JUNE WITH THE BIRDS OF THE WASHINGTON COAST.

THE WHITE-CRESTED CORMORANTS.

BY LYNDS JONES.

The proper study of the White-crested Cormorants (*Phalacrocorax dilophus cincinatus*) was made during our stay upon Carroll Islet, but lest the mere narrative of the trip become tiresome I make bold to interpolate the following notes into the narrative while my audience is storm-bound with me at La Push, in the midst of the down-coast journey.

The reader has already seen enough pictures of the rocks and islands characteristic of this coast to become familiar with the precipitous sides, jagged outlines, verdure-clad top, and crumbling ledges. The accompanying half-tone pictures will give some idea as to what parts of Carroll Islet these Cormorants select as nesting sites, and illustrate certain details which the camera was able to record. These pictures represent two somewhat different kinds of nesting places, and fairly represent the life of these birds during the breeding season.

Figure 2 is a representation of nearly the entire colony which occupied a sharp ledge jutting out from the northeast corner of the island, a ledge with a sharp and jagged summit ridge, as the picture shows. This was the only colony of this species found in such a situation. Figure 1 represents a part of one of the other and apparently more usual nesting site of this species—a rather narrow ledge of broken shelving rock at the foot of a precipice or over-hang. Apparently any relatively flat space sufficiently large to accommodate the nest may be utilized, either upon the sharp ledge or precipice's foot. A careful scrutiny of any of the nests shown will reveal the fact that one of the prime requisites in a nesting site for the individual nest is that on one side the ground or rock must fall abruptly away. It is on this side that the excrement forms a limy smear, often extending many feet below the nest. The uphill side of the nest is always relatively clean.

Nests are made of coarse sticks arranged much after the manner of a hawk's nest, cupped to the depth of five or six inches, and with a lining of grassy material which covers scarcely more than the bottom of the depression. The sticks

Fig. 1. Jones, 1907.

White-crested Cormorant (*Phalacrocorax dilophus cincinnatus*). A ledge colony at the foot of a precipice.

used were such as might have been found upon the island, and the grass seemed to correspond to that within a short dis-

tance of the colony. There was no evident attempt at concealment in any case, nor was there any clear indication that any nests were placed with a view to shelter either from the weather or from the scorching rays of the sun. The evident distress of both old and young birds when exposed to the direct sunlight would certainly afford excuse enough for seeking a shady nook among the rocks. The very young birds were nearly baked when left uncovered for any great length of time. One such died under our eyes, evidently from the heat.

The many attitudes of the birds in the colony and upon their nests are well shown in the outline of the colony. Those standing erect are protesting the invasion of their ancient domain by the camera-man. The one beneath which the eggs show has merely raised up from the position which the completely sitting bird in front maintains. The sitting bird is in the incubating posture. In contrast to this note the attitudes of the old birds upon the nests containing young which are old enough to hold their heads up for food, as in figure 4. The attitude here shown is the one just preceding or following feeding. The birds stand at attention and are ready to fly at a moment's notice without creating any disturbance in the nest. The old bird in figure 3 "stood" to the camera beautifully, permitting an approach within three feet, focussing cloth and all, and did not so much as start at the snap of the shutter. The youngster beside her was later fool enough to try his featherless wings and got bumped for his pains.

Figure 5 is a nest-full—four young of somewhat different ages, but all belonging to the same brood. The black downy covering, the orange-yellow throat pouch, and the open mouth of the youngster at the left of the picture are all characteristic. These birds pant like a dog when they are hot, as these birds were, the throat pouch throbbing and expanding with every inhalation. It appeared that the panting was the result of an attempt to cool the blood. The utter helplessness of the very young is well shown in figure 6. The bird hanging over the edge of the nest is not more than a day old. The remaining egg hatched on the day following the photograph. The nest shown in figure 7 was partly sheltered by an overhanging

rock. The three eggs were fresh, one of them being a decided runt.

The varying ages of the young—none of which were yet feathered—and the fresh eggs in a nest which showed no signs of having been a victim of the pilfering Crows, both point to

Fig. 2. Jones, 1907. White-crested Cormorant (*Phalacrocorax dilophus cincinnatus*). A ledge-crest colony.

the conclusion that there must be a great deal of individual variation in the time of nesting of these birds. It is true that nests containing fresh eggs may represent a second set after the loss of the first one, but the fact that none of the young

birds were anywhere near ready to leave the nests seems conclusive that only one brood is reared in a season. The nesting season was too far advanced to afford any opportunity for studying nest building or egg deposition.

