Dr. J. K. Townsend informed Audubon that "The California vulture inhabits the region of the Columbia River to a distance of five hundred miles from its mouth and is most abundant in spring, at which season it feeds on the dead salmon that are thrown upon the shores in great numbers. It is also met with near the Indian villages, being attracted by the offal of the fish thrown around their habitations." He also stated: "The California vultures cannot be called, however, a plentiful species, as even in the situations mentioned, it is rare to see more than two or three at a time, and these so shy as not to allow an approach to within a hundred yards, unless by stratagem. Although I have frequently seen this bird, I have never heard it utter a sound. The eggs I have never seen, nor have I had any account of them, that I could depend upon. I have never heard of their attacking living animals. Their food while on the Columbia is fish almost exclusively, as this food is always found in great abundance near the falls and rapids—they also feed on dead animals. At Fort Vancouver I saw two feeding on the carcass of a pig." Altho Townsend's statement is convincing, some people have doubted the authenticity of this record, since no one has since recorded the California condor in the region of the Columbia River. Dr. Newberry, Dr. Suckley, and Dr. Cooper could find no other records of the bird in Oregon.

The most striking record on the present range of the California condor is one from Douglass County in southern Oregon. This seems very unusual, as we can find nothing else in recent years of the bird living between the San Francisco region and this place, altho it is a stretch of several hundred miles.

The Oregon records were given by Mr. George Peck and his son Mr. Henry Peck, who are both reliable ornithologists, and who were both well acquainted with the bird in southern California. Mr. Henry Peck informs me that on or about July 4, 1903, he and his father saw two California condors at Drain, Douglass County, Oregon. They were quite high in the air and were sailing about over the mountains. The elder Mr. Peck saw them several times after that. He states the birds were instantly recognized by both of them. Again in March, 1904, Mr. Henry Peck writes, "I saw four condors which were very close to me, almost within gun shot. I recognized them first by their size, and second by the white feathers under their wings. The birds were all flying very low, as there was a high wind blowing." Mr. Peck also gives the record of a condor that was killed on the coast of southern Oregon a number of years ago.

These records seem to show that if the California condor was formerly found in the region of the Columbia river, the numbers have decreased and the last of these northern birds seem to have taken refuge in the rough mountain regions of southern Oregon, while the range of the condor in California has contracted to regions from Monterey County south thru the mountains of the Coast Range and the extension of the San Bernardino Range into Lower California.

Portland, Oregon.

THE LOCUST-DESTROYING BIRDS OF THE TRANSVAAL [a]

By DR. FREDERICK W. D'EVELYN

THE relation of birds to agriculture is one of much importance and is worthy of the closest investigation as well as the fullest consideration in order to arrive at results which constitute a safe experience for practical application. The advance of civilization of necessity interferes with the natural order of things,

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disturbing the balance which nature at all times, in her own many varied methods, ever is desirous of maintaining.

Every agriculturist ought to be, in measure at least, also an ornithologist—a bird man, capable of intelligent observation, capable of estimating the results of such observations and thereby arrive at conclusions which would prove helpful in estimating the proper balance to be aimed at, the proper relation to be desired, say, between species and numbers, between natural and artificial food supply and such like factors of compensation.

Among the serious pests to the farmer in all parts of the world insects occupy a place of almost primary importance. I well remember the second day I was in South Africa. I strolled out into the bush; the day was warm and the verdure and softness of the turf suggested a most pleasant resting place. Scarcely had I lain down than I was covered with myriads of creeping things. Insects of all possible shapes and colors ran over my outstretched body. They were all strangers to me and not knowing their intentions toward me, a foreigner, I was not long in deciding that until we were better acquainted I would refrain from taking mine ease upon the "soft and silent turf." The climatic and physical conditions of such an immense area of land as the Transvaal of course modify in a very perceptible manner its avifauna; thus, long stretches of park-like lands, rich in bush and verdure; then perhaps great areas devoid of all save scrubby grasses but ultimately terminating, not infrequently, in river banks, dense in shrubbery and tall reeds. Such variation of necessity finds its counterpart in a varied bird life which, especially to a stranger, presented an almost irresistible fascination. Indeed not infrequently one was prone to overlook one's outpost duty and revel in the attractive and novel seduction of the brilliantly plumaged birds flitting to and fro, scarcely disturbed by the white intruder, who to them must have been in very truth a *rara avis*. With such memories as these it seems almost a misfortune to learn that civilization has stepped in, and on the old fighting grounds is found the uniformed inspector, the museum expert, or other representative of a Bureau of Entomology or a Department of Agriculture. Do not these investigators only too surely indicate that man's intrusion has upset nature's compensatory balances, and the harmony of supply and demand being broken, artificial aid must come to succor the friend or destroy the enemy of the farmer and orchardist?

We have today quite a corps of field experts doing service in the Transvaal and who by the reports forwarded to headquarters are not merely affording valuable assistance to the agriculturist but adding much important knowledge which is most helpful to the ornithologist.

