true that it is relatively slight and not very constant.

4. *Loxia curvirostra balearica* Homeyer, 1862, type locality, Mallorca.

5. *Loxia curvirostra poliolegna* Whitaker, 1898, type locality, Tunis.

6. *Loxia curvirostra guillemardi*, Madarász, 1903, type locality, Cyprus.

7. *Loxia curvirostra mariae* Dementiev, 1932, type locality, Crimea. Not examined but briefly discussed above.

8. *Loxia curvirostra altaiensis* Sushkin, 1925, type locality, central Altai. Not examined, see discussion of *tianschanica*.

9. *Loxia curvirostra tianschanica* Laubmann, 1927, type locality, Naryn, Tian Shan, with the following as synonyms: *przewalskii* Dementiev, 1932, type locality, western Tian Shan, and *turkestanensis* Griscom, 1937, type locality, Naryn, Tian Shan. Dementiev (1932, *Alauda*, p. 6) was unaware of the existence of *tianschanica* when he described *przewalskii* but later (1934, p. 290) corrected his oversight by synonymizing this name with *tianschanica*. As Peters (1943, *Bull. Mus. Comp. Zool.*, vol. 92, p. 97) has shown, *turkestanensis* is a manuscript name of Sushkin on the labels of two specimens from the vicinity of Naryn, inadvertently validated by Griscom in his discussion of *tianschanica*.

The validity of *tianschanica* has been questioned, but it seems to be a well-differentiated race of the "yellow" type, differing from *altaiensis*, with which it shares a relatively thin and slender bill, by being paler on the sides of the face and ear coverts in both sexes, by a very strong development of the yellow pigments in males and to a lesser extent in females, and probably by averaging generally paler and somewhat larger. No specimens of *altaiensis* are available to me, but this race is acknowledged by all the Russian authors to be very dark. According to Dementiev (1934) the males of *altaiensis* are very dark red, with very dark brown ear coverts, and the females are dark brownish olive, with brown ear

coverts, and not strongly tinged with olive above and below. This diagnosis of *altaiensis* is repeated by the "Birds of the Soviet Union," and both this work and Dementiev stress that in *tianschanica* the ear coverts are pale and that the adult males very often remain in greenish yellow plumage and that they are not darkly streaked above.

The 23 specimens of *tianschanica* that I have examined in the Rothschild Collection show these differences very clearly. Of these, 16 are males, and only six are in red plumage and not very dark red. Three of these six males are more or less tinged with yellow, and the 10 males that are not red are very heavily saturated above and below with yellow or greenish yellow. The females are more heavily tinged with yellow than is female nominate *curvirostra* and have a bright yellow rump (and therefore, see above, are apparently yellower than in *altaiensis*) but generally speaking are very pale, especially on the throat and lower abdomen.

I believe that *tianschanica* may average larger than *altaiensis*. The wing length of the 16 males measures 92–99 (96.2) and that of five females 90–95 (92.5) as against 86–97, no average given, in the 31 specimens of both sexes of *altaiensis* measured by Sushkin. However, the "Birds of the Soviet Union" states that in 16 specimens of *altaiensis* of both sexes the wing measures 90.7–97.9, no average given, and in 21 of *tianschanica* of both sexes 89.5–97.3 (94.3).

Griscom did not recognize *tianschanica* but believed (p. 187) that a "deep, rich scarlet" race occurs in this region that approaches *himalayensis* in characters. I cannot agree, because the specimens of *himalayensis* that I have examined are very much darker in both sexes than 23 specimens from the Tian Shan in the Rothschild Collection, have a much weaker bill, and are conspicuously smaller, the wing length of 10 males of *himalayensis* measuring 86–91 (88.5) and that of two females 86, 87.

10. *Loxia curvirostra japonica* Ridgway, 1885, type locality, Japan.

11. *Loxia curvirostra himalayensis* Blyth, 1845, type locality, Nepal, with *Loxia curvirostra bangsi* Griscom, 1937, type locality, western Szechwan [i.e., Sikang]. As Mayr (1941, Ibis, p. 357) has already shown, *bangsi* is a synonym of *himalayensis*.

To complete the list of the valid races of *Loxia curvirostra* in the Old World, the following two are added, although they are not Palearctic: *Loxia curvirostra luzoniensis* Ogilvie-Grant, 1894, which is restricted to the mountains of northern Luzon; and *L. c. meridionalis* Robinson and Kloss, 1919, from the mountains of southern Annam.

