

FIELD-NOTES ON THE MAMMALS, BIRDS AND REPTILES OF
NORTHERN CALIFORNIA.

By CHARLES H. TOWNSEND.

(With one plate.)

The first studies of the zoology of Northern California of which we have any record were those of Dr. J. S. Newberry, in connection with the Pacific Railroad Surveys of nearly thirty years ago.* Subsequently, collections of mammals, birds, and reptiles were made at Fort Crook by Lieut. John Feilner and D. F. Parkinson, and at Yreka by Mr. William Vuille, but no publications on the subject appeared after the Reports of the Pacific Railroad Surveys until Mr. H. W. Henshaw, in 1878, studied the ornithology of the northeastern portion of the State in connection with United States Geographical Surveys west of the 100th meridian.†

Prof. E. D. Cope published brief notes on the reptilia of the region in the Proceedings of the Philadelphia Academy of Sciences, which were based on collections made by himself on the McCloud River in 1882.

The extensive labors of Dr. Cooper in California were altogether south of the region here treated of.

The present paper results from collections and observations made by myself while connected with the operations of the United States Commission of Fish and Fisheries in California. During a period extending from April 1, 1883, to July 15, 1884, I visited the counties of Siskiyou, Shasta, Tehama, and Lassen, and subsequently spent a month in Humboldt County in 1885 (November 15 to December 17).

Of birds, the entire number of species noted by me personally is more than two hundred, but by placing on the list about sixty additional species known to the region from the labors of other observers, the ornithological portion of the paper is made a complete list of the species so far known to have been found in California north of the fortieth parallel. The same is true with regard to the fullness of the lists of mammals and reptiles; all three lists being restricted to the species whose presence in the region is proved.

The Sierra Nevada and Coast ranges extending through Northern California divide it very naturally into three separate faunal regions: the Redwood region on the coast; the Sacramento, lying between the two ranges of mountains; and the eastern region, sloping from the Sierras toward the State of Nevada. (See Plate V, sketch map of Northern California.)

* See Bibliographical Appendix.

† A brief account of "Explorations in Northern California," by John Feilner, appeared in the Smithsonian Reports for the year 1851.

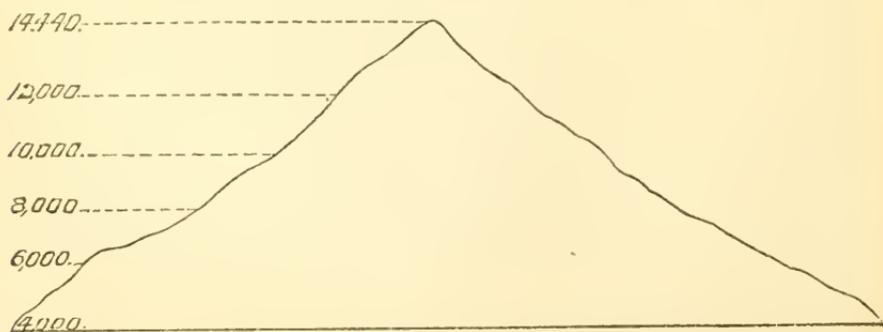
The first is characterized by a heavy growth of redwood forest, which does not extend much farther south in California than the Russian River, and by a greater rainfall than any other part of the State. It is apparently but a narrow southward extension of the redwood region occupying the coast farther north, and with a similar climate. Several species of birds are here found darker, or otherwise differentiated, when compared with examples from drier regions. Examples of such are the Valley Quail, the Wren-Tit, and the California Jay, and they have been distinguished from those on the opposite side of the mountains as subspecies.

The second is the narrow northward extension of the great interior plain of California drained by the Sacramento River. It is comparatively dry and is usually unwooded, except in the vicinity of streams.

The Magpie, the Road-Runner, the Burrowing Owl, &c., range from the far south to the very head of the valley. The Antelope once abounded here and the Badger finds here the open plains it requires.

But the third, or eastern, region, is the most marked and the most diversified. Beginning at the Nevada boundary line with level plains, it rises through scattered hills to the high Sierras. There are no large streams, but large and small lakes are scattered everywhere, and open, sage-covered meadows are found at random among the lower pine forests. Birds of the central region of the United States, such as the Sharp-tailed Grouse, Sage Hen, and Nuttall's Whippoorwill, find the Sierra Nevadas an impassable barrier, and are found no farther west in this latitude. The western limit of many mammals, among which may be mentioned the Mule Deer and the Rocky Mountain Woodchuck, is also found here.

In addition to the interest which attaches to the meeting in Northern California of the faunas of three separate regions there is that of the classification of the country into three regions according to elevation: The valleys or plains, but little above the level; the foot-hills or chaparral belt; and the pine forests extending from about 3,000 feet up to the highest limit of timber. As might be expected, these regions differ greatly from each other in climate and vegetation.



Mount Shasta, Northern California (outline from southeast).

My most fruitful collecting field was in the rugged foot-hills of Shasta County, particularly in the vicinity of the United States salmon-breeding establishment on McCloud River.

The station has an elevation of 1,000 feet, but is surrounded by mountains rising usually a thousand feet higher. The country is wooded chiefly with pines, but the forests are often interspersed with vast tracts of impenetrable chaparral.

Mammals, birds, and reptiles abound, and the streams are full of salmon and trout.

The Black-tailed Deer (*Cariacus columbianus*) is especially abundant. The following species of birds obtained here were not met with elsewhere :

Columba fasciata.
Sphyrapicus varius nuchalis.
Trochilus alexandri.
Trochilus calliope.
Melospiza heermanni.

Tachycineta thalassina.
Vireo huttoni.
Harporhynchus redicurus.
Chamaea fasciata henshawi.

During the summer of 1883 I traveled through the Mount Shasta country in Siskiyou County, with a party of the United States Geological Survey, the topographical division, Prof. Gilbert Thompson in charge. The route included Yreka and the headwaters of the McCloud River as well. Much time was spent on the higher slopes of the mountain, the summit of which is 14,440 feet high, and clothed in perpetual snow. North of Mount Shasta there are extensive sage plains stretching away toward Oregon, but immediately around the mountain and to the southward are continuous and magnificent pine forests. The nature of the country in general is so frequently explained in the following notes that it is unnecessary to speak further of it here.

The following is a list of the birds and mammals belonging properly to the evergreen coniferous forests and higher mountains of Northern California generally :

BIRDS.

Oreortyx "plumiferus."
Dendragapus "fuliginosus."
Columba fasciata.
Accipiter "striatulus."
Xenopicus albolarratus.
Picoides arcticus.
Sphyrapicus ruber.
Sphyrapicus thyroideus.
Ceophlæus pileatus.
Contopus borealis.
Cyanocitta stelleri.
Perisoreus obscurus.
Picicorvus columbianus.
Cyanocephalus cyanocephalus.
Carpodacus cassinii.
Loxia minor.
Passerella megarhyncha.

Passerella "schistacea."
Pipilo chlorurus.
Dendroica occidentalis.
Helminthophila "lutescens."
Geothlypis macgillivrayi.
Geothlypis "occidentalis."
Certhia "americana."
Sitta canadensis.
Parus gambeli.
Parus rufescens.
Sialia arctica.

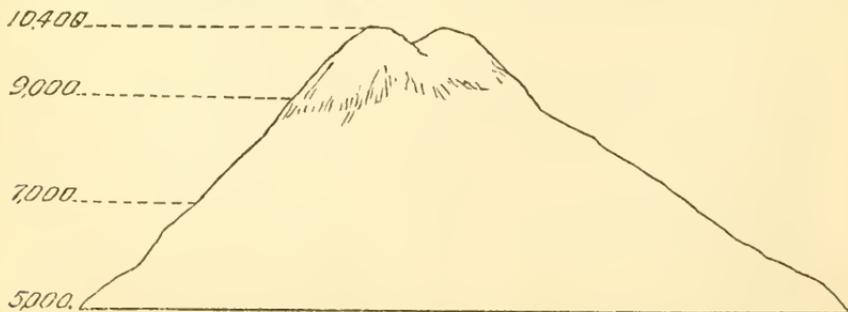
MAMMALS.

Haplodon rufus.
Lagomys princeps.
Tamias lateralis.
Sciurus "fremonti."
Sciurus douglassi.

MIDSUMMER BIRDS OF THE TIMBER-LINE ON MOUNT SHASTA.

1. *Dendragapus "fuliginosus."* Common.
2. *Accipiter cooperi.* One specimen.
3. *Accipiter velox.* One specimen.
4. *Accipiter "striatulus."* Two specimens.
5. *Buteo "calurus."* Seen once.
6. *Haliaeetus leucoccephalus.* Seen once.
7. **Falco sparverius.* Very common.
8. *Sphyrapicus thyroideus.* One specimen.
9. *Melanerpes torquatus.* Not common.
10. **Colaptes cafer.* Common.
11. *Trochilus rufus.* Not uncommon.
12. *Contopus borealis.* Two specimens.
13. *Contopus richardsoni.* Rare.
14. **Cyanocitta stelleri.* Rather common.
15. **Perisoreus obscurus.* Frequent.
16. **Picicorvus columbianus.* The most abundant species.
17. *Sturnella neglecta.* One specimen found frozen in snow.
18. **Carpodacus "cassini."* Very common.
19. **Spizella "arizona."* Very common.
20. **Junco "oregonus."* Common.
21. **Helminthophaga "gutturalis."*
22. **Helminthophaga "lutescens."*
23. *Dendroica auduboni.* Common.
24. *Dendroica occidentalis.* One specimen.
25. *Geothlypis macgillivrayi.* Common.
26. *Sylvania "pilcolata."*
27. *Cinclus mexicanus.* Seen once.
28. **Salpinctes obsoletus.* Abundant.
29. *Catherpes conspersus.* Seen once.
30. *Certhia "americana."* Rare.
31. *Sitta canadensis.* Not common.
32. **Parus gambeli.* Plentiful.
33. **Regulus "olivaceus."* Rare.
34. **Regulus calendula.* Rare.
35. *Myadestes townsendi.* Not uncommon; one specimen found frozen in the crater.
36. **Merula "propinqua."* Rather common.
37. **Sialia arctica.* Abundant.

The summer of 1884, until July, was spent in Lassen County, in the region sloping eastward from Lassen's Peak, a perpetually snow-crowned



Lassen's Peak, Northern California (outline from north).

mountain 10,400 feet high. The region is mountainous, with numerous lakes and vast pine forests extending down to the borders of the sage plains to the eastward.

The mammals and birds named below were obtained only on this eastern slope of the Sierra Nevada:

MAMMALS.

Cariacus macrotis.
Arctomys flaviventer.
Tamias "townsendi."
Spermophilus "townsendi."
Sciurus "fremonti."
Lepus campestris.
Arvicola "eurtatus."

BIRDS.

Hydrochelidon "surinamensis."
Pelecanus erythrorhynchos.
Pelagadis guarana.
Phalaropus tricolor.
Recurvirostra americana.
Himantopus mexicanus.
Pediocates "columbianus."
Centroceres urophasianus.
Picooides arcticus.
Passerella "schistacea."
Phalaropus nuttalli.

Collections were made in winter in the northern end of the Sacramento Valley, near the town of Red Bluff. The following are the birds peculiar to the valley region, or at least not obtained elsewhere:

Totanus melanoleucus.
Ereunetes occidentalis.
Elaenus leucurus.
Geococcyx californianus.

Coccyzus americanus.
Dryobates nuttalli.
Otocoris "strigata."
Pica nuttalli.

On a brief trip to Northern California, in the fall of 1885, I was enabled to make small collections of vertebrates in the rainy belt of country occupying the coast, a region of dense and continuous redwood forests. The birds abounding here, but apparently wanting in the interior, are:

Trinator pacificus.
Stercorarius parasiticus.
Larus glaucescens.
Larus occidentalis.
Larus brachyrhynchus.
Larus philadelphia.
Pelecanus californicus.
Merganser serrator.
Anas penelope.
Oidemia fusca.
Oidemia perspicillata.
Philuete canagica.
Porzana carolina.
Porzana norcalifornica.
Crymophilus fulvicastris.
Phalaropus lobatus.

Tringa canutus.
Tringa minutilla.
Tringa "pacifica."
Limosa fedoa.
Totanus flavipes.
Symphemia semipalmata.
Charadrius squatarola.
Arenaria interpres.
Arenaria melanocephala.
Callipepla californica.
Bonasa "sabini."
Falco anatum.
Bubo saturatus.
Melospiza "samuelis."
Pipilo "oregonus."
Chamaea fasciata.

I received courteous treatment from many persons while residing in Northern California, whom it would be superfluous to name. I am,

however, specially indebted to the following-named gentlemen at whose hands I had substantial favors:

Messrs. Robert Radcliff and L. W. Green, in charge of the Government fisheries on McCloud River; Prof. Gilbert Thompson, in charge topographical division U. S. Geological Survey; Mr. H. A. Rawson of Red Bluff, and Mr. J. H. Sisson of Strawberry Valley.

1.—MAMMALS.

Family CERVIDÆ. DEERS.

Cariacus macrotis (Say). *Mule Deer*.

The Mule Deer was found in comparative abundance along the eastern slope of the Sierra Nevadas in Northern California, but was not observed west of that range.

In the region east of Mount Shasta the Black-tailed Deer appeared to be the prevailing species, the present one being only occasionally met with, but in Lassen County, a hundred miles farther south, the reverse was found to be the case. Indeed, I saw nothing of the Black-tailed Deer there, but the hunters with whom I associated informed me that they sometimes killed stragglers of that species in the country sloping eastward from Mount Lassen.

After several months' experience with the rather small Black-tailed Deer in Shasta County and elsewhere, the immense size of the present species, as observed for the first time on the eastern slope of the mountains, was quite a revelation, but nowhere in its range did the Mule Deer appear to exist in as great numbers as did other species on the opposite slope. The first one seen, an old buck, which had been alarmed by the discharge of my shot-gun when I little suspected the near presence of such game, sprang from the bushes at my feet and tore off at such tremendous speed and with such prodigious bounds and crash of chaparral, that he seemed a different kind of deer altogether. When running, the white patch about the tail renders this species conspicuously different from the following one:

Cariacus columbianus (Rich.). *Columbia Deer*; *Black-tailed Deer*.

As mentioned in the account of the preceding species, the Black-tailed Deer, which has hitherto been considered as confined strictly to the Pacific slope, is known to occur in many places low down on the eastern slope of the Sierras. Its eastward range in general is, however, bounded by these mountains, showing its singularly narrow belt of distribution. In the case of this animal, where climate and food can hardly be taken into consideration, such remarkable limits are inexplicable. As expressed by Judge Caton: "An imaginary line which becomes as impassable as a Chinese wall to an entire species of animals who have full physical power to traverse it, but do not, while all others pass it unhesitatingly, is certainly a curious and interesting fact."

This Deer was found in abundance in Shasta and Siskiyou Counties, where I obtained many specimens, as shown by the extract from the Smithsonian catalogues following this sketch. Although almost excluded from the timbered portions of the Upper Sacramento Valley by the encroachments of civilization, it is found immediately upon entering the foot-hills, and ranges thence in summer high up on the mountains. I frequently saw individuals in midsummer at the limit of highest bushes on Mount Shasta, and obtained specimens near the timber-line in September. At this season some of the younger animals were still in the yellowish-red summer coat, which, in the majority of the older Deer, had given place to the short hairs developing into the bluish winter coat. In still other examples the long lighter-colored hair was adhering in patches about the hinder parts, and could be rubbed off with the hand, exposing the new growth beneath. A month later the new coat had attained probably its full length, as there was no appreciable difference in this respect between those taken in October and those taken in February.

There is what might be termed a migration of Deer in this region—a very decided up and down movement in spring and fall between the valleys and the high mountains. In Shasta County this is north and south migration, from the fact of the country rising toward the north, the southern portions being foot-hill country.

Indeed the animals seem to retire *en masse* into the mountains in spring, for it was with difficulty that venison could be procured in sufficient quantity for the table during the summer along the Lower McCloud River. They were found in midsummer in abundance everywhere about Mount Shasta, where, during the month of July, 1883, one of my friends killed twenty bucks. It is unlawful to kill female Deer at any season in California, and a sportsman who does it is dubbed with the contemptuous sobriquet of "doe-killer." In one hunter's camp where I was entertained for a time the rule was that any member of the party who should bring in a buck with less than three "points" to his antlers should perform the culinary duties of the camp until some one else should be proven guilty of a similar offense. The dish-washing punishment was an effective restraint upon those who were un-sportsmanlike enough to kill "spike" bucks and females where large Deer were plenty, and prevented the undue accumulation of venison. An exception to this rule was made in the case of the writer on the ground that he did not shoot for sport, but in the interests of science.

Several hundred Deer have recently been killed in Northern California for their hides alone, the carcasses being often thrown away entire. Such fiendish work is condemned by all honorable persons, and the practice is being frowned down. Residents of localities abounding in deer are accustomed to kill females when requiring meat, and nothing is said about it, but the time will surely come when the laws must be religiously observed if the Deer are to be preserved in abundance.

In the fall the Black-tailed Deer begin to descend into the foot-hills and the lower country generally, and in winter are as numerous there as they are in summer at greater elevations.

Winter specimens were all infested with parasites, about an inch in length, which were found in clusters in the folds of the throat, almost every animal examined having considerable numbers of them. They appeared to be the larva of a bot-fly (*Estrus?*).

Many of these specimens were useless for mounting, the animals having spoiled their coats by rubbing against trees to rid themselves of wood-ticks.

The antlers of these Deer vary greatly in the number of "points," deformity, rugose appearance, &c.

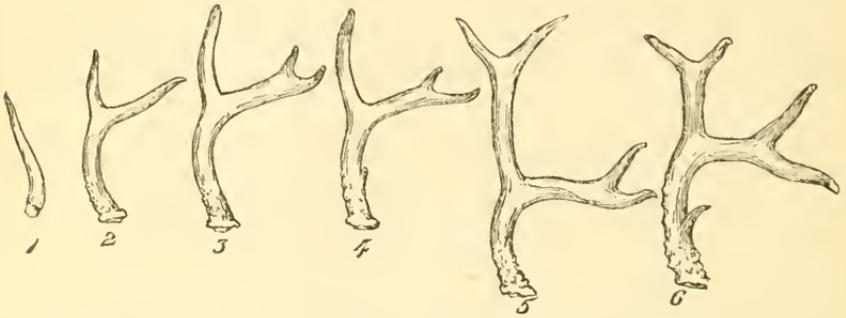
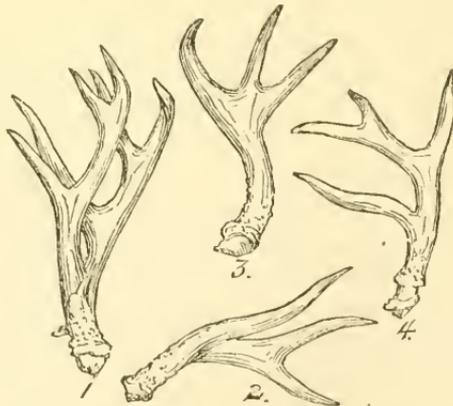


Fig. 1, spike of yearling; Figs. 2 and 3, antler at second year; Figs. 4 and 5, antlers at third year; Fig. 6, fully-developed antler as to form, but becoming heavier and rougher with age.

The accompanying cut illustrates, in a general way, the appearance of the antler with each year's growth, until the fourth or fifth year, after which the normal appearance is that of Fig. 6.



ABNORMAL GROWTHS.—Fig. 1, double antler with two brow-tines; Figs. 2, 3, and 4, deformed antlers from old deer.

In Siskiyou County I saw a pair of antlers with the right one so palmated and flattened that it resembled a miniature moose-horn.

A hunter in Shasta County showed me a pair of slim-looking horns, which he assured me adorned the head of a doe, killed by an Indian in his employ, and the statement was substantiated by one of his neighbors. This man's porch was ornamented with numerous deer-horns remarkable for size and deformity.

The wild bucks seen April 1 had new horns, in the velvet, about 3 inches long. In July they appeared to have attained their full size, but the velvet did not begin to rub off until towards the last of August. In specimens killed September 10 there were bits of this covering still adhering to the white and, as yet, unpolished antlers. The antlers do not drop off until about the 1st of February, although there is considerable difference in this respect between the young and the old bucks, the former carrying their spikes much longer.

We thought we could detect quite an individual difference in the adult bucks brought to our camps. One class were seemingly long-legged lank deer, with large and rough horns, while the others had shorter legs and smoother, and usually smaller, though perfectly developed, antlers. The difference in the weight of these two kinds was very noticeable, the latter being decidedly heavier. The hunters appeared to have no explanation for this individual difference, although they constantly recognized it. It is probably due to age only, the very old animals probably not attaining the weight of those only five or six years old.

The rutting season with this species is about the month of November, when the first frosts come. It is somewhat earlier in the high mountains than in the low country. An early rain appears to have the effect of hurrying this time a week or more, and then the Deer are found running everywhere about the woods, where a week before they might have been scarce. In this region fawns are dropped in May and June. Hunters think that this period is also affected by the locality, whether low or elevated. In such mountainous country a difference of only a couple of thousand feet in altitude makes a great difference in the progress of the seasons, the first frosts affecting the rutting, and thus the fawning periods.

Still-hunting is the only method practiced in Northern California, so far as I am aware, in the hunting of the Black-tailed Deer. I heard nothing of any habitual hounding of Deer, or shooting on runways, or night-hunting with lights. Dogs are used by many hunters in trailing wounded animals and as assistants in discovering game, but the common varieties are usually the only ones trained in such work.

In the spring and summer months the customary method of the still-hunting is to ascend the high wooded ridges, early in the morning, and seek the deer before they retire to the brushy gulches for concealment and to escape the heat of noon. At such times they may be found wandering in small bands along the ridges and other elevations where there is but little brush, while later in the day they are not easily

started from their hiding places unless frightened by a dog. At other seasons they are more irregular in their habits, and may be found with equal readiness at all hours of the day. A good tractable dog is a valuable adjunct in hunting, but really reliable dogs are the exception, and many hunters are accustomed to do without them altogether.

The "salt-licks," occurring in many parts of the country, are regularly visited at night by the deer, at certain seasons, and often prove good shooting places. The animals establish distinct trails leading to these licks, and sometimes resort to them in considerable numbers.

The Black-tailed Deer is called *Uōp* by the Indians of Northern California.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimens.
1883.					
14108	28	♀ juv.	Siskiyou County, California...	Sept. 7	Skin.
14109	29	♀ juv.	do	Sept. 11	Do.
14110	31	♀ juv.	Shasta County, California.....	Oct. 18	Do.
14111	32	♂ ad.	do	Oct. 18	Do.
14112	33	♀ juv.	do	Oct. 18	Do.
14113	34	♀ ad.	do	Oct. 19	Do.
14114	35	♂ ad.	do	Oct. 23	Skin of head.
14115	36	♀ juv.	do	Oct. 31	Skin.
14116	37	♂ ad.	do	Oct. 31	Do.
14117	38	♂ juv.	do	Oct. 31	Do.
14118	41	♀ juv.	do	Nov. 6	Do.
14119	42	♂ ad.	do	Nov. 6	Do.
14120	43	♂ ad.	do	Nov. 7	Do.
14121	51	♂ ad.	do	Nov. 15	Do.
11122	52	♂ ad.	do	Nov. 20	Do.
1884.					
14248	60	♂ ad.	do	Jan. 15	Do.
14249	61	♂ ad.	do	Jan. 15	Do.
14250	62	♀ juv.	do	Jan. 15	Do.
14251	63	♀ ad.	do	Jan. 19	Do.
14252	61	♀ juv.	do	Jan. 19	Do.
14253	65	♀ ad.	do	Jan. 19	Do.
14254	68	♂ ad.	do	Jan. 26	Skin of head.
14255	69	♀ ad.	do	Jan. 26	Do.
14313	75	♂ ad.	do	Feb. 8	Skin.
14314	76	♀ ad.	do	Feb. 8	Do.
14315	77	♀ ad.	do	Feb. 11	Do.
14316	78	♀ juv.	do	Feb. 11	Do.
14317	79	♀ ad.	do	Feb. 11	Do.
14318	80	♀ ad.	do	Feb. 11	Do.
21225	81	♂ ad.	do	Feb. 11	Skeleton.
21218	82	♀ ad.	do	Feb. 11	Do.
21226	83	♂ ad.	do	Feb. 11	Do.
21219	84	♀ ad.	do	Feb. 13	Do.
21220	85	♀ ad.	do	Feb. 13	Do.
21221	86	♀ ad.	do	Feb. 13	Do.
21222	87	♀ ad.	do	Feb. 13	Do.
21227	88	♂ ad.	do	Feb. 13	Do.
21228	89	♂ ad.	do	Feb. 13	Do.
.....	90	♂ ad.	do	Feb. 17	Do.
21223	91	♀ ad.	do	Feb. 17	Do.
21224	92	♀ ad.	do	Feb. 17	Do.