Among the insect pests up-country in Transvaal, Orange River country and other regions none demand more serious consideration than the locust. The Red Locust and the Brown, both migratory in habits, are guilty of much injury to crops, ripened grain and even to the pasturage on the veldt. The mature insect, owing to its great powers of flight, is more injurious, but the insect in an earlier stage known to the Boers as "Voetganger" is capable of much destruction. Almost all of the local birds, even hard-bills, eat locusts, while some are such free feeders upon the insects that they have been classed as Locust Birds. Our esteemed colleague, F. Thomsen, Assistant Chief Locust Officer, in his last official report to the Department of Agriculture, gives some interesting notes, the result of his observations in the field; these conjoined with such facts as have been personally recorded will enable us to learn something regarding these feathered friends of the farmers of the Transvaal.

The locust is a powerful insect on the wing and to encounter a swarm in mo-

tion is an experience not much dissimilar to that of a hailstorm, the insects actually striking one's face with a violence almost painful. It is a fact of common observation that birds carefully avoid becoming entangled in a swarm of locusts, attacking the moving mass only from the rear and then only effectually when the swarm is small or gets subdivided. The insect itself soon seems to realize that it is being hunted and seeks to take cover either by dropping suddenly into the long grass or, as in the case of Voetgangers, creeping beneath clods of earth, stones or such cover.

It is very interesting to see a covey of birds following the line of fire, as the grass, fired by the natives to increase its growth, wends its way like a huge serpent across the veldt and kopjes. The heat naturally drives the insects from cover, and they become easy prey to the birds. The Glareola (Nordmann's Prantincole) or as the farmers call it, the small locust bird, is par excellence the leading species in the destruction of the locust. This bird is somewhat larger than a cowbird or oriole: back greyish shading away into the belly which is nearly white; the throat is brownish mottled and separated from the chest by a collar of dark brown or grey. The play of color observable when the bird is flying is owing to the fact that the upper surface of the wings is greyish or black while the underside is light or almost white.

The birds appear in large flocks about this season of the year, which you will remember is the South African spring time, and, as Mr. Thomsen reports, display a most marked method of attack. Thomsen says: "The birds get on the wing as if by word of command and fly and whirl round and round rising higher and higher till the swarm looks like an immense dust-cloud rushing skywards." Once a swarm of locusts is sighted they break away from their formation, follow up the insects and, flying in amongst them, greedily seize the body, while the wings and legs, being neglected, fall in countless numbers upon the ground. The attack is kept up with great determination until either the swarm is destroyed or its broken sections seek cover in the long grass or rocky soil.

The Glareola are birds of ancient history, being figured in the hieroglyphs of Egypt, and it is not unlikely that the children of Israel had fricassed "Locust Birds" when the Transvaal was an inland sea and the great divide of the Drachensberg formed the barrier line of the Indian Ocean.

Storks, the White-bellied (*Abdimia abdimii*) and the European (*Ciconia alba*) are both locust eaters of repute. I have seen these birds in abundance in the Rustenberg district, a most charming region, well watered and abounding in park-like glades and rich pasturage. In the spring when the young grass is rich in verdure the big bird with its white plumage, black wings, scarlet beak and red legs, becomes a very conspicuous sight and proves a subject of much interest as it rushes hither and thither after the nimble Voetganger or the more adult Springhaan, as the Boer names the fully winged locust. The White-bellied Stork is possibly more numerous than his above-named relative and a large flock seen at a distance is not infrequently taken for a herd of sheep.

Once when passing thru the Marico district a bird was pointed out to us as one of the locust birds. I am satisfied since reading Mr. Thomsen's report that it was one of the starlings, probably the Wattled Starling (*Dilophus caruncullatus*). At this interval it is difficult to recall its description but that of Thomsen is very distinct. This bird, like the Glareola, is about the size of a cowbird, greyish brown all over; the wings and tail very dark with a greenish sheen upon them. The underpart of the abdomen and undertail coverts are a very pale greyish brown; around the eyes there is a bright yellow patch; on the throat of the males are two

black wattles from which the bird takes its name. There is also another wattle on the top of the head and one on the forehead close to the upper mandible.

Their presence always indicates locusts and if the supply is abundant the starlings will locate, build, and hatch their young. Unfortunately, however, it not infrequently happens that the supply of locusts runs short ere the nestlings are fledged, with the result that numbers die from lack of food.

The South African Kestrel (*Tinnunculus rupicolus*) is a persistent enemy and will follow a swarm of locusts for miles, strangely avoiding the main body of the insects, seizing only the stragglers or tail-enders. These hawks of course catch the insect with their claws and dine in mid air while still upon the wing. It is reported by some of the earlier ornithologists that these hawks came from northern Africa, following the flights of locusts as they move southward, and being satisfied with their new quarters, took up their residence and became local varieties.