Loxia pytyopsittacus

Two races of the Parrot Crossbill are recognized by Hartert and Steinbacher (1932) and Griscom (1937): nominate *pytyopsittacus* Bork-

hausen, 1793, type locality, Sweden, and *estiae* Piiper and Härms, 1922, type locality, Sarema (or Oesel) Island, Estonia. Hartert and Steinbacher as well as Griscom state that *estiae* is a "very distinct subspecies" differing from nominate *pytyopsittacus* by having a longer and less arched bill, its curvature being similar or "somewhat" similar to that of nominate *curvirostra* Linnaeus. I cannot agree with these authors and think that *estiae* is a pure synonym of nominate *pytyopsittacus*.

The shape and size of the bill in five topotypes of *estiae*, all of them breeding birds collected by Härms, fall perfectly within the range of individual variation of a series of 17 specimens of nominate *pytyopsittacus* collected in Norway, Sweden, and northern Russia. Three of the topotypes of *estiae* are adult, and the other two are immature in streaked plumage. In these two the bill differs individually, being highly arched in one, less highly so and slightly longer in the other, and this last specimen matches perfectly an immature bird in the same plumage from Norway, the only immature available other than the two from Sarema Island. If the series of 16 adults from Norway (six specimens) and Sweden and Russia (five specimens each) is examined critically, it can be readily seen that there is a considerable range in the individual variation of the shape and size of the bill, and it seems to me that the authors who recognize *estiae* have not taken this fact sufficiently into account. With the rejection of *estiae*, this species becomes monotypic. Another race (*norwegica* Laubmann, 1927, type locality, Norway) has been separated, but its validity has been rejected by Hartert and Steinbacher, and, as stated above, I find that birds from Norway and Sweden are not separable on bill characters or in any other way.

Uragus sibiricus

Four races of the Long-tailed Rose Finch are generally recognized, the ranges and characters of which are briefly given below. They are: nominate *sibiricus* Pallas, 1773, type locality, southern Siberia; *ussuriensis* Buturlin, 1915, type locality, southern Ussuriland; *sanguinolentus* Temminck and Schlegel, 1850, type locality, Japan; and *lepidus* David and Oustalet, 1877, type locality, Tsinling Range in southern Shensi. This last race is little known and under this name two very distinct races have been confused, the other being *henrici* Oustalet, 1891, type locality, "Turkestan oriental et le Tibet" which (below) is restricted to Sikang. *Henrici* seems to have been forgotten in the literature until Hartert and Steinbacher (1932, Die Vögel der paläarktischen Fauna, suppl. vol., p. 49) synonymized this name with *lepidus* on the ground that it had been based on a lone specimen in very bad condition and without definite locality. However, Meise (1934, Abh. Ber. Mus. Dresden, vol. 18, no. 2,

p. 19) argued that *henrici* seemed to be valid, because four specimens in the Dresden Museum from "Szechwan and Tibet" (which apparently are the same ones that Jacobi, 1923, *ibid.*, vol. 16, no. 1, p. 25, had identified as *lepidus*) differed from the description of that form by having white on only the two outer pairs instead of the three outer pairs of rectrices. Meise stated that he had not examined *lepidus*.

The Rothschild Collection of the American Museum of Natural History contains a male topotype of *lepidus* in worn plumage collected on July 22 (perhaps the only other male specimen besides the one in Paris) and a female from southeastern Kansu collected by Berezowsky but no specimens from the range of *henrici*. Thanks to the kindness of Dr. Rand, I have been able to compare these with a series of 16 specimens from northern Yunnan and southeastern Sikang collected from February 19 to May 20 and which are part of the series reported by Bangs (1932, Field Mus. Nat. Hist., zool. ser., vol. 18, p. 376) and identified by him as *lepidus*. Dr. Dorst has also been so very kind as to compare for me the types of *lepidus* and *henrici*. This information and the specimens show that *henrici* is indeed an extremely well-differentiated race, differing in both sexes from *lepidus* in comparative plumage (April and May specimens from southeastern Sikang are in worn plumage also) by being darker and much more heavily streaked, the males above and the females above and below. Not only are the shaft streaks from two to three times broader in *henrici*, but they are blacker, and in the males the edges of the feathers are whitish or only faintly tinged with pink, not red, as in *lepidus*. In addition, *henrici* is larger than *lepidus*, and, as stated by Meise, the white is restricted only to the two outer pairs of rectrices. In true *lepidus* the tail is longer (see also David and Oustalet) than the wing, whereas it is shorter or of the same length in *henrici*, being shorter in *sanguinolentus* but longer again in *ussuriensis* and nominate *sibiricus*. This curious variation in proportions led Jacobi (*loc. cit.*) to state that *sanguinolentus* was a separate species in which he included his *lepidus* [= *henrici*, as shown above], but the five forms appear to me to be conspecific. They replace one another geographically, have the same general pattern and pigmentation, and the variation between the proportion of the length of the wing to that of the tail is irregular (see below) varying from race to race or even from sex to sex in the same race. For instance, in male *ussuriensis* the tail is distinctly longer than the wing, but in females, judging by those I have measured, it is virtually equal.

The valid races are:

1. *Uragus sibiricus sibiricus* Pallas, 1773, with *fumigatus* Sowerby, 1920 (Bull. Brit. Ornith. Club, vol. 40, p. 99, type locality, Krasnoyarsk),

and *stegmanni* Hartert and Steinbacher, 1932 (*loc. cit.*), type locality, Karakol, Tian Shan, as synonyms. This race is the palest and largest and ranges from about Tomsk, Barnaul, and Ust Kamenogorsk eastward through southern Siberia and northern Mongolia to Amurland, intergrading with *ussuriensis* in northern Manchuria. It winters south to Dzungaria and Russian Turkestan to the Tian Shan and Ferghana, but does not breed in these regions, and the form described by Hartert and Steinbacher, based on such winter visitors, is not valid. These authors described *stegmanni* as less white on the throat and head than nominate *sibiricus* and distinctly smaller, but this is not confirmed at all by the material in the Rothschild Collection, or other collections in the American Museum of Natural History, which include large series taken in the winter in Russian Turkestan. The validity of *stegmanni* has already been denied by the Russian authors, as also has that of *fumigatus*. Hartert and Steinbacher listed *fumigatus* as a synonym of nominate *sibiricus* because they said it had been based on specimens not in comparative plumage but listed it as a synonym with a query. Specimens from Krasnoyarsk are not available, but it is difficult to believe that the population of this region should differ appreciably, if at all, from that of southern Siberia, especially southwestern Siberia which seems to be the region from whence Pallas described *sibiricus*, so the Russian authors must be followed.

2. *Uragus sibiricus ussuriensis* Buturlin, 1915. This race is darker in both sexes than nominate *sibiricus*, the females more heavily streaked, and the males darker red, and is also somewhat smaller. Its range is from Ussuriland west to central Manchuria and south to northern Korea, and it winters south to Hopeh.

3. *Uragus sibiricus sanguinolentus* Temminck and Schlegel, 1850. This race is still darker in both sexes, it is smaller than nominate *sibiricus* or *ussuriensis*, and has the tail shorter than the wing rather than longer. It breeds in Sakhalin, southern Kuriles, and Hokkaido and winters in Japan, south to Shikoku.

4. *Uragus sibiricus lepidus* David and Oustalet, 1877. This race is still darker than *sanguinolentus*, in males the silvery rose feathers of the crown are restricted to the front half of the crown and do not reach the hind crown as in the preceding races, in both sexes the white wing bars are somewhat narrower, and the white area in the tail is smaller. Its range, as far as is known, is restricted to southern Shensi and south-eastern Kansu.

5. *Uragus sibiricus henrici* Oustalet, 1891. This race is very distinct, and the characters (see above) that separate it from *lepidus* separate it

also from the other races. Its range is from western Szechwan westward to at least central Sikang, and it has also been collected and examined by me from Nguluko in northern Yunnan, north of Likiang, where it had been collected in February.

The type, according to Oustalet, was brought back by Bonvalot and the Prince d'Orléans from their trip in what is now called Sikang. The type locality of *henrici*, "Turkestan oriental and Tibet," is so vague that it is desirable to restrict it to a definite locality or region. Accordingly it is restricted here to the region in central and eastern Sikang between Batang and Tatsienlu (now Kangting), a region traversed by Bonvalot and the Prince.

MEASUREMENTS: In view of the fact that the difference between the length of the wing and of the tail is of interest, the measurements of each specimen are listed together in the case of males, the wing being listed first.

Uragus sibiricus sibiricus from the Altai, Turkestan, and Irkutsk: Males, 72/75, 73/78, 73/78, 73/80, 73/81, 74/82, 76/77, 76/82, 76/83, 77/81, 79/82, 79/85 in specimens from Turkestan; 74/84, 74/85, from the Altai; 73/83, 75/85, from Irkutsk. Wing of 16 males 72-79 (74.8), tail 75-85 (81.3). Ten females, wing 68-76 (72.8), tail 67-84 (78.2).

Uragus sibiricus ussuriensis from Ussuriland: Males, 65/72, 66/68, 66/68, 66/71, 66/73, 67/72, 68/70, 69/72, 69/77, 71/75, 71/75, 72/75, 72/75, 72/79, 73/78, 74/82, 75/79. Wing length of 17 males 65-75 (69.5), tail 68-82 (74.4). Six females, wing 65-71 (67.5); tail 65-72 (68).

Uragus sibiricus sanguinolentus from Japan: Males, 65/62, 66/64, 66.5/64, 68/67, 70/67, 71/68. Wing of six males 65-71 (67.8), tail 62-68 (65.4). Five females, wing 63-66 (64.2), tail 55-65 (60).

Uragus sibiricus lepidus: Male, 64+/67+. David and Oustalet (1877, Oiseaux de la Chine, p. 359) give the measurements of the type as wing 70, tail 73. One female, 66/66.

Uragus sibiricus henrici: Males 71+/71+, 74+/68+, 76+/73+. Ten females more or less worn, wing 67-73 (69+), tail 64-70 (66+).

THE GENUS *Urocynchramus*

The position of this monotypic genus has puzzled many authors, some of whom believe that it is not even a finch. In my opinion, however, Przevalski's Rose Finch (*Urocynchramus pylzowi*) is indeed a rose finch not too distantly related to another monotypic genus of the rose finches, namely, *Uragus sibiricus*, the Long-tailed Rose Finch. *Urocynchramus* is puzzling, because its lone species differs from all other finches by having an additional ("tenth") primary which is not rudimentary but very well developed. In the three males of *U. pylzowi* that I have measured this additional primary, the outermost (or "first") varies from

45 to 47 mm. in length measured from the wrist, as against 67–70 for the second primary and 77–78 for the longest. This long outer primary is somewhat similar in its development, though still longer, than that of the typical weavers of the genus *Ploceus*. Judging apparently on this sole basis, some authors, according to Stone (1933, Proc. Acad. Nat. Sci. Philadelphia, vol. 85, p. 220), have referred *U. pylzowi* to the Ploceidae, but most writers place it in an isolated position at the very end of the Fringillidae, after the Emberizinae. The most extreme view is taken by Domaniewski (1918, Jour. Ornith., vol. 66, pp. 421–424) who erects for it a separate family, the Urocynchramidae.

In general coloration, *U. pylzowi* is a typical rose finch. Its tail is very long, proportionately longer than that of the other finches of the subfamily Carduelinae, with the exception of *Uragus* the close relationship of which to the rose finches has never been questioned. The tail of *Urocynchramus* is more graduated than that of *Uragus*, but its pattern is generally similar. In the latter the four outer pairs of rectrices are entirely or partly white, while in *Urocynchramus* they are rose. Both species apparently hold their long tail in the same way, and their flight is similar judging by the remarks of Przevalski, the author of *Urocynchramus* and the discoverer of *pylzowi*. Przevalski (1876, Mongol i Strana Tangut, vol. 2, pp. 99–102) was so impressed with its general resemblance to *Uragus* that he states that when he shot his first specimen of *pylzowi* "on the wing" he thought he was collecting *Uragus*.

Przevalski characterized *Urocynchramus* as "Rostrum Emberizae, cauda Uragi," but the bill of *Urocynchramus pylzowi*, though attenuated to a fine point, is typical of that of many true finches such as *Carduelis ambigua*, *spinus*, *sinica*, or even *carduelis*, and in the rose finches we find some species with a similarly attenuated bill such as *Carpodacus nipalensis* or *C. rubescens*. The shape of the bill does not necessarily indicate therefore that *Urocynchramus* is related to the emberizine finches. The additional primary is interesting, but strongly differentiated monotypic genera are not rare in the cardueline finches. In the rose finches alone we have *Uragus*, with its very long tail and its short but stout decurved little bill which reminds one of the bill of some Paradoxornithidae, and *Kozlowia*, with its tremendously long and very pointed wing. In *Kozlowia* the bill is identical in shape with that of *Urocynchramus*.

