AGRICULTURAL EXTENSION SERVICE, UNIVERSITY OF MINNESOTA

Poultry Patter

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BUILDING VENTILATION INDICATOR

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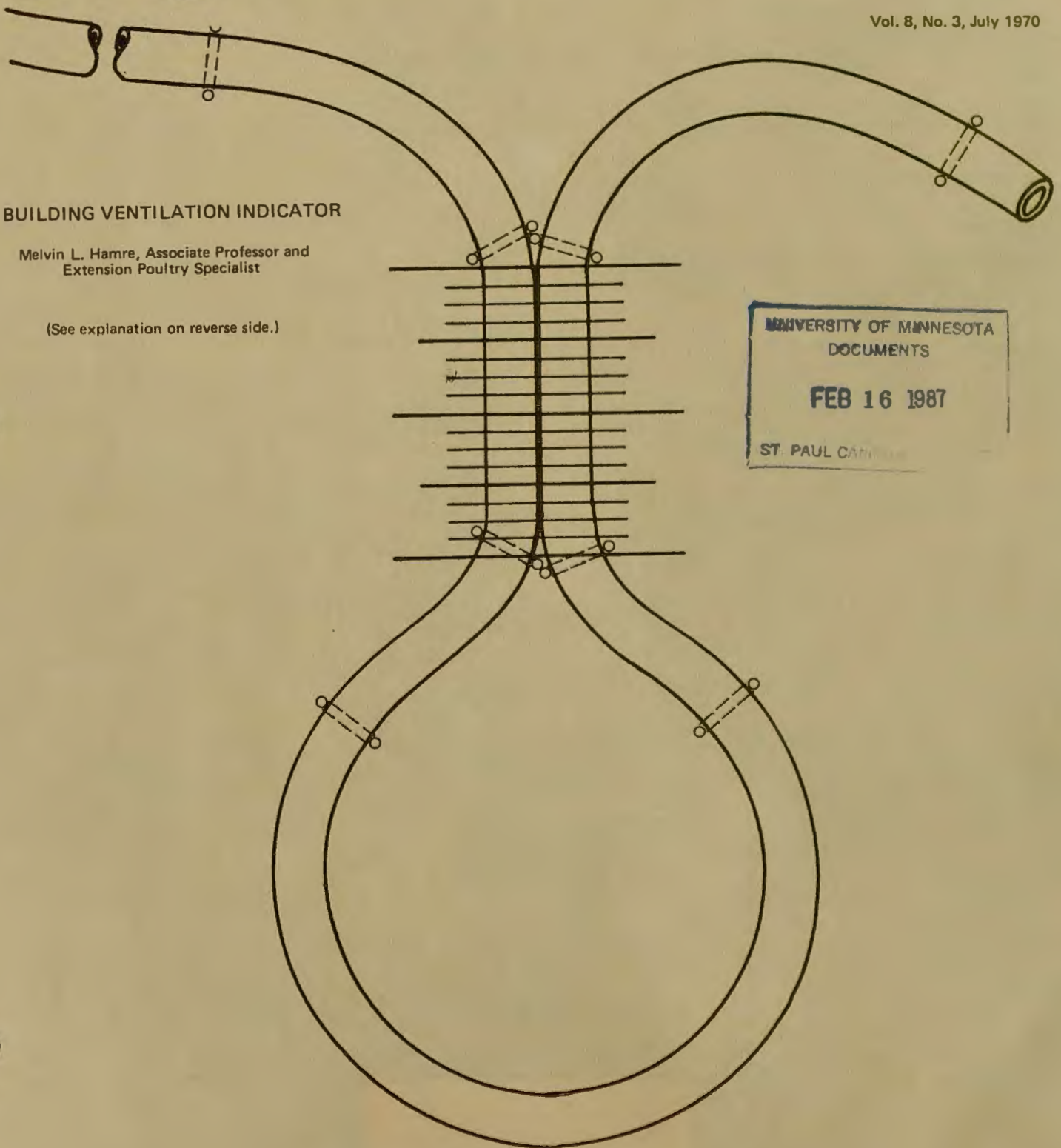
(See explanation on reverse side.)



Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Roland H. Abraham, Director of Agricultural Extension Service, University of Minnesota, St. Paul, Minnesota 55101.

Most poultrymen have no means of checking the performance of the ventilation system in their poultry houses. A difference in outside and inside air pressure makes the ventilation system work. The system is designed to maintain a certain pressure differential but malfunctions can occur. Dust and debris collecting on fans and air intakes and outlets can cause a system to perform poorly. Ammonia and moisture act together to corrode parts of the system. These changes can go unnoticed without a device to measure performance of the system.

Gauges can be purchased for checking differences in air pressure. A homemade device for checking the performance of your ventilation system is described in this article. A simple gauge can be made with about three feet of 3/8-inch plastic tubing and colored water. Follow these easy steps:

1. Mount the diagram on the other side of this sheet on a board of similar size and cover it with a sheet of plastic. Staple the tubing over the plastic, fitting it over the diagram.
2. Fill the tubing with water mixed with food coloring to the mid point of the calibrated section.
3. Drill a hole the size of the plastic tubing in the poultry house wall at least four feet from any fans or air intakes.
4. Nail the gauge next to the hole so that it is at least four feet from any fans or intakes.
5. Adjust the tubing so that one end projects through the hole about four inches beyond the outside wall of the building. Turn both ends of the tubing slightly downward so that dust cannot settle into them.

Slight pressure changes within the building will cause the height of the water columns to rise and fall. When the system is functioning properly there will be a difference in height of 1/5 to 3/5 inch, depending upon what pressure difference the system is designed to give. A reading should be taken when the building is new or just after it has been cleaned and the birds placed in it. Record this reading as a reference standard and compare readings taken at about the same time during the day to this reading. A change from the standard usually means that a check of the system is necessary to determine if there is a malfunction.

With a positive pressure system inside air pressure is greater than outside air pressure and the column of water measuring inside pressure will be lower than that measuring the outside pressure. This system uses fans to force air into the building through air intakes. Turbulence created by the fans blends incoming air with air already in the building. Slight pressure forces air in the building outside through air outlets.

With a negative pressure system outside air pressure is greater than inside air pressure and the water column measuring inside air pressure is higher than that measuring the outside air pressure. This system uses fans to draw stale air out of the building, creating a slight vacuum. Outside air comes into the building through air intakes.

Insufficient pressure differences result in a poor blend of air in the poultry house, causing damp areas in the winter and warm spots in summer. Excessive pressures require more electricity, are costly to maintain, wear ventilation machinery excessively, and may result in over-heated motors.

Good air mixing and movement depends upon fan location and capacity, air intake and outlet distribution, and proper adjustment of the system. Correct pressure differences can produce a uniform flow of air throughout the building. This improves poultry health and comfort by equalizing temperatures within the building, removing excess heat, bringing in oxygen, diluting the population of airborne disease organisms, and removing moisture, ammonia, and carbon dioxide.

A device of the type described in this article can be used effectively to indicate whether your ventilation system is functioning on a day-to-day basis. It is not meant to be an effective device for a calibrated reading of the extent of pressure or vacuum in the system.

The information for this issue of Poultry Patter has been taken from Fact Sheet 58, Building Ventilation Indicator, M. L. Sunde and J. L. Skinner, University of Wisconsin.

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