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A Partial List of the Birds of Keam Canyon, Arizona.

BY A. K. FISHER.

IN the summer of 1894 the writer had occasion to visit Keam Canyon, Arizona, for the purpose of studying the mammals and birds of the region. To reach this interesting locality it was necessary to make a stage trip of over twenty-four hours duration, northward from the town of Holbrook on the Santa Fe Pacific Railroad.

Leaving Holbrook on the morning of July 17, 1894, we soon ascended the limestone rim of the Little Colorado Valley and passed out upon the mesa beyond. Off to the northward the distant landscape was clothed in a delicate purple, the varying shades producing an effect of surpassing beauty and one not easily forgotten. From this point of vantage it could be seen that beyond the Le Roux wash twenty miles away the route gradually ascended toward the distant horizon, and promised to be more interesting than the sandy waste immediately before us. The long journey through the day and night was at times somewhat monotonous, but as one of the horses had previously never worn harness, it was prudent to be watchful. North of the Le Roux wash we passed one of the big corrals with long extending wings, now falling into decay, into which in the early days of plenty the Navajos used to drive whole bands of antelope. It was admirably situated for the purpose in a depressed valley, the steep sides of which together with the supplementing fence of interwoven juniper and pinyon boughs, made it impossible for the animals to escape when once they had entered.

Late in the afternoon a heavy thunderstorm broke upon us and the deluge soon filled the washes, so that within one short hour their beds of dry, burning sand were swept by roaring, seething masses of turbulent waters, which made traveling in the low country anything but certain. At one place just at dusk we passed a lot of naked Navajos who had taken advantage of the rain and were busily engaged in drowning out prairie dogs by directing the streams of water into

the burrows. As the young animals were nearly grown and each burrow contained from six to eight individuals, the Indians must have received a generous supply of meat. After night-fall our journey was less wearisome, the rain had ceased, the treacherous washes were less frequent or formidable, the unruly horse had settled down to an even pace, and we rode along with comparative comfort. From time to time the shadowy form of a passing Indian, or the dim outlines of the hogans showed that we were among the Navajos and gradually approaching our destination.

Keam Canyon lies within the Moki Reservation, eighty miles north of Holbrook and about one hundred miles northeast of the San Francisco mountains, the highest peak of which is plainly visible from the bluff shown in the accompanying plate. The Moki name of this mountain is Ne-vat-i-kiobi, which means the house of the snow. At the trading post of Mr. T. V. Keam, in the vicinity of which most of the observations in the present paper were made, the trend of the canyon is towards the northwest, but a few miles lower down it turns to the west and broadens into a more extensive valley. Thirteen miles from this post is the Mesa, on which the Moki pueblos of Tewa, Sichumovi, and Wolpi are situated. The portion of the valley which interests us is from 400 to 800 yards in width and is depressed one hundred feet or more below the surface of the surrounding mesa. The side walls are picturesque and present an endless variety of forms, from clear cut perpendicular cliffs to masses of giant boulders interspersed with a more or less luxuriant growth of pinyon and juniper. Erosive action has left its mark in the softer material, and produced caves of varying size which furnish homes for some of the birds and mammals of the region. Out-croppings of coal are quite numerous, and heaps of ash, together with bits of pottery, show where the aborigines utilized this fuel in the preparation of their wares.

The canyon is well known to many anthropologists and others who are interested in the ritual customs of the Moki, and who have traversed the long stretches of desert between the little town of Holbrook and the cliff dwellings on the First Mesa to witness the celebrated snake dance and other Tusayan ceremonies. Mr. Keam's genial hospitality towards the many strangers who have visited this far-off land is proverbial and has earned for him a wide reputation.

Anyone unacquainted with the conditions of bird life in the arid regions would be disappointed with the small number of species found at Keam Canyon, and would be surprised at the meagre representation of most of them. Although considerable time between July 18 and August 3 was devoted to exploring the canyon and surrounding mesa for the purpose of observing birds, only thirty-nine species were found, and of these seven were included on single records. The doves (*Zenaidura macroura*) were fairly common throughout the canyon, and considerable numbers visited the little rivulet that flowed from a covered spring in a side canyon back of the house, where they bathed and drank at all times of day from sunrise until long after dark. Turkey vultures (*Cathartes aura*) were almost always present, and about fifty roosted in a clump of dead pinyons below the northwest rim of the canyon within plain view of the house. Among the birds of prey the little sparrow hawks (*Falco sparverius deserticolus*) were the commonest, and were often seen hunting for lizards and insects, or flying about their nesting places in the crevices and erosions of the canyon walls. One prairie falcon (*Falco mexicanus*) was seen on July 18, and a week later a fine adult duck hawk (*Falco peregrinus anatum*) flew close to the house toward evening and disappeared along the edge of the cliffs beyond. Although no golden eagles (*Aquila*) were seen at large, as many as a dozen were counted at the Moki pueblos, where they are used in con-

nection with certain ceremonies. The western redtail (*Buteo borealis calurus*) was seen daily, and on one occasion a few characteristic feathers lying beside a half-eaten jackrabbit showed almost conclusively the author of the good work. The great horned owl (*Bubo*) was not seen, but its wierd notes were occasionally heard at dusk and early morn. Tracks were seen of the roadrunner (*Geococcyx californianus*) which is well known to the Mokis under the name of Hosh-bo-a.