Cervus canadensis Erxl. *Wapiti*: American "Elk."

The retreat of the large mammals before advancing civilization is amply illustrated in the history of the Elk in California: Once abundant in nearly all suitable localities in the State, it is now almost unknown. I saw its weather-worn antlers at several places in the Sacramento Valley and along the coast in the vicinity of Point Reyes. It still exists in moderate numbers in Mendocino, Humboldt, and Trinity Counties, along the upper courses of Bel, Elk, and Trinity Rivers. Two large

Elk were shot in Humboldt County in December, 1885, and brought to Eureka, where I saw them. It has probably entirely disappeared from its former haunts about the eastern base of Mount Shasta.

Family ANTILOCAPRIDÆ. THE PRONG-HORN ANTELOPE.

Antilocapra americana Ord. *Prong-horn Antelope.*

Like the preceding, this species was once abundant in nearly all the open country of California. It is but a few years since it disappeared from the Sacramento Valley, where it lived in great numbers. It is not now found west of the Sierras in the northern part of the State. Along the eastern slope, from the Klamath lakes southward, it is yet comparatively common. I saw some in 1883 that had been killed on the plains lying northeast of Mount Shasta, and met with it frequently in Lassen County in 1884. There it was usually found on the open, sage-covered meadows interspersed through the pine forests, and was sometimes found back among the pines, a mile or more from any open glade. The sheep-herders of the region said that their young were often found in June.

The skins of Antelopes I killed at that season were unfit for preservation, owing to the looseness of the hair.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimens.
21519	147	♀	Lassen County, California	1884. June 6.	Skeleton.
21520	174	♀	.....do	June 26.	Do.

Family BOVIDÆ. CATTLE.

Ovis canadensis Shaw. *Bighorn ; Mountain Sheep.*

As a further illustration of the disappearance of large mammals from regions where they were once abundant, I quote the following, written by Dr. Newberry, a little more than twenty-five years ago :

“On the slopes and shoulders of Mount Shasta the *Ovis montana* exists in large numbers, so much so that one spur of the mountain has been named ‘Sheep Rock,’ and there the hunters are always sure of finding them.”

All this is changed. There is probably not a single Bighorn remaining either on Shasta or its outlying spur, Sheep Rock. I had the privilege of traveling over every part of this particular section with the Topographical Division of the U. S. Geological Survey during the summer of 1883, and we could find no traces of its presence. Resident hunters reported it as having disappeared, none having been seen for more than six years. Its former abundance at Sheep Rock was attested by the great number of its horns and bones, which were scattered about everywhere. Prof. Gilbert Thompson, in charge of our party, pointed out to me a complete skeleton of this animal at the foot of the Mud Creek gla-

cier, high up on Mount Shasta. I learned nothing of its occurrence in the Mount Lassen region, although it is found in the high Sierras, farther south. It exists in moderate numbers in Northeastern California and the adjoining portion of Oregon.

Family SCIURIDÆ. SQUIRRELS.

Arctomys flaviventer Aud. and Bach. *Rocky Mountain Marmot*.

This animal was met with only on the eastern slope of the Sierras in Lassen County, and in but one particular ledge of rocks, where it lived in large numbers. It has been taken at Fort Crook by Captain Feilner, and as this locality is also on the eastern side of the mountains it appears that the species may be confined to that side as I learned nothing of its occurrence elsewhere in Northern California.

Museum regis-ter No.	Col-lector's No.	Sex and age.	Locality.	Date.	Nature of speci-mens.
14572	148	Ad	Lassen County, California	1884. June 6	Skiu.
14573	157	Juv ....	.....do	June 17	Do.

Tamias lateralis (Say). *Say's Chipmunk*.

This handsome animal is an abundant resident of the pineries, to which it is strictly limited. It is found from the lower border of the coniferous belt as high up on the mountains as the timber extends, and in certain portions of its range, as on the western slope of Mount Lassen, literally swarms. It, like all other Chipmunks of the higher pine forests, passes the severer part of the winter in complete hyber-nation.

Resident hunters about Mount Shasta said that Chipmunks never appeared in midwinter. Its large size and distinct stripes render it a conspicuous species in its haunts; while riding along the unfrequented roads through the pines one may see it continually bobbing up from behind some rock or prostrate tree trunk, often remaining so close as to render distinct every movement of its bright eyes twitching with nervous curiosity.

Museum regis-ter No.	Col-lector's No.	Locality.	Date.	Nature of speci-mens.
14455	10	Siskiyou County, California ..	1883. July 22	Skin.
14456	15	.....do	July 26	Do.
14457	16	.....do	July 26	Do.
14589	149	Lassen County, California	1884. July 15	Do.
14590	150	.....do	July 15	Do.
14598	151	.....do	July 15	Do.
14644	201	.....do	July —	Do.
14645	202	.....do	July —	Do.
14646	203	.....do	July —	Do.
14647	204	.....do	July —	Do.
14648	205	.....do	July —	Do.
14649	206	.....do	July —	Do.
14650	207	.....do	July 5	Do.

Tamias asiaticus Townsendi (Bach.). *Townsend's Chipmunk.*

Abundant on the eastern slope of the Sierras in Lassen County. It is confined to the pine forests like the others of its genus in Northern California. Although not recognized elsewhere there is probably no reason why it should not occur on the western side of the mountains.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
14591	167	Lassen County, California	1884. June 20	Skin.
14592	168	.....do.....	June —	Do.
14593	169	.....do.....	June —	Do.
14594	170	.....do.....	June —	Do.
14595	171	.....do.....	June —	Do.
14596	172	.....do.....	June —	Do.
14597	173	.....do.....	June —	Do.
14651	197	.....do.....	July —	Do.
14652	198	.....do.....	July —	Do.
14653	199	.....do.....	July —	Do.
14654	200	.....do.....	July —	Do.

Tamias asiaticus quadrivittatus (Say). *Rocky Mountain Chipmunk.*

Quite as abundant in Siskiyou and Northern Shasta Counties as the preceding species is on the eastern side of the Sierras. Chipmunks were not seen in the foothills except on one or two occasions when I found the present species on the high hills along the Lower McCloud.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
14458	7	Shasta County, California	1883. June 17	Skin.
14459	8	Siskiyou County, California	July 14	Do.

Tamias asiaticus Townsendi (Bachman). *Townsend's Chipmunk.*

This Chipmunk is plentiful among the redwoods at Humboldt Bay. No other squirrels were met with in the coast region.

Collector's No.	Locality.	Date.	Nature of specimens.
293	Humboldt Bay	1885. Dec.	Skin.
294	.....do.....	Dec.	Do.
295	.....do.....	Dec.	Do.
296	.....do.....	Dec.	Do.
297	.....do.....	Dec.	Do.

Spermophilus grammurus Douglassi (Rich.) *Douglass's Lined-tailed Spermophile.*

Exceedingly abundant in the Upper Sacramento Valley, ranging well into the foothills in some places, but never being found as high as the

pine belt. In the region about Red Bluff it was especially numerous; whether one went along the roads through the fields, or along the streams, he was sure of finding this omnipresent Spermophile. It not only makes its burrows around the orchards and along the fences through the wheat fields, but gathers in colonies or lives solitary in places far distant from the tilled lands. In places where its burrows are numerous, a pair or more of burrowing owls may be found, which, having no prairie dogs to dig holes for them, are compelled to depend upon it for their habitations.

This animal may hibernate to a certain extent, but as snow rarely falls in the Upper Sacramento Valley and never lies more than a few hours when it does, its hibernation is imperfect. The large proportion of mild days renders it possible for the animal to appear at any time. I was not in the valley during January and February, but in December and March the only indications of hibernation were its decreased numbers.

Douglass's Spermophile is a destructive animal to growing crops, and although under the ban of agriculturists seems to maintain its existence in spite of all poisons that may be employed against it.

Museum regis- ter No.	Collec- tor's No.	Sex and age.	Locality.	Date.	Nature of speci- men.
				1883.	
14437	4	.....	Shasta County, California . . .	Apr. 20	Skin.
14438	6	.....	do	May 12	Do.
				1884.	
14439	106	.....	Tehama County, California . . .	Mar. 15	Do.
14440	106	.....	do	Mar. 15	Do.
14441	108	.....	do	Mar. 15	Do.
14445	109	.....	do	Mar. 20	Do.
14446	110	.....	do	Mar. 20	Do.
14447	111	.....	do	Mar. 20	Do.
14448	112	.....	do	Mar. 20	Do.
14449	113	.....	do	Mar. 20	Do.
14450	114	.....	do	Mar. 28	Do.
14451	115	.....	do	Mar. 28	Do.
14452	117	.....	do	Mar. 29	Do.
14453	118	.....	do	Mar. 29	Do.
14454	119	.....	do	Mar. 29	Do.
14472	126	.....	do	Apr. 4	Do.
14443	127	.....	do	Apr. 5	Do.
14444	128	.....	do	Apr. 5	Do.
21255	134	.....	do	Apr. 25	Skeleton.
21236	135	.....	do	Apr. 25	Do.
21237	136	.....	do	Apr. 25	Do.
21238	137	.....	do	Apr. 25	Do.
21239	138	.....	do	Apr. 25	Do.
21240	139	.....	do	Apr. 25	Do.
21241	140	.....	do	Apr. 25	Do.
21242	141	.....	do	Apr. 25	Do.

Spermophilus grammurus Beecheyi (Rich.). *Californian Lined-tailed Spermophile.*

As is well known, the preceding northern variety, *Douglassi*, and the present southern variety, *Beecheyi*, meet and intergrade in Northern California.

Although my own specimens of *Spermophilus grammurus* are probably all referable to the former, the latter is certainly entitled to a place in

this catalogue, as specimens taken at Fort Reading by Dr. Hammond, and at Fort Crook by Captain Feilner, have been referred to the variety *Beecheyi*.

Spermophilus Richardsoni Townsendi (Bachman). *Townsend's Spermophile*.

I found this species on the eastern slope of the Sierra Nevadas, in Lassen County, where it was abundant, replacing the two preceding species. It is a typical Spermophile in its habits, gathering in communities in suitable places, such as are afforded by the open meadows interspersed through this coniferous region.

It is never found far from these open glades and makes no solitary burrows as chipmunks do. Although from its gregarious life it is at once recognized as a Spermophile, its smaller size and short erected tail render it strikingly chipmunk-like when running.

The Lined-tailed Spermophiles run by comparatively easy bounds, with their long tails gracefully curved, but this fellow scurries over the ground making all sorts of contortions, with his stunted tail pointed skyward. When sitting erect he applies the caudal appendage flat to the ground as a prop, and with fore paws drawn close to the body looks from a distance like a stake in the ground, suggesting at once the name "picket-pin," by which it is known to the hunters and herders of the region. More than once have I mistaken the erect motionless form of this Spermophile for a picket-pin in the grass.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimen.
			1884.	
14580	162	Lassen County, California	June 20	Skin.
14581	163	.....do	June —	Do.
14582	164	.....do	June —	Do.
14583	165	.....do	June —	Do.
14584	166	.....do	June —	Do.
14585	179	.....do	June 26	Do.
14586	185	.....do	July 20	Do.
14587	186	.....do	July —	Do.
14588	187	.....do	July —	Do.
14655	188	.....do	July —	Do.
.....	189	.....do	July —	Do.

Sciurus hudsonius Fremonti (Aud. and Bach.). *Fremont's Chickaree*.

Not uncommon in the pines of Lassen County, the only place it was found. This, with the following variety and intermediate grades, has been obtained at Fort Crook by Feilner and Parkinson:

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimen.
			1884.	
14577	145	Lassen County, California	June 1	Skin.
14578	146	.....do	June 1	Do.

Sciurus hudsonius Douglassi (Gray). *Douglass's Chickaree.*

Common throughout the pine forests surrounding Mount Shasta.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimen.
14433	9	Siskiyou County, California ..	1883. July 14	Skin.
14434	13	.....do	July 23	Do.
14435	14	.....do	July 23	Do.
14436	17	.....do	July 26	Do.

Sciurus fessor Peale. *California Gray Squirrel.* (*Ti-leel-is of the Wintuus*).

Very common everywhere throughout the coniferous forests, ranging low down into the foothills in many places. In winter the males of this species appear to gather in groups, and in Shasta County, in January and February, I have frequently shot half a dozen out of one tree as fast as I could load and fire. Females seemed never to be present in these bands.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimen.
14432	3	.....	Shasta County, California	1883. Apr. 20	Skin.
14429	55	♂	.....do	1884. Jan. 13	Skin in alcohol.
14430	56	♂	.....do	Jan. 13	Do.
14431	57	♂	.....do	Jan. 13	Do.
14472	58	♂	.....do	Jan. 13	Do.
14473	59	♂	.....do	Jan. 13	Do.
14574	142	.....	Lassen County, California	June 1	Skin.
14575	113	.....	.....do	June 1	Do.
14576	144	.....	.....do	June 1	Do.
21513	190	.....	.....do	July 20	Skeleton.
21514	191	.....	.....do	July 20	Do.

Sciuropterus volucella hudsonius (Gmel.). *Northern Flying Squirrel.*

I learned from hunters and miners of the occasional occurrence of the Flying Squirrel in Northern California, but did not meet with it. The species is, however, known to the region from specimens obtained at Fort Crook by Captain Feilner.

Family HAPLODONTIDÆ. SEWELLELS.

*Haplodon rufus** (Raf.). *Sewellel*; "*Mountain Beaver*" (*U. Cal.*); "*Blue Muskrat*." (*U. Cal.*)

A short-tailed rodent of the size of a Muskrat was described to me by residents of Northern California as existing in one or two places on the southern slope of Mount Shasta, and in several places on the eastern slopes of Mount Lassen. This animal, from the minute account given of its mode of life and external features, I readily recognized as *Haplodon*. It was variously described under the names "*Mountain Beaver*" and

* Dr. C. H. Merriam has recently described a larger form (*H. major*) from Central California, to which the present may be referable.

"Blue Muskrat," the names Mountain Boomer, Showtl and Sewell not being in use there. Mr. J. B. Campbell, of Shasta County, told me of finding peculiar animals in his traps once while trapping on Mount Shasta, and his description of them was such as to leave no doubt as to their identity. Subsequently when on Mount Shasta I was unable to find the exact locality where the animals abounded, but met with their burrows at Mount Lassen the following summer (1884). While passing rapidly through the latter region I obtained evidence of the existence of some species of the genus *Haplodon* near Morgan's Springs, on the headwaters of Mill Creek, and while at Big Meadows, on the north fork of Feather River, was shown burrows said to be inhabited by the "mountain beaver." These burrows were in a wild gorge, deep and narrow, down which the little river dashed with roar and foam. In certain places, where for a short distance moist, clayey banks took the place of the interminable fallen trunks and bowlders, were numerous holes, somewhat resembling those made by muskrats, and near them were scattered bunches of freshly cut weeds and coarse grasses. Some of the green herbs were dragged partially into the mouths of the burrows, and if the animal itself had not been readily recognizable from my informant's description, it could doubtless have been identified from this singular habit of cutting herbs and laying them out to dry, as described in Vol. IX of the Pacific Railroad Reports. As I was compelled by force of circumstances to leave there the next day, specimens, unfortunately, could not be obtained. The altitudes of these two localities were each a little over 5,000 feet.

Family CASTORIDÆ. BEAVERS.

Castor fiber Linné. *Beaver*.

Rather common along the wilder streams of the region, such as the Upper Sacramento and the McCloud Rivers. At the western base of Mount Shasta a number of them occupied unmolested a dam, which they had constructed in a corner of a meadow belonging to Mr. J. H. Sisson.

Beaver skins are worth from \$3 to \$5 in Northern California, but trapping in general is not much practiced now. This animal is called *Cá-tet* by the Indians of McCloud River.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimen.
21230	93	Shasta County, California.	1884. Feb. 20	Skeleton.
21231	94	.....do	Feb. 20	Do.

Family MURIDÆ. MICE.

Arvicola austerus curtatus Cope. *Western Prairie Mouse*.

Collected at Fort Crook by Capt. John Feilner; not represented in my collection.

Arvicola riparius (Ord). *Common American Meadow Mouse.*

Found in abundance in timothy meadows at the base of Mount Shasta, and probably equally numerous in suitable localities throughout the region.

Museum register No.	Collector's No.	Locality.	Date	Nature of specimens.
			1883.	
14484	19	Siskiyou County, California...	Aug. 1	Skin.
14486	20	.....do.....	Aug. 1	Do.
14485	21	.....do.....	Aug. 4	Do.
14486	22	.....do.....	Aug. 4	Do.
14487	23	.....do.....	Aug. 4	Do.
14488	24	.....do.....	Aug. 4	Do.
14489	25	.....do.....	Aug. 4	Do.

Hesperomys leucopus (Le Conte). *White-footed Mouse.*

Probably the most abundant and regularly distributed of all the *Muride* of the region, having been met with from the open plains high up into the pine-covered mountains. At one of our camps in Lassen County we were literally besieged by Mice of this species. They would enter the cabin at all hours of the day and feed upon crumbs strewn upon table and floor, while their noisy foraging among our provision boxes by night was a source of real annoyance.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimens.
				1883.	
14483	12	Juv...	Siskiyou County, California ..	July 22	Skin
14481	44	Juv...	Shasta County, California.....	Nov. 9	Do.
14482	45	Juv.....	.....do.....	Nov. 9	Do.
				1884.	
14479	120	.....	Tehama County, California ..	April 5	Do.
14478	131	.....	.....do.....	April 5	Do.
14600	175	.....	Lassen County, California ..	June 26	Do.
14601	176	.....	.....do.....	June 26	Do.
14602	177	.....	.....do.....	June 26	Do.
14603	178	.....	.....do.....	June 26	Do.
14608	192	.....	.....do.....	July —	Do.
14609	193	.....	.....do.....	July —	Do.
14666	194	.....	.....do.....	July —	Do.
14661	195	.....	.....do.....	July —	Do.
14662	196	.....	.....do.....	July —	Do.

Hesperomys leucopus sonoriensis (Le Conte).

Fort Crook. Feilner's collection.

Neotoma cinerea (Ord). *Bushy-tailed Wood Rat.*

The Wood Rat is regularly distributed throughout the foothills and mountains, and its bulky nest, resembling a large brush pile, is one of the common objects to the hunter of the region. I have frequently found a dozen in a single day's tramp, being situated for the most part in brushy tracts or secluded ravines. Sometimes they are built among bushes or against fallen tree trunks apparently for support, as the structures are often 5 feet high. Wood Rats steal all sorts of light port-

able articles from hunters' cabins, which they use in building their habitations, and will carry off large quantities of crackers, grain, groceries, etc. In fact no provisions are safe from their foraging if left unguarded in remote camps. The animals themselves are seldom seen, being rather nocturnal in their habits and must be trapped to be secured.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
14420	12	Siskiyou County, California . . .	1883. Aug. 1	Skin.
14599	152	Lassen County, California	1884. June 15	Do.

Neotoma fuscipes Cooper. *Dusky-footed Wood Rat.*

Near the coast in Humboldt County this Wood Rat is very abundant, building immense houses of twigs, sticks, etc., like the preceding species, which it resembles in its habits. Near the mouth of Eel River I saw the domicile of a Wood Rat perched upon the roof of a deserted cabin in a dense thicket. It consisted of a pile of brush 6 feet in height and diameter covering half of the roof. A small tree, whose branches extended into the nest, was evidently used by the animal as a means of access to its nest, a portion of which extended from the roof to the trunk of the tree. This species often builds in colonies, and in a thicket at San Simeon, in San Louis Obispo County, I found no less than forty nests within a radius of as many yards.

Collector's No.	Locality.	Date.	Nature of specimens.
291	Humboldt County	1885. Dec. —	Skin.

Family GEOMYIDÆ. GOPHERS.

Thomomys talpoides bulbivorus (Rich.). *Pacific Pocket Gopher.*

Common in nearly all parts of the region. When at San Diego a perfect albino of this species was presented to me.

Family SACCOMYIDÆ. POCKETED RATS.

Perognathus monticola Baird. *Mountain Pocket Mouse.*

Obtained at Fort Crook by Captain Feilner; not represented in my collection.

Dipodomys Phillipsi (Woodhouse). "*Phillip's Pocket Rat*;" "*Kangaroo Rat*."

Not uncommon in many localities. At Red Bluff I sometimes found it drowned in the water tanks at railroad crossings.

Family ZAPODIDÆ. JUMPING MICE.

Zapus hudsonius Coues. *Jumping Mouse.*

Several individuals of this species were seen in some meadows at the western base of Mount Shasta, where one specimen was collected. It was also found in Shasta County by Dr. Newberry, and occurs no doubt throughout the region.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimen.
14491	11	Siskiyou County, California ..	1883, July '22	Skin.

Family HYSTRICIDÆ. PORCUPINES.

Erethizon dorsatus epixanthus (Brandt). *Western Porcupine.*

While in Northern California I was much interested in the habits of the Porcupine, which was found to be very abundant in Lassen County. The first intimation we had of its presence was on the first night of our stay in an old cabin on a sheep range, which was adopted as headquarters while in that region. We had noticed numerous chipmunks (*Tamias lateralis* and *T. Townsendi*) while establishing ourselves for the night, and hearing considerable nibbling of our boxes after dark we naturally attributed the noises to these animals or to wood rats, whose brush-pile domiciles existed plentifully all over the country. But a certain persistent nibbling kept me awake, and I finally investigated with a candle. A large Porcupine was found squatted upon a box contentedly regaling himself on morsels of pine which he was biting from the edge of the table. He faced the light with much curiosity, and seemed in no way disconcerted at finding four men gazing at him. A companion passed a revolver to me, which I snapped close to his head several times, but finding it empty I struck an ineffectual blow with a stick, when the animal very deliberately crawled through an unlinked space between the logs and departed. Our three dogs outside growled ominously, but did not venture to attack the animal, whose natural means of defense one of them at least had experienced to his sorrow.

We were destined, however, to meet with Porcupines again; a stump before the cabin door had been used for several seasons by the herders as a salting place for their horses, and they told me that it was resorted to nightly by Porcupines, occasional ones being killed there from time to time. They had eaten part of the top of this stump down to a depth of four inches and had gnawed deep excavations in each side of it. We placed salt there as usual, which was dissolved by the rain, thus permeating it thoroughly, and again, as predicted by the herders, the place became a nocturnal rendezvous for Porcupines.

A Chinaman herder, employed on the range, killed four of these animals for me at this place inside of a week's time, and others could probably have been taken if I had been there to keep careful watch for them. On my return to the main camp I shot one in the act of gnawing this particular stump, the animal being too much absorbed in its occupation to pay any attention to my approach. Before we abandoned that camp the Poreupines had gnawed a hole completely through the stump from side to side. Its original diameter was about 18 inches.

Dogs that have experienced the disadvantages of Poreupine fighting are reluctant to engage with them again, one tussel being sufficient for the majority of them. Those attached to our camp would bristle up when they came around, but would wisely retire from the scene of action with knowing growls.

A rancher living 5 miles south of Susauville, in the same (Lassen) county, told me that a dog belonging to his ranch killed more than twenty Poreupines before succumbing to his injuries. In addition to this number he had treed nearly as many besides, which were killed by his master and the people about the place. This was related by the man, Mr. S. Alexander, in the presence of several of his neighbors, who did not seem inclined to question the verity of the statements, and I repeat it as an illustration of the uncommon abundance of the Poreupine in that region.

A sheep-herder on a neighboring range whom I had interrogated as to the possibility of obtaining specimens of this animal, replied, "You'll soon get all you want if you stay round here; they won't trouble themselves to get out of a person's way." His prediction as to their abundance was soon verified, and he spoke not less truly of their stupid fearlessness of man, for I soon after approached two by day, in the open woods, which were easily dispatched with clubs.

It was ascertained from other herders in that section that it was the habit of Poreupines to prowl about cabins by night and nibble at boxes, tables, and other camping furniture that had traces of salt upon them. There could be no doubt but that salt, and salt only, was the source of their attraction to the above mentioned stump.

