Pine Warbler *(Dendroica pinus)*. Heard singing regularly in the taller pines throughout the entire north end of the island, at Frances Town and around 'The Back'. Observed on 9 of the 11 days, a total of 16 (0-3 per day) individuals.

American Redstart *(Setophaga ruticilla)*. A young male was observed on 22 March at Mastic Point, 'The Front'.

We wish to thank especially Mr. Kenneth Parker for his kind help in making these studies possible and also Bruce Gray, Ricky Gray, Otto Jendresen, Mr. and Mrs. Norman Nelson and all the people at Mastic Point, who helped measureably in our studies.

819 North Ave., Battle Creek, Michigan

Received October 31, 1960

THE CHICKADEE TRAP

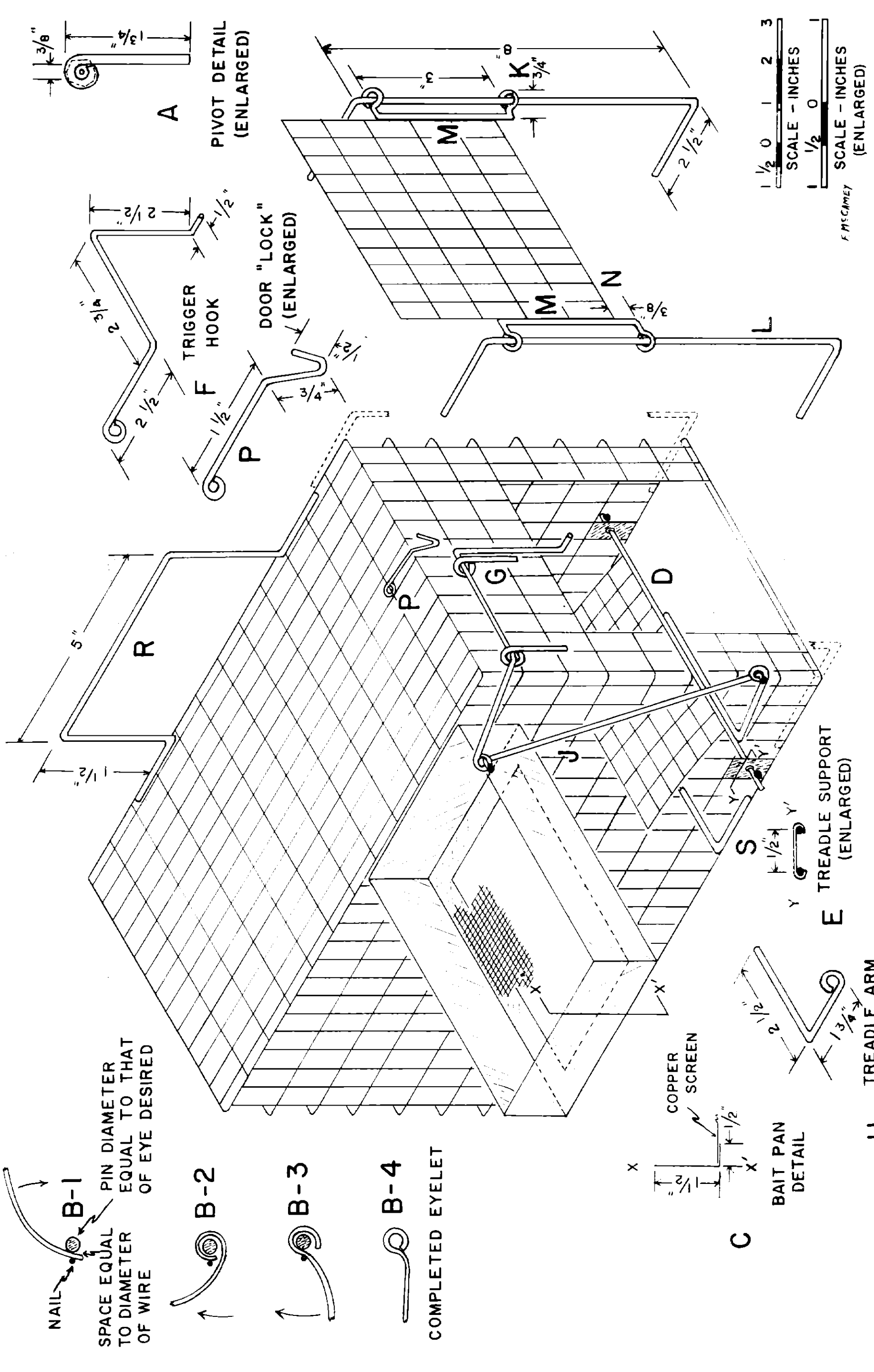
By Franklin McCamey

In a banding study of the Black-capped Chickadee *(Parus atricapillus)* the usual design of the popular Potter trap proved to be unsatisfactory. These birds are too light and quick for the relatively sluggish, heavily loaded trigger. The difficulty is inherent in the design of the trigger, where the tip supporting the door must move upward slightly, lifting the door, as it moves backward into the trap to permit the door to drop. Smoothing the tip and improving the efficiency of the pivot supports does not help enough.

The accompanying sketch shows an improved trigger design that has been highly successful in taking lightweight birds. Hanging the trigger tip from above causes it to move slightly downward as it begins the backward movement to free the door. This speeds the action of the trigger in releasing the door and makes it possible for a weight of only 2 grams to trip the trigger. Normally the triggers are balanced to trip with a 5 gram load (approximately the weight of an eightpenny common nail). If carefully balanced, the trigger mechanism can be made stable in either the set or sprung position, eliminating most of the accidental tripping caused by vibration.

While increasing the sensitivity of the trap, an effort was made to simplify the details of construction and omit easily damaged parts requiring frequent adjustments. Three years of hard use indicate that this effort was successful. Some of the traps have even caught squirrels repeatedly and still remained sensitive enough to catch chickadees.

