finches — seed baited maze traps. These conclusions are, of course, biassed by the fact that certain combinations of variables were not tried. Conclusions reached by other observers should be similarly inspected for bias. Seasonal differences should also be examined.

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BLAKE, C. H. 1949. How much does a trap capture? *Bird-Banding*, 20:182-185.

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A TOP-OPENING TREE TRAP

BY CHARLES H. BLAKE

Hollom (1950: 13 and Fig. 8) describes a small, modified chardonneret trap. As shown in Fig. 1 I have further modified this, making it entirely of half-inch hardware cloth with a 5″ x 6″ entrance, and adding a bail. The door is made enough longer than the entrance so that when closed it overhangs the front edge of the trap a little. The tripping perch is conveniently cut from a quarter-inch thick twig. It may be lower than is shown in the sketch. The door is powered by a thin elastic band attached near the hinge and running downward and forward as shown. A very long elastic may be run across the bottom of the trap and part way up the far side. The tension, when the trap is set, should not be much greater than with the door closed.
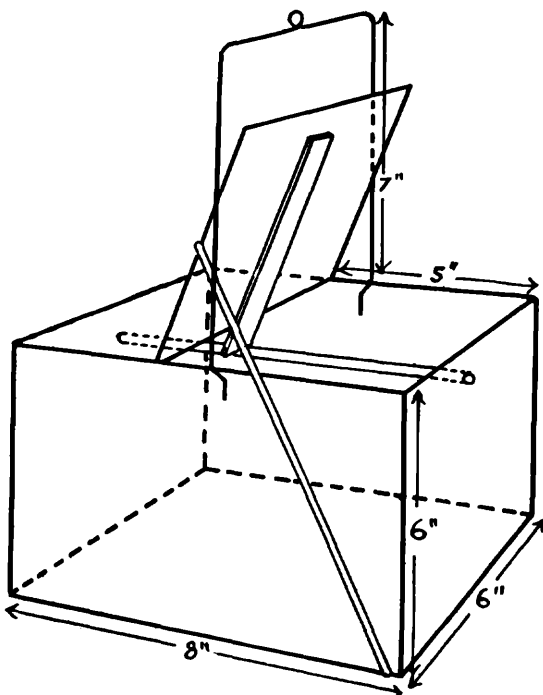
So far I have used seed in a small tray as bait and hung the trap from a lower limb of a tree by the ring in the bail. The list of captures from 10 April to 31 December, 1950 is: Downy Woodpecker 1, Black-capped Chickadee 72, White-breasted Nuthatch 2, House Wren 1, Ruby-crowned Kinglet 1, Rose-breasted Grosbeak 6, Goldfinch 3.   At least one Chickadee learned to go in and out without using the perch. Lateral twigs left on the perch would help.

REFERENCE CITED

HOLLOM, P. A. D.   1950.   *Trapping methods for bird ringers.*   Brit. Trust for Ornith. Field Guide, no. 1, 40 p., 25 Fig.

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ON THE PROBLEM OF THE RETURN OF MIGRATORY BIRDS

BY CHARLES H. BLAKE

It seems clear from observation that certain migratory birds return with good accuracy to their nesting sites and to their winter quarters. It is usually supposed that the failure of some of these species to show returns to intermediate banding stations may be ascribed to their using a somewhat different route on each migratory trip. Such an explanation is only credible if we assume that the departures from the previous route are merely large enough so that the bird passes beyond the area of attraction of the trapping station and that these deviations are not cumulative during any one trip.   Otherwise, the bird would stand a strong chance of passing into unfamiliar territory from which it could not find its way to its destination. We are here discussing only those cases where a bird is making a migration in a direction previously travelled. The problem of the first fall and spring migrations of a young bird may be entirely distinct. It will be noted that I am assuming virtually contact navigation. As an *obiter dictum* drift or abmigration will yield no returns and the case of instrument navigation, although it would give the same sort of result as contact navigation, is still too obscure to be profitably considered.

A still more unlikely answer is that the bird has solved the problem of going between two fixed points by a path which is known as a "random walk." If we are satisfied with a statistical distribution of the returns around the fixed point this solution is possible, but the bird's solution seems to be an absolute one rather than statistically random.

Later I expect to consider the problem of the direction of flight line and of individual migratory flights (here called jumps). Each jump is an uninterrupted flight from one feeding or resting stop to another. Here I intend only to consider the problem of the statistical distribution of the lengths of jumps and its bearing on the likelihood of return to a given stop on the migratory path of the individual.

We may start with the assumption that a bird feels no special attachment to any one migratory stop. This seems intuitively reasonable