When assaulted, the Poreupine makes no defensive demonstration other than the erection of its quills. It retreats only at a feeble swaying trot, which a child could surpass, and if closely pressed it moves off sideways with mouth open and back arched.

All the specimens obtained were infested with wood-ticks to a disgusting extent, and their legs and bellies were covered with sores from this cause. There being no quills on the legs and underparts it was not as difficult a job to skin them as might be supposed. They have but small eyes for the size of their heads, with a decidedly "piggish" look about them.

Notwithstanding the abundance of the species in Lassen County, observed but one individual in Shasta and Siskiyou Counties dur-

ing more than a year's residence. It was not met with in the coast region.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
14565	158	Lassen County, California . . .	1884. June 17	Skin.
14566	159	.....do	June 17	Do.
14567	160	.....do	June 17	Do.
14568	161	.....do	June 17	Do.
21516	180	.....do	July 12	Skeleton.
21515	181	.....do	July 12	Do.
21517	182	.....do	July 12	Do.

Family LAGOMYIDÆ. PIKAS.

Lagomys princeps (Rich.). *North American Pika: Little Chief Hare.*

I did not meet with this interesting animal on Mount Shasta, although I have reason to believe it exists there, from a statement made by a resident of Siskiyou County. I found it, however, in many places on the eastern and western slopes of Mount Lassen, where it inhabited rock ledges, or, more correctly, places where large masses of rock had slipped from higher positions, forming rock slides. It was especially abundant in the vicinity of Morgan's Springs, on the western side of the mountains, at an elevation of about 6,000 feet. The Pikas did not appear to come out from their retreats until late in the day, at least I did not hear them until towards evening, and then their sharp squeaks came from all parts of the great heap of loose rocks where I used to watch for them. They are as good ventriloquists as locusts and katydids, and I have sometimes stared at the rocks from which their tiny shrieks arose until my eyes ached before catching sight of one. Indeed, if I could locate one by the sound in half an hour's time, so as to shoot it, I considered myself fortunate.

This deceptiveness in their cries, together with their inconspicuous color and diminutive size, rendered them altogether quite difficult to obtain, for they never went near my traps.

They were not observed to sit upright like chipmunks, as they are said to do elsewhere, but squatted mouse-like upon some stone or crouched beneath its shelter. They are decidedly mouse-like in their actions.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
14656	183	Mount Lassen, California	1884. July 20	Skin in alcohol.
14657	184	.....do	July 20	Do.

Family LEPORIDÆ. HARES.

Lepus americanus Washingtoni (Baird). *Western Varying Hare.*

Not uncommon in the upper Sacramento Valley, and sometimes ranges well into the foothills.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
14460	103	Shasta County, California	1884, Mar. 1	Skin in alcohol. Do.
14461	133	Tehama County, California	Apr. 8	

Lepus sylvaticus Auduboni (Baird). *Audubon's Hare.*

Not uncommon about Humboldt Bay, where two specimens were obtained. Found at Fort Crook by Capt. John Feilner.

Lepus campestris Bachman. *Prairie Hare.*

Fort Crook, Captain Feilner. I shot a hare near Eagle Lake, in June, which I thought to be this species, but the specimen was not preserved.

Lepus Trowbridgei (Baird). *Trowbridge's Hare.*

Fort Crook, Captain Feilner. A hare which I took to be the species was seen on the Sage Plains, north of Mount Shasta.

Lepus californicus Gray. *California Hare*; "Jackass Rabbit."

The Californian Hare, or Jack Rabbit, as it, like all other large hares, is usually called, is abundant in every part of the upper Sacramento Valley and the adjoining foothills, in some places being found almost up to the pine belt. It was found to be less numerous on the coast. The Jack Rabbits may be seen towards evening, in little companies, playing on the open plains bordering the timber belts, and if suddenly come upon there is a general stampede among them and a scamper for the nearest cover. It leaves in the mind of the hunter, as he walks homeward, a pleasant picture, the principal features of which seem to be several pairs of disproportionately big ears galloping off in the gloaming toward some dark wood in the background.

Somewhere in this region I heard the ridiculous nickname of "Narrow-gauge Mule" applied to the Jack Rabbit.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
14126	1	Shasta County	1883, Apr. 20	Skin.
14462	120	Tehama County	1884, Mar. 29	
14463	124	do	Apr. 4	Do.
	300	Humboldt County	1885, Dec. —	Do.

Family VESPERTILIONIDÆ. BATS.

Vesperugo serotinus (Schreber). *Serotine Bat.*

Obtained at Sheep Rock, at the northeast base of Mount Shasta.
Not very common.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
14492	26	Siskiyou County, California.	1883. Aug. 23	Skin.
14493	27	.....do.....	Aug. 23	Do.

Vesperugo noctivagans (Le Conte). *Silvery-haired Bat.*

Collected at Fort Reading by Dr. J. F. Hammond.

Vespertilio lucifugus Le Conte. *Blunt-nosed Bat.*

Fort Reading, Dr. Hammond.

Family TALPIDÆ. MOLES

Scapanus Townsendii (Bach.). *Oregon Mole.*

Not common; only seen on two or three occasions.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
14475	46	Shasta County, California	1883. Nov. 10	Skin.

Family URSIDÆ. BEARS.

Ursus americanus Pallas. *Black Bear; Teile of the Wintuns.*

Black Bears are plentiful throughout the mountains and higher foothills of Northern California.

They are wild and watchful creatures, and it is difficult to shoot them in "still-hunting," for they can seldom be approached within easy shooting distance as deer can, and if not "hard hit" are likely to be lost. They are, however, readily trapped, and according to hunters in general one trap is worth several guns if the business of getting them is to be seriously entered upon.

I saw a large and glossy Bear near the Government trout hatchery, on Lower McCloud River, once, engaged in browsing upon the leaves of trees, which it rose upon its haunches to reach, pulling down the branches with its paws. When fired upon it rushed to the steep clayey bank of an adjacent gulch and threw itself, apparently with deliberate intention, by successive somersaults, to the bottom, reaching which, it started down the little valley at marvelous speed, crashing through the low brush like a demon of wrath. It rapidly distanced

the pack of dogs that pursued it from noon until nightfall, and escaped, although leading them all the way by a much blood-bespattered trail.

In following this Bear across the many steep-banked gulches that it had sought in its precipitate flight, we observed that it had descended all favorable declivities by rolling, heels over head, to the bottom, apparently gaining time by headlong tumbles down hill. This, as I was afterwards told by Indians, is not an unusual trick with wounded or frightened bears.

Californian examples of *Ursus americanus* are remarkable for variety of coloration. During the month of November, 1883, Mr. J. B. Campbell and the writer trapped four Bears on McCloud River, one of which was glossy black, another dark brown, and two almost yellowish.

The usual method of trapping is to fasten the bait to a tree just out of reach of the Bear, and place the trap, concealed by leaves, &c., where the animal (a bear, or possibly a panther) must spring it with its feet in attempting to reach the meat. We collected skins and skeletons of deer on the same trip, and our custom was to search for Bear signs where intestines and other useless parts of deer had been left at the time of shooting on previous days, as the Bears were quite likely to revisit such windfalls on following nights, and there set our trap.

One very large Bear dragged the trap and the piece of sapling to which it was secured (for the trap should not be fastened immovably) over the high ridges east of the McCloud to the Squaw Creek side of "the divide," a distance of several miles, taking it entirely out of our neighborhood. Traveling with these "impediments" in tow, the Bear, of course, left a very distinct trail, but it required six hours or more to overtake and shoot him, so tortuous and rugged was his way. The return from such a hunt is even harder than the pursuit, for the heavy skin and a little of the meat are load enough for one man, and the two guns and the trap are rather more than a load for the other man, with much chaparral to struggle through and night coming on. A good bear trap with its chain weighs 30 pounds, and costs half as much as the average rifle does.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimens.
14123	39	♀	Shasta County, California.....	1883. Nov. 4	Skin.
14124	50	♂	.....do.....	Nov. 15	Do.
14125	53	♂	.....do.....	Nov. 20	Do.
21531	209	.....	.....do.....	.....	Skull.

Ursus horribilis Ord. *Grizzly Bear*; *Wi-ma*, of the *Wintuns*.

This animal is rare in Northern California, but I heard of a few instances of its capture within late years. While in Lassen County, several hunters reported the presence of a very large Grizzly along the

eastern slope of the mountains in June. It sometimes appears in the Mount Shasta region and in Trinity County. An old Indian living in the vicinity of the McCloud River fish hatchery, in 1884, bore sad marks of an encounter with a "*wi-ma*" more than twenty years before, the patella of the right knee having been bitten off, and that part of the leg otherwise mutilated, leaving an ugly cancerous sore, which, under barbarous Indian treatment, had never healed.

When Dr. J. S. Newberry passed through Northern California twenty-five or thirty years ago the Grizzly was met with in many places, to the apparent exclusion of the Black Bear, which was not found until the expedition had passed well into Oregon. Since the Grizzly began to disappear before the advancement of the settler, the other species has been more numerous, leading to the inference that the Black Bear will not be found in abundance where the larger species is well established. Mr. J. L. Wortman informs me that in many parts of the West where Grizzlies abound the black bear occurs very rarely.

Family PROCYONIDÆ. RACCOONS.

Procyon lotor (Linné). *Raccoon*.

Pretty generally distributed, but not observed in the high mountains. Common about the sloughs in the timber belts of the Sacramento Valley, less numerous in the foot-hills of Shasta County. Called *Kà-ril* by the Wintuns.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimens.
14391	71	♂	Shasta County, California.....	1884, Jan. 28	Skin.
14465	125	.....	Tehama County, California ...	Apr. 1	Do.
14467	129	.....	do	Apr. 5	Do.

Bassaris astuta Licht. *Cacomistle*; *Civet Cat*.

I trapped one of these animals in Shasta County in February, 1884. The species occurs throughout the wooded country, except perhaps the coast and the higher mountains, but is regarded as somewhat of a rarity by those who engage in trapping. A Pitt River miner told me of having had a pair of tame Civet Cats about his cabin for a year or more. He described them as being most active at night and decidedly nocturnal in their habits.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimens.
14424	102	♂	Shasta County, California.....	1884, Feb. 29	Skin.

Family MUSTELIDÆ. WEASELS.

Lutra canadensis (Turton). *North American Otter.*

The Otter is not uncommon on the mountain streams of Northern California, especially on rivers abounding in fish, like the McCloud and Upper Sacramento. The evidence of its presence, however, rested upon pelts seen in the possession of trappers, and tracks along the shores, for I never saw it alive.

Although a piscivorous creature, and abundant in the vicinity of the Government fish hatcheries on the Lower McCloud. I never heard of its committing depredations upon the trout ponds, as the lynxes were accused of doing. Its natural shyness was probably a reason for this, as it is a most difficult animal to entrap and is accredited with a very suspicious nature.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimen.
21232	73	Shasta County, California.....	1884. Feb. 5	Skeleton.

Mephitis mephitica (Shaw). *Common Skunk.*

This species was met with on several occasions along McCloud River. A specimen of a female, obtained April 20, was found with fœtuses but an inch and a half in length at that date, indicating probably that the young would not have been brought forth until the summer was well advanced. Audubon saw the young of this species in the Eastern States in May, but other authors that I have consulted are silent on that point.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimen.
14127	2	♀ ad.	Shasta County, California.....	1883 Apr. 20	Skin.

Mephitis putorius (Linné). *Little Striped Skunk.*

This very handsome little animal was found to be rather common in the timber belts around Red Bluff, in Tehama County, and in the foot-hills of Shasta, the adjoining county on the north. Several fine specimens of this species, that had been killed during my residence in that region, were lost to science on account of my reluctance about engaging in the by no means delectable occupation of preparing their skins for the cabinet. Although the odor arising from this species is decidedly less obnoxious than that of the larger Skunks, it is still sufficiently pronounced as to cause hesitation on the part of the most ardent collector. I doubted whether the befouled skin of a Skunk killed by the ordinary method of shooting could ever be rendered tolerable by any method of

disinfection. In the face of these difficulties a letter arrived from Professor Baird suggesting a new method of treatment for such specimens, which was followed with gratifying success. "The best way of treating the Skunks," he wrote, "is to catch them in a closed box trap, baited with meat. This box can be immersed in water and the animal drowned without causing any smell. Last summer at Wood's Holl [Mass.] eight or ten were taken directly under the house which we occupied, and we drowned them and sent them to Washington without their becoming in any way a nuisance."

The attempt at preserving the offensive specimens that had been shot or taken in steel traps having failed, a box trap was baited with a young chicken and placed under a sheep-herder's cabin to which the animals resorted nightly. When visited the following morning it was found sprung and proved to contain the desired species, although it was with some misgivings that we ventured to peep into it. The captive being uninjured had not been frightened into a discharge of its formidable secretion, and the characteristic odor of its family was barely perceptible. It was a very pretty creature, and I regretted that it could not be studied alive for a time, but adult Skunks in full possession of their defensive armature are not well adapted for pets, so it was converted into a dried specimen after the prescribed process, without becoming offensive to any one. The method of killing Skunks by drowning, I have since learned, has long been known, although apparently not in that region. The herders told me that scarcely a night passed without their being awakened by the noise made by Skunks rummaging among the camp utensils, and they hailed the box trap as a means of speedy and safe deliverance from their persecutors. This Skunk, from its very small size and apparently greater agility, is more dangerous to poultry than the larger *Mephitis mephitis*, being especially destructive to young chickens. At one ranch where I staid for a time it would enter the coops and kill small chickens by the dozen, but never seemed to disturb the hens that were brooding them. It was difficult to exclude it, for it seemed to find its way into the coops as readily as a weasel.

I shot one of these Skunks at this ranch one night, the Chinese cook, who had discovered it, holding a lamp to disclose its position among the hen-coops. It had already killed about ten small chickens, but had made no attempt to disturb the hen that was covering them.

Museum regis-ter No.	Col-lector's No.	Sex and age.	Locality.	Date.	Nature of specimen.
14426	104	♂	Shasta County, California...	1884.	Skin.
14428	116	-----	Tehama County, California	Mar. 4	Do.
14427	122	-----	do	Mar. 28	Do.
				Apr. 8	Do.

Taxidea americana (Boddart). *American Badger*.

The Badger is a common species in the Sacramento Valley and on the plains of Northeastern California. My own experience with this retiring animal accords with that of other travelers through regions where it abounds. Its omnipresent burrow furnishes unmistakable evidence of its presence, but the animal itself is not often seen. The only one I saw was a young one, 7 or 8 inches in length, which was killed on a ranch near Red Bluff, on March 15. It was yellowish cottony white, with the characteristic dark feet and striped head of the species, the markings, however, being rather faint.

Col-lector's No.	Sex and age.	Locality.	Date.	Nature of speci-men.
105	Juv...	Red Bluff, California	1884. Mar. 15	Skin.

Putorius vison (Schreber). *American Mink*.

Common throughout the region. Mink skins were often seen in the possession of the Indians of McCloud River, by whom the animal is called *Bas-soos'*. We had live Minks at different times at the Fisheries, but they never seemed to thrive. It is not improbable, however, that they died from wounds received in trapping.

Col-lector's No.	Locality.	Date.	Nature of speci-men.
301	Humboldt County	1885. Dec. —	Skin.

Putorius brasiliensis frenatus (Sewast.). *Bridled Weasel*.

I was told of the frequent occurrence of weasels in Northern California, and saw one near Mount Lassen, which was not secured. As specimens of *P. frenatus* were taken at Fort Crook, by Captain Feilner, there can be little doubt it is the prevailing if not the only species.

Mustela pennanti Erxleben. *Pekan*. *Pennant's Marten*.

Pennant's Marten, better known as the "Fisher," is found throughout the wooded and mountainous portions of this region. A handsome specimen was obtained in Shasta County, in February, which was taken in a steel trap set for a fox. Its name in the language of resident Indians is *Yé-pāk-ús*.

Museum regis-ter No.	Col-lector's No.	Sex and age.	Locality.	Date.	Nature of speci-mens.
14395	72	♂	Shasta County, California	1884. Feb. 5	Skin.
21233	95	.....	.....do	Feb. 20	Skeleton.

Mustela americana Turton. *American Sable or Marten.*

The Pine Marten is a common inhabitant of the pineries of Northern California. Our dogs killed one in Lassen County, which was too badly mutilated to be preserved.

Family CANIDÆ. Dogs.

Urocyon virginianus littoralis (Baird). *Coast Gray Fox.*

Foxes are plentiful in many parts of the country, especially between the Sacramento Valley and Mount Shasta, and are readily trapped.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimens.
				1883.	
14128	40	♀	Shasta County, California	Nov. 6	Skin.
14129	47	.....	do	Nov. 10	Do.
14130	49	.....	do	Nov. 11	Do.
				1884.	
14293	54	.....	do	Jan. 7	Skin.
21210	66	.....	do	Jan. 25	Skeleton.
21211	67	.....	do	Jan. 25	Do.
21212	70	.....	do	Jan. 28	Do.
21213	74	.....	do	Feb. 5	Do.
21214	96	.....	do	Feb. 20	Do.
21215	97	.....	do	Feb. 23	Do.
21216	99	.....	do	Feb. 26	Do.
21217	100	.....	do	Feb. 26	Do.
21529	210	.....	do	July —	Do.
21530	211	.....	do	July —	Do.

Vulpes fulvus argentatus (Shaw). *Silver Fox: Black Fox.*

I secured a half-grown Black Fox at Red Bluff, in 1884, by digging it out of a hole.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimen.
14428	208	Juv. . . .	Red Bluff, California	1884. Mar. —	Skin.

Canis latrans Say. *Coyote.*

On the plains north and east of Mount Shasta and along the eastern slope of the Sierras, the Coyote is a common animal. I secured a specimen in Lassen County, in June, 1884. It constantly harasses the sheep that are herded there in thousands in summer. It is rare in the Sacramento Valley.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
14570	153	Lassen County, California	1884. June 15	Skin.

Family FELIDÆ. CATS.

Felis concolor Linné. *Puma* or *Panther*: *Pât-ët of the Wintuns*.

In the rugged country about the junction of McCloud and Pitt Rivers the widely distributed Panther, or "Mountain Lion," as it is called in California, is especially numerous. It has been taken many times in the vicinity of the Government Fishery Establishment there. On March 29, 1884, three Panthers which had approached the building, in all probability for the purpose of stealing hogs, were "treed" by the numerous curs about the place, and were shot and converted into specimens—numbers 121, 122, and 123, as given below. Mr. John Miles, a settler in the same neighborhood, had half a dozen or more skins of Panthers about his place in February, 1884, all of which I believe he had killed within a year's time. They were, as a rule, shot in the near vicinity of his house, after having been treed by dogs.

It is practically impossible to raise colts in the Shasta County hills on account of these pests. They destroy many hogs and young cattle also, but do not present so serious an impediment to the keeping of these animals as in the case of horses. Mr. J. B. Campbell, who trapped two Panthers for me in 1883, told me that he had actually never seen more than two or three of the numerous colts born on his stock range, as they had been killed and devoured by Panthers soon after birth.

Museum register No.	Collector's No.	Locality.	Date.	Nature of specimens.
21078	30	Shasta County, California.....	1883. Oct. 15	Skeleton.
14469	121	.....do	1884. Mar. 29	Skin.
14470	122	.....do	Mar. 29	Do.
14471	123	.....do	Mar. 29	Do.
21526	212	.....do	July —	Skeleton.
2527	213	.....do	July —	Do.
21528	214	.....do	July —	Do.

Lynx rufus (Güldenst.). *Red Lynx*.

We trapped numerous Lynxes in 1883-'84 along McCloud River and Squaw Creek (flowing into Pitt River), where they are apparently as numerous as foxes, and as easily secured. Mr. W. E. Bryant, of Oakland, had a pair of tame Lynxes at his home in 1885, which were as affectionate and agreeable pets as could be desired, purring contentedly in true cat fashion when their fur was stroked. This, however, is very unusual with Lynxes; they are bad-tempered and savage. One which was kept caged at the McCloud River fisheries for two or three years was always the most vicious creature imaginable, snarling and glaring at every one who approached, with an expression truly satanic. He

lived almost exclusively upon the fish which died from time to time in the ponds.

Museum register No.	Collector's No.	Sex and age.	Locality.	Date.	Nature of specimens.
14131	5	.....	Shasta County, California	1883. May 1	Skin.
14132	48	.....	.....do	Nov. 11	Do.
.....	98	♂	.....do	1884. Feb. 23	Skeleton.
.....	101	.....	.....do	Feb. 26	Do.

II.—BIRDS.

Family PODICIPIDÆ. GREBES.

Æchmophorus occidentalis (Lawr.). *Western Grebe.*

The western Gull, which was not met with in the interior of Northern California, except at Eagle Lake, was found in great abundance in November and December on the coast at Humboldt Bay. At the former locality it was rather common in June, and several nests of some species of grebe were seen among the tule reeds bordering the lake.

Æchmophorus clarkii (Lawr.). *Clark's Grebe.*

The relationship of this bird to the preceding, of which it may be the female, not being clearly established, I retain it for the present as a separate species. It was found but once, a single specimen, the sex of which I could not determine, having been obtained on the lower McCloud River on October 14.

Colymbus auritus (Linn.). *Horned Grebe.*

I secured two specimens of this bird at Humboldt Bay, where it is not uncommon. It has also been taken at Fort Crook (Feilner's collection).

Colymbus nigricollis californicus (Heerm.). *American Eared Grebe.*

Numerous at Eagle Lake and Humboldt Bay.

Podilymbus podiceps (Linn.). *Pied-billed Grebe.*

The Dabchick is found on most of the lakes and streams of this region. It was obtained on ponds near the base of Mount Shasta in summer, and was present on the Lower McCloud and Humboldt Bay in winter.

Family URINATORIDÆ. LOONS.

Urinator imber (Gunn.). *Loon.*

The Loon breeds regularly on the mountain lakes of Northern California. In June and July I visited several wild secluded lakes in the mountains east of Lassen's Peak, each of which had its pair of Loons. The larger of these are each a mile or two in extent and are known as

Butte, Glassy, and Snaggy Lakes, but the more isolated ones are probably known only to hunters, being far removed from settled localities, and many of them are nameless. It is probable that all of those lakes which contain fish are regularly resorted to by Loons as breeding places. On July 10 I waded out to a narrow sand bar in Butte Lake, upon which a Loon had been sitting, and found her nest or rather egg, for although two eggs is the regular number for this species there was but one in this instance, which was lying on the bare sand. It measured 3.40 by 2.18. Our efforts to shoot Loons here proved quite unavailing, for they were far out of shotgun range; and after much ammunition had been expended in vain by other and better marksmen than I, we decided that they could certainly dodge a rifle ball at two hundred yards distance, let the aim be directed at them or in front of them, or where we would. At short range these birds can be killed with the shotgun by aiming at the water before them where they receive the charge in plunging forward to dive. Loons were observed nowhere else than on these lakes, with exception of one specimen seen in the possession of an Indian at the mouth of Pitt River.

Urinator pacificus (Lawr.). *Pacific Loon*.

Occurs irregularly at Humboldt Bay, where Mr. Charles Fiebig obtained the specimens contained in his collection at Eureka.

Urinator lumme (Gunn). *Red-throated Loon*.

The only instance of the appearance of the Red-throated Loon in this region is that of a specimen obtained at Fort Crook by Captain Feilner.

Family STERCORARIIDÆ. SKUAS AND JAEGERS.

Stercorarius parasiticus (Linn.). *Parasitic Jaeger*

I saw a specimen of this bird in the collection of Mr. Fiebig, at Eureka, who shot it on Humboldt Bay, and who says it is not often seen there.

Family LARIDÆ. GULLS AND TERNS.

Larus glaucescens Naum. *Glaucous-winged Gull*.

This and the next species were both obtained at Humboldt Bay in December, *glaucescens*, however, being quite rare compared with the great numbers of *occidentalis* gathered there.

Larus occidentalis Aud. *Western Gull*.

Larus californicus Lawr. *California Gull*.

The California Gull was found in abundance at Eagle Lake late in June, but there were comparatively few breeding there, the only suitable localities, two small islands, being apparently monopolized by cormorants *Phalacrocorax dilophus albociliatus* and pelicans. It was numerous at Humboldt Bay in December. I obtained a single indi-

vidual at the mouth of the McCloud River on May 16, and stragglers were observed on the Sacramento River near Red Bluff at various times in winter.

Larus delawarensis Ord. *Ring-billed Gull*.

A solitary specimen of this Gull was taken at Summit Lake, near Mount Lassen on June 5.