A solitary hairy woodpecker (*Dryobates villosus* subsp.?) which busied itself among some pinyons and junipers along the canyon wall was the only representation of the family observed. A fine specimen of poorwill (*Phalacroptilus nuttalli*) was secured on the evening of July 19 as it was flying over the canyon bottom in front of the house. It would have been impossible to have seen it but for the light color of the ground over which it passed, like a fleeting shadow, in pursuit of insects. The Mokis who saw the specimen were much interested in it and designated it by the name of Ho-witz-ko. Nighthawks were common and were heard booming every evening. A colony of white-throated swifts (*Aeronautes melanoleucus*) bred in the holes in the canyon walls back of the house, and were almost always in sight, skimming rapidly along the edge of the mesa or darting out high over the valley into which, however, they rarely descended. A female black-chinned hummer (*Trochilus alexandri*) was secured on July 31, from its perch on a dead-topped juniper, and a fine male rufous hummer (*Selasphorus rufus*) was killed July 30 among some flowers along the edge of a trail. Several other hummers were seen at different times, but at too great a distance for positive identification. Among the flycatchers the Arkansas kingbirds, ash-throated flycatchers and Say phœbes were seen, the latter, which lived among the giant boulders of the canyon walls, being the most abundant. Pinyon and Woodhouse jays were seen every day on the mesa and a few were seen flying across the valley. Although the season was not far enough advanced for the pine nuts to contain kernels, nevertheless cones were found which had been mutilated by these jays.

The raven (*Corvus corax sinuatus*) is one of the commonest birds in the valley, and on account of its great fondness for corn and melons is one of the most troublesome to the Mokis. Hundreds congregate along the edges of the cliffs and other prominent places in the vicinity of the gardens, and should the old women who are placed on guard to watch the fields from early morn until nightfall relax their vigilance for a moment, the birds are sure to take advantage of the opportunity. The gray vireo (*Vireo vicinior*) was tolerably common, though its presence might easily have been overlooked except for the characteristic song which was often heard while the birds remained hidden amid the dense foliage of the pinyon and juniper. A thrasher, which the Mokis called Kot-to-zi, was not uncommon, but was extremely wary and difficult of approach. It was not satisfactorily identified until July 31 when a chance shot secured a specimen which proved to be the Bendire thrasher (*Toxostoma bendirei*). This capture would have been a surprise but for the taking of an immature bird at Holbrook a short time previously. This species, which is commonest throughout the area occupied by the giant cactus, evidently has extended its range to this remote corner of Arizona by a route along the Colorado and Little Colorado Rivers and their tributary valleys.

The following list includes all the species observed. Though the number represented is not large and the species are not especially interesting, the fact that the list covers a comparatively little known region is considered a sufficient excuse for its publication:

<i>Zenaidura macroura</i>	<i>Cyanocephalus cyanocephalus</i>
<i>Cathartes aura</i>	<i>Icterus bullocki</i>
<i>Buteo borealis calurus</i>	<i>Carpodacus mexicanus frontalis</i>
<i>Aquila chrysaetos</i>	<i>Chondestes grammacus strigatus</i>
<i>Falco mexicanus</i>	<i>Spizella socialis arizonæ</i>
<i>Falco peregrinus anatum</i>	<i>Amphispiza bilineata deserticola</i>
<i>Falco sparverius deserticolus</i>	<i>Petrochelidon lunifrons</i>
<i>Bubo virginianus pallescens</i>	<i>Tachycineta thalassina</i>
<i>Geococcyx californianus</i>	<i>Stelgidopteryx serripennis</i>
<i>Dryobates villosus</i> (subspec?)	<i>Lanius ludovicianus excubitorides</i>
<i>Phalænoptilus nuttalli</i>	<i>Vireo vicinior</i>
<i>Chordeiles virginianus henryi</i>	<i>Mimus polyglottos leucopterus</i>
<i>Aeronautes melanoleucus</i>	<i>Toxostoma bendirei</i>
<i>Trochilus alexandri</i>	<i>Salpinctes obsoletus</i>
<i>Selasphorus rufus</i>	<i>Catherpes mexicanus conspersus</i>
<i>Tyrannus verticalis</i>	<i>Parus inornatus ridgwayi</i>
<i>Myiarchus cinerascens</i>	<i>Psaltriparus plumbeus</i>
<i>Sayornis saya</i>	<i>Polioptila plumbea</i>
<i>Aphelocoma woodhousei</i>	<i>Sialia arctica</i>
<i>Corvus corax sinuatus</i>	

Feathers Beside the Styx.

BY EDGAR A. MEARNS.

STRANGERS to the Yellowstone National Park are apt to regard the truest statements respecting its wonders as nothing short of startling. Possibly their confirmation may cause the pendulum of credulity to swing too far in the opposite direction. Certain it is that some of the tales of the Park to which credence is generally attached require scientific corroboration, and none more so than those which relate to supposed death pens in which animals, large and small, perish in numbers.

When traveling with my wife through the Yellowstone region, fourteen years ago, vague accounts reached us of hollows and places filled with deadly gases into which all creatures passing must leave hope and life behind. These whisperings, later, culminated in the story of the tragic death of "Wahb," the grizzly, from the facile pen of Ernest Thompson Seton. On returning to the Park, in April, 1902, I learned that to doubt the existence of a valley or canyon of death, bestrewn with the decaying carcasses of bears and other beasts, somewhere in that region, was to display hopeless ignorance of fact. Men of high position and undoubted veracity had testified, as eye-witnesses, to these things; but Captain Hiram M. Chittenden, U. S. A., an engineer officer charged with carrying on extensive improvements now in progress in the Yellowstone National Park, tells me that, notwithstanding his great familiarity with the topography of the Park, no such place is known to him. When such an alleged locality was reached the huge dead beasts had vanished, and no more than a fragment of bone such as might be found anywhere in the region was visible.

Though we were unable to set foot on the bank of a veritable River Styx, any