

REFERENCE

The most complete and satisfactory reference to the Barn Owl is A. C. Bent, 'Life Histories of North American Birds of Prey (Part 2)': 140-153, 1938. The reference cites all of the significant research papers of recent years.

San Jose
California

THE SEASONS OF BIRD SONG. REVIVAL OF SONG AFTER
THE POSTNUPTIAL MOLT

BY ARETAS A. SAUNDERS

A GOOD many of our singing birds revive the song in late summer or fall, usually after the molt that closed the nesting season is over. A few species revive the song every year. Others usually do so, but are not to be heard in certain years. Still others revive the song rarely, only in one or two years, interspersed by long periods of years of silence. A number of species, as far as I can determine, have never been known to revive the song.

The data on revival in this paper are chiefly from southern Connecticut; but for revival in July and August, most of the data are from Allegany State Park, N. Y. Only in the last six years have I had full opportunity to study revival, in those months, in Connecticut.

My studies of revival are by no means as complete as those of spring singing and cessation, for two reasons. In the fall there is no period of daylight, in which an avocation may be followed, before the time that work on a vocation must begin. In the earlier years of my studies, certain allergic troubles often made field observation at that season out of the question.

There is great variation from one season to another in the extent of fall singing. Even species that sing every fall do so much more frequently in one year than another. There are also certain days on which many birds of different species sing frequently and abundantly, followed by other days in which there is very little singing or none at all.

After some study of records in relation to the information I can get about molts, I have concluded that the study of revival belongs mainly or entirely to passerine birds. There is a certain amount of singing or calling on the part of the cuckoos, the Whip-poor-will and the Flicker, but no definite evidence to show that this is revival after the molt. September singing of the Wood Pewee is, according to authorities, not after the molt but before it.

I have omitted from the list some species, such as the crows and jays that, in my opinion, are not true singers. Other omitted species are either too rare or too locally distributed in this region for me to obtain data, or they are ones that apparently never sing in the fall.

Bicknell's studies (1884-1885) include notes on revival and fall song that are similar to mine in most cases. His notes are mainly from the vicinity of New York City. Since his articles are now not easily available to all students I have mentioned a number of his records that are significant.

In the *Birds of Connecticut* (Sage and Bishop, 1913) Dr. L. B. Bishop records a number of dates of early and late singing of various species. I am mentioning those that are of special significance. Since they are Connecticut records, and probably mainly from the vicinity of New Haven, they are essentially from the same locality as mine.

It is a general theory that those species that change the color of the male plumage between summer and winter do not sing in the fall. This is mainly true but there are some exceptions. The converse of this, that species that do not change coloring do sing in the fall, is far from true in a number of cases. What is probably of greater significance is the acquirement of fat. Bicknell (1884-1885) gives numbers of instances to show that birds cease to sing when they acquire fat in the fall.

Species reported to sing in the fall, but on which I have no data, are as follows: Hermit Thrush (*Hylocichla guttata*) heard by Bicknell (1884: 131) Oct. 18, 1880; Olive-backed Thrush (*Hylocichla ustulata*) reported by Bicknell (1884: 130) as heard by another unnamed observer at Bay Ridge, Long Island, Sept. 26, 1880; Indigo Bunting (*Passerina cyanea*) observed in flight song by Bicknell (1885: 152) on Sept. 23, 1879.

The following are the species on which I have data:

Crested Flycatcher (*Myiarchus crinitus*).—The average dates of revival are Aug. 15 to Sept. 2. The earliest date is Aug. 8, 1941, and the latest, Sept. 10, 1944.

Phoebe (*Sayornis phoebe*).—The song is revived in September and October, but is not heard every year. In twelve years the dates average Sept. 17 to Oct. 9; the earliest is Sept. 6, 1923, and the latest, Oct. 23, 1940. I once observed the flight song—Sept. 27, 1944.

Least Flycatcher (*Empidonax minimus*).—The song of this species is rarely revived. In Allegany Park I heard it Aug. 11, 17 and 22, 1922; Aug. 11 and 22, 1927; and Aug. 11, 1933. In Connecticut it was heard Aug. 8, 1941, Sept. 7, 1940, and Sept. 23, 1946.

