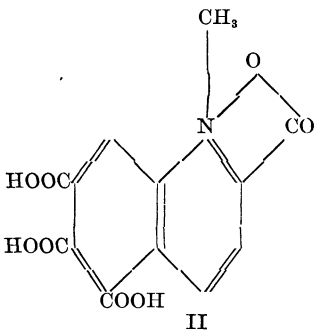

II

acid II. The already reported production of propionic acid on alkali fusion appears to be compatible with the cleavage of Ring D. Likewise the methyl group of the above methyl naphthylamine can be formed by cleavage of Ring D. And finally, the dimethylaminobenzaldehyde reaction given by lysergic acid would be expