The device affords a simple means of illustrating the chaotic movement of a large number of small particles similar to the motion of molecules in gases and vapors. The similarity is especially instructive when compared with the evaporation of a liquid since the effect of the evaporating mercury upon the particles leaving its surface is similar to the actual motion of vapor molecules which leave a liquid.

The phenomenon can be projected upon a screen and the particles and their movement greatly magnified, so that the device may be used for lecture demonstration of the kinetic theory.

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ABNORMALITIES IN THE CHICK EMBRYO[1]

For the past five years the writer has had under her supervision the preparation of the vast amount of material used for large embryology classes. On account of the possibly controlled conditions under which it could be obtained, the chick was extensively used. Hundreds of these embryos have been examined. Seldom were the eggs incubated for a longer period than three days. For the first two years the pressure to secure material was so great than only the normal embryos of the right degree of development were saved. It was noticed that a large per cent. of the fertile eggs did not give embryos which were satisfactory for class use. The obtaining of an extremely abnormal embryo and two embryos on one blastoderm in a single incubation lead to the saving of all of the specimens. Since that time, over two hundred abnormal ones have been collected.

The abnormalities seemed to occur more in the central nervous system than elsewhere. Two regions were particularly affected, the brain and the neural tube in the region of the last two or three mesoblastic somites and the beginning of the segmental plate. However, the abnormalities did not occur in both of these regions in the same embryo. In embryos obtained from eggs incubated forty-eight hours the abnormality of the neural tube extended over a length of between one eighth and one fourth of a millimeter. The neural tube here was either solid without a central canal or the central canal was extremely small, or there were from two to five canals. This could be recognized in the whole mount as apparent loops of one side of the neural plate, or as a thickened part of the entire tube. The most extreme case of the abnormality of the brain was a seventy-two-hour chick, in which the brain was only about one-fourth the normal size and the fore-, mid- and hind-brains appeared as a series of loops. Another example was a forty-eight-hour chick which had an optic vesicle less than one third the normal size. This optic vesicle was connected with the brain by a stalk more than twice the normal length.

During the past summer Miss Alsop, a graduate student, undertook some experiments upon the cause of these abnormalities. At the same time we were running some controls under normal conditions. She found that she could obtain a large per cent. of abnormalities, and, at will, could produce them either in the brain region or in the region of the tube. She hopes to have a detailed account of her experiments, along with drawings and a more extended description of these abnormalities, ready for publication in a short time.

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