Larus brachyrhynchus Rich. *Short-billed Gull*.

Rather common at Humboldt Bay, where specimens were shot in December.

Larus philadelphia (Ord). *Bonaparte's Gull*.

This bird was seen in the collection of Mr. Fiebig, who reports it common on Humboldt Bay in winter.

Sterna forsteri Nutt. *Forster's Tern*.

Found in comparative abundance at Eagle Lake, where it was probably breeding on Pelican Island. I saw stray companies of Terns occasionally along the river at the northern end of the Sacramento Valley in the spring, and they were plentiful at Humboldt Bay in the fall.

Hydrochelidon nigra surinamensis (Gmel.). *Black Tern*.

Very common at Eagle Lake, and doubtless breeds regularly there among the tangle and débris of the tule marshes with the grebes, whose deserted nests it has been known to utilize. It was not observed elsewhere.

Family PHALACROCORACIDÆ. CORMORANTS.

Phalacrocorax dilophus albociliatus Ridgw. *Farallone Cormorant*.

This Cormorant appears to be present during the greater part of the year on the larger streams of this region, but was wanting on McCloud River in summer, having doubtless repaired to the coast or to suitable lakes to breed. On June 28, I found a large colony breeding upon a small rocky islet in Eagle Lake, their nests being made of reeds and rushes, which they must have carried from the shore a mile away. On March 3 I visited a roosting-place of this species near the mouth of Pitt River, to which a hundred or more birds resorted nightly. The trees there were conspicuously marked with their excrement. The largest roost, however, was found on Lower Mad River, near Humboldt Bay, every tree along the bank for several hundred yards being crowded with Cormorants towards nightfall. They occupied even the tops of the tallest pines, and the place was a Babel from their commotion, although a railroad upon the opposite bank of the river was less than a hundred yards from their roost.

Family PELECANIDÆ. PELICANS.

Pelecanus erythrorhynchos, Gmel. *American White Pelican*.

This Pelican was found only at Eagle Lake, where it resorts to breed in great numbers in summer. There are two islands lying in this beau-

tiful sheet of water, and I observed that the Pelicans had taken almost exclusive possession of one of them, the other being similarly occupied by equally large numbers of shags. Although a few of the latter were living peaceably with the former on the Pelicans' island, there were only two Pelicans found on the island occupied by the shags. On the day of our visit (June 28, 1884) a flock, numbering a score or more, were seen wheeling gracefully in the air at a very great height, their white forms distinct in the sunlight miles away.

Pelecanus californicus Ridgw. *California Brown Pelican*.

This bird, which is quite common on the coast, may be seen almost any evening in the fall fishing in Humboldt Bay. It flies in a rapid business-like manner but a few feet above the surface of the water, and drops with a great splash when a fish is discovered. It continues its search well into the night, and I have frequently been startled by its noisy splash when rowing on the bay after dark. During the day it usually swims quietly and does not appear to fish much by diving.

Family ANATIDÆ. DUCKS, GEESE, AND SWANS.

Merganser americanus (Cass.). *American Merganser*.

This sheldrake breeds regularly on the Lower McCloud, where it is present the year round. Young birds in the down were obtained on May 21, and several flocks of young were seen a couple of weeks later. Young birds of this species were also seen on Eagle Lake late in June. Fish ducks were not observed elsewhere than on the larger mountain streams and lakes.

Merganser serrator (Linn.). *Red-breasted Merganser*.

Common at Humboldt Bay, but not observed elsewhere.

Lophodytes cucullatus (Linn.). *Hooded Merganser*.

Apparently a winter visitant, having been met with on McCloud and Pitt Rivers, and Humboldt Bay in the fall and winter.

Anas boschas Linn. *Mallard*.

The Mallard is a common constant resident of this whole region, having been observed to be comparatively abundant in the Upper Sacramento Valley in winter, and found breeding in limited numbers about the mountain lakes in summer. I found Mallards August 1, at the base of Mount Shasta, in certain wet meadows, where, in all probability, they had nests, and on June 27, I found a nest of eight eggs, in the middle of a grassy plain near Eagle Lake. It is one of the commonest game-ducks at Humboldt Bay.

Anas strepera Linn. *Gadwall*.

The Gadwall is a rather rare duck at Humboldt Bay, and was not met with in the interior counties at all, but specimens were shot at Fort Crook by Captain Feilner, and the species doubtless breeds in suitable lakes in the region.

Anas penelope Linn. *Widgeon*.

I saw a mounted specimen of this Old-World bird in the collection of Mr. Charles Fiebig, of Eureka, who shot it in the vicinity in 1884. The only instance of its occurrence in the region.

Anas americana Gmel. *Baldpate*.

Observed regularly in the sloughs south of Red Bluff in winter, and was seen on the McCloud in January only. It is abundant at Humboldt Bay.

Anas carolinensis Gmelin. *Green-winged Teal*.

I saw this bird on two or three occasions at Red Bluff only, but it is well known to sportsmen as a very common game bird of the Sacramento Valley. Mr. Fiebig reports it as a regular winter game bird at Humboldt Bay.

Anas discors Linn. *Blue-winged Teal*.

Not met with by me, but recorded as a rare migrant by Mr. H. W. Henshaw.

Anas cyanoptera Vieill. *Cinnamon Teal*.

This Teal was not seen by me, but was collected at Fort Crook by Captain Feilner, and supposed to breed in the vicinity of the larger lakes.

Spatula clypeata (Linn.). *Shoveller*.

The only specimens of this bird obtained were killed on the McCloud River in May, about the close of the rainy season. Although well known to sportsmen, it is apparently not very abundant, either in the Sacramento Valley or on the coast. I saw it, however, at Humboldt Bay in November and December, 1885.

Dafila acuta (Linn.). *Pintail*.

A common winter resident of the Sacramento Valley and the coast about Humboldt Bay.

Aix sponsa (Linn.). *Wood Duck: Summer Duck*.

The Wood Duck is a common and comparatively well-distributed species. It was observed on the Lower McCloud at various times from October 1 until March 1, often in quite large flocks, and was seen in April and May at Red Bluff, where it frequented the sloughs in the timber belts along the Sacramento River.

Aythya americana (Eyt.). *Redhead*.

Reported as breeding in limited numbers in Northeastern California by Mr. Henshaw. Mr. Fiebig has specimens in his collection from Humboldt Bay, where it is considered rare.

Aythya vallisneria (Wils.). *Canvas-back*.

I was informed by sportsmen of the occasional occurrence of this species in the Upper Sacramento Valley and at Humboldt Bay.

Aythya marila nearctica Stejn. *American Scaup Duck.*

This, and the next two species are inserted in this list on the authority of Mr. Henshaw, who records them as migrants and winter visitants in the northeastern part of the State.

Aythya affinis (Eyt.). *Lesser Scaup Duck.*

Aythya collaris (Donov.). *Ring-necked Duck.*

Glacionetta clangula americana (Bonap.). *American Golden-eye.*

The golden-eye was frequently observed on the Lower McCloud in fall and winter, and Mr. Fiebig informed me of its irregular occurrence at Humboldt Bay.

Charitonetta albeola (Linn.). *Buffle-head.*

Apparently scarce in the interior, but I saw a female on a small tributary of the Lower Pitt River in January, 1884, and the Feilner collection shows that it has been taken at Fort Crook. Subsequently I found it common on the coast at Humboldt Bay.

Oidemia fusca (Linn.). *Velvet Scoter.*

Both this and the next species are very common at Humboldt Bay.

Oidemia perspicillata (Linn.). *Surf Scoter.*

Chen hyperborea (Pall.). *Lesser Snow Goose.*

An abundant winter resident, being especially numerous in the Sacramento Valley. On one occasion at Red Bluff, while watching the incessant northward movement of the geese from the Sacramento Valley, I saw a triangle of Canada geese headed by a single one of this species, the two waving lines of dark forms converging in a snow white point. The unusual spectacle attracted the attention of pedestrians on the street. Other triangles, composed of the two species flying in apparent harmony, were seen frequently. When passing down the Sacramento Valley on the cars, flocks of these white geese in company with other darker kinds were sometimes seen settling in the wheat almost within gunshot of the train.

Anser albifrons gambeli (Hartl.). *American White-fronted Goose.*

Very abundant in winter.

Branta canadensis (Linn.). *Canada Goose.*

A very abundant winter resident of Northern California, but exceeded in numbers by the following:

Branta canadensis hutchinsi (Sw. and Rich.). *Hutchins's Goose.*

The most abundant species. California is blessed with a large and varied assortment of water-fowl, but is specially celebrated in this respect for the vast multitudes of wild Geese which winter in the interior valleys. In the Sacramento Valley the Geese in their aggregate num-

bers probably far surpass those of any other region in the United States.

Wheat growing is carried on most extensively and the ranchers are compelled to defend their growing crops from invading Geese, regularly employing "goose herders" to patrol their lands and frighten away the numberless feathered marauders. One great ranch in Colusa County, of more than fifty thousand acres, employed quite a formidable company of men who rode about with repeating rifles, firing among the Geese as they settled in flocks in the more distant tracts, causing them to take wing. This is a common practice throughout the valley.

Branta nigricans (Lawr.). *Black Brant.*

Common in winter in the vicinity of the coast, but not met with in the interior.

Philacte canagica (Sevast.). *Emperor Goose.*

I was much surprised when Mr. Fiebig, of Eureka, told me that the fine mounted specimen of this far northern bird, contained in his collection, had been killed at Humboldt Bay. I was quite familiar with the species, having collected specimens of it in Northern Alaska, its natural habitat, but I little suspected that it would wander as far south as California. The specimen was taken in the winter of 1884.

Olor columbianus (Ord.). *Whistling Swan.*

A winter visitant from the north to the larger lakes and streams of the region.

Olor buccinator (Rich.). *Trumpeter Swan.*

Rare; visits California during the migrations, according to Dr. Newberry.

Family IBIDIDÆ. IBISES.

Plegadis guarauna (Linn.). *White-faced Glossy Ibis.*

Found in the northeastern part of the State by Mr. Henshaw, in 1877-'78.

Family ARDEIDÆ. HERONS, BITTERNs, ETC.

Botaurus lentiginosus (Montag.). *American Bittern.*

Found in large numbers on upper Pitt River by Dr. Newberry, collected at Fort Crook by Lieutenant Parkinson, and reported by Mr. Fiebig as of irregular occurrence at Humboldt Bay.

Botaurus exilis (Gmel.). *Least Bittern.*

Found rather common in the Sacramento Valley by Dr. Newberry.

Ardea herodias Linn. *Great Blue Heron.*

A common resident, wandering well into the mountains in following the streams. Found in all parts of the country that were visited.

Ardea egretta Gmel. *American Egret*.

Noticed occasionally in the Upper Sacramento Valley, and at Humboldt Bay.

Ardea virescens Linn. *Green Heron*.

I found this species only twice in Northern California. It was obtained near Yreka, August 20, and at Red Bluff, May 9. These specimens were noticed by Mr. Ridgway to be of rather unusual appearance, the fulvous-white edging of the wing coverts being broader in pattern than in any other specimens with which they were compared. This may be peculiar to the Green Herons of the Pacific slope, but the scarcity of specimens from that region does not admit of any satisfactory conclusions being arrived at.

Nycticorax nycticorax nævius (Bodd.). *Black-crowned Night Heron*.

The Black-crowned Night Heron, which was found in abundance at its established "roosts" on Eel River, in Humboldt County, was seen but once in the interior, a specimen having been shot on Lower Pitt River in the spring of 1883.

Family GRUIDÆ. CRANES.

Grus mexicana (Linn.). *Sandhill Crane*.

Cranes were seen occasionally on the plains south of Red Bluff in the fall, and one was seen on a mountain meadow east of Mount Lassen in June.

Family RALLIDÆ. RAILS, GALLINULES, AND COOTS.

Rallus virginianus Linn. *Virginia Rail*.

Recorded by Dr. Newberry as common throughout California, and by Mr. Henshaw as numerous about all marshy lakes.

Porzana carolina (Linn.). *Sora*.

Only met with near the mouth of Mad River, Humboldt County, where two specimens were obtained November 24, 1885.

Porzana noveboracensis (Gmel.). *Yellow Rail*.

This Rail, heretofore unknown on the Pacific slope, was found by Mr. Charles Fiebig at Humboldt Bay, a specimen having been taken in the marsh at the outlet of Freshwater Creek in 1884. This bird was accompanied by another of apparently the same species, which could not be secured.

Fulica americana Gmel. *American Coot*.

Numerous in all tule marshes, lakes, and other localities frequented by water birds. Abundant in the coast region.

Family PHALAROPODIDÆ. PHALAROPES.

Crymophilus fulicarius (Linn.). *Red Phalarope*.

The collection of Mr. Fiebig, of Eureka, contains a specimen of this bird shot at Humboldt Bay in May, 1883.

Phalaropus lobatus (Linn.). *Northern Phalarope.*

Mr. Fiebig, who has specimens of this species, informs me of its frequent appearance on Humboldt Bay in winter.

Phalaropus tricolor (Vieill.). *Wilson's Phalarope.*

Three specimens of Wilson's Phalarope were obtained in June, 1884, in the vicinity of certain shallow lakes in western Lassen County. No others were seen in the country.

Family RECURVIROSTRIDÆ. AVOCETS AND STILTS.

Recurvirostra americana Gm. *American Avocet.*

I obtained a pair of Avocets on June 17, in the locality mentioned in the preceding paragraph.

Himantopus mexicanus (Müll.). *Black-necked Stilt.*

I did not meet with this species myself, but it is represented in other collections from the northeastern part of the State.

Family SCOLOPACIDÆ. SNIPES, SANDPIPERS, ETC.

Gallinago delicata (Ord). *Wilson's Snipe.*

I shot a snipe on July 25 on a small tributary of the McCloud flowing from the eastern base of Mount Shasta. It was not seen anywhere else in the country except at Humboldt Bay.

Tringa canutus Linn. *Knot.*

Mr. Charles Fiebig informed me of the occurrence of this species at Humboldt Bay in winter.

Tringa minutilla Vieill. *Least Sandpiper.*

Common along the coast of Humboldt County.

Tringa alpina pacifica (Cones). *Red-backed Sandpiper.*

A very common coast species in winter.

Ereunetes occidentalis Lawr. *Western Sandpiper.*

Specimens of this bird were obtained at Red Bluff on May 8, 1884, the only time it was seen.

Limosa fedoa Linn. *Marbled Godwit.*

According to Mr. Fiebig's statement, the Godwit is present at Humboldt Bay the year round and probably nests there.

Totanus melanoleucus (Gmel.). *Greater Yellow-legs.*

Obtained on April 22 at Red Bluff, and not observed elsewhere.

Totanus flavipes (Gmel.). *Yellow-legs.*

Of frequent occurrence at Humboldt Bay.

Totanus solitarius (Wils.). *Solitary Sandpiper.*

I met with this species only at the western base of Mount Shasta August 3, 1883. Collected at Fort Crook by Feilner.

Symphemia semipalmata (Gmel.). *Willet*.

Specimens of the Willet were collected in November and December at Humboldt Bay, where it is common.

Actitis macularia (Linn.). *Spotted Sandpiper*.

Found sparingly throughout the region.

Breeds at Eagle Lake.

Numenius longirostris Wils. *Long-billed Curlew*.

According to resident sportsmen, occurs in the vicinity of Red Bluff in spring. It is probably only a migrant in the Upper Sacramento Valley, but is known to be abundant about the lakes east of the Sierras.

Family CHARADRIIDÆ. PLOVERS.

Charadrius squatarola (Linn.). *Black-bellied Plover*.

Met with only at the outlet of Eel River, in Humboldt County, December, 1885.

Ægialitis vocifera (Linn.). *Killdeer*.

Abundant in all open parts of the country. Found in meadows at the base of Mount Shasta.

Family APHRIZIDÆ. SURF BIRDS AND TURNSTONES.

Arenaria interpres (Linn.). *Turnstone*.

This and the next species both occur at Humboldt Bay, *melanocephala* being the more common.

Arenaria melanocephala (Vig.). *Black Turnstone*.

The Black Turnstone is a common bird at all points on the Pacific coast that I have visited. I first met with it at the Farallone Islands, thirty miles west of San Francisco Bay, in August, 1884, and in July, 1885, found it north of the Arctic circle in Alaska.

Family TETRAONIDÆ. GROUSE, PARTRIDGES, ETC.

Oreortyx pictus plumiferus (Gould). *Plumed Partridge*.

The Mountain Quail, as this bird is usually called, is a common resident of the foothills and mountains. In summer it was found breeding plentifully about the western base of Mount Shasta in company with the "Valley Quail," but was not observed on the higher slopes of the mountain.

Mountain Quails are very numerous among the hills of the Lower McCloud, gathering in large flocks in winter. I found a nest of ten eggs east of Mount Lassen on June 12, and a nest of eight eggs was taken at Baird on June 24. I did not meet with it near the coast.

Callipepla californica (Shaw). *California Partridge*.

This coast form of the California Quail was found in the greatest abundance in the logging districts and cultivated portions of Humboldt County.

Callipepla californica vallicola Ridgw. *Valley Partridge.*

The "Valley Quail" of the interior region was found in abundance throughout the upper Sacramento Valley, and the more open parts of the foothills which inclose it. In one instance only was it found in the higher pine country, having been seen in considerable numbers at the base of Mount Shasta. It was not observed anywhere north of Mount Shasta, nor east of the Sierras.

Dendragapus obscurus fuliginosus Ridgw. *Sooty Grouse.*

A common inhabitant of the pine forests and the mountains. I found females and young birds on August 1 in the meadows at the base of Mount Shasta, and late in June young birds just hatched were captured at the eastern base of Mount Lassen. I tried to raise these, and might have succeeded if they had not been killed by an unexpected cold snap, as they were rather lively and had fed freely for a week or more. I often flushed grouse at the line of highest bushes on Mount Shasta in mid-summer, which were probably all males, as no young birds were found in such situations. These Grouse are also inhabitants of the pine-covered hills east of the belt of redwood forest, extending along the coast.

Bonasa umbellus sabini (Dougl.). *Oregon Ruffed Grouse.*

I saw a specimen of this Grouse in the collection of Mr. Fiebig, of Eureka, who says it is to be found only in the desert and densest portions of the Humboldt redwood forests.

Pediocætes phasianellus columbianus (Ord). *Columbian Sharp-tailed Grouse.*

As I did not travel into Northeastern California farther than Eagle Lake, I did not meet with this and the next species, but was assured by hunters and others that they were to be found in many localities.

Centrocercus urophasianus (Bp.). *Sage Grouse.*

Known to be common in suitable country east of the Sierras. Certain hunters told me of having killed them within 20 or 30 miles of Eagle Lake.

Family COLUMBIDÆ. PIGEONS.

Columba fasciata Say. *Band-tailed Pigeon.*

Very abundant in the foothills of the Lower McCloud in the fall and winter, gathering in the pine trees on the higher ridges in immense flocks. It was very seldom seen in the high mountains in summer and did not appear to descend at all into the valleys in winter. I do not know where it breeds.

Zenaidura macroura (Linn.). *Mourning Dove.*

A very common summer resident of the valleys and lower hills, being more abundant and more gregarious than in eastern United States. It was found breeding late in May in the hills along Battle Creek east of Red Bluff.

Family CATHARTIDÆ. AMERICAN VULTURES.

Pseudogryphus californianus (Shaw). *California Vulture*.

In 1884 a hunter at Red Bluff told me that he had killed a vulture of immense size in the southeastern part of Tehama County two or three years previous, and that he had seen others in the foothills southwest of Mount Lassen within the last four or five years. As this is all the information I could obtain with regard to this species, it has probably almost disappeared from Northern California, where it was once certainly common.

Mr. W. E. Bryant, of Oakland, had a live Californian Condor when I visited him in December, 1883, but it has since died. Mr. H. W. Henshaw has obtained six of these birds in the southern part of the State during the past year.

Recent measurements by Mr. Ridgway show that this species is really larger than the Condor of the Andes, so that in "climate," production of gold, mammoth trees, fruits, &c., and a just claim to the largest bird of flight, California is "still ahead."

Cathartes aura (Linn.). *Turkey Vulture*.

One of the common birds of the country in summer, both on the coast and in the interior.

Family FALCONIDÆ. FALCONS, HAWKS, EAGLES, ETC.

Elanus leucurus (Vieill.). *White-tailed Kite*.

Seen at Red Bluff only, where two individuals appeared early in May.

Circus hudsonius (Linn.). *Marsh Hawk*.

The Marsh Hawk appears to have been found in abundance by all the ornithological observers of this region but myself, as I only saw it in the Sacramento Valley at rare intervals. Dr. Newberry found it "abundant beyond all parallel on the plain of upper Pitt River." Humboldt Bay, common, Fiebig.

Accipiter velox (Wils.). *Sharp-shinned Hawk*.

Met with on one occasion only. A specimen was taken at the timber-line of Shasta on September 7. Mr. Fiebig, however, says it is not uncommon in Humboldt County.

Accipiter cooperi Bonap. *Cooper's Hawk*.

Not uncommon; taken near the timber-line of Shasta in September. It was also obtained at Red Bluff.

Accipiter atricapillus striatulus Ridgw. *Western Goshawk*.

I shot two young Goshawks near the timber-line of Mount Shasta on July 28. It has been taken at Yreka by Mr. Vnille and at Fort Crook by Lieutenant Parkinson.

Buteo borealis calurus (Cass.). *Western Red-tail*.

Next to the Sparrow Hawk this is the most abundant species, having been met with in all parts of the country from the Sacramento Valley to the timber-line of Mount Shasta. I obtained a set of four eggs at Red Bluff April 1. The nest from which they were taken occupied the forks of a scrubby oak, about 20 feet from the ground. It was built of heavy twigs, and had a uniform lining of "soap-root" fiber.

Buteo lineatus elegans (Cass.). *Red-bellied Hawk*.

This species is recorded as common by Dr. Newberry, and was obtained at Fort Crook by Captain Feilner.

Buteo swainsoni Bonap. *Swainson's Hawk*.

I found this species to be of common occurrence in the Sacramento Valley in winter, and it was found frequently in the pine country about Mount Lassen in summer.

Archibuteo lagopus sancti-johannis (Gmel.). *American Rough-legged Hawk*.

Obtained at Fort Crook. Reported as common in marshy localities by Mr. Henshaw.

Archibuteo ferrugineus (Licht.). *Ferruginous Rough-leg*.

Mr. Henshaw saw a Hawk in Northeastern California which he believed to be of this species.

Aquila chrysaetus (Linn.). *Golden Eagle*.

I shot a Golden Eagle, the only one met with, near Sheep Rock, northeast of Mount Shasta, on August 21, 1883. I was riding in the rear of our party (a division of the U. S. Geological Survey), and dropped the noble bird by a shot, from the saddle, as we passed along the trail, within 80 yards of the dead cedar from which it was calmly regarding us. •

Haliaeetus leucocephalus (Linn.). *Bald Eagle*.

Eagles were frequently seen in Northern California, and with exception of the one mentioned in the preceding paragraph, I think they were all of this species. They are destructive to young lambs, and the sheep-herders in many localities are their sworn enemies. When on the extreme peak of Shasta (14,440 feet altitude), on July 27, 1883, in company with members of the U. S. Geological Survey, an Eagle came up through the fog that had gathered immediately below us and shared with us our rocky pinnacle above the clouds.

Falco mexicanus Schleg. *Prairie Falcon*.

This Hawk I saw on two or three occasions, in the upper Sacramento Valley. Mr. Henshaw found it common at Fort Bidwell, and it was collected at Fort Crook by Lieutenant Parkinson.

Falco peregrinus anatum (Bonap.). *Duck Hawk*.

Mr. Fiebig informed me that this was one of the commonest Hawks about Humboldt Bay. He pronounces it a feeder upon snipe and shore birds rather than other game.

Falco columbarius (Linn.). *Pigeon Hawk*.

Numerous specimens of the Pigeon Hawk were obtained at Yreka by Mr. Vuille. It was also taken at Fort Crook by Captain Feilner. I did not find it myself.

Falco richardsoni Ridgw. *Richardson's Merlin*.

The presence of this species was noted in Northern California by Mr. Henshaw.

Falco sparverius Linn. *Sparrow Hawk*.

An exceedingly common inhabitant of all parts of the country. It was frequently seen in summer on Mount Shasta, at an elevation of 9,000 feet, and many pairs were found breeding at the base of the mountain.

Pandion haliaetus carolinensis (Gm.). *American Osprey*.