When one is in doubt, general habits and call notes are often good clues to relationship. Unfortunately, *Urocynchramus* is not well known, and such observations as we have seem contradictory. Przevalski said that the "voice" of *pylzowi* resembled that of *Emberiza schoeniclus*, but the flight was that of *Uragus*. Schäfer (1938, Jour. Ornith., vol. 86, Sonder-

heft, pp. 329–330) said that the calls of *pylzowi* are finch-like (“finkennartig”) but that its flight is not, being similar to that of a tit, but *Uragus* is also often compared to a tit, its German name being “Meisengimpel.”

I have not stressed the rosy pigmentation of *Urocynchramus*, but this is probably the best clue that it is related to the rose finches, and I am inclined to agree with Stone who states, “I am a strong believer in the phylogenetic value of color and this bird occurring, as it does, in the heart of the great center of Rose Finches, which have much the same color, I consider closely related to them in spite of the additional primary. We have the same difference in wing formula in the Vireos, and yet we should hardly claim that *V. gilvus* [with one additional primary] and *V. philadelphicus* [no additional primary], should be placed in separate families on this account.” Stone places *Urocynchramus* next to *Uragus*, which seems also to me to be its correct position.

Urocynchramus pylzowi

This species has been divided into two subspecies: nominate *pylzowi* Przevalski, 1876, type locality, eastern Nan Shan, and *coloratus* Tugarinov and Stegmann, 1929, type locality, headwaters of the Blue River, which is darker according to these authors. Tugarinov and Stegmann cited a number of differences in coloration between the males of the two races, but Schäfer (1939, Proc. Acad. Nat. Sci. Philadelphia, vol. 90, p. 260), who says that he has examined more than 30 specimens of *coloratus*, states that he cannot find any marked differences between them and nominate *pylzowi*. The material of *pylzowi* examined by me is so limited that I cannot give an opinion, but it seems best to follow Schäfer and not recognize *coloratus*. My material consists of three adult males, one topotype of *coloratus*, and two specimens of nominate *pylzowi*, one of which is a topotype. The topotype of *coloratus* differs from the topotype of nominate *pylzowi* by being somewhat browner above, somewhat more rusty on the bend of the wing, and with the rosy parts darker. These are among the differences cited by Tugarinov and Stegmann. However, they are slight in my specimens and, judging by the large series examined by Schäfer, such differences as exist are too slight and not sufficiently constant to warrant the recognition of *coloratus*.

Propyrrhula subhimalacha

Two races of the Red-headed Rose Finch have been recognized: nominate *subhimalacha* Hodgson, 1836, type locality, Nepal, and *intensior* Rothschild, 1922, type locality, northern Yunnan. The birds that visit northeastern Burma in the winter, where the species may also breed,

have been referred to the latter. Rothschild separated *intensior* as being more intensely and extensively saturated with crimson in the male, and less olive above but deeper yellow below in the female. However, the changes caused by wear or the plumage sequence of this species are not very well known, and the validity of *intensior* has been questioned.

The type of *intensior*, which I have examined, is deeply saturated with crimson above and on the throat and breast. The date at which it was collected is not given, but the bird is in fresh winter plumage and similar in coloration to another male in the same plumage collected at the end of December, 1938, in northeastern Burma. These two males are darker and more richly colored than a male topotype of nominate *subhimalacha* in the same plumage collected in January, but this specimen is very old as it was collected in 1876 and the difference might be caused by fading, except that in the specimen from Nepal the crimson below is more restricted in extent, a difference that should not be affected by fading. In females and males in green plumage, two out of five from Yunnan and Burma are identical (or virtually so) above with two in comparative plumage from the Himalayas, one from Nepal and the other from Sikkim, but the birds from Yunnan and Burma are more yellow on the throat, and on the breast the green pigment shows a tendency to extend farther down.

In short, I am not certain whether *intensior* is valid. It is possible that additional material, freshly collected and in various plumages, may show that it is, but until then it is probably best to follow the consensus of the more recent authors and not recognize it. Its validity has been questioned by Kinnear (1937, *Ibis*, p. 470) and Mayr (1941, *Ibis*, p. 358) and rejected altogether by Kinnear (1944, *Ibis*, p. 349) and Ludlow (1951, *Ibis*, pp. 566-567).