Welded wire 1 x ½-inch mesh, #16 gauge, galvanized after welding, was selected as the best material. This wire is sufficiently stiff that supporting frames are not required around the openings or bottom, and the mesh is usually square and accurately sized. Bends are made over a square metal bar attached to the workbench, most easily in the intermesh space between crosswires. (Note the corners of the illustrated trap.) All the heavy wires are of #12 gauge galvanized steel wire, carefully straightened by pounding on a hardwood block. Almost any solder may be used to fasten the joints; that designated as 60:40, or with any higher proportion of tin, will be easier to use. Tinners' flux, a


A
PIVOT DETAIL
(ENLARGED)
3/8"
1 3/4"
F
TRIGGER
HOOK
2 1/2"
1/2"
2 3/4"
P
DOOR "LOCK"
(ENLARGED)
1 1/2"
3/4"
1/2"
K
M
N
L
8"
3"
3/4"
3/8"
SCALE - INCHES
SCALE - INCHES
(ENLARGED)
F. McCAMEY
R
5"
1 1/2"
P
G
D
J
S
E
TREADLE SUPPORT
(ENLARGED)
Y
Y'
X
X'
H
TREADLE ARM
2 1/2"
1 3/4"
C
BAIT PAN
DETAIL
COPPER
SCREEN
B-1
B-2
B-3
B-4
NAIL
SPACE EQUAL
TO DIAMETER
OF WIRE
PIN DIAMETER
EQUAL TO THAT
OF EYE DESIRED
COMPLETED EYELET

liquid, is brushed on the joint before heating. It is obtainable at hardware stores and is preferable to acid-core solder. The soldering iron must be a 100-watt or larger. After soldering, wash the work with water to remove the excess flux which will corrode the wires if left on them more than a few hours. Small alligator clips, used in electrical testing, are very useful for holding the wire parts together while soldering.

For a trap without a bottom it seems best to make the two sides, front and back from one piece of wire, then add the top. If a bottom is desired, the two sides, top and bottom should be formed from one piece, with the front and back added later. To make the treadle and trigger unit as light as possible, welded wire of #18 gauge in ½ x ½-inch mesh may be used for the treadle. Similarly, the bar connecting the treadle arm to the trigger hook may be made of #14 steel wire.

It is necessary to remove all sharp, projecting edges of cut wires which might injure the bird or the operator. This is easily done before assembling the trap by smoothing the cut ends with a grinding wheel of medium grit, either on a bench grinder or with a portable quarter-inch drill attachment. A stiff wire-brush wheel, power driven, is also useful for removing rough edges without grinding them down.

Pivots or bearings that fit accurately and work freely are essential for a smoothly functioning trap. Make them as follows. Cut, or punch, discs about ½ inch in diameter from sheet copper readily available as roof flashing. Solder these to loops formed in the ends of the wires where a bearing is required, and drill out a hole in the copper disc slightly larger than the wire to be used for the shaft through the bearing. (See pivot detail, A.) Pass the shaft through the bearing hole and apply a drop of solder to the end of the shaft to prevent its pulling back through the hole. Care is necessary to avoid soldering the entire bearing; be sure to heat only the shaft wire in applying this drop of solder. Such a bearing lasts indefinitely without adjustments, works smoothly, loosens easily when jammed with ice, and it is easy to make with a little practice.

Eyelets and loops are easily formed around a pin set in the workbench (shown at B). To make the pin, select a nail, screw, bolt or hardwood dowel approximately the size of the eye needed and fasten firmly to the workbench, or to a board which may be clamped to the bench when in use. Drive a small nail in beside the pin, at a distance equal to the thickness of the wire being used to form the eye. Place the end of the wire between the pin and the nail, and bend around the pin as far as possible (B-2). Remove the wire, turn over and replace between the pin and the nail, then bend slightly in the reverse direction to form the neck of the eyelet (B-3). Remove the wire and complete closing of the eye with pliers.

The bait pan is made from a strip of copper roof flashing, bent into an "L" shape as shown in the detail, C. After forming this into a rectangle 4 x 6½ inches, a piece of copper screen is soldered in to make the bottom. The entire pan may be made of screen, either copper or galvanized, but it will not have the durability of one made from copper flashing.

The treadle, 3 x 5 inches, is built on a shaft 7 inches long (D) inserted into copper plates soldered between the mesh wires at the bottom of the trap 3 inches back from the front. (See detail of treadle support, E.) This forms an efficient bearing for the treadle in the same manner as already described for other pivots. After bending the trigger hook to the dimensions shown in the detail (F), slide the two pivot supports (G) onto the shaft and mount (inside the trap) on the mesh wires above the door opening. Then connect the trigger hook to the treadle arm (H) with a bar (J) made the proper length to bring the trigger hook and treadle arm into their proper relationship. This length will vary slightly from trap to trap, but it should be about 6 inches. A tip 3/8 inch long is bent at 90 degrees at each end of the bar to pass through the bearing holes on the trigger hook and treadle arm.

Next the supporting eyelets (K) for the door are formed and placed on the door guide bars (L) before completing the guide bars. Solder the guide bars to the body of the trap, then solder the shafts of the supporting eyelets to the sides of the door at M. The eyelets should fit the guide bars quite loosely, but they must line up on the guide bars after soldering to the door. Minor adjustments are easy to make by bending the eyelets or the guide bars at top and bottom to assure that the door slides freely. Be sure to project the bottom eyelets about 3/8 inch below the door to allow clearance under the door (N). This will prevent breaking a bird's neck if it should be caught by the falling door.

Finally, solder in the bait pan and attach the hook to hold the door in the "locked open" position (P). If the handle (R) is placed on the side of the trap it will be easier to carry two traps in one hand. If the trap has been made without a bottom, a bar must be added under the treadle to hold the sides of the trap together and prevent the treadle from swinging out below the trap. (Shown at S.)