The Guinea Fowl (*Numida coronata*), so familiar in the bushes on the river banks, has not infrequently added a pleasant side dish to our scoff when on the up-country trek, we outpanned for the night, and, outstretched upon the grass, watched with impatient eyes our Kaffir boys prepare the evening meal. These birds, along with the legendary *Otis kori*, the Paauw of the Boers, the Crested Bustard of the ornithologist, a big bird of 30 or 40 pounds weight, but capable of outrunning, like our own famous *Geococcyx californianus*, a fleet horse; the Quail (*Coturnix capensis*); the cape turtle dove (*Turtur capicola*); the Hadadah Ibis, and many others must all be credited as aids to the agriculturist, so persistent are they in the destruction of locusts.

It would be an oversight even in this imperfect capitulation to omit reference to some of the "Tick Birds"—selecting by courtesy the graceful and not uncommon White Egret or Tick Bird (*Bubulcus lucidus*), a foe to the Voetganger, but not very effective inasmuch as they are dainty feeders, taking the precaution to "masticate" their prey before they swallow it, a slow process with the locusts in active flight.

They are a very showy bird and when seen in the early dawn seem almost spirit-like as they glide past on their way to the feeding grounds. The red-billed Oxpecker, a Tick Bird, but perchance only by renown, an emergency enemy of the locust, is such an interesting species that it is certainly worthy of mention. It is a bird somewhat larger than an English sparrow, multi-colored in plumage, with a very pronounced undershading of rich gamboge tint. It is amusing to watch it as it hunts for its food, the ticks upon oxen, horses and mules. Scarcely have you outspanned than the red-bill is alight upon the animals' backs; off it goes on its tour of inspection, clambering over, around, underneath; examining all flexures of the joints, around the eyes, the insertion of the tail, and such areas where the tender skin proves a favorite locality for the tick. Oftentimes have I been amused to see the little benefactor, with its head turned sidewise, peering into the anal socket, while the grateful animal lifts up the tail, only too glad to be freed from the dozen or more ticks which are invariably to be found in that region.

The bird is very active, ever on the *qui vive*, and it is difficult to obtain a specimen, for if disturbed it darts from one animal to another with great rapidity, and one hesitates to shoot an ox simply to obtain a specimen of *Buphaga erythrorhyncha*.

One day just when the setting sun was gilding the long stretches of vlei, across which we were driving, a large bird sprang out of the grass and ran rapidly ahead of us. Altho I had never seen one before, the pen behind its ear, its peculiar gait with tucked up hinder extremities, as if to keep it out of the wet, told me it

was a specimen of the famed Secretary Bird (*Serpentarius secretarius*). Its plumage was varying shades of neutral tints, evidently protective coloring harmonizing with its surroundings; in length 51 inches with an expansion of 74 inches. The bird is strong on legs and wing, generally running a considerable distance before taking flight. It builds a gigantic nest, perhaps even larger than that of the King of Kopje, the Black Vulture (*Otogyps auricularis*). The nest is loosely put together, of coarse twigs, and not infrequently placed in the deep center of one of those thorn trees whose formidable spines have won an unenviable notoriety for the species in South Africa.

The Secretary, known to the Boers as the snake-eater, makes a meal of lizards, rats, meercats, locusts, or snakes, just as the menu provides. In his encounter with the latter he is seen at his best. No sooner does his keen eye locate a snake than he advances toward it, carefully but surely. When within striking distance the ear tufts and neck feathers are erected, the bird strikes out with its foot, somewhat after the manner of a game rooster, at the same time lowering a wing which it interposes as a shield to receive the stroke of the snake. The fight is generally one of but a few rounds, for the bird is an able fencer and succeeds very quickly in getting in a single blow which breaks the back of the snake. The bird immediately follows its advantage by implanting its foot upon the head and neck of the reptile, pressing them into the ground, while it delivers the *coup de grace* with its powerful beak. It then deliberately swallows the snake whole, beginning with the tail, and, as if to make death doubly certain, it bangs the head once again against the ground just as it disappears within the accommodating maw of the victor. This bird is so valuable as a scavenger that it is now upon the protected list.

One might linger longer and recount memories of the great vultures, those mighty factors in South African sanitation, or repeat legends of the White-necked Raven, associated in the hazy orthodoxy of the voretrekkers as the species which fed the exiled prophets, or might perchance hear again, as we have so often done, the weird affrighted cry of the Plover which threaten to reveal our presence as we carry despatches or steal ghost-like amidst the midnight shadows to outflank the watchful Zulu or cunning Matabele. But time forbids.

In conclusion let us only earnestly hope that future campaigns in South Africa may be those of the ornithologist and scientist, marching thrice-armed in the justness of their cause against an only too numerous and capable enemy, the insect pests, whose advance at times is as terrible and as destructive as an army with banners.

Alameda, California.

NESTING OF THE WESTERN HORNED OWL IN COLORADO

By ROBERT B. ROCKWELL

YEAR after year, as the first faint signs of approaching spring begin to manifest themselves and the familiar longing for the fields and woods asserts itself the writer's first thought has been of that much-sought-for nest of the Western Horned Owl (*Bubo virginianus pallescens*). But despite repeated inquiries, numerous "false alarms" and long hard trips during many different years it was not until the spring of 1907 that the long-looked-for nest was discovered.

Repeated failure had created a rather vague impression that a Horned Owl's