Black-capped Chickadee (*Parus atricapillus*).—The singing of this bird in fall is so irregular that averaging dates is of little value. In thirty years of observation this species was present in the fall, but was only heard singing in eighteen of those years. In three of those years it sang only in September; in three others, only in October; in two, only in November; and in one, not until December. In some years, when no song was heard, the bird was comparatively scarce, but in others it was as common as usual but was not heard singing. It is sufficient to say that it may be heard in every fall month, in a period of years, but sings less frequently than in the spring.

White-breasted Nuthatch (*Sitta carolinensis*).—I have only one fall record of this bird's song—Sept. 19, 1940. Another unusual date is Dec. 24, 1922.

House Wren (*Troglodytes aëdon*).—This bird is not a common fall singer. Most of the fall songs are of the primitive type (Saunders, 1929: 48). They are frequently a faint, indefinite warble, not recognizable as to species unless the bird is seen. In only two years have I heard the full song in the fall—Sept. 6, 7, and 18, 1941, and Sept. 29, 1946. In seven other years primitive songs have been heard. The average date for these is Sept. 16. The earliest is Sept. 4, 1937, and the latest, Oct. 14, 1940. The latter is my only October date.

Winter Wren (*Troglodytes troglodytes*).—I have heard this species in fall only three times—Oct. 23, 1929, Nov. 13, 1932, and Oct. 28, 1939. Other records are: Nov. 21, 1880 (Bicknell, 1884: 138) and Nov. 4, 1903 (Bishop, 1913: 171).

Carolina Wren (*Thryothorus ludovicianus*).—The occurrence of this species in Connecticut is so irregular that it is difficult to tell much about its song periods. When common it is a persistent singer and the song may be heard in every month of the year. In eight years, in which it was common enough to give a fair idea of its seasons, the beginning of fall singing averaged Sept. 10; the earliest was Aug. 31, 1941, and the latest Sept. 26, 1931. The end of the period averaged Nov. 3; the earliest, Oct. 14, 1944; and the latest, Nov. 26, 1946.

Long-billed Marsh Wren (*Telmatodytes palustris*).—Areas where this species formerly bred have largely been destroyed by the spread of civilization, and I have had little opportunity to determine much about its song seasons. On Sept. 4, 1944, and Sept. 3, 1946, I found birds in song, in both cases singing a song of such primitive character that I could not have recognized it had I not seen the singer. According to Bicknell (1884: 139) its fall singing is irregular. He cites Sept. 7, 1879, and Oct. 3, 1880, as latest dates in each of those years. Dr. Bishop (1913: 172) gives Sept. 18, 1895, and Sept. 26, 1904, as late dates.

Short-billed Marsh Wren (*Cistothorus stellaris*).—It is difficult to determine just what is revival singing in this species. According to Dwight (1900: 296) it molts in August. Yet, in 1941 and 1942 it appeared in Connecticut in the latter half of July in considerable numbers, and sang continuously from then until September, being last heard Sept. 2, 1941, and Sept. 7, 1942. Bicknell (1884: 139) found it ceasing to sing in August and reviving the song Sept. 22, 1878, Sept. 18, 1881, and Oct. 23, 1880; his remarks indicate that these late songs were all more or less primitive in form.

Catbird (*Dumetella carolinensis*).—A rare fall singer. I have heard it in only six years, and usually only once in any one year. The dates average Sept. 27, but have a wide variation, from Sept. 1, 1939, to Oct. 22, 1928. The song at this season is short, fragmentary, and often of primitive nature.

Brown Thrasher (*Toxostoma rufum*).—I have heard this bird singing in the fall just once, Sept. 13, 1944. Bicknell (1884: 132) records it on Sept. 8, 1881.

Robin (*Turdus migratorius*).—The Robin is a fairly regular fall singer, but I do not hear it every year. In thirty years of records I have heard it in nineteen years and missed it in eleven. The average dates are from Sept. 28 to Oct. 17. The earliest song is Sept. 13, 1930, and the latest, Nov. 6, 1946.

Wood Thrush (*Hylocichla mustelina*).—I have heard this bird only once in the fall—Sept. 7, 1941.

Bluebird (*Sialia sialis*).—I have heard this bird in fall song only on Oct. 10 and 11, 1940. Bicknell (1884: 133) states that it is occasionally heard in September and October but he gives no definite dates. Dr. Bishop (1913: 181) records it for Oct. 22, 1892.