In forming the trigger hook, care must be used to avoid marring the top of the hook where the door is supported when the trap is set. This may occur in using pliers to form the hook and will result in rough and uneven operation of the trigger. The top of the hook and the bottom edge of the door should be carefully smoothed with steel wool to remove the normal roughness of the zinc coating on the wires. If scratches are present, they may be polished off with a fine-grained carborundum stone, finishing with steel wool.

The treadle should remain stable in either the set or sprung position, without the weight of the door on the trigger hook. This balance may be achieved by soldering small pieces of wire, as required to make up the necessary weight, to the mesh of the treadle or to the connecting bar leading to the trigger hook.

When using the trap, make sure it rests firmly on the ground or shelf, without rocking. Place a small wedge under one corner if necessary. This is important to prevent accidental springing of the trap by vibration from the wind or a bird alighting on it. The sensitivity of the trap may be varied easily by bending the tip of the trigger hook up or down very slightly. Use smooth-jawed pliers (such as banding pliers) to avoid scratching the tip.

CHICKADEE TRAP 12" x 8" x 6½"

MATERIAL LIST

Welded wire, 1 x ½-inch mesh, #16 gauge	1 pc. 60" x 8"
(For trap without bottom, 1 pc. 50" x 12")	
Steel wire, galvanized, #12 gauge	1 pc. 72"
Sheet copper, 16 oz.	1 pc. 22" x 2"

Copper screen 1 pc. 6½" x 4"
Solder ¼ lb.
Tinners' flux and small paste brush

TOOL LIST (Minimum for efficient work)
Electric drill, quarter-inch
Set of drill bits
Grinding wheel, 4", #60 grit
Soldering iron, 100-watt or larger
Metal shears
Hammer
Pliers One long-nosed, with wire cutters
One slip-joint, for gripping tightly
(A pair of diagonal wire-cutters will be useful)
Files One 10-inch, flat, mill cut
One 6-inch, triangular, mill cut
Alligator clips Four or more

Dept. of Zoology and Entomology, University of Connecticut, Storrs, Conn.

Received November 9, 1960

Ed. note: this trap design attracted a great deal of interest at recent meetings of NEBBA. It has been tested by active use of several dozen traps over a three-year period. My own impression is that it is the best design for an automatic-door trap yet devised, for light birds and perhaps for most of the birds which will come to a feeding shelf off the ground. The excellent workmanship demonstrated by Mr. McCamey has contributed to the efficiency of the trap, but I believe that the design is still efficient with a somewhat lower grade of workmanship (which is perhaps the best that most of us can do). The general methods and materials described are suitable for other small traps. As far as I know, this design has not yet been employed in a multi-cell trap; anyone doing so should consider the possible disadvantages of multi-cell design with a trigger capable of releasing the door with a load of only 2 to 5 grams (vibration from the movement of birds already caught, or from the falling of a compartment door).

GENERAL NOTES

A Modification of the Miller Method of Aging Live Passerine Birds.—Miller *(Bird-Banding,* **17**: 33-35, 1946) described a method of determining the age of live passerine birds. This method utilized the condition of the skull, which is incompletely ossified during the immature birds' first few months of life. Miller's description of skull-roof differences between immature and adult passerines is as follows:

"The skull of a passerine bird when it leaves the nest is made up of a single layer of bone in the area overlying the brain; at least, the covering appears single when viewed macroscopically. Later the brain case becomes double-layered, the outer layer being separated from the inner layer by an air space across which extend numerous small columns of bone. It is not necessary to section the bone to determine the condition. Externally the skull of the immature bird appears uniform and pinkish in live and freshly-killed specimens. The skull of the adult is whitish, due to the air space, and also it is finely speckled as a result of the dense white bony columns between the layers."

Miller points out that "the double condition is attained progressively and, in some species, more rapidly than in others." He says further that "in many passerine species of the north temperate region one may rely on evidences of immaturity persisting in the skull through September and October. Often they may be detected later. Experience must be gained separately with each species in order fully to evaluate the evidence." In the English Sparrow *(Passer domesticus),* Nero *(Wilson Bull.,* **63**: 84-88, 1951) found that the double condition "had