The Fish Hawk was occasionally seen on the McCloud River and on streams in the vicinity of Yreka.

Family STRIGIDÆ. BARN OWLS.

Strix pratincola (Bonap.). *American Barn Owl*.

This Owl was found by Mr. Henshaw to be tolerably common on the Madeline Plains and at Fort Bidwell. It was also met with by Dr. Newberry.

Family BUBONIDÆ. HORNED OWLS, ETC.

Asio wilsonianus (Less.). *American Long-eared Owl*.

Collected at Fort Crook, by Captain Feilner.

Asio accipitrinus (Pall.). *Short-eared Owl*.

This species was found in considerable numbers on Upper Pitt River by Dr. Newberry, was obtained at Fort Crook by Captain Feilner, and is contained in Mr. Fiebig's collection of Humboldt County birds.

Ulula cinerea (Gmel.). *Great Gray Owl*.

Dr. Newberry obtained proofs of the existence of this Owl in the Sacramento Valley.

Megascops asio kennicottii (Elliot)? *Kennicott's Screech Owl*.

In the spring of 1883 I found the fragments of a specimen of this species at Baird. It is represented in the collections from Fort Crook. Mr. Ridgway informs me that the specimen from Fort Crook is apparently intermediate between *kennicottii* and *bendirei*.

Megascops flammeolus (Kaup). *Flammulated Screech Owl.*

A specimen of this southern Owl was taken at Fort Crook, in August, 1860, by Capt. John Feilner—the first instance of its capture in the United States.

Bubo virginianus subarcticus (Hoy). *Western Horned Owl.*

Common throughout Northern California. I obtained a specimen at Red Bluff March 24.

Bubo virginianus saturatus Ridgw. *Dusky Horned Owl.*

The Horned Owls, which I saw at Humboldt Bay, are probably referable to this variety. No specimens were obtained.

Speotyto cunicularia hypogæa (Bonap.). *Burrowing Owl.*

The Burrowing Owl is a very common resident of all suitable places. It was found on the sage-covered districts north of Mount Shasta, and occupied the deserted burrows of the spermophiles in the Sacramento Valley.

Glaucidium gnoma Wagl. *Pygmy Owl.*

I obtained two specimens of the Pygmy Owl at the western base of Mount Shasta in 1883, and two more at Humboldt Bay in 1885.

This is a most interesting bird. It is rather diurnal in its movements, and may be seen long before sunset engaged in its search for small birds, upon which it seems to subsist largely, flying close to the ground along the borders of tall marshes. It doubtless kills marsh-wrens and small sparrows, as such birds were often noticed near the hunting grounds of the owl. One Pygmy Owl, which I shot, had a freshly killed snowbird (*Junco oregonus*) in its claws.

Family CUCULIDÆ. Cuckoos.

Geococcyx californianus (Less.). *Road-runner; Chaparral Cock.*

The Road-runner is rare in Northern California. Found throughout the Sacramento Valley, its numbers gradually diminish towards the north, until at Pitt River its northward limit is reached. Several hunters informed me that it has been seen in the vicinity of Copper City, on Pitt River, ten miles above its confluence with the Sacramento. It is of more frequent occurrence in the southern part of Shasta County, and is not uncommon at Red Bluff, where one was captured during my residence there.

Coccyzus americanus (Linn.). *Yellow-billed Cuckoo.*

At Fort Reading Dr. Newberry frequently saw and heard "Rain Crows," which he supposed to be *C. erythrophthalmus*, but as *C. americanus* is the only one of the genus known to inhabit the Pacific slope there can be little doubt about its being this species.

Family ALCEDINIDÆ. KINGFISHERS.

Ceryle alcyon (Linn.). *Belted Kingfisher*.

A resident species, common on streams as far up as the base of Mount Shasta.

Family PICIDÆ. WOODPECKERS.

Dryobates villosus harrisii (Aud.). *Harris's Woodpecker*.

Common everywhere in the higher country. Found also in the redwood forests of the coast.

Dryobates pubescens gairdnerii (Aud.). *Gairdner's Woodpecker*.

Common in all parts of the country, except at the western side of Mount Lassen, where I do not remember to have seen it. It was found breeding at Baird in April and May. Once, when rowing on the McCloud River, I was attracted to a nest of this species by seeing a snake crawl into a hole in a dead stump overhanging the water. Investigation proved that it had made a meal of the young woodpeckers.

Dryobates nuttalli Gamb.. *Nuttall's Woodpecker*.

Found only in the timber belts of the upper Sacramento Valley, of which it is probably a constant resident, as it was very common about Red Bluff both in spring and fall. In March it was more frequently seen in the cottonwoods and sycamores by the river than elsewhere.

Xenopicus albolaryvatus (Cass.). *White-headed Woodpecker*.

This bird was found to be very common in summer in the pineries, out of which I have not seen it. Three nests containing young birds were found early in June, in the Mount Lassen region, where the species appeared to be more numerous than about Mount Shasta. These nests were in holes in dead pine trees, within ten or fifteen feet of the ground.

Picoides arcticus (Swains.). *Arctic Three-toed Woodpecker*.

Two specimens of the Three-toed Woodpecker were obtained in the dense forest east of Mount Lassen early in June. None were found west of the Sierras, where the species is probably very rare. It was found rather common along the eastern slope by Mr. Henshaw.

Sphyrapicus varius nuchalis Baird. *Red-naped Sapsucker*.

A single specimen of this form was obtained at Baird, November 13, 1883. This is the only record of the occurrence of this species west of the Sierras, it being properly a bird of the region east of the mountains.

Sphyrapicus ruber (Gm.). *Red-breasted Sapsucker*.

Found in midsummer in limited numbers on the heavily pine timbered slopes of Mounts Shasta and Lassen, and in December in the redwood forests on the coast. Numerous specimens of this and the next species were collected at Fort Crook, by Feilner and Parkinson.

Sphyrapicus thyroideus (Cass.). *Black-breasted Woodpecker.*

Two specimens only of this species were taken, one on the timber line of Mount Shasta August 25, 1883, the other at the eastern base of Mount Lassen early in June, 1884.

Ceophlœus pileatus (Linn.). *Pileated Woodpecker.*

This bird was observed on several occasions in the high hills along McCloud River and at the base of Mount Shasta, and was seen once among the Redwoods near the coast.

Melanerpes formicivorus bairdi Ridgw. *Californian Woodpecker.*

A very common inhabitant of all parts of the country up to the border of the heavy pine region. I do not remember to have seen it as far east as Mount Lassen. Neither this nor the next species were seen in the belt of Redwood forest along the coast. The trees there bore no marks to indicate the presence of *formicivorus*.

Melanerpes torquatus (Wils.). *Lewis's Woodpecker.*

This is probably the most regularly distributed of all the Woodpeckers of this region. It is a constant resident of the valleys and foot-hills, and is found in summer throughout the pine country. One specimen was taken in midsummer on the timber-line of Shasta. It was often seen in winter along the Lower McCloud, and in fall and spring frequented the oak timber of the Upper Sacramento Valley in considerable numbers.

Colaptes cafer (Gmel.). *Red-shafted Flicker.*

A very common resident of the foot-hills and mountains of the country, probably, however, leaving the higher mountains in winter. It was present in the hills of the Lower McCloud in January and February, and was found on the timber-line of Shasta in summer.

Colaptes cafer saturator Ridgw. *Northwestern Flicker.*

The Flickers obtained in the Redwood region and at Red Bluff have been referred to this variety by Mr. Ridgway.

Family CAPRIMULGIDÆ. GOATSUCKERS.

Phalænoptilus nuttalli (Aud.). *Poor-will.*

On July 10, 1884, while deer hunting in the pine forest at the eastern base of Mount Lassen I started a bird of this species from her eggs. Not having a gun adapted to the purpose I could not obtain the bird, but was near enough to identify the species with certainty, even if I had not additional evidence in the characteristic creamy whiteness of the eggs. These latter were on the ground, in the open forest, entirely unprotected by nest or shelter of any kind. They measured 1.00 by .76 and 1.00 by .78 inch.

The species is known to be a summer resident of the country to the eastward of the Sierras, and if found at all to the west of the mountains, in the northern part of California, it is as a rare visitor, for there is no record of any such distribution, and I did not meet with it except upon this occasion. It was collected at Yreka by Mr. Vieille.

Chordeiles virginianus henryi (Cass.). *Western Nighthawk*.

A common summer inhabitant of the open country.

Family MICROPODIDÆ. SWIFTS.

Chætura vauxii (Towns.). *Vaux's Swift*.

"Common in California." (Newberry.)

Family TROCHILIDÆ. HUMMINGBIRDS.

Trochilus alexandri Bourc. & Muls. *Black-chinned Hummingbird*.

A very common summer resident of the foot-hills, breeding numerously on the Lower McCloud River, where seven nests were found at intervals from May 23 to June 26, 1883. These nests were without exception built on the branches of alders and other low bushes close by the McCloud River or the creeks flowing into it, none of them being too high to be easily reached from the ground.

While composed mainly of the cottony down of plants generally used by Hummingbirds for building material, they were very differently disguised by the materials used for their outside covering. Instead of being lichen-coated, in the manner of nests found in large trees, these were closely covered with the brown husks of buds and certain small seeds, which were finally enveloped in a network of spider-web to hold them in place. One nest, taken June 21, was so heavily covered with this netting of spider's manufacture as to be remarkably firm and hard for a Humming-bird's nest. Another, taken May 28, was composed of the above-mentioned seed husks and spider-webs to the total exclusion of the usual down of willows and other plants. Only one nest in the lot was entirely lichen-coated, and as it was built in a young live oak this coating corresponded with the gray-colored branch on which it rested much better than would the brownish color employed to disguise the nests in the lichen-colored branches of the alders.

Here we have a beautiful adaptation of means to requisite ends, which may be further illustrated by similar methods of concealment adopted by two of the following species. In all these instances the artifices resorted to by the birds to render their nests inconspicuous appeared to be efficient, for I do not remember even to have discovered any of the twenty or more Hummingbirds' nests I have collected until their positions were disclosed by the movement of the builders or the actions of the anxious parent birds.

The measurements of four eggs of this species from as many different nests were (in hundredths of an inch): .48 by .32, .50 by .32, .50 by .33, and .50 by .34.

Trochilus anna (Less.). *Anna's Hummingbird*.

The species was found in abundance along the Lower McCloud and in the timber belts of the upper Sacramento Valley. Specimens were obtained in the former region as early as March 7. On February 4 I saw a Hummingbird 6 miles above the mouth of Pitt River, which I think belonged to this species. Another was seen on February 24, on the Lower McCloud River, which also seemed to be of this species. As there was a little snow on some of the hill-sides at that early date, these birds appeared to be advancing more rapidly than the season, but the manzanita blossoms which were beginning to appear on the sunnier slopes probably encouraged them in their northward movement.

I did not myself find this bird breeding in these places, but nests collected at the United States fishery on McCloud River by Mr. Livingston Stone establish the fact. These are altogether the coarsest nests I have seen, being made of plant down and flaxy plant fibers with a miscellaneous coating of mosses, coarse lichens, husks of buds, tiny bits of bark, and even a few minute twigs. I think they would harmonize admirably with their surroundings in the high oak trees in which they are said to have been placed.

Early in June I found a curious double nest which, from its coarse structure and heavy covering of mosses and lichens, might have been built by this species, but I could not make its identity certain by obtaining the bird. A fresh nest was placed upon a bit of drift lodged in the tip of a swaying branch of a willow which overhung the McCloud River. To the side of this mass of leaves and grasses was attached a weather-worn nest which in all probability had been built the previous season by the same bird.

Trochilus rufus Gmel. *Rufous Hummingbird*.

This bird was first seen in the foot-hills of the Lower McCloud about April 5, its presence there being noted throughout the summer. Several specimens of males in fine plumage were obtained on May 17 in the vicinity of certain beds of wild flowers on the tops of the high hills about the United States fishery. In such places I was always certain of finding a considerable number of them during the latter part of the month, and their actions there were characterized by a wonderful degree of animation. The males were constantly darting into the air to a height of 30 or 40 feet above their fellows, uttering sharp squeaks and dropping almost instantly among them and buzzing among the flowers in the noisiest possible manner. I could find no nests of this species, and I do not think that they build close to the streams, like the other Hummingbirds in this region, but resort to the dry, brush-covered hills. I found these birds in midsummer at the highest limit of timber on Shasta.

Trochilus callope Gould. *Calliope Hummingbird*.

This species was not met with until May 17, when two were obtained among the above-mentioned wild flowers in company with *Trochilus rufus*. I found nests on the following dates: May 29, June 9 and 12. These were in trees on the bank of McCloud River, and were observed to be lichen-coated, to correspond with their situations. One of them, so placed upon a decayed limb as to be completely sheltered by a larger one immediately over it, was covered with as great a variety of materials as the nests of *Trochilus arnae*, and in addition to these had some cast off skins of aquatic insects built into it.

Family TYRANNIDÆ. TYRANT FLYCATCHERS.

Tyrannus verticalis Say. *Western Kingbird*.

A very common summer resident of the settled and cultivated portions of the country. It appeared at Red Bluff April 5, and was noticed in the foot-hills of the Lower McCloud about the last of the month. At the latter place a nest of four eggs was found June 9. Another was taken in the hills east of Red Bluff a week earlier. These, and all others noticed, were in the near vicinity of houses.

Myiarchus cinerascens Lawr. *Ash-throated Flycatcher*.

This species arrived at Red Bluff April 25, and at Baird May 15. It is common in summer, both in the Sacramento Valley and in the chaparral and wooded country higher up. It was not found in the pine regions of Mounts Shasta and Lassen.

Sayornis saya (Bonap.). *Say's Phoebe*.

A common summer resident of the Upper Sacramento Valley, particularly in the vicinity of Red Bluff, where it was first observed March 11. It was not found to inhabit higher country.

Sayornis nigricans (Swains.). *Black Phoebe*.

The Black Pewee was noticed at Baird as early as February 29, 1884, and the first nest of eggs was obtained April 24. It remained about the buildings throughout the summer, usually raising two broods. Found everywhere but in the mountains.

Contopus borealis (Swains.). *Olive-sided Flycatcher*.

Not uncommon in the pine forests in summer. I found it on one or two occasions as high as the timber-line on Shasta. Specimens were rather hard to procure, owing to the great height which the bird maintained in the trees. It was seldom seen in the pineries of the Lassen region.

Contopus richardsoni (Sw.). *Western Wood Pewee*.

A common summer inhabitant of the foot-hills and mountains. It was not obtained at Baird until May 28, and was not noticed at all in the Sacramento Valley.

Empidonax pusillus (Swains.). *Little Flycatcher.*

Specimens of this species were obtained in Lassen and Modoc Counties by Mr. Henshaw, who reports it as a numerous summer resident of the eastern slope of the Sierras.

Empidonax obscurus (Swains.). *Wright's Flycatcher.*

I did not meet with this species myself, but it was found breeding in Lassen County by Mr. Henshaw, where, however, it was not common. Specimens were collected at Fort Crook by Captain Feilner.

Family ALAUDIDÆ. LARKS.

Otocoris alpestris rubea Hensh. *Ruddy Horned Lark.*

This form of the Horned Lark is a very common inhabitant of the plains and open country everywhere in Northern California. It was found in limited numbers on the sage-covered districts north of Mount Shasta in midsummer. The closely-grazed sheep pastures of the Upper Sacramento Valley were alive with them in April and May, and they were abundant in July on the grassy plains east of Mount Lassen. As I was not at Red Bluff in midsummer or midwinter I cannot affirm that they are always present there, but think it not unlikely a few were nesting there late in May. On May 4 I found a most remarkable nest of eggs in all probability of this species. I had secured a number of Horned Larks the same morning in a stubble-field and a nest containing one egg of the usual olive-white color, with minute dark spots, so characteristic of the egg of the species, when a plowman approached with a nest containing three eggs of similar size and pattern of marking, but so suffused with a rich reddish-brown as to be unrecognizable. The man said they were those of a bird exactly like the *Otocoris* in my basket. Both nests were of equal size, loosely made of grasses and weeds and placed among the clods and stubble. There were no other birds on the entire plain but Horned Larks, and as the eggs agree with no others, there is no other resort than to call them eggs of this species. The measurements (in hundredths of an inch) are: of the normal egg .76 by .60, and of the reddish colored set, .81 by .58, .76 by .56, .74 by .56.

Otocoris alpestris strigata Hensh. *Streaked Horned Lark.*

This northwestern dark-colored race was abundant at Red Bluff in December, when a few specimens were obtained.

Family CORYIDÆ. CROWS, JAYS, MAGPIES, & C.

Pica pica hudsonica (Sab.). *American Magpie.*

This species is known to the region chiefly from specimens taken at Fort Crook by Captain Feilner. Its western limit is reached there, for it is replaced on the opposite side of the Sierras by the next species.

Pica nuttalli Aud. *Yellow-billed Magpie.*

A very common constant resident of the Upper Sacramento Valley, out of which it was not observed. Magpies were always to be found about the buildings on the ranches around Red Bluff, and their brush-pile nests were conspicuous objects in the scraggy oak trees near them. They began making repairs on several old nests about March 10, but I found no eggs, although I inspected them regularly for a month or more. I have no reason to believe that any new nests were built, but I think that the birds laid their eggs in two or three old nests that were inaccessible to me. All those examined were found to be roofed with twigs in the usual manner of Magpies' nests, and had openings on opposite sides so that the birds could enter and leave without the inconvenience of turning their long tails in crowded quarters. I saw a pair of sparrow hawks flying in and out of one of these arboreal brush-piles early in the spring, but could not determine whether they nested there on account of its inaccessible situation.

Cyanocitta stelleri (Gmel.). *Steller's Jay.*

Moderately common among the redwoods of Humboldt County.

Cyanocitta stelleri frontalis (Ridgw.). *Blue-fronted Jay.*

This jay is a very common inhabitant of the pine region, wintering in considerable numbers in the foot-hills, where a few remain to breed. I found full grown young birds at the timber-line of Shasta in midsummer. It was not observed in the Sacramento Valley in winter.

Aphelocoma californica (Vig.). *California Jay.*

A common resident of the foot-hills in summer and of the valleys in winter, generally speaking, stragglers being found in both regions at all seasons. It was very rarely found in the higher pine country. One specimen was obtained near the base of Mount Shasta, at an altitude of 4,500 feet. The only-nest obtained at Red Bluff was taken May 1.

Perisoreus obscurus (Ridgw.). *Oregon Jay.*

The only place in the interior where I found this species was on the heavily-timbered slopes of Mount Shasta a few thousand feet below timber-line, where four flocks of about half a dozen birds each were seen. I saw a flock on the west side of the mountain on July 30. Ten specimens were collected on the east side during August and September. On September 7 I crippled one of a band of five, which screamed so continuously that its comrades returned and assaulted it furiously. They were so excited by its cries that I shot one after the other in quick succession until all were immolated upon the altar of ornithology, the last one still violently attacking the first unfortunate. These very interesting birds never appeared as pests about our camp, as they are known to do in Oregon and elsewhere. They were silent creatures, with the exception of a startling scream sometimes uttered when flying

high through the tops of the pines. None were observed among the conifers of Mount Lassen, but in December, 1885, numerous bands were met with in the Humboldt redwood forests.

Corvus corax sinuatus (Wagl). *American Raven*.

The Raven I only saw on one or two occasions at Red Bluff. It is recorded by other observers as a common species of all parts of the country except the high mountains, and was collected at Fort Crook by Lieutenant Parkinson. On the coast, however, about Humboldt Bay it was constantly present. California Ravens appeared to be scarcely more than half the size of those I obtained in Northern Alaska, and certainly had not half the vocal power of the Alaskan birds, which are remarkably loud-voiced.

Corvus americanus Aud. *American Crow*.

An abundant, constant resident of the Upper Sacramento Valley, occasionally wandering into the higher foot-hills. It was seen on two or three occasions in the hills about Baird, but was not observed anywhere in the high mountains. Early in May Crows were breeding everywhere in the timber belts south of Red Bluff. Their nests always contained four eggs, and neither nests nor eggs differed in any way from those of the common eastern Crow, although the birds themselves were invariably found to be much smaller. They exhibited none of the proverbial wariness of eastern Crows, and were always easily obtainable. On one occasion, finding it necessary to economize ammunition, I poisoned wheat with strychnine, hoping to obtain specimens thereby, but although sick Crows were noticed in the vicinity for several days afterward, only one died from the effects of the poison.

Picicorvus columbianus (Wils.). *Clark's Nutcracker*.

My most pleasurable memories of bird collecting in California are inseparably connected with the time spent in hunting the Nutcracker along the timber-line of Mount Shasta. High up on the lonely mountain, where the dark pine forest gives place to scattered trees and stunted shrubs, where tracts of pumice and ashes, marking old volcanic flows, lie strewn with lava boulders, and where common bird life languishes, is the home of the Nutcracker. Such a locality is desolate enough, but is not without its grander aspects; for from the somber foreground the picture widens out into vistas the sublimity of which becomes indelibly stamped upon the imagination. On one side and below are the forests stretching downwards and away farther than the eye can see, affording glimpses of scenery only surpassed in grandeur by the view on the other side, where the snowy peak rises glistening in the sunshine far above.

In the thin air of this high latitude—nine or ten thousand feet—any but the slowest walking is too exhausting to be continued long, and as the Nutcrackers are observant and shy, it is not an easy matter to shoot

them. They are such restless rovers, too, that one can never depend on their remaining long enough in one situation to be stalked. It is useless to follow one of these birds, for when he leaves the pine cone at which he may have been hammering contentedly he is as likely to fly clean out of the neighborhood as not. The best way to get the birds is to shoot them on the wing from some covert over which they are likely to fly in passing from one patch of piñons to another. Their coming is unmistakably announced by their incessant squalling. Even when feeding the Nutcrackers keep up a peevish scolding. In summer their heads and breasts are always reddened by the juice of the unripe cones of *Pinus flexilis*, but later they depend on the seeds of the larger pines.

Cyanocephalus cyanocephalus (Wied.). *Piñon Jay*.

About fifteen specimens of this species were collected at Fort Crook by Captain Feilner. There are no records showing that it has been found in this region by any one else, but there can be no doubt that it inhabits the piñon-covered localities generally.

Family ICTERIDÆ. BLACKBIRDS, ORIOLES, &C.

Xanthocephalus xanthocephalus (Bonap.). *Yellow-headed Blackbird*.

A bird common in Northern California, but of irregular distribution, often passing over extensive stretches of unfavorable country to arrive at the cultivated tracts and reedy lakes where it breeds. This is characteristic of all the Blackbirds found in the country, for, after leaving the Sacramento Valley, the settled places are few and far between, and Blackbirds are too partial to grassy meadows and marshes to wander far from them. I do not remember of ever seeing a Blackbird of any species among the foot-hills of the Lower McCloud.

This species was often found among the flocks of Brewer's Blackbirds that frequented the timothy meadows of Berryvale, at the western base of Mount Shasta, 3,500 feet altitude. Very few were seen at Red Bluff, but large numbers were found breeding in the "tules" bordering Eagle Lake. Here they led an independent sort of life amid strange surroundings, for with the exception of the marsh wrens that nested in the reeds with them, other species of land birds were scarce; ducks, coots, and grebes were splashing and gabbling among the reeds beneath their nests; gulls, terns, shags, and pelicans were flying overhead or darting into the water all around. The rippling surface of the lake, the waving reeds along its margin, the tall pines, with their background of mountains, and the presence of a great variety of birds, all contributed to form here a scene of life and beauty. From their station upon the tops of the tules these Blackbirds displayed their yellow heads and vied with their strange neighbors in noise and animation.

Agelaius phœniceus (Linn.). *Red-winged Blackbird*.

An abundant summer resident of the cultivated country north of Mount Shasta, and observed in moderate numbers in suitable localities

elsewhere. It was first seen at Red Bluff March 24, in company with Brewer's Blackbird.

Agelaius gubernator (Wagl.). *Bicolored Blackbird*.

This form may have been among the flocks of the preceding species that were observed in various places, but I did not recognize it as such. Dr. Newberry found it common in the Sacramento Valley and Mr. Henshaw records its presence on the eastern slope of the Sierras.

Agelaius tricolor (Nutt.). *Tricolored Blackbird*.

As this is a species not distinguishable on sight from the two preceding species when flocking with them, and as none were collected, I cannot affirm that it is a bird of the region under discussion. It is admitted on the strength of the records of Drs. Newberry and Heermann; according to the former, common in the Klamath basin, and the latter, breeding in great numbers in the vicinity of the town of Shasta.

