An impeded Herring Gull.—On the morning of January 26, 1947, Mr. Irwin Alperin, Mr. Walter Sedwitz, and myself were looking over a flock of mixed Herring, Ring-billed and Black-backed Gulls, numbering about one hundred and fifty birds, at Breezy Point, Long Island. We observed an adult Herring Gull flying toward us, with a string about fifteen feet long trailing behind it. This was apparently caught on its foot and strung out in a plane parallel with its body. A piece of wood, unpainted, irregularly rectangular in shape, and approximately eight by five inches in size hung from the string about four feet from the end of the bird's tail. There was nothing about the bird's flight or behavior denoting particular alarm as would be analagous to a frightened dog with a can tied to its tail, but when this bird flew over the flock of gulls we had been observing, they immediately flushed up, and then returned as the gull disappeared. The fact that a member of their own genus, so disposed, released a fear response in the resting birds seems curious enough to record as a note and perhaps be of significance to some investigator.—DR. M. A. JACOBSON, *New York, N. Y.*

A concentration of Bald Eagles in Virginia.—On the morning of September 10, 1940, Dr. Edward Fleisher, Mr. Irwin Alperin and myself witnessed an unusual Bald Eagle concentration from the Cape Charles ferry as we were docking at Little Creek, Virginia. On previous occasions Dr. Fleisher and I observed one or two birds at this locale. This time we had a minimum count of twenty-three. They were sitting on the beaches, flying, and perched in trees, much like a flock of vultures. Never having seen such a large number of eagles previously, we were indeed strongly impressed, but what was still most curious, every bird we saw was immature! What prompted this grouping of young birds, at this particular time and locale, in such numbers, is just another unanswerable question we submitted to our very long list concerning the avifauna.—DR. M. A. JACOBSON, *New York, N. Y.*

Wing-flapping rates of birds.—It is surprising, in view of the important part played by wing flapping in the flight of birds, that there should be so few reports of rates of flapping. In the past few months I have accumulated a certain amount of data by counting flaps over a period measured with a fifth-second stop watch. The method in my hands seems satisfactory up to seven or eight flaps per second and is not feasible for small birds.

In the observations which follow, it is to be understood that the bird was in established flight, unhurried, and at apparently constant speed unless otherwise stated. When given, the variation is the standard deviation, not the probable error.

DOUBLE-CRESTED CORMORANT.—2.6 $\pm$ 0.35 complete strokes per second; 7 observations.

BLACK DUCK.—2.0 per second; 3 observations. This seems a very slow wing rate. More data are needed.

SPARROW HAWK.—2.4 per second; 1 observation.

RING-NECKED PHEASANT.—3.2 per second; 1 observation. Taken near the middle of a flight.

KILLDEER.—2.4 per second; 3 observations.

GREAT BLACK-BACKED GULL.—2.0 per second; 1 observation.

HERRING-GULL.—2.3 $\pm$ 0.3 per second; 37 observations.

That a bird may stroke very uniformly under constant conditions is shown by five successive observations on a single bird which yielded 2.2, 2.3, 2.3, 2.3, 2.3 strokes per second, which give an average of 2.3 $\pm$ 0.05. The error inherent in the stop watch averages 0.09 strokes per second, and the rate of the bird may be regarded as uniform.

LAUGHING GULL.—2.45 per second; 2 observations.

DOMESTIC PIGEON.—3.0 ± 0.47 per second; 15 observations. In this species the rate is quite variable and more data are needed to determine the dependence of rate on the conditions of the flight.

MOURNING DOVE.—2.45 per second; 2 observations. Both of these observations were taken from long, straight flights. In this species, short glides, each occupying about the time of one stroke, are irregularly interspersed.

BELTED KINGFISHER.—2.4 per second; 2 observations. This is an overall rate including the glides inserted between each two or three strokes.

NORTHERN FLICKER.—2.2 per second; 1 observation of the characteristic flap and glide flight.

BLUE JAY.—In this species I have been able to classify partially the various types of flight and give the results for three of them:

The first few strokes after take-off—4.0 ± 1.1 per second; 7 observations.

Steady flapping flight—2.6 ± 0.24 per second; 20 observations and 3.4 ± 0.28 per second; 18 observations. The array of observations is clearly bimodal but the cause is not yet known. This style of flight is used when flying against the wind or when gaining altitude.

Flap and glide flight—2.2 ± 0.27 per second; 35 observations. When slowly losing altitude, this is the normal style. It is not as evenly undulatory as in the Flicker but shows a slow descent and a sharp rise with the stroke.

AMERICAN CROW.—2.0 ± 0.31 per second; 17 observations. The flight of the Crow should be divided into styles similar to those of the Blue Jay. My data are still insufficient for this purpose.

EASTERN ROBIN.—2.3 ± 0.2 per second; 5 observations.

EASTERN BLUEBIRD.—3.1 per second; 2 observations.

STARLING.—3.3 per second; 3 observations. These are for the usual flight of three strokes and a glide. The species shows other styles of flight.

EASTERN GOLDFINCH.—4.9 per second; 1 observation. The glides are included and three strokes are counted between each glide.

It would appear that the flapping rate depends on: (1) the style of flight, (2) the size and shape of the wing, (3) the rate of motion of the center of pressure of the wing, (4) the ground speed, (5) air motion.

The first point is obvious and is illustrated well by the figures given for the Blue Jay. The second point is equivalent to saying that the rate depends on the total power which the flight muscles put out in overcoming the resistance of the air to wing motion.

The third point rests on the hypothesis that some minimum velocity of the center of pressure is necessary to maintain flight whether the type be flapping or soaring.

The fourth and fifth points are, in some respects, connected. Both rest on the view that the bird as a sentient organism is aware of its goal when flying. This teleological view is easily justified by observation. The detail in which the goal is envisioned at any given moment will evidently depend on circumstances of time, distance, and visibility. However, a bird flying by day toward a reasonably near and familiar goal does not fly in a random fashion. It takes account of the relative altitude of starting point and goal and of the rate at which it should approach the goal. Local variation of air motion will cause a bird to alter its style of flight to maintain as nearly as may be its speed and direction.—CHARLES H. BLAKE, *Massachusetts Institute of Technology, Cambridge, Massachusetts.*