The eggs are of the usual cormorant type—a greenish shell color heavily overlaid with lime so that the shell color rarely shows. Nests containing both eggs and young were often so filthy that nothing in them could long remain white. Young birds had the habit of throwing out the recently acquired meal of regurgitated fish, and they were as indifferent to the place where it fell as any other victim of *mal de mer*. The vicinity of such nests we avoided. The young birds did not simply throw out the pellet of fish, but after getting it up as far as the pouch they turned their heads violently from side to side until the offending pellet had been thrown out, no matter whom it might hit.

The colony shown in figure 1 was shared by a few California Murres who occupied the spaces between nests which were level enough to keep an egg from rolling into the water, or off from the ledge. There was no apparent discord in such a mixed colony, even though the Murres were within reach of the weapons of the Cormorants. In one other place the same conditions prevailed. I could discover no reason for regarding this as a case of true commensalism. If there was any benefit derived from this association it must have been to the advantage of the Murres.

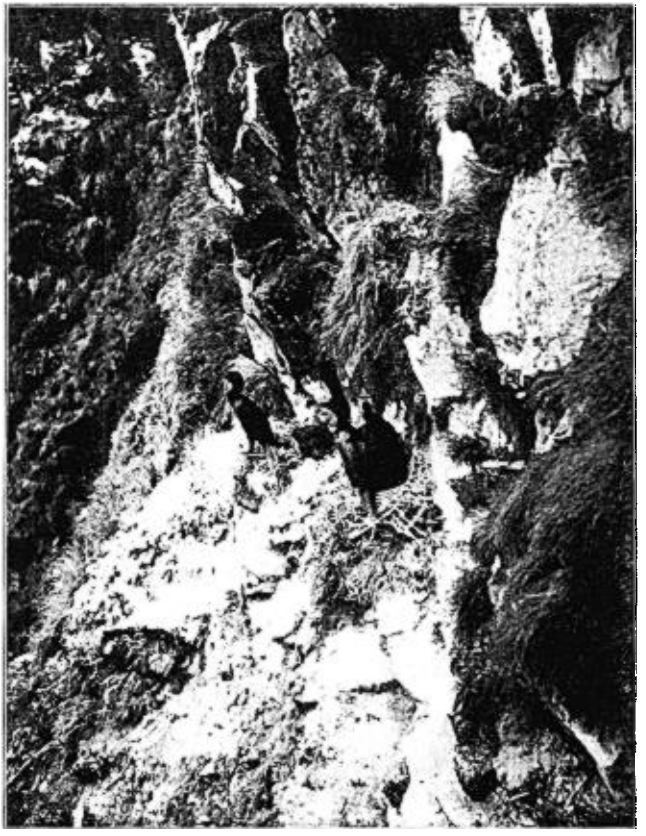
Besides these two nesting sites there were a few small ledges on the ocean side of the island where we found nests of this species, usually not more than two or three nests together. Here there was some distant intimacy with Baird's Cormorants, but the different manner of nesting of these two species precludes the possibility of any competition between them.

The perpetual noises made by the birds of the island seriously interfered with any careful study of the various notes of these Cormorants. When the old birds were disturbed or alarmed they gave vent to a spluttering squawk and often a low grunting. The young yelped something like a puppy, particularly when they were calling for food. They were

usually silent when crouching away from danger. The very young birds showed no fear, but the older ones clearly did.

One can readily distinguish between this species and Baird's Cormorant by the presence of the two white patches

Fig. 3. **Jones, 1907.**



White-crested Cormorant (*Phalacrocorax dilophus cincinnatus*). A two-nest colony. Carroll Islet, Wash.

each side of the base of the tail in Baird's and no such markings in the White-crested. Baird's is also noticeably smaller. Brandt's Cormorant was the only other member of this group

about the island, and it could be distinguished by its blue gular pouch and the whitish pencilings about the neck.

In three sets of three eggs each there is considerable variation in the shapes of the eggs, but the average dimensions are nearly 60 by 40 millimeters. The largest egg noted was 63

Fig. 4. Jones, 1907.

White-crested Cormorant (*Phalacrocorax dilophus cincinnatus*). Old and young.

by 41, and the smallest, except the runt, was 52.2 by 39.5. The runt measured 41 by 28.5. The eggs are about equal ended, with plumper outlines and blunter and more rounded ends than the typical cormorant egg. Careful scrutiny reveals the

fact that there is a large and a small end. I could not be certain that there was any prevailing arrangement of the eggs in the nest. The evidence seemed to indicate that the actual as

Fig. 5. Jones, 1907.

A nest-full of young White-crested Cormorants. Carroll Islet, Washington.

well as the relative position of the eggs was changed each day, even if only slightly.