Sturnella magna neglecta Aud. *Western Meadow Lark*.

The remarks on the distribution of the preceding species of the family Icteridæ are largely applicable to this one, which is very numerous wherever there are meadows of any considerable extent. It is exceedingly abundant throughout the upper end of the Sacramento Valley, especially when the larks of the high mountain meadows also gather there to pass the winter. I found one individual frozen in the snow of Shasta in August, more than 1,000 feet above the timber-line.

Icterus bullocki (Swains.). *Bullock's Oriole*.

Bullock's Oriole was first collected at the United States fishery on April 25. A pair nested in a "live oak" overhanging the river quite near the fishery, and I was entertained by the hostile bearing of the male toward intruders. One day a stray *Icterus bullocki* came along and essayed to usurp the place of the rightful owner of the nest, which brought an immediate conflict. The two males struggled and tore each others hair, so to speak, until both fell into the water beneath, where of course they separated. Before their plumage was dry they met at the nest overhead and engaged in combat again, and with the same result. Seven or eight times in succession did I see their angry struggles interrupted by repeated tumbles into the icy McCloud.

These Orioles were first seen at Red Bluff April 5, where they nested regularly in the cottonwoods and locusts about the ranch buildings. In a clump of half a dozen trees at one place I counted more than twenty deserted nests, some of which were occupied by crimson-fronted house finches. The number of old nests about this house would seem to indicate that they were not occupied a second time by the orioles. One of these nests was composed almost entirely of various kinds of strings and coarse twine, interwoven throughout with horse hair, which last appeared to enter largely into the composition of all the nests. It was cer-

tainly a convenient building material, for there were more than a hundred horses and mules on the ranch, and combings from their manes and tails were sticking everywhere about the stables and corrals. This species was very abundant in the timber belts of the Upper Sacramento Valley about the latter part of April, feeding among the new leaves of the oaks, but later in the season had mostly scattered off to their nesting places in various parts of the valleys and foot-hills. None were seen in the pine country or the high mountains.

Scolecophagus cyanocephalus (Wagl.). *Brewer's Blackbird*.

The most abundant of all the Blackbirds of Northern California, and like the other species a summer resident of all localities suitable for blackbirds. They were not numerous at Red Bluff until near the last of March.

Family FRINGILLIDÆ. FINCHES, SPARROWS, & C.

Coccothraustes vespertina (Cooper). *Evening Grosbeak*.

Seemingly very rare. Two specimens have been procured in this region, one at Fort Crook, by Captain Feilner, and the other at Yreka, by Mr. Vuille.

Carpodacus purpureus californicus Baird. *California Purple Finch*.

This species was observed on a few occasions only. It was taken at Baird on June 6, and again on the 24th, 1883. A single individual was obtained at the eastern base of Mount Lassen on June 1, 1884, and it was subsequently secured at Humboldt Bay in December, 1885.

Carpodacus cassini Baird. *Cassin's Purple Finch*.

Cassin's Purple Finch is an abundant summer inhabitant of the mountains and the pine regions generally. During the summer of 1883 it was found in abundance on the higher slopes, and especially along the timber-line of Mount Shasta, where, although no nests were found, its breeding was indicated by the large proportion of young birds present. Very few were to be found at the base of the mountains and none in the lower foot-hills and valleys, with exception of a single individual taken on the Lower McClond November 16. It is probably only found there when passing between its winter and summer homes.

Carpodacus frontalis (Say). *House Finch*.

The House Finch is a very abundant resident of all parts of Northern California, except the pine forests and the high mountains. The majority of those that are in the foot-hills in summer probably winter lower down, for only occasional stragglers were seen at Baird in winter. At Red Bluff they began nesting about May 1. Here their presence and agreeable songs enlivened the usually unattractive buildings upon the grain ranches, where they were the prevailing species during the long dry season when most valley birds seek the shelter of the timber. The "Linnetts," as these birds are called in California, nest in all sorts of

places. At a ranch near the town, where my laboratory was set up for a time, they took possession of all the available cracks and crevices about the buildings, nesting also in the locust trees, the rose bushes, and even in several deserted nests of Bullock's Oriole. They did not accept these nests as built by the Orioles, but constructed their own nests inside, often half filling them with rubbish. One of these was filled to overflowing, so there was barely room for the eggs, thus making it quite a heavy and bulky affair. Sometimes their nests were found in the lower branches of the cottonwoods along the river.

The nest of the House Finch, in the materials entering into its composition, is subject to as great variety as is its situation, being made of all kinds of green and dried weeds, of coarse twine and strings, of sundry fibers of dead weeds, with lining of horse-tail, wool, cotton, or in fact of any handy material that would do to build a bird's nest out of. They lay not more than five eggs, which are subject to much variation in their marking. They are very destructive to fruit, and in some places I found the ranchers prepared with special ammunition for destroying them.

In the autumn they are gregarious, and a flock of thirty or forty of these rosy fellows in one small tree is a pretty sight.

Loxia curvirostra minor (Brehm). *American Crossbill.*

This resident of the pines appears to be somewhat irregular in its distribution. Although I spent more than two months among the conifers of Mount Shasta, Crossbills were not met with, except on one occasion, until September 3, on the eastern slope. Our camp, at an elevation of about 6,000 feet, on a small stream, was occasionally visited by small bands of these birds. I soon learned from the monotonous notes which they uttered in concert when flying when they were about camp, and on going out usually saw them in the tops of certain tamaracks near by. As observed in the pine region east of Mount Lassen the following summer they were more numerous and easier to obtain.

In this region they were nearly always to be found in three particular localities in the vicinity of springs, and seldom anywhere else. One of these was our own cabin, and I collected many Crossbills by firing from the door with a parlor gun which did not make report enough to frighten them away. It was their custom to come to a stump before the door early in the morning, often half a dozen being on it at once, and sometimes three or four could be killed in succession before they became alarmed. A few moments' inspection of the place from the nearest pine was sufficient to restore their confidence, however, and they would come down again.

I have every reason to believe that the source of their attraction to this particular stump was salt, as we always salted the horses there, and there was always more or less of it sticking in the crevices. This stump was resorted to by porcupines during the night for the salt which

permeated it, and I am at a loss to explain its attraction for the birds in any other way.

A spring in a grove of aspens some miles away was also much frequented by Crossbills, but as I saw them there only when passing by, there was no opportunity for observing their habits.

The third place frequented by them was the vicinity of a tumble-down hut by a spring in a grove of tamaracks. This place, known to sheep-herders as Bridge Creek, was on the trail leading from Mount Lassen to Susanville. Here we camped for a short time, and the Crossbills did not fail to appear each day, being especially active at morning and evening. In this flock of old and young there were birds of every color intermediate between the red of the male and the olive of the female.

As they perched in the tamaracks over the door, single ones were easily picked off with the small gun without disturbing the rest, and if we retired to a suitable distance they would enter the shanty and pick over the fragments of victuals that littered the earthen floor.

Although I rambled all over the surrounding country, I do not remember finding Crossbills elsewhere than at these three places.

Spinus tristis (Linn.). *American Goldfinch.*

Common at Red Bluff in spring and summer, where they were usually found in flocks in the cottonwoods along the river. They were first seen March 20. Also obtained at Humboldt Bay.

Spinus psaltria (Say). *Arkansas Goldfinch.*

The Green-backed Goldfinch is a common summer resident of the foothill country, particularly the lower parts. A limited number wander higher into the mountains and still fewer remain in the valleys, although two nests were found at Red Bluff (April 30 and May 14). The first one of the season arrived at Baird as early as March 1.

Spinus pinus (Wils.). *Pine Siskin.*

A considerable number of specimens of the pine goldfinch were collected at Fort Crook by Capt. Feilner. I did not meet with it myself until I arrived at Humboldt Bay in November, 1885, where, however, it was seldom seen.

Pooecetes gramineus confinis Baird. *Western Vesper Sparrow.*

Not represented in my collection, but common in the valleys, according to Dr. Newberry and Mr. Henshaw.

Ammodramus sandwichensis alaudinus (Bp.). *Western Savannah Sparrow.*

This species was found in abundance at Red Bluff in spring and fall. Not having been there in summer and winter, I am uncertain whether it winters there, but there is little doubt that it remains through the hot weather, although the greater part of the valley birds wander a little higher up at that season. Large flocks of the species were gath-

ered together late in December. With the exception of a very few found near the mouth of the McCloud River in November they were not observed in high country.

Chondestes grammacus strigatus (Sw.). *Western Lark Finch.*

An abundant summer resident of all parts of the country, except the pine forests and the high mountains. As observed, breeding late in May at Baird, the nests were on the ground, while at Red Bluff they nested two weeks earlier, and all the nests noticed were in low trees. It was very abundant in August on the high lying plains northward of Mount Shasta.

Zonotrichia leucophrys (Forst.). *White-crowned Sparrow.*

Numerous in the mountains of the northeastern part of the State, where it was found breeding in June by Mr. Henshaw. Also recorded from Northern California, by Dr. Newberry. I have not recognized it there myself.

Zonotrichia intermedia Ridgw. *Intermediate Sparrow.*

This species was abundant at Red Bluff in the spring. Flocks of them, accompanied by occasional individuals of *coronata*, constantly frequented the brush fences of certain localities. A few were observed there in December also. They were seen only at rare intervals in the region round about Mount Lassen and were not found at all about Mount Shasta.

Zonotrichia gambeli (Nutt.). *Gambel's Sparrow.*

A single specimen of this form was obtained at the United States fishery November 10.

Zonotrichia coronata (Pall.). *Golden-crowned Sparrow.*

Occasionally met with at Red Bluff in March, and only under the circumstances mentioned in the paragraph relating to *intermedia*. At Humboldt Bay it was more numerous.

Spizella monticola ochracea Brewst. *Western Tree Sparrow.*

This species is represented in Captain Feilner's Fort Crook collection.

Spizella socialis arizonæ Cones. *Western Chipping Sparrow.*

Met with almost everywhere in the country, even up to the timberline of Shasta, where numerous young birds were found in midsummer. The valley region about Red Bluff was the only locality where this sparrow was really rare. At Baird nests were found late in May and at Mount Lassen early in June.

Spizella breweri Cass. *Brewer's Sparrow.*

Recorded as abundant by Dr. Newberry and Mr. Henshaw. Specimens were collected at Fort Crook by Captain Feilner.

Junco hyemalis oregonus (Townsend). *Oregon Junco*.

The Oregon Snowbird is a very common inhabitant of the high mountains, retiring to all parts of the lower country in winter. Snowbirds breed everywhere in the pine country about Mount Shasta, and often at the timber-line. At Mount Lassen, where they were equally common, a nest of four fresh eggs was taken on June 6. It was built on the ground, the usual situation of nests of this species. These birds were abundant and familiar at Red Bluff early in the spring, and were noted among the foot-hills of the Lower McCloud River in January.

Amphispiza belli nevadensis (Ridgw.). *Sage Sparrow*.

Not observed by me, but found in moderate numbers in the sage-covered districts of Northeastern California by Mr. Henshaw.

Melospiza fasciata heermanni (Baird). *Heermann's Song Sparrow*.

This species appears to be confined to the foot-hills proper, of which it is a constant and rather common resident. It may be found along with the next species in the valleys, but I did not recognize it elsewhere than as stated:

As a rule it frequents the shrubbery overhanging the streams, in which situations it nests in April, especially towards the last of the month.

All the nests found along the McCloud River were built among the drift twigs and leaves lodged in the low bushes at the season of high water. One found May 10 was a bulky structure of the outer bark of reeds, with some grasses and withered leaves, the lining being principally of the separated fibers of dead weeds and reeds. It contained five eggs of a pale blue-ground color, minutely dotted with reddish-brown, especially at the larger end. Their measurements were: one, .78 by .60; one, .82 by .60, and three .80 by .60 inch.

Melospiza fasciata samuelis (Baird). *Samuel's Song Sparrow*.

A single specimen, the only one of the kind seen, was taken on the coast at the mouth of Eel River in December, 1885.

Melospiza fasciata guttata (Nutt.). *Rusty Song Sparrow*.

Not uncommon at Baird in fall and winter, associating probably with the above-mentioned variety, as it affects similar localities. At Red Bluff it was seldom obtained.

Melospiza lincolni (Aud.). *Lincoln's Sparrow*.

Specimens of Lincoln's finch were collected at Fort Crook by Captain Feilner.

Passerella iliaca unalaschcensis (Gm.). *Townsend's Sparrow*.

The only specimen of the genus *Passerella*, collected on the Lower McCloud River, proves to be of this variety. It was taken at the United States fishery on September 24, 1883. Common on the coast of Humboldt County.

Passerella iliaca megarhyncha (Baird). *Thick-billed Sparrow.*

Common about Mount Shasta in summer, where it frequented the chaparral tracts and the bushes scattered through the pine country. Although no nests were found, its breeding there was indicated by the number of immature birds met with.

Passerella iliaca schistacea (Baird). *Slate-colored Sparrow.*

This slate-colored variety was found in abundance in June in brushy tracts everywhere about the eastern base of Mount Lassen.

Pipilo maculatus megalonyx (Baird). *Spurred Towhee.*

The Spurred Towhee is an abundant, constant resident of all parts of the country, excepting, perhaps, the higher slopes of the mountains, as I did not find it on Shasta above 5,500 feet altitude. The nesting period, as indicated by the dates of nests found in the valleys and foot-hills, extends from the middle of April to the last of May.

Pipilo maculatus oregonus (Bell). *Oregon Towhee.*

My coast specimens of the Towhee are all typical *oregonus*. Abundant in Humboldt County.

Pipilo chlorurus (Townsend). *Green-tailed Towhee.*

The Green-tailed Finch was found to be quite common in the brushy tracts that are interspersed through the higher pine regions, never being found lower than the bases of Shasta and Lassen.

Pipilo fuscus crissalis (Vig.). *Californian Towhee.*

An exceedingly common all-the-year-round inhabitant of the foot hills and valleys. It was very rarely found higher than the border of the heavy pine country. The breeding season appears to be later than that of *P. megalonyx*, lasting from May 1 until July 1. The builders of these latest nests may have been raising a second brood, but it is rather doubtful.

As it was noticed neither as far north as Mount Shasta nor as far west as Mount Lassen, its range in the interior of Northern California may be considered as limited to the Sacramento Valley and the foot-hills which inclose it.

Habia melanocephala (Swains.). *Black-headed Grosbeak.*

This grosbeak is a common summer resident of the foot-hill region, never having been observed higher than 3,900 feet altitude. It arrived at Red Bluff May 1, and at Baird May 11. At Red Bluff it probably never remains to breed, but passes through to higher country. A nest of three eggs was found at Baird May 21, in some tangled bushes by the river. It was composed entirely of twigs, the lining consisting merely of rather finer ones, and the whole not so compactly built but that one could see through it. The eggs, of a light blue color, were rather closely spotted, especially at the larger end. These spots were in two layers,

the under and obscurer ones being of a purplish gray, the distinct outside series of amber brown. The eggs measured: one, .92 by .68, the other two, .94 by .66 inch.

Guiraca cærulea (Linn.). *Blue Grosbeak.*

The only account of the occurrence of this species in Northern California is by Dr. Newberry, who found it on Upper Pitt River.

Passerina amœna (Say). *Lazuli Bunting.*

A common summer resident of all parts of the country up to the border of the dense pine region. It arrived at or, more properly, passed through, Red Bluff May 1, and was first seen at Baird about the middle of the month. The first nest was found May 26 at the latter place. It was a symmetrical structure of dried grasses and the outer covering or bark of certain species of reeds, the whole being so withered and bleached as to present a uniform grayish appearance. There was no lining, and as the eggs had not yet been laid it is not unlikely that it was an unfinished nest. A few bits of mosquito netting were the only artificial substances in its composition. It was attached to the twigs of a low shrub, among some bowlders near the river.

Family TANAGRIDÆ. TANAGERS.

Piranga ludoviciana (Wils.). *Louisiana Tanager.*

A very common summer resident of the foot hills and mountains. It arrived at Baird May 14, and at Red Bluff, the following season, May 17. At the latter place it occurs only when passing through to higher country.

Family HIRUNDINIDÆ. SWALLOWS.

Progne subis (Linn.). *Purple Martin.*

Martins were not common in the localities where I collected. A few were noticed about some buildings at the west base of Mount Shasta in midsummer. A colony of a dozen or more was found established in a large dead pine on the edge of the forest at the eastern base of Mount Lassen on June 6. The only nest I could reach occupied a large decayed cavity 20 feet from the ground. It contained four fresh eggs. There were other nests higher up.

Petrochelidon lunifrons (Say). *Cliff Swallow.*

Common only in certain localities. A moderate number of Cliff Swallows inhabited the buildings alluded to in the account of the preceding species, and they were abundant in the cultivated region about Susanville, Lassen County. They were very rarely seen in the Sacramento Valley, and never found breeding on cliffs or other natural situations.

Chelidon erythrogaster (Bodd.). *Barn Swallow.*

Of similar distribution and abundance as the Cliff Swallow.

Tachycineta bicolor (Vieill.). *Tree Swallow*.

An abundant summer resident of all settled parts of Northern California. The first bird of the season at Baird was seen as early as February 24, and the first nest of eggs (a set of seven) was found May 12. These Swallows nested regularly under the eaves of the fishery buildings, and sometimes established colonies in dead trees along the river. About Red Bluff they seemed to prefer dead trees in the timber belts to the artificial nesting places afforded by the buildings on the ranches.

Tachycineta thalassina (Swains.). *Violet-green Swallow*.

The Violet-green Swallow was often seen flying over the almost inaccessible limestone rocks which crowned the high ridge opposite the United States fishery. Here I procured my first and only specimen of this exquisitely colored bird on July 4, 1883.

Clivicola riparia (Linn.). *Bank Swallow*.

Not found in any of the localities I visited, but according to Dr. Newberry and Mr. Henshaw it is not uncommon.

Stelgidopteryx serripennis (Aud.). *Rough-winged Swallow*.

Apparently rare. Specimens were obtained at Baird on July 7, 1883, and at Red Bluff May 9, 1884.

Family AMPELIDÆ. WAXWINGS, &c.

Ampelis cedrorum (Vieill.). *Cedar Waxwing*.

Seemingly rare, having been observed on one occasion only. A flock of about a dozen appeared at Red Bluff on December 19.

Phainopepla nitens (Sw.). *Phainopepla*.

I am almost certain that I saw this species at Baird late in June, 1883. Its claim to being a bird of the region is established by the fact of its having been taken at Fort Crook by Captain Feilner. This is probably the most northerly record of its range.

Family LANIIDÆ. SHRIKES.

Lanius ludovicianus (Linn.). *Loggerhead Shrike*.

Not uncommon about Red Bluff in the spring. A single specimen was obtained on a sage plain east of Mount Lassen in July, 1884. Shrikes were never seen in the foot-hills of Shasta County.

Lanius ludovicianus excubitorides (Sw.). *White-rumped Shrike*.

Very rare, as it was found only on the sage plains near Yreka in August, and at Humboldt Bay in December.

Family VIREONIDÆ. VIREOS.

Vireo gilvus (Vieill.). *Warbling Vireo*.

Uncommon. At Baird it was first observed on June 7, where occasional ones were met with during the spring and early summer. It was found at rare intervals in midsummer about the base of Shasta.

Vireo solitarius cassinii (Xantus). *Cassin's Vireo*.

More common and more generally distributed than any other vireo. It was first observed at Baird May 20. Very rarely seen in the Shasta and Lassen regions.

Vireo huttoni Cass. *Hutton's Vireo*.

Hutton's Vireo was met with occasionally during the spring and summer at Baird, where it was first observed May 24.

Family ULNIOIDIDÆ. WOOD WARBLERS.

Helminthophila ruficapilla gutturalis Ridgw. *Calaveras Warbler*.

Rare at Baird, where I obtained only a single specimen. In August they were rather common among the bushes about the margin of Castle Lake, 20 miles west of Mount Shasta, associating with the Pileolated Warblers (*Sylvania pileolata*), which were equally common.

A little later some were found on the highest timber-line of Shasta, where a few young birds also were seen.

Helminthophila celata lutescens Ridgw. *Lutescent Warbler*.

Probably rare, as I have but one specimen, which was taken at the timber-line of Shasta.

Dendroica aestiva (Gmel.). *Yellow Warbler*.

A bird apparently as common as in the Eastern States. It arrived at Baird about May 1, where it was abundant until midsummer, when its numbers greatly diminished. Three nests were found in the bushes by the river, two on May 29, one on June 10.

Dendroica coronata (Linn.). *Myrtle Warbler*.

A number of specimens from Red Bluff, which I at first took to be *D. auduboni*, prove to be of this species. They were plentiful in the timber belts about May 1 and at Humboldt Bay in the fall.

Dendroica auduboni (Townsend). *Audubon's Warbler*.

Although I was in the foot-hills of Shasta County from April 1 to July 1, 1883, I did not find this species until I ascended Mount Shasta in August. It was the commonest species of Warbler immediately below the timber-line, the bulk of these being young birds. On March 29 of the following year they arrived at Red Bluff, where they were rather common during the spring.

Dendroica nigrescens (Townsend). *Black-throated Gray Warbler*.

Quite common in the foot-hills along the Lower McCloud River. It was first seen at Baird May 10, and at Red Bluff the following spring on May 6. At the latter place, however, it was very rare, and was totally wanting in the heavy pine regions about Mounts Shasta and Lassen.

This species, usually observed in pairs or in groups of three or four, seemed to frequent all parts of the foot-hill country, loitering much in the gulches, the manzanita brush, and the lower shrubbery generally, but sometimes resorting to the oak trees.

A nest containing three fresh eggs was found at the United States Fishery on May 18, 1883. It was placed upon the horizontal limb of an "evergreen" oak, 10 feet from the ground. The sitting female retired to an upper branch and witnessed the abduction of her treasures with absolute indifference. This nest in its composition consists almost entirely of the bark or outer covering of dead weed-stalks of various kinds, with a slight interweaving of flaxy grass fibers. The lining is of bird feathers, probably those of the quail, interspersed with the hair of cattle. The ground color of the eggs is white. They are dotted with reddish-brown somewhat irregularly all over, but at the large end the dots are so close as to form a circle. The measurements are: of one, .61 by .46 and of the other two .61 by .48. With exception of a doubtful set forwarded from the same locality, the previous season, by Mr. Livingston Stone, this is the first record of the finding of the eggs of this species. The eggs obtained by Mr. Stone are much rounder, one of them measuring .62 by .52, while the blotches are very much larger and of a brighter color. The nest is more loosely constructed, of still lighter materials and with scarcely any lining. A third nest has since been forwarded from Arizona by Mr. E. W. Nelson.

Dendroica occidentalis (Townsend). *Hermit Warbler*.

A single specimen of this warbler was obtained at the timber-line of Mount Shasta August 15, 1883. It was in a small spruce pine with a group of mountain chickadees.

Geothlypis macgillivrayi (Aud.). *Macgillivray's Warbler*.

Found only at Mount Shasta. It was not uncommon from the base up to timber-line in July and August, and seemed to frequent the scattered tracts of shrubbery rather than the dense pine woods. I saw no nests, but it is probable that it breeds there.

Geothlypis trichas occidentalis (Brewster). *Western Yellow-throat*.

A single individual of this species was obtained at the base of Mount Shasta on August 6, and being a comparatively young bird was probably reared there.

Icteria virens longicauda (Lawrence). *Long-tailed Chat*.

Common throughout the lower country generally, but not ranging as high as the pine belt. It was first seen at Baird May 10 and at Red Bluff May 4.

Sylvania pusilla pileolata (Pall.). *Pileolated Warbler*.

At Red Bluff the first migrant arrived on May 1, where, however, it was not often seen, probably only occurring there while passing through

to higher country. It is rather numerous during the summer about Mount Shasta from the base up to timber-line.

Family MOTACILLIDÆ. WAGTAILS.

Anthus pensilvanicus (Germ.). *American Pipit*.

Plentiful in the Sacramento Valley. It had a habit of wading in shallow water like a sandpiper, and I have secured several at once by taking a "line shot" along the river's edge. It was occasionally noted along the ocean beaches of Humboldt County.

Family CINCLIDÆ. DIPPERS.

Cinclus mexicanus Swains. *American Dipper*.

One of the characteristic birds of the country, especially numerous in the foot-hills and mountains.

