

Cranbrook Close-Up:



COMPARING TWO newly-hatched chicks in a Cranbrook school biology class research project are instructor Holland Sperry (left) and student Frederick Krauss.



NEWLY-HATCHED chicks get acquainted with Christopher Robin, cocker spaniel who was born at Cranbrook school and hasn't missed a day of school during his ten-year existence. Making the introductions is Frank Swift.



INSTRUCTOR HOLLAND SPERRY (right) moves a tray full of chicks, as (from left) Frank Swift, Stephen Smith and Frederick Krauss look on. In foreground is Christopher Robin.

Research Recipe Lists Eggs

Special to The Birmingham Eccentric

Recipe for Research: Take 500 eggs. Take four trays from a forced-draft incubator. Put 125 eggs in each tray, taking care that each tray contains an equal number of eggs from each of 96 hens which have been especially and closely bred through 27 generations. Mark every egg with the date and Take the hope that at least 100 eggs in each tray will hatch, and that few will prove infertile.

Now take the hypothesis, formulated from similar experiments over eight years, that the egg rotated frequently during the incubation will produce the most vigorous chick. But an hypothesis must be supported by data, and the long, long road of collecting and comparing data to see that an hypothesis is the road the research scientist must always travel.

So this story is about some of the data gathered in a not-so-simple research project conducted by Holland Sperry, in Cranbrook school's biology department with a group of boys who have elected biological research as their project for three-weekly activities periods. Through this project, all the biology classes get a taste of what research is, and the patience it takes.

Mr. Sperry firmly believes that boys interested in any of the sciences should get the "feel" of research at an early age. "For instance," he says, "they should not go blindly into medicine at college because they believe that a physician has prestige in his community and usually makes good money. The strength of a research program is not the resulting statistics, but what the mind does in intelligent guessing. Your common sense will give you an hypothesis—but the trick is to prove it."

NOW, LET'S GO back to the four trays in the incubator. Every hen born and raised at Cranbrook school has an identification number, and from each of 96 hens four, eight, 12 or 15 eggs are incubated—an equal number from each hen in each tray, with the data marked on them, plus a large red "C" on the 125 eggs in tray A.

TRAY A—The control tray, in which the eggs are automatically rotated 90 degrees every six hours. This tray is given top priority in incubation care—lots of oxygen and a constant humidity of 86, which allows continual evaporation but not too much.

Temperature is maintained at 99.5, which is normal for most forced-draft incubators. This means the top and bottom temperature of the eggs is the same. Though under a hen the top runs about 102 degrees, and the bottom some what lower. Hens and other birds rotate their eggs with their beaks, but it's a bit messy process, and those buried in the middle or out on the edge of the nest are often missed. Approximately 80 per cent of the eggs in this tray hatch. Tray "A" is the standard for the other three.

TRAY B—No turning or rotating of eggs. About 15 per cent of these eggs hatch. Many chicks are found in the wrong end of the egg, and hatching is always slower. In this tray, indicating weakness. Also, some of these chicks have such low vitality they sometimes take as long as 12 weeks to catch up in size and weight with their siblings hatched in tray A.

TRAY C—NO TURNING. No rotating. A 6-watt bulb flashes on every 10 minutes, which causes the embryo and later the chick to struggle inside the shell to escape the excess heat. Question: does this so-called "exercise" in the shell give the chick as much increased vigor as is evident in the chicks hatched from rotated tray A? Since only 50 per cent of this batch hatch, it would indicate that the exercise derived from turning is more effective than the exercise incident to the struggle to escape excess heat.

TRAY D—Same flashing lights as tray C, plus automatic rotation as tray A. If these chicks are the best of the lot, it would indicate that the lights are helping in some way beyond the simple rotation in tray A. However, about 80 per cent of these chicks hatch, and as in tray A, which indicates that rotation and lights benefit chick embryos in the same way.

IN EVALUATING the four trays, the effort is to determine the percentage of strength and weakness in the resulting chicks, which in this case is measured in terms of hatchability. Some indications of weakness: chicks in mal-position in the eggs; delayed hatching; excess white and some yolk in yolk sac when chick hatches, indicating it was too weak to assimilate all the food within the shell.

On the 15th day of incubation, the eggs in each tray are moved into specially built hatching boxes so that when the chicks appear—usually on the 21st day—the date written on their shells will not be destroyed or confused with that of other chicks. This makes it possible to identify and band each chick after it gets its breath and begins its life cycle—a band that it carries for life.

MR. SPERRY SAYS that researchers along these lines will say that results cannot be accurate with less than 1000 eggs hatched under each of the four incubating conditions described above. He, however, is satisfied that 125 is enough for each of the four categories, for three reasons: (1) because each tray contains an equal

test is made after the first three days of incubation, and the infertile eggs eaten (yes, they are still good—mostly) or discarded.

This, then, is one of several research projects constantly going on at Cranbrook school in the science

department—projects that are most unusual in any secondary school in the country, projects that will encourage or discourage any lad contemplating a life devoted to one of the sciences, depending upon his individual cast of mind.

Mr. Sperry gives much credit for the success of the egg project to Charles Corp of Bloomfield Hills, now at the University of Michigan, who carried much of the responsibility for this experiment, and spent four years developing the techniques used. —M.H.B.

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