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ELECTRIC BEACONS USED TO FRIGHTEN WILD DUCKS FROM GRAINFIELDS

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INTRODUCTION

Wild ducks have greatly increased in numbers during the past 10 years and are destroying farm crops in certain localities. Corn and grain sorghums in the Platte River Valley in Colorado and Nebraska, and wheat and barley in the Dakotas are seriously damaged each fall. Injury to rice in California, Texas, and elsewhere has also occurred.

Several frightening devices, including guns, scarecrows, flares, lights revolved by the wind, and different types of pyrotechnics have been used in attempts to keep wild ducks out of grainfields. All are helpful to some extent, but a combination of several frightening methods is usually more effective than any one alone.

Electric beacons have been used for frightening ducks in Skagit County, Wash. Robert N. Hart, State Game Warden of California, devised a rotary duck beacon that proved successful in frightening ducks from crops in the Imperial Valley. This beacon is compact and well built. A clockwork mechanism turns the current on and off intermittently, and while it is on, the revolving light throws a steady beam over the field.

The beacon used in the experiments described in this leaflet is similar to that referred to with the exception that the light flashes continually as it revolves. The flashing light seems to be more effective than a constant beam.

DESCRIPTION OF BEACON

An automobile spotlight was used for this experimental beacon (fig. 1). An ordinary headlight is satisfactory if it is equipped with a clear glass

lens and a 50-candlepower bulb; the spotlight is more suitable, however, because it has a stem that can be used in mounting the light. The beacon should be so constructed that the beam may be raised or lowered. This adjustment is necessary to accommodate the beam of light to undulations of the terrain.

The electric current is delivered to the revolving light by means of two brushes made of spring brass (fig. 1, D). The lower brush connects with the central post of the spotlight and the upper one with an insulated copper ring to which has been soldered the spotlight wire leading from the bulb.

It is powered with a 6-volt phonograph motor making 78 revolutions a minute, and the speed is reduced by a set of V-belt pulleys so that the beacon revolves three times a minute. By using a different type of motor, the beacon can be made to operate on a 115-volt alternating current. Low-speed motors adapted to the 115-volt current are also used in electric phonographs and may be salvaged from such machines. A 6-volt storage battery will operate the beacon 20 to 30 hours on one charging. During very cold weather it may be necessary to bury the battery to prevent its freezing as the charge runs low.

The flashing light is produced by connecting in the circuit near the spotlight a "flasher" of the type used in automobile tail lights (fig. 1, G). This causes the beam of light to go on and off about 70 times a minute. The frequency lowers to less than 60 times a minute as the battery becomes weaker. A continuous beam can readily be produced by shorting the "flsher" from the circuit.

An ordinary alarm clock equipped to turn off the battery current about 8 minutes out of each quarter hour is illustrated in figure 2. The copper plate is insulated from the clock by rubber. The beacon operates only when the current is turned on by the minute hand of the clock making contact with the inside projections of this copper plate. The original minute hand of the clock was replaced with a piece of spring brass and the hour hand removed.

The case protecting the motor and other parts of the beacon is weatherproofed with a single piece of galvanized metal, which extends down about 1 inch over each side. A small rim is soldered around the hole through which the beacon shaft revolves. A "skirt", which is fastened to the shaft, projects downward over the soldered rim and prevents rain and snow from entering the case (fig. 1, B). Thus equipped, the beacon operates successfully in both rain and snow.

The battery will have to recharged every second day if the beacon is operated continuously each night. If the beacon is used during the evening and the morning "flight periods" only, the battery will function for a week on one charging. This would necessitate two additional trips into the field each night: one to turn the beacon off when the evening duck flight is over