Water Ouzels were common all along the McCloud River in the fall and winter, but from April 1 to July 1 it was only seen twice. This can probably be accounted for by the birds having gone further into the mountains to breed, for they were found in abundance on the rapid streams about Mount Shasta in July, August, and September. I found one individual at the snow-line on Shasta in midsummer, on an icy rivulet flowing from beneath the perpetual snow. It was a surprise to find this bird in such a desolate place; there seemed to be nothing for an ouzel or any other bird to eat along that cold stream, full of ashy sediment and flowing a couple of hundred yards only to disappear in the loose pumice and other volcanic rocks of which the mountain is composed. Why should the bird leave its native streams in the valleys for the desolate limit of perpetual snow? The Ouzel certainly wanders into very inhospitable places, for I have seen it on the snow-fed rivulets of the Aleutian Islands.

It is a most persistent diver; I remember of watching one for nearly two hours once, diving for some kind of tiny shell-fish. It plunged from the upstream end of a low rock, about 4 feet long, and was evidently swept well down by the current, for it always reappeared some distance below the rock, to which it would return. After a shake of its plumage it would walk to the upper end to repeat the maneuver.

Family TROGLODYTIDÆ. Wrens, Thrashers, &c.

Harporhynchus redivivus (Gamb.). *Californian Thrasher*.

The only specimen obtained was found dead on the stage road near Baird, on January 3, 1884. Judging from its wasted form it might have died from starvation. There was a little snow in some of the gulches near by, and the bird had probably been overtaken by severe weather. This is the only instance of its occurrence in Northern California so far as I am aware.

Salpinctes obsoletus (Say). *Rock Wren.*

A very common summer habitant of rocky ledges everywhere. Here is a bird well named. Yea, though its systematic synonymy multiply forever, yet will not the observant naturalist be tempted to call its English name other than "Rock Wren." It is thoroughly characteristic of the bird's habits.

I found it in May abundant in the rugged limestone rocks that top nearly all the high hills along the Lower McCloud River, where its animated song was surpassed only by the sweeter music of the White-throated Wren with which it sometimes associated. In midsummer when high up above the timber line of Shasta the songs of the Rock Wrens came to me constantly from among the surrounding lava boulders. Later in the season when at Sheep Rock Butte, 20 miles northeast of Mount Shasta, the bleak forbidding rock bluffs were enlivened chiefly by the presence and the songs of these birds.

Catherpes mexicanus conspersus Ridgw. *Cañon Wren.*

Neither as abundant nor as well distributed as the preceding species, but like it a frequenter of the most desolate rocks. It was often seen in the lime rocks at Baird, where its young were also observed late in June, but only one was found on the lava rocks above the timber line of Shasta, although sometimes found in suitable places at the northeast base of the mountain.

At the first-mentioned locality I observed them creeping over the vertical, and sometimes overhanging, rock surfaces after the manner of the Creeper (*Certhia*).

But the remarkable song of this Wren is the principal fact with regard to it, and here I heard it at its best. I accompanied a party of young men on a cave exploring trip once, and after a hard climb under a blazing sun, over limestone rocks weathered out into points and edges so sharp that our shoes were cut to pieces by them, we came in sight of the cave. Here, while holding on to the sloping rock wall across the face of which the trail led, we heard a bird song that caused each man to look up. Clinging to the opposite wall of the cañon was a White-throated Cañon Wren pouring out bewitching melody. "Listen!" said some one. The song was quickly over, but the bird flew nearer the mouth of the cave and began again. It was about noon, with not a breath stirring and the sun's rays pouring down. The clear ringing notes in the still air re-echoed from the bare walls of rock all around. A companion who bore a heavy coil of rope on his shoulders, turned to me, the sweat dropping from his face: "Did you ever hear the like before?" I certainly never had, and felt already repaid for my laborious climb, for I had never known a feathered songster to utter notes so enchanting.

When, a moment later as we rested in the shelter of the cavern's mouth, the wild, sweet song broke forth again, the singer this time

overhead and out of sight, even the stolid Indian who carried one of our packs glanced at me and uttered some word of approval. The song is indescribable, so I have told this long story to show how even an unappreciative audience at an unfavorable time could be captivated by a remarkable bird song.

Mr. Ridgway, who has heard the song of this species in many places among the western mountains, suggests to me that the echoing walls of rock which usually inclose the retreat of the bird serve to enhance the beauty of the notes, and I myself do not doubt that they are rendered more striking by the very desolateness of the surroundings.

Thryothorus bewicki spilurus (Vig.). *Vigor's Wren*.

This Wren was observed in moderate numbers at Baird and at the base of Shasta in summer. A few probably winter in the hills about the former place as I saw occasional ones there in February. Full-grown young birds were discovered about June 1.

Troglodytes ædon parkmanii (Aud.). *Parkman's Wren*.

Found breeding in considerable numbers about one of the cultivated gardens of the United States fishery reservation. In midsummer they were abundant among the piled-up logs of a certain clearing in the forest at the base of Mount Shasta. Also seen at Red Bluff in the spring.

Anorthura hiemalis pacificus Baird. *Western Winter Wren*.

I did not meet with more than half a dozen individuals of this species in the interior, and these only in the rocky and mossy cañons about the Lower McCloud River in the fall and winter, but it was found everywhere about the redwood logging districts of Humboldt County.

Cistothorus palustris Wils. *Long-billed Marsh Wren*.

The conspicuous globular nests of this Wren were found clinging to the stems of the tules wherever our boat penetrated at Eagle Lake, but no eggs were discovered. The bird is less numerous in the marshes of Humboldt County.

Family CETHIDÆ. CREEPERS.

Certhia familiaris americana (Bonap.). *Brown Creeper*.

Noticed only occasionally in the pine forests inland. It probably winters lower down, for stragglers were seen at Baird in January and numerous pairs in the Humboldt redwoods in December.

Family PARIDÆ. NUTHATCHES AND TITS.

Sitta carolinensis aculeata (Cass.). *Slender-billed Nuthatch*.

Decidedly not common, having been found only at rare intervals in the McCloud River hills and very seldom at Red Bluff.

When seen they appeared rather silent, seldom giving vent to the querulous notes so characteristic of Nuthatches, and which the eastern species utters so constantly. A solitary individual was secured at Humboldt Bay.

Sitta canadensis Linn. *Red-breasted Nuthatch.*

A rather abundant resident of the vast pineries around Mount Lassen, but apparently not so common in similar country about Mount Shasta. A few were obtained on the Shasta timber-line. On June 1, 1884, a nest was found in a dead pine in western Lassen County. A hole had been drilled in the trunk about ten feet from the ground, but the wood was so hard that it effectually resisted my hunting knife. The cavity, which had a depth of 8 inches, had evidently cost the excavator considerable hard work, whether it was its present occupant or the downy woodpecker.

Sitta pygmæa Vig. *Pygmy Nuthatch.*

Although I was constantly on the alert for this bird I did not meet with it, which was contrary to my expectations, as it was found by Dr. Newberry, Captain Feilner, Lieutenant Parkinson, and Mr. Henshaw in the respective localities of Northern California explored by them.*

Parus inornatus Gamb. *Plain Titmouse.*

Though not observed in the high mountains, it was not uncommon in the foot-hills and valleys. A nest containing seven eggs was found April 4, 1884, in a poultry-house at Red Bluff. It was composed of the stalks of weeds and grasses, and a considerable amount of tow or oakum, with a lining of wool and fluffy bird feathers, and occupied a cavity between the joists, quite near the roosting place of the chickens. The sitting female made no effort to escape as I gently lifted her from the nest.

In the latter part of May this Titmouse was rather common in the scattered oak timber on Battle Creek, 20 miles east of Red Bluff.

It is not mentioned by other observers in Northern California.

Parus atricapillus occidentalis (Baird). *Oregon Chickadee.*

A common winter visitant from the north, according to the accounts of Newberry and Cooper. I did not meet with it myself.

Parus gambeli Ridgw. *Mountain Chickadee.*

An abundant resident of the mountains, out of which I have not seen it; breeding everywhere on the slopes of Mounts Shasta and Lassen, even up to the highest timber-line. Late in June, 1884, a nest was discovered in the pine forest at the western base of Mount Lassen. It occupied a crack in the end of a prostrate pine log by the roadside, and contained young birds nearly grown.

* Mr. Townsend apparently overlooked two specimens of this species which he collected on Mount Lassen July 4, 1884, one of them being an adult, the other a young bird. His remarks under the head of *S. canadensis* would therefore appear to apply in part to *S. pygmæa*, if not entirely so far as Mount Lassen is concerned, the three examples of *S. canadensis* collected by him being all from Mount Shasta, from which locality his collection contains no example of *S. pygmæa* — R. RIDGWAY.

Parus rufescens Towns. *Chestnut-backed Chickadee.*

Abundant in the fall on the coast, where I shot many. Seen but once elsewhere. I obtained a single individual at the western base of Mount Shasta on July 14, 1883. It was found near a wayside watering-trough, where the stage road passed through the densest part of the forest.

Chamæa fasciata Gamb. *Wren-Tit.*

Found constantly among the briars and brushwood in Humboldt County in the fall. Nothing like the sweet song of the following variety was ever heard in this region, but this may have been due to the late season of the year.

Chamæa fasciata henshawi Ridgw. *Pallid Wren-Tit.*

This variety of the Wren-Tit is a rather rare summer visitor to the Lower McCloud. In July it was observed in the bushes that filled some of the cañons leading into the rugged mountain opposite the United States fishery at Baird, where its singular and pleasing song, not much inferior to that of the Cañon Wren, was often heard. In November it was occasionally seen in the shrubbery along the river.

Psaitriparus minimus (Towns.). *Least Tit.*

A rather common resident of the valleys and foot-hills; ranging higher up in summer.

The Least Titmice go about in flocks of a dozen or two, the different members of the bands keeping well together in their foraging. They usually all settle in the same bush, scattering through it and inspecting it thoroughly, and when two or three begin to move off the rest soon follow.

In the foot-hills they were apparently as plentiful in winter as in summer. The timber belts about Red Bluff, in the Upper Sacramento Valley, were favorite breeding resorts with them, as I found a dozen or more nests, old and new, within a week's time.

A nest found April 28 in some dead willows near the river contained three eggs, but all those found after May 1 were empty or contained young birds. Their distances from the ground did not average higher than 12 feet.

I know of no North American bird building a more exquisite nest or larger in proportion to its own size than this one. The materials composing it, such as the "cotton" of the cottonwood tree, the silky cocoons of insects, the down of plants, small mosses, blossoms, &c., are simply "felted" together, and the structure depends for its firmness upon whatever adhesive properties the substances have for each other.

It is a long pendant nest, somewhat after the fashion of an oriole's, but consisting of these soft materials, is quite flexible. The entrance is an inconspicuous hole in one side, near the top, which is never open above like the oriole's. It is a curious agglomeration which must be seen to be appreciated.

Family SYLVIIDÆ. WARBLERS, KINGLETS, GNATCATCHERS.

Regulus satrapa olivaceus Baird. *Western Golden-crowned Kinglet.*

This bird, which is moderately common on the coast, is rare farther inland, where two specimens, collected at the timber-line of Mount Shasta in July, were the only ones met with. The fact of these latter being young birds would seem to indicate the breeding of the species there.

Regulus calendula (Linn.). *Ruby-crowned Kinglet.*

Two specimens only were seen at Mount Shasta, one on August 15, 1883, at the timber-line, the other on September 2, at an elevation of about 6,000 feet; the latter, being quite a young bird, was probably reared there. Several were seen among the shrubbery along the river at Baird in November, and a couple of stragglers were observed there in January. More common along the coast.

Poliophtila cærulea (Linn.). *Blue-gray Gnatcatcher.*

Not common breeds. I collected a single specimen and found a newly-built nest at Baird on June 19, 1883. A nest was found at Red Bluff, in the oak timber by the river, on May 12, 1884. Another was found in a similar situation soon after. These nests were respectively about 10, 15, and 20 feet from the ground, in stunted scraggy oak trees. One was placed in the forks, where it was admirably concealed; the other two were saddled on top of the limbs that bore them, and all were lichen-coated on the outside. There were no eggs in any of them when first discovered, and as none were found at subsequent visits I think the little builders had been frightened away by my first inspection of their exquisite architecture.

The Blue-gray Gnatcatcher does not appear to have been met with in Northern California by any other observer except Mr. Vuille, who found it at Yreka in May.

Family TURDIDÆ. THRUSHES, SOLITAIRES, STONECHATS, BLUEBIRDS, &C.

Myadestes townsendii (Aud.). *Townsend's Solitaire.*

A rather common constant resident. The remarks on *Sialia arctica* would apply pretty well to this species in so far as they relate to its breeding in the mountains and wintering in lower country. But Townsend's Solitaire does not appear to descend into the lowest valleys, for I saw nothing of it during the winter at Red Bluff. It was frequently seen in the rugged foot-hills of Shasta County in January, February, and March.

Dr. Newbury's remark that it does not inhabit dense forests does not accord with my experience. It frequented the most heavily-timbered sections of both the Shasta and Lassen regions. It is a true flycatcher in its habits, returning to the same perch from each short flight after insects.

A nest containing three eggs was found on July 12 in the dense pine forest surrounding Butte Lake, near Mount Lassen. It was built in a cavity in the splintered end of a pine log, which, having fallen across a boulder, was raised about 5 feet above the ground. I passed close by and would not have noticed the nest had not the sitting bird taken flight. A projecting piece of bark sheltered it perfectly.

This nest was composed almost entirely of pine needles, with a slight base of pine twigs. There was no perceptible lining, unless the decayed and broken needles upon which the eggs rested could be called such. The eggs measure .90 by .70, .90 by .72, and .92 by .70. They are uniformly but rather faintly marked with reddish-brown upon a whitish ground color. This was probably rather late breeding for this species.

Late in July I found a specimen of this bird frozen in the snow and ice which filled the crater of the extinct volcano of Shasta. It is but rarely that a passerine bird ascends so high. The finding of its frozen form recalled the passage relating to the bird that "wandereth from its nest."

Turdus aonalaschkæ Gmel. *Dwarf Hermit Thrush.*

First seen on the southern slope of Mount Shasta on July 25, 1883. My catalogue of specimens shows but four of this species from the interior region, specimens having been taken on the Lower McCloud early in October, and at Red Bluff on May 12 and December 24. On the coast of Humboldt County it was rather numerous in the fall.

The Dwarf Thrush usually frequents the dense pine woods or the shady gulches, and is always near the ground.

Turdus aonalaschkæ auduboni (Baird). *Audubon's Hermit Thrush.*

Found only in the northeastern part of the State. The important fact of this Rocky Mountain species breeding on the eastern slope of the Sierras was ascertained by Mr. Henshaw, who found it very abundant in the mountains near Fort Bidwell in July.

Merula migratoria propinqua Ridgw. *Western Robin.*

More common in the cultivated valleys than elsewhere, but never abundant as Robins are in the long-settled sections of the Eastern States. Stragglers were met with in the foot-hills of Shasta County at all seasons of the year. The first nest was found at the United States fishery May 21. It was high up on the horizontal limb of a "live oak" by the river and contained four eggs. Specimens were obtained in the mountains along McCloud River in January, and on the timber-line of Mount Shasta in August.

During the summer of 1885 I found the eastern form of the Robin and the Varied Thrush associating among the dwarf pines of the Kowak River region in Northern Alaska.

Hesperocichla nævia (Gmel.). *Varied Thrush.*

I first saw the Varied Thrush while "a hunting of the deer" along the Lower McCloud River early in November, 1883, often finding it loitering

under the low shrubbery and among the fallen tree trunks in the deepest and wildest cañons where the sunlight could not penetrate. In such quiet places I used to rest sometimes when making a long round, and the stillness would often be broken by a note of alarm from this bird when it had discovered so unusual an apparition as a human being in its secluded retreats. He would fly into some pine near by and earnestly regard the motionless forms of the hunter and his dog, and if given no further cause for alarm would remain in the vicinity quietly continuing the inspection from various points of view.

In January and February, when the leaves had fallen and there was snow in the gulches, it was often found among the oaks on the high ridges, but nothing striking was observed in its habits, as it was rather silent and solitary. In autumn I think it fed on the berries of the junipers that grew in the cañons. It was not met with in the valleys or the higher mountains, but was found in abundance in the redwood forests of Humboldt County in November and December, 1885.

Sialia mexicana Swains. *Western Bluebird.*

The Western Bluebird is probably entitled to be called constant resident, as I noted its presence at Baird in January, March, June, July, August, and December. It was found breeding at the western base of Mount Shasta late in July, where the only nest discovered was placed in an old post hole in the ground. The post had been moved only a few inches and the nest was under its shelter in its new position. Grasses overhung the hole and the young birds, then nearly grown, were well concealed. No other nests were seen, but from the constant presence of bluebirds I have no doubt but a limited number of them were breeding in the vicinity of Mount Shasta.

They were common in the region around Mount Lassen in June and July, 1884, where they were constantly associated with the Mountain Bluebirds (*Sialia arctica*), which were much more numerous.

Sialia arctica (Swains.). *Mountain Bluebird.*

This bird is a constant resident, migrating not northward and southward, but up and down between the valleys and the high mountains. I did not meet with it until I ascended Mount Shasta, in July, where along the timber-line parent birds accompanied by full fledged young were found in abundance. Stragglers were occasionally to be found lower down, but the rule was *S. mexicana* at the base and *S. arctica* at the timber-line of the mountain.

In western Lassen County, where the land has an elevation of 5,000 or 6,000 feet, Mountain Bluebirds were very common in June and July. There they were usually accompanied by such of the Western Bluebirds as had straggled up that far. The presence of young birds indicated that they were breeding in that region. Late in December small bands of them were found flying about the stubble-fields at Rea

Bluff, their intensely blue colors at that time contrasting strongly with their faded condition in the breeding season.

Their habit of perching on weeds and bushes about the plains, and of hovering in the air like sparrow-hawks, as recorded by other observers, was a striking feature of their conduct as observed at Red Bluff. They did not frequent the timber belts when wintering in the valleys, but were generally to be found in the open country or along the brink of the river, perching upon scattered driftwood, often in company with the other species.

Here we have an exchange of courtesies, *Sialia arctica* being graciously received at his cousin's headquarters in the valley in return for hospitality extended to *Sialia mexicana* in the mountains during the past summer.

VERTICAL RANGE OF BIRDS IN NORTHERN CALIFORNIA.

The following table illustrating the vertical range of birds in Northern California is modeled somewhat after a similar one on the birds of Colorado, by Mr. F. M. Drew (*The Auk*, January, 1885, p. 11), and is interesting chiefly as showing a much lower average range than in the latter State, which has a vastly greater average elevation. While there are mountain peaks in California as high as any in Colorado, the upward range of birds in the former State begins at sea level instead of at an altitude of 3,500 feet, which is already attained upon passing within the borders of the latter State. In Northern California the two great ranges of mountains—the Sierra Nevada and the Coast Range, from which rise peaks crowned with perpetual snow—are separated by the valley of the Sacramento, a broad plain, which at its upper end, about 300 miles from the sea, has an altitude of but 500 feet. From there it is but 40 or 50 miles through the chaparral belt or "foot-hills" to the border of the coniferous forests, at an altitude of 2,500 or 3,000 feet, representing an elevation less than the lowest land in Colorado.

From this it will be seen that birds are not forced into the mountains as they are in Colorado, since they can pass between the two ranges almost the entire length of the State.

The present table of upward ranges of birds cannot claim the same degree of completeness as the one with which it is compared, being limited, as a rule, to the observations of one person, made at lower altitudes. The timber-line on Mount Shasta, with an elevation of 9,000 feet (more than 1,000 lower than on the Rocky Mountains), being the highest field of observation and the Sacramento Valley at Red Bluff the lowest except at the coast, it is evident that the birds will not be found to range as high as in Colorado.

If, in any case, species have been found at greater elevations in the region in question than those indicated by my own observations, the former altitudes are substituted. This is, however, the exception.

The table is reliable as far as it goes, and it goes only as far as the comparatively limited observations of one person, with occasional notes from other sources, will admit.

When collections shall have been made at higher stations, and all the species known to the region similarly reported upon, the vertical range of birds becomes a very interesting study, where the extremes of elevation are so great.

No.	Name.	Highest range in—				Breeds—	
		Spring.	Summer.	Autumn.	Winter.	From—	To—
1	<i>Zemophorus occidentalis</i>		5, 100		Coast.		5, 100
2	<i>Zemophorus clarkii</i>			1, 500			
3	<i>Colymbus auritus</i>		3, 900		Coast.		
4	<i>Colymbus "californicus"</i>		5, 100		Coast.		5, 100
5	<i>Podilymbus podiceps</i>	3, 400		1, 500	Coast.		3, 400
6	<i>Urinator imber</i>		6, 000				6, 000
7	<i>Urinator pacificus</i>				Coast.		
8	<i>Urinator lumino</i>		3, 900				
9	<i>Stercorarius parasiticus</i>				Coast.		
10	<i>Larus glaucescens</i>				Coast.		
11	<i>Larus occidentalis</i>				Coast.		
12	<i>Larus californicus</i>	1, 000	5, 100		300		5, 100
13	<i>Larus delawarensis</i>		5, 500				
14	<i>Larus brachyrhynchus</i>				Coast.		
15	<i>Larus philadelphia</i>				Coast.		
16	<i>Sterna forsteri</i>	300	5, 100		Coast.		5, 100
17	<i>Hydrochelidon "surinamensis"</i>		5, 100				5, 100
18	<i>Phalacrocorax dilophus</i>		5, 100		1, 500		5, 100
19	<i>Pelecanus erythrorhynchos</i>		5, 100				5, 100
20	<i>Pelecanus californicus</i>				Coast.		
21	<i>Merganser americanus</i>	1, 500	5, 100	1, 500			5, 100
22	<i>Merganser serrator</i>				Coast.		
23	<i>Lophodytes cucullatus</i>			1, 500	1, 500		
24	<i>Anas boschas</i>	5, 200			300		5, 200
25	<i>Anas strepera</i>		3, 900				
26	<i>Anas penelope</i>				Coast.		
27	<i>Anas americana</i>				300		
28	<i>Anas carolinensis</i>				300		
29	<i>Anas discors</i>						
30	<i>Anas cyanoptera</i>		3, 900				
31	<i>Spatula clypeata</i>	1, 000			Coast.		
32	<i>Dasila acuta</i>				300		
33	<i>Aix sponsa</i>				1, 500		
34	<i>Aythya americana</i>				Coast.		
35	<i>Aythya vallisneria</i>				Coast.		
36	<i>Aythya "nearctica"</i>				4, 600		
37	<i>Aythya affinis</i>				4, 600		
38	<i>Aythya collaris</i>				4, 600		
39	<i>Glaucometta "americana"</i>				1, 500		
40	<i>Charitonetta albeola</i>				1, 700		
41	<i>Oidemia fusca</i>				Coast.		
42	<i>Oidemia perspicillata</i>				Coast.		
43	<i>Chca hyperborea</i>				300		
44	<i>Anser "gambeli"</i>			1, 000	1, 000		
45	<i>Branta canadensis</i>				300		
46	<i>Branta "hutchinsi"</i>				300		
47	<i>Branta nigricans</i>				Coast.		
48	<i>Phalacrocorax canagica</i>				Coast.		
49	<i>Olor columbianus</i>				5, 000		
50	<i>Olor buccinator</i>						
51	<i>Plegadis guarana</i>		4, 000				
52	<i>Botaurus lentiginosus</i>		3, 900				
53	<i>Ardeita exilis</i>						
54	<i>Ardea herodias</i>		5, 100		1, 600		5, 100
55	<i>Ardea egretta</i>	300		1, 500			
56	<i>Ardea virescens</i>	300	2, 635				
57	<i>Nycticorax "navius"</i>	1, 000			Coast.		
58	<i>Grus mexicana</i>		5, 300	300			
59	<i>Rallus virginianus</i>		4, 600				
60	<i>Porzana carolina</i>				Coast.		
61	<i>Porzana noveboracensis</i>				Coast.		
62	<i>Fulica americana</i>		5, 100		300		5, 100
63	<i>Crymophilus fulicarius</i>	5, 300					
64	<i>Phalaropus lobatus</i>				Coast.		
65	<i>Phalaropus tricolor</i>				Coast.		
66	<i>Recurvirostra americana</i>	5, 300					

No.	Name.	Highest range in—				Breeds—	
		Spring.	Summer.	Autumn.	Winter.	From—	To—
67	Himantopus mexicanus		4,000				
68	Gallinago delicata		3,100				
69	Tringa canutus				Coast.		
70	Tringa minutilla				Coast.		
71	Tringa "pacific"				Coast.		
72	Prenetes occidentalis	300					
73	Limosa fœdoa				Coast.		
74	Totanus melanoleucus	300					
75	Totanus flavipes				Coast.		
76	Totanus solitarius		3,400				
77	Symphemia semipalmata				Coast.		
78	Actitis macularia		5,100				5,100
79	Numerius longirostris			300			
80	Charadrius squatarola				Coast.		
81	Ægialites vocifera	300	5,100				5,100
82	Arenaria interpres				Coast.		
83	Arenaria melanocephala				Coast.		
84	Oreortyx "plumiferus"	3,000	5,300	3,000	3,000		5,300
85	Callipepla "vallicola"	1,500	3,500		1,500		3,500
86	Callipepla californica		Coast.		Coast.	Coast.	
87	Dendragapus "fuliginosus"	3,000	9,000	3,000			5,300
88	Bonasa "sabini"		Coast.			Coast.	
89	Pediocetes "columbianus"		4,000				
90	Centrocercus urophasianus		5,000				
91	Columba fasciata	3,000		3,000	3,000		
92	Zenaidura macroura	1,000	3,500				
93	Pseudogryphus californianus		1,000				
94	Cathartes aura	1,000	3,400	1,000			
95	Elanus leucurus	300					
96	Circus hudsonius		3,000		300		
97	Accipiter veiox		9,000	2,600			
98	Accipiter cooperi	300	8,500	2,600			
99	Accipiter "striatulus"		8,000	3,900			8,000
100	Buteo "calurus"	1,000	8,000			300	5,300
101	Buteo "elegans"		3,900				
102	Buteo swainsoni		5,300	300			5,300
103	Archibuteo "sancti-johannis"	3,900	5,300				
104	Archibuteo ferrugineus		4,600				
105	Aquila chrysaetus		3,000		3,900		
106	Haliaeetus leucocephalus		11,000		3,900		
107	Falco mexicanus		4,600	300			
108	Falco "anatum"		Coast.				
109	Falco columbarius		3,900				
110	Falco richardsoni						
111	Falco sparverius	2,600	8,500	1,000	1,000	Coast.	8,000
112	Pandion "carolinensis"		2,500	1,500			
113	Strix pratineola		4,600				
114	Asio wilsonianus		3,900				
115	Asio accipitrinus		3,900		Coast.	Coast.	
116	Ulula cinerea						
117	Megascops "kemicotti"	1,000	3,900				
118	Megascops flammeoculus			3,900			
119	Bubo "subarcticus"	300	2,000				
120	Bubo "saturatus"				Coast.		
121	Speotyto "hypogaea"		300			300	
122	Glaucidium gnoma		5,000		Coast.	Coast.	5,000
123	Geococcyx californianus		1,000		1,000		1,000
124	Geococcyx americanus		900				
125	Ceryle alcyon		5,100	1,000			
126	Dryobates "harrisii"		5,300	3,900	3,900		
127	Dryobates "gairdnerii"	3,900	3,900		3,900	1,000	
128	Dryobates "nuttalli"		300		300	300	
129	Xenopicus albalavatus	5,300	5,300				5,300
130	Picoides arcticus		5,300				
131	Sphyrapicus "nuchalis"		4,600	1,200			
132	Sphyrapicus ruber	3,900	7,000	2,600			
133	Sphyrapicus thyroideus		8,000	3,900			
134	Geoplineus pileatus	3,000	6,000				
135	Melanerpes "bairdi"						
136	Melanerpes torquatus	3,900	8,500	2,600			
137	Colaptes cafer	3,900	8,500	3,900	3,900		
138	Colaptes "saturatus"		300		300	Coast.	300
139	Phalacroptilus nuttalli	2,600	6,500				6,500
140	Chordeiles "henryi"	1,000	3,400				3,400
141	Chetura vauxii						
142	Trochilus alexandri	1,000	3,900		1,000		
143	Trochilus ama		1,000			1,000	
144	Trochilus rufus	2,000	8,500			1,000	
145	Trochilus callope	3,900	4,600			1,000	
146	Tyrannus verticalis	3,900	3,900			1,000	
147	Myiarchus cinerascens	1,000	3,900				

No.	Name.	Highest range in—				Breeds—	
		Spring.	Summer.	Autumn.	Winter.	From—	To—
148	Sayornis sayi	300	3,900	-----	-----	300	-----
149	Sayornis nigricans	-----	1,000	-----	1,000	1,000	-----
150	Contopus borealis	-----	8,000	-----	-----	-----	7,000
151	Contopus richardsoni	1,000	8,000	-----	-----	1,000	-----
152	Empidonax pusillus	-----	4,600	-----	-----	-----	-----
153	Empidonax obscurus	-----	4,600	-----	-----	-----	-----
154	Otocoris "rubea"	300	5,300	-----	-----	300	-----
155	Otocoris "strigata"	-----	-----	300	300	-----	-----
156	Pica "hudsonica"	-----	3,900	-----	-----	-----	-----
157	Pica nuttali	-----	1,000	-----	1,000	-----	1,000
158	Cyanocitta stelleri	3,900	8,500	3,900	1,000	1,000	7,000
159	Cyanocitta "frontalis"	-----	-----	-----	-----	-----	-----
160	Aphelocoma californica	1,000	5,900	2,600	1,000	300	-----
161	Perisoreus obscurus	3,900	7,000	-----	Coast.	-----	-----
162	Corvus "sinuatus"	1,000	3,900	-----	Coast.	-----	-----
163	Corvus americanus	3,900	3,900	-----	-----	300	-----
164	Picicorvus columbianus	3,900	9,000	3,000	-----	-----	-----
165	Cyanocephalus cyanocephalus	-----	3,900	-----	-----	-----	-----
166	Xanthocephalus xanthocephalus	300	5,100	300	-----	-----	5,100
167	Agelaius phoeniceus	-----	3,000	-----	-----	-----	-----
168	Agelaius gubernator	-----	4,600	-----	-----	-----	-----
169	Agelaius tricolor	-----	300	-----	-----	-----	-----
170	Sturnella "neglecta"	3,900	5,300	1,000	300	300	-----
171	Icterus bullocki	3,900	3,900	-----	300	-----	-----
172	Scolecophagus cyanocephalus	1,000	5,300	-----	-----	-----	-----
173	Coccothraustes vespertina	-----	3,900	-----	-----	-----	-----
174	Carpodacus "californicus"	5,300	5,300	3,900	Coast.	-----	-----
175	Carpodacus cassinii	3,900	8,500	3,900	-----	-----	8,000
176	Carpodacus frontalis	1,000	3,000	1,000	1,000	300	-----
177	Loxia "minor"	3,900	6,000	-----	3,900	-----	6,000
178	Spinus tristis	2,600	-----	-----	-----	-----	-----
179	Spinus psaltria	1,000	3,400	3,900	-----	300	-----
180	Spinus pinus	-----	3,900	-----	Coast.	-----	-----
181	Poocartes "confinis"	-----	4,600	-----	-----	-----	-----
182	Ammodramus "alaudinus"	300	-----	1,000	300	300	-----
183	Chondestes strigatus	1,000	2,600	-----	300	300	2,600
184	Zonotrichia leucophrys	-----	4,600	-----	-----	-----	-----
185	Zonotrichia intermedia	3,900	6,500	-----	300	-----	-----
185a	Zonotrichia gambeli	-----	-----	1,000	-----	-----	-----
186	Zonotrichia coronata	300	-----	-----	-----	-----	-----
187	Spizella "ochracea"	-----	3,900	-----	-----	-----	-----
188	Spizella "arizona"	1,000	8,500	-----	-----	1,000	8,500
189	Spizella breweri	-----	3,900	-----	-----	-----	-----
190	Junco "oregonus"	3,900	8,500	3,900	1,000	3,000	8,000
191	Amphispiza "nevadensis"	-----	4,600	-----	-----	-----	-----
192	Melospiza "heermanni"	-----	1,500	-----	1,500	-----	1,500
193	Melospiza "sammolis"	-----	-----	-----	Coast.	-----	-----
194	Melospiza "guttata"	-----	-----	1,000	-----	-----	-----
195	Melospiza lineoli	-----	3,900	-----	-----	-----	-----
196	Passerella "unalascensis"	-----	-----	1,000	-----	-----	-----
197	Passerella megarhyncha	-----	6,000	-----	3,000	-----	-----
198	Passerella "schistacea"	3,900	5,300	-----	-----	-----	5,300
199	Pipilo "megalonyx"	1,000	5,300	2,600	1,000	300	5,300
200	Pipilo "oregonus"	-----	-----	-----	Coast.	-----	-----
201	Pipilo chlorurus	3,900	5,300	-----	-----	-----	5,300
202	Pipilo "crissalis"	1,000	2,000	-----	1,000	300	-----
203	Icteria melanoccephala	3,900	3,400	-----	-----	1,000	-----
204	Guiraca cerulea	-----	3,900	-----	-----	-----	-----
205	Passerina amoena	1,000	3,900	-----	-----	1,000	-----
206	Piranga ludoviciana	2,600	6,000	-----	-----	1,000	-----
207	Progne subis	-----	5,300	-----	-----	3,000	5,300
208	Pterochelidon lunifrons	3,900	4,100	-----	-----	-----	4,100
209	Chelidon cythrogaster	3,400	4,100	-----	-----	-----	4,100
210	Tachycineta bicolor	3,900	-----	-----	1,000	300	-----
211	Tachycineta thalassina	-----	2,500	-----	-----	2,500	-----
212	Cliviaola riparia	-----	4,600	-----	-----	-----	-----
213	Stelgidopteryx serripennis	300	1,000	-----	-----	-----	-----
214	Ampelis cedrorum	-----	-----	-----	300	-----	-----
215	Phainopepla nitens	-----	3,900	-----	-----	-----	-----
216	Lanius ludovicianus	-----	5,300	-----	-----	-----	-----
217	Lanius "excubitorides"	3,900	2,700	-----	-----	-----	-----
218	Virco gilvus	1,000	4,600	-----	-----	-----	4,600
219	Virco "cassini"	3,900	5,300	-----	-----	-----	-----
220	Virco buttoni	1,000	-----	1,000	-----	-----	-----
221	Helminthophila "gutturalis"	1,000	8,500	-----	-----	-----	8,500
222	Helminthophila "lutescens"	-----	8,500	-----	-----	-----	8,000
223	Dendroica aestiva	2,600	2,600	-----	-----	1,000	-----
224	Dendroica coronata	300	-----	-----	-----	-----	-----
225	Dendroica auduboni	3,900	8,500	5,900	-----	-----	7,000
226	Dendroica nigrescens	-----	1,000	-----	1,000	1,000	-----
227	Dendroica occidentalis	-----	8,000	-----	-----	-----	-----

No.	Name.	Highest range in—				Breeds—	
		Spring.	Summer.	Autumn.	Winter.	From—	To—
228	<i>Geothlypis macgillivrayi</i>		8,500				8,000
229	<i>Geothlypis "occidentalis"</i>		3,400				3,400
230	<i>Icteria "ongicauda"</i>	2,600	2,600			300	
231	<i>Sylvania "pileolata"</i>	3,900	8,500				
232	<i>Anthus pensilvanicus</i>		300		300		
233	<i>Cinclus mexicanus</i>	1,000	8,500	1,500			4,500
234	<i>Harporhynchus redivivus</i>				1,000		
235	<i>Salpinctes obsoletus</i>	2,000	9,000			2,000	8,500
236	<i>Catherpes conspersus</i>	2,000	8,500	2,000		2,000	
237	<i>Thryothorus "spilurus"</i>	1,000	3,400	1,000	1,000	1,000	3,400
238	<i>Troglodytes "parkmanii"</i>	1,000	3,400			1,000	3,400
239	<i>Troglodytes "pacificus"</i>			1,000	2,500		
240	<i>Cistothorus palustris</i>	3,900	5,100				5,100
241	<i>Certhia "americana"</i>		8,000	3,900	3,900		7,000
242	<i>Sitta "aculeata"</i>			3,500	300		
243	<i>Sitta canadensis</i>		8,000				8,000
244	<i>Sitta pygmaea</i>		3,900				
245	<i>Parus inornatus</i>	1,500	1,000			300	
246	<i>Parus "occidentalis"</i>						
247	<i>Parus gambeli</i>		9,000	3,400			8,000
248	<i>Parus rufescens</i>		3,400		Coast.		
249	<i>Chamaea fasciata</i>				Coast.		
250	<i>Chamaea "henshawi"</i>		2,000	1,000			2,000
251	<i>Psaltriparus minimus</i>	1,500	3,000		1,500	300	
252	<i>Regulus "olivaceus"</i>		8,000				8,000
253	<i>Regulus calendula</i>		8,000	1,000	1,000		7,000
254	<i>Polioptila caerulea</i>	2,000	1,000			300	
255	<i>Myadestes townsendii</i>		8,000		1,500		7,000
256	<i>Turdus aonalaschkae</i>	300	4,000	1,000	300	300	
257	<i>Turdus "auduboni"</i>		4,600				
258	<i>Merula "propinqua"</i>	1,000	8,500	3,900	1,500	300	6,000
259	<i>Hesperocichla nevada</i>			2,000	2,000		
260	<i>Sialia mexicana</i>	3,600	5,300	3,900	1,000	300	600
261	<i>Sialia arctica</i>	3,900	8,500		300		8,500

ALTITUDES OF LOCALITIES IN THE INTERIOR OF NORTHERN CALIFORNIA.

	Feet.		Feet.
Sacramento River:		Mount Shasta region:	
Red Bluff.....	309	Yreka.....	2,635
Redding.....	917	Mount Shasta P. O.....	2,734
Soda Springs.....	2,360	Berryvale.....	3,462
McCloud River:		Nabar's Ranch.....	3,176
United States fisheries (Baird).....	984	Brewer's Creek.....	5,989
J. B. Campbell's.....	1,671	Peak.....	14,440
Horseshoe Bend.....	2,704	Mount Lassen region:	
Pitt River:		Peak.....	10,437
Month.....	917	Cinder Cone.....	6,907
Fort Crook.....	3,900	Eagle Lake.....	5,115
Other places:		Susanville.....	4,195
Fort Bidwell.....	4,680	Big Meadows.....	4,285
Goose Lake.....	4,600	Battle Creek Meadows.....	4,700
		Deer Flat.....	4,357
		Butte Lake.....	6,085

III.—REPTILES.

TESTUDINATA. TORTOISES AND TURTLES.

Chelopus marmoratus (Bl. & Girard). *California Terrapin*.

Found in Pitt River and in suitable ponds along the Lower McCloud, Apparently not common.

LACERTILIA. LIZARDS, & C.

Eumeces skiltonianus B. & G. *Skilton's Skink*.

Obtained by Prof. E. D. Cope near the United States fish-hatching establishment on McCloud River during his trip through Northern California in 1882, and by Dr. J. S. Newberry, on Pitt River, during the Pacific Railroad expeditions in 1855.

Gerrhonotus multicarinatus B. & G. *Many-keeled Lizard*.

Common in dry situations along the Lower McCloud River, where numerous specimens were obtained. This elegant Lizard, the largest in the region, was particularly numerous among the limestone rocks on the hills. Its presence is usually made known by the sudden rustling of the dry leaves as it makes a rush for cover. It has much curiosity, however, and is easily secured when it pauses to watch one with its bright eyes. The Indians suppose it poisonous, but, like all other Lizards of the United States, except, perhaps, the Gila Monster (*Heloderma suspectum*), it is harmless. Its sharp teeth will soon bring the blood on one's hands if it is handled carelessly.

Gerrhonotus scincicaudus Skilton. *Skink-tailed Lizard*.

Not represented in my collection, but obtained at Fort Reading by Dr. Hammond.

Sceloporus undulatus (Harlan). *Alligator Lizard*.

Abundant everywhere among the foot-hills of Shasta County.

Sceloporus undulatus thayeri (Harlan). *Thayer's Alligator Lizard*.

Obtained by Professor Cope on the Lower McCloud.

Sceloporus consobrinus graciosus (B. & G.). *New Mexican Alligator Lizard*.

Taken on Upper Pitt River by Dr. Newberry.

Phrynosoma douglassi pygmæa (Bell) Yarrow.* *Pigmy Horned Lizard*.

The only Horned Toads met with in Northern California were obtained at the western base of Mount Shasta in 1833. With the exception of one specimen found by Prof. Gilbert Thompson (in charge of the topographical division U. S. Geological Survey), they were of most diminutive size. Species of the genus *Phrynosoma* do not appear to occur west of the Sierras, in Northern California, the presence of *pygmæa* being simply due to its having ranged southward from Oregon as far as Mount Shasta until it reached the mountain barrier to its progress.

P. coronatum, of Central and Southern California, is not found as far north as the Upper Sacramento Valley; therefore the genus is probably not represented at all in this latitude between the Sierra Nevadas and the coast.

* *P. douglassi pygmæa* was described by Yarrow (Proc. Nat. Mus. 1882, p. 443). Specimens obtained from Deschutes River, Oregon, Fort Walla Walla, Wash. Ter.

OPIHIDIA. SERPENTS.

Crotalus lucifer B. & G. *California Rattlesnake.*

Pretty generally distributed, but more numerous in the foot-hills of Shasta County than elsewhere. Very few Snakes were met with in the elevated coniferous forests, and none high up on the mountains. Abundant as this Rattlesnake is in many parts of the foot-hills, it does not appear to be offensive. I have almost trodden on it a score of times.

Allen writes as follows regarding *Caudisoma confluenta* in the region of the Upper Missouri: "It was estimated that on the expedition of 1872 (North Pacific Railroad Expedition) not less than two thousand were killed and yet not a man nor an animal was bitten by them. This shows how little danger there really is from them, even when numerous. Man is a far more fatal enemy to the Snake than the Snake is to man."

Contia mitis B. & G. *Purple-tailed Snake.*

One specimen only. Shasta County.

Ophibolus getulus boyli (Linn.). *California King Snake.*

Not uncommon on the Lower McCloud, in damp places near the river. The Wintuns of that locality had a mortal fear of it, calling me *Sá kás-yá-pa-tün* (snake devil), as I allowed one of the animals to twine about my arm.

Diadophis punctatus amabilis (Linn.). *Ring-necked Snake.*

Specimens of this small Snake were obtained on McCloud River by Mr. Livingston Stone and myself. It is not often seen.

Diadophis punctatus pulchellus (Linn.), Yarrow. *California Ring-necked Snake.*

Found on the McCloud by Professor Cope, who says it differs from *amabilis* in having the inferior two rows of scales unicolor with the abdomen, which in life is brilliant orange.

Pityophis catenifer * B. & G. *Pacific Pine Snake.*

A Pine Snake, 5 feet long, which I obtained near Mount Shasta, and kept as a pet for several weeks, became very tame. Other specimens were collected on the McCloud River.

Pityophis sayi bellona (Schleg.). *Western Bull Snake.*

Found at Honey Lake in 1877 by Mr. H. W. Henshaw, and at Fort Crook by Capt. John Feilner. Not represented in my collection.

Bascanium constrictor Linn. *Black Snake.*

Recorded in Smithsonian catalogues as having been collected at Honey Lake by Mr. Henshaw, and at Pitt River by Lieutenant William-son.

* *P. catenifer* is a name applied to a colored variety of *P. sayi bellona*: it is not a distinct species.

Bascanium constrictor vetustum (Linn.). *Yellow-bellied Black Snake.*

Not uncommon on the McCloud.

Bascanium tæniatum laterale (Hallowell). *Hallowell's Coach-whip Snake.*

One specimen. Not common.

Eutænia hammondi Kennicott. *Hammond's Garter Snake.*

From Eagle Lake. Collected by Mr. Henshaw.

Eutænia vagrans (B. & G.). *Wandering Garter Snake.*

Collected on Pitt River by Lieutenant Williamson, and at Humboldt Bay by Lieutenant Trowbridge.

Eutænia elegans B. & G. *Boyd's Garter Snake.*

Obtained at Fort Bidwell in July, 1878, by Mr. Henshaw.

Eutænia sirtalis (Linn.). *Striped Snake.*

Numerous specimens were collected on the McCloud and elsewhere.

Eutænia sirtalis parietalis (Linn.), Cope. *Rocky Mountain Garter Snake.*

Fort Bidwell. H. W. Henshaw.

Eutænia sirtalis obscura (Linn.), Cope. *Dusky Garter Snake.*

Fort Crook. Capt. John Feilner.

Eutænia sirtalis pickeringi (B. & G.), Cope. *Pickering's Garter Snake.*

Fort Reading. Dr. Hammond.

Eutænia sirtalis tetratænia (Linn.), Cope. *California Garter Snake.*

Pill River. Lieutenant Williamson.

Eutænia atrata Kennicott. *Black Garter Snake.*

Obtained at Crescent City by Mr. Paul Schumacker.

Charina plumbea B. & G. *Lead-colored Worm Snake.*

While at Berryvale, near the western base of Mount Shasta, a boy killed a Snake which he thought had "a head at each end," a notion not unlikely to be suggested by the appearance of this short-tailed Snake. The species is not uncommon about Mr. J. H. Sisson's meadows at that place. Mr. Henshaw met with it at Eagle Lake, on the eastern slope of the Sierras, in 1877.

URODELA. SALAMANDERS.

Amblystoma tenebrosum B. & G. *Oregon Salamander.*

I found this Salamander rather numerous in the small tributaries of the Lower McCloud late in the autumn, and secured many specimens, the largest of which was probably not more than 7 inches in length.

Plethodon iöcanus Cope. *Mount Shasta Salamander.*

Described by Professor Cope from a specimen which he found near the mouth of the McCloud. (Proc. Acad. Nat. Sci. Philada., 1883, p. 24.)

* *B. constrictor vetustum* should be *B. constrictor flaviventris* (Linn.), Yarrow and Henshaw.

My own specimen is from the same place. Professor Cope named this species "from the aboriginal name, *Ika*, of the grand peak of Northern California, Mount Shasta. From the same name the town of Yreka derives its name." I can think of no better English name than Mount Shasta Salamander.

Diemyctylus torosus Esch. *Pacific Water Lizard*.

Found throughout the region. Very abundant in small streams in Shasta and Humboldt Counties. The orange color of the under parts appears to vary considerably with the season from yellowish to reddish tints. The animals congregate in shallow water in the fall, a dozen or more often being visible at once. They are hardy, and may be kept alive without water for a long time. Professor Cope (Proc. Phila. Acad., 1883, p. 28) says the species is entirely aquatic, but I have certainly found it among damp logs away from water.

ANURA. FROGS AND TOADS.

Bufo halophilus Baird. *Baird's Toad*.

Obtained by Professor Cope at United States fishery establishment on McCloud River.

Hyla regilla Baird. *Pacific Hyla*.

McCloud River; not uncommon; also Fort Crook, Captain Feilner.

Rana pachyderma Cope. *Thick-skinned Frog*.

Described by Professor Cope from specimens from McCloud River, where it is rather common.

LIST OF WORKS AND WRITTEN RECORDS REFERRED TO IN THE PRESENT PAPER.

- 1857.—J. S. Newberry, M. D. Pac. R. R. Surv., vol. vi. Pt. iv, Zool., chap. i, Mammals; chap. ii, Birds.
- 1857.—S. F. Baird. Pac. R. R. Surv., vol. x. Pt. iv, Zool., No. 4, Reptiles.
- 1859-1861.—Capt. John Feilner and Lient. D. F. Parkinson, Smithsonian Mus. Catalogue, vols. iv and v. Entries of numerous specimens of birds collected at Fort Crook, N. Cal.
- 1865.—Capt. John Feilner. Smithsonian Report, 1865. Explorations in N. Cal. in 1860, under auspices of Smithsonian Institution.
- 1866.—Wm. Vuille. Smithsonian Mus. Catalogue, vol. viii. Entries of specimens of birds collected at Yreka, N. Cal.
- 1879.—H. W. Henshaw, U. S. Geographical Surv. Rept. on ornithological collections made in portions of California, Nevada, and Oregon in 1877-'78.
- 1883.—E. D. Cope. Proc. Acad. Nat. Sci. Philada., 1883, p. 23. Notes on reptiles from McCloud R., N. Cal.
- 1883.—H. C. Yarrow. Bull. U. S. Nat. Mus., No. 24. Check-list of N. A. Reptilia and Batrachia, with catalogue of specimens in U. S. National Museum.
- 1883, '84, and '85.—C. H. Townsend. Smithsonian Museum Catalogues. Current vols.

Entries of more than one thousand birds, together with several hundred mammals and reptiles collected in Northern California.