Ruby-crowned Kinglet (*Regulus calendula*).—This bird frequently sings while passing through in fall migration. I have recorded the song in twelve years, but in some years, though the bird is as common as usual, no song is heard. The average dates are Oct. 4 to Oct. 20; the earliest, Sept. 26, 1914 (at West Haven, Conn.); and the latest, Nov. 1, 1919.

Northern Shrike (*Lanius excubitor*).—My only record of fall singing for this species is Nov. 8, 1921.

White-eyed Vireo (*Vireo griseus*).—All of the vireos that are summer residents in southern Connecticut revive the song in late August or September, only a week or two after the song of the nesting season has ceased. The White-eyed Vireo averages Sept. 1 to 13; the earliest date is Aug. 19, 1942, and the latest, Sept. 21, 1946.

Yellow-throated Vireo (*Vireo flavifrons*).—The revival song of this

species averages from Aug. 19 to Sept. 14. The earliest is Aug. 15, 1943, and the latest, Sept. 26, 1945.

Blue-headed Vireo (*Vireo solitarius*).—This species breeds in the Allegany State Park, where I obtained notes on revival of song, in late August, in only three summers. The dates were: Aug. 29, 1929; Aug. 27, 1935; and Aug. 28, 1937. In other years no singing was heard, after its cessation, to the end of August. In Connecticut, where the bird occurs in migration, I have heard the song in September or October in sixteen years. The average dates are Oct. 2 to Oct. 16. The earliest is Sept. 11, 1943, and the latest, Oct. 23, 1932.

Red-eyed Vireo (*Vireo olivaceus*).—This bird is so persistent in singing that it is difficult to judge just where summer singing ends and revival begins. The dates I consider to be revival average Aug. 20 in Connecticut and Aug. 26 in the Allegany State Park. The end of fall singing is more definite. It averages Sept. 10, with the earliest on Sept. 1, 1935, and the latest, Oct. 3, 1922.

Warbling Vireo (*Vireo gilvus*).—This bird has become so scarce in recent years, in my opinion due to poison sprays in the elm trees, that I am unable to determine, from my few scattered records, just when revival begins. But the last songs are more definite. In twelve years the last song averages Sept. 12, with the earliest on Sept. 5, 1945, and the latest, Oct. 3, 1922. It is of interest that the last dates for both this and the preceding species are the same, both birds being in song that day, and are the only October records I have for either species.

Black and White Warbler (*Mniotilta varia*).—This bird, whose regular song ceases early, revives song in July or early August. In Allegany Park it is too scarce for my notes to be of much value. In Connecticut the revival song averages July 24 to Aug. 26. The earliest song is July 17, 1944, and the latest, Sept. 6, 1941. Bicknell, (1884: 210) records a much later date—Sept. 23, 1879.

Worm-eating Warbler (*Helmitheros vermivorus*).—I have heard this bird only once, after its regular song period ceased. This was Aug. 5, 1941. Bicknell (1884: 210) records it for Aug. 14 and 21, 1881.

Blue-winged Warbler (*Vermivora pinus*).—This bird revives singing in late July, and continues to sing until its departure in late August. Dates average July 17 to Aug. 22. The earliest beginning is July 11, 1945, and the last song is Sept. 6, 1933. Songs at this period are commonly the second song (Saunders, 1935: 179) and frequently flight songs.

Tennessee Warbler (*Vermivora peregrina*).—I have heard migrating birds of this species sing in fall just twice. In Allegany Park, N. Y., on Aug. 8, 1932, and in Connecticut, Sept. 17, 1921.

Parula Warbler (*Parula americana*).—I heard a song from this species in Allegany Park, N. Y., on Aug. 23, 1933. Bicknell (1884: 212) records a song Sept. 18, 1881.

Yellow Warbler (*Dendroica petechia*).—This species revives its song in late July, and usually continues to sing until late August. I had no opportunity to make regular observations in Allegany Park. In Connecticut the song averages July 28 to Aug. 20, the earliest being July 21, 1946, and the latest, Aug. 25, 1941. In September I have heard single songs Sept. 7, 1940, and Sept. 21, 1942; the latter was one of primitive character.

Magnolia Warbler (*Dendroica magnolia*).—In the Allegany State Park this bird sings occasionally in August, after the regular period is over. I have heard it Aug. 16 and 27, 1922; Aug. 26, 1932; Aug. 12, 13, 1938; and Aug. 10, 11, 1940. Some of these dates are earlier than the latest regular singing, for this species sang regularly until Aug. 15, 1937. But 1937 was an unusual year in that respect, and in 1938 and 1940 it was very evident that regular singing of this species ceased in July.

Black-throated Blue Warbler (*Dendroica caerulescens*).—In five of the sixteen summers I spent in the Allegany Park, this bird revived its song in August. It was heard Aug. 5, 8, 9, and 22, 1922; Aug. 7, 1934; Aug. 9 and 21, 1936; Aug. 6, 7, 8, and 10, 1937; and Aug. 7, 1939. I have never heard it in fall migration, but Bicknell (1884: 213) records Sept. 22, 1878.

Myrtle Warbler (*Dendroica coronata*).—Fall singing of this species, in my records, is confined to a single song heard Oct. 4, 1942.

Black-throated Green Warbler (*Dendroica virens*).—This species sings rarely after the nesting season. I have heard it only on Oct. 3, 1941, and Sept. 24, 1942. On the second date the song was incomplete and of somewhat primitive character.

Chestnut-sided Warbler (*Dendroica pensylvanica*).—In Allegany Park I have heard late songs of this species Aug. 11, 1931, and Aug. 9 and 19, 1937. In Connecticut it sang on Aug. 17, 1942; Aug. 30, 1944; and Aug. 9 and Sept. 1, 1946.

Prairie Warbler (*Dendroica discolor*).—Dates for late singing of this species are: Sept. 7, 1923; Sept. 10, 1931; Sept. 3, 1936; and Aug. 21, 1946.

Oven-bird (*Seiurus aurocapillus*).—The revival song of this species is sometimes the regular territory song and sometimes the flight song. The regular song was heard in Allegany Park on Aug. 23 and 27, 1922; Aug. 8, 1928; and Aug. 23 and 24, 1939. Flight songs were heard on

July 21 and 25 and Aug. 3, 1934; Aug. 27, 1936; and Aug. 3, 11, and 22, 1937. In Connecticut regular song was heard on Aug. 12 and 24, 1941, and Aug. 21 to 24, 1943. A flight song, Sept. 26, 1941, is the only record I have of singing after August.

Northern Water-thrush (*Seiurus noveboracensis*).—Although this species is a regular migrant in August, both in Allegany Park and Connecticut, I have heard the revived song only in Connecticut, on Aug. 22 and 29, 1943, and Aug. 10, 1944.

Louisiana Water-thrush (*Seiurus motacilla*).—In the Allegany Park, a few birds of this species occur each year in fall migration in July or early August. I have heard them sing there only on July 20, 1928, and July 15, 1937. In Connecticut there is a period of song in July and August which averages July 7 to Aug. 3. The earliest date is July 1, 1943, and the latest, Aug. 8, 1945. On July 24, 1942, a bird indulged in an elaborate flight song.

Mourning Warbler (*Oporornis philadelphia*).—In the Allegany Park, this species usually revives its song in late July or August. I have recorded it in thirteen of the sixteen summers I spent there. It averages Aug. 5 to Aug. 16; the earliest date is July 26, 1927, and the latest, Aug. 22, 1937. The revived song is often a flight song.

Yellow-throat (*Geothlypis trichas*).—In the Allegany Park I recorded this species in revival song in only seven of the sixteen summers. In four of these years, only the flight song was heard, on dates varying from Aug. 8, 1932 to Aug. 30, 1935. In the other three years, only the regular song was heard on dates varying from Aug. 10, 1939, to Aug. 24, 1936. In Connecticut, the revived song has been heard in every one of the past six years, averaging Aug. 15 to Sept. 1; the earliest was Aug. 10, 1941, and the latest, Sept. 7, 1941. This was mainly the regular song but there were flight songs in 1943 and 1945, and in 1946 all of the revival songs were flight songs.

Hooded Warbler (*Wilsonia citrina*).—While this species is a regular breeder in Allegany Park, it is not common and I have never heard a revival song there. In Connecticut I have heard songs on Sept. 1, 1943; Aug. 19, 1944; and Aug. 12, 1946.

Canada Warbler (*Wilsonia canadensis*).—This species breeds commonly in the Allegany Park where it revives the song every summer so soon after the cessation of the regular song period that at first I thought that period lasted until mid-August. There is, however, a songless period in late July, varying sufficiently from year to year that dates of first revival in one year may be earlier than cessation of the nesting

song in another. The revival song averages July 29 to Aug. 16; the earliest is July 23, 1934, and the latest, Aug. 29, 1932. In Connecticut, where the bird occurs only in migration, fall songs are heard occasionally, but not every year. The earliest song is Aug. 17, 1943, and the latest, Sept. 7, 1941.

Redstart (*Setophaga ruticilla*).—The revival singing of this species is irregular. Records of late singing in the Allegany Park are: Aug. 18, 19, 1934; Aug. 2, 6, 1935; and Aug. 10, 1939. In Connecticut, the song is more frequent and averages July 29 to Aug. 20; the earliest, July 22, 1943 and the latest, Aug. 24, 1941. Revival singing varies so much from year to year that in 1942 there was a very short period of cessation, whereas in 1945 I heard a revival song only once, on July 31, and in 1946 there was very little revival singing. Bicknell (1884: 217) records a song on Sept. 5.

Eastern Meadowlark (*Sturnella magna*).—This is one of the few species that sing every year in the fall. In twenty-four years of observation the average dates are Sept. 24 to Nov. 15. In some years the bird begins to sing early in September and continues to December. In others, there is only a little song in October or early November. The earliest date for the beginning of fall song is Sept. 3, 1939, and the latest, Oct. 15, 1918. The earliest last song is Oct. 26, 1935, and the latest, Dec. 19, 1937.

Red-wing (*Agelaius phoeniceus*).—The song of this species is rarely heard in the fall. Records are: Oct. 31, 1937, and Oct. 12, 16, and 31, 1943.

Orchard Oriole (*Icterus spurius*).—My only records, after the regular song period, are Aug. 20 and 21, 1943, and Aug. 9, 1946.

Baltimore Oriole (*Icterus galbula*).—The song of this species is revived every year in late July and August. In some years revival follows cessation so closely that I can only guess which dates are the last of the nesting singing and which the first of revival. Using these guesses, the beginning of revival averages July 24, with the earliest on July 15, 1945, and the latest, July 28, 1941. The final song averages Sept. 2; the earliest is Aug. 30, 1942, and the latest, Sept. 7, 1941. The revived songs begin with ones that are short and curtailed, but they gradually pick up to full songs in mid-August. But never, at this season, is song so frequent or exuberant as it is in spring.

Rusty Blackbird (*Euphagus carolinus*).—I have heard this bird in fall only on Oct. 31, 1937, and Oct. 12, 1945. Bicknell (1885: 252) indicates that it is a fairly common fall singer. I find that I have

missed seeing it at all in a number of fall seasons. Perhaps the species was commoner in past years than it is today.

Scarlet Tanager (*Piranga olivacea*).—This bird sings rarely in September. Records are: Sept. 14, 1922; Sept. 22, 1935; and Sept. 3, 5, and 6, 1944. When one hears this song in September it is an opportunity, in my experience, to observe a male bird in the full winter plumage.

Rose-breasted Grosbeak (*Pheucticus ludovicianus*).—In Allegany Park, I heard this bird in song on Aug. 17 and 23, 1933. In Connecticut, records are: Aug. 28, 1941; Aug. 15, 31, 1942; Aug. 29, 30, 1943; and Sept. 16, 1945. On two occasions the August singers proved to be young males in immature plumage. Bicknell (1885: 151) records a young male singing, Sept. 23, 1879.

Purple Finch (*Carpodacus purpureus*).—Records of the singing of this species on Sept. 5, 1942, and Aug. 11, 1946, are evidently from breeding birds. In fall migration, when the species is much more numerous, singing averages Oct. 10 to Nov. 3. The earliest of this singing is Sept. 29, 1941, and the latest, Nov. 19, 1927. Songs heard Oct. 28 and Nov. 12, 1944, were not the typical song, but the "vireo" song (Saunders, 1935: 246).

Goldfinch (*Spinus tristis*).—This bird is a rare fall singer. Records are: Oct. 28 and Nov. 1, 1919; Nov. 20, 1926; Oct. 26, 1935; Nov. 13, 1938; and Sept. 14, 1940.

Towhee (*Pipilo erythrophthalmus*).—Records of fall song for this bird are: Oct. 12, 1935; Oct. 8, 1939; and Oct. 3, 1946. Though fall song is infrequent, it is as loud, full and complete as is the song in spring.

Savannah Sparrow (*Passerculus sandwichensis*).—On Sept. 17, 1922, I traced to its source an indefinite, buzzy song that was entirely unrecognizable and found the bird to be a Savannah Sparrow.

Vesper Sparrow (*Poocetes gramineus*).—I have only two records of fall singing: Oct. 22, 1918, and Sept. 25, 1932. Bicknell (1884: 330) records a flight song, Sept. 30, 1883.

Slate-colored Junco (*Junco hyemalis*).—My only records for fall singing of this species are: Oct. 22 and 26, 1918; Oct. 21, 1934; and Oct. 27, 1935.

Tree Sparrow (*Spizella arborea*).—I have heard this species in fall song in seven years, usually on only one date in each year. The average date is Nov. 11; the earliest, Oct. 30, 1938; and the latest, Nov. 19, 1943.

Chipping Sparrow (*Spizella passerina*).—A single bird in song, Aug.

21, 1944, is the only record I have of singing after the regular period. Bicknell (1885: 145) records songs from Sept. 24 to Oct. 10.

Field Sparrow (*Spizella pusilla*).—I have records of a full song of this species only on Sept. 26, 1931, and Sept. 28, 1941. In four other years I have recorded primitive songs, varying from Oct. 10 to Oct. 26.

White-crowned Sparrow (*Zonotrichia leucophrys*).—Records of fall singing for this species are: Sept. 27, 1914; Sept. 30, 1928; Oct. 8 and 9, 1938; and Oct. 2, 1943. It is a rather rare bird in Connecticut. In regions where it is more numerous, probably fall song is heard frequently.

White-throated Sparrow (*Zonotrichia albicollis*).—This species is one that can be heard in song every fall. I have records for twenty-five years. The average dates are Oct. 6 to Nov. 6. The earliest song is Sept. 26, 1926 and 1931. The latest is Nov. 29, 1940. The first arrivals in fall are not in song. I have always seen this species in fall before I have heard a song, and the wait for song ranges from two days to three weeks. Fall songs are not commonly perfect and full. They are shortened, or the pitch of the last notes is badly flattened, as if the bird had not energy enough to keep it up.

Fox Sparrow (*Passerella iliaca*).—I have records of fall singing in this species for ten years, but usually only one or two days in each year, and of intervening years in which the bird was often common but no song was to be heard. The dates of songs average about Nov. 13, with the earliest, Oct. 30, 1927, and the latest, Nov. 23, 1939.

Swamp Sparrow (*Melospiza georgiana*).—Bicknell (1885: 149) writes of this species as a common fall singer, giving Sept. 18 to Oct. 17 as limits of the singing season. My observations are confined to a single case of a bird singing a song of primitive character on Oct. 8, 1932. Probably Bicknell had access to some large swampy areas where this bird was a common breeder. There are no such areas in southwestern Connecticut, and breeding birds are few and generally isolated. The species is common in migrations, but evidently migrating birds do not often sing.

Song Sparrow (*Melospiza melodia*).—This species is the most regular and dependable fall singer of all of our birds. I have records of its singing for twenty-seven years. The average date for the first song is Sept. 30; the earliest, Sept. 13, 1942; and the latest, Oct. 11, 1931. The song period continues to November, averaging Nov. 21. The earliest last song is Nov. 6, 1936, and the latest, Dec. 4, 1941. When one studies details of individual songs and learns to recognize indi-

vidual birds by this means (Saunders, 1924) it may frequently be noted that fall singers are the same individuals, occupying the same territory that they did in summer (Nice, 1943: 125). Occasional songs, mainly in September, are of primitive type, but I more frequently hear such songs at the close of the nesting season in August or the beginnings of spring song in February or March.

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Fairfield
Connecticut

BIRDS OF THE ALTA LAKE REGION, BRITISH COLUMBIA

BY KENNETH RACEY

DURING 1926, a list of the birds found in the Alta Lake district was published in *The Auk* (see *Auk*, 43: 319, July, 1926). Since the compilation of this list, twenty years ago, many new records for the region have been found, and several corrections have been made in the original list.

During the past twenty years, there has been but little change in the climatic conditions, this period participating in the usual climatic cycles. Some of the glaciers in the surrounding mountains have receded to a noticeable extent, and others have entirely disappeared. In near-by Pemberton Valley, the precipitation for 1945 was 37 inches, whereas the average for the past thirty-three years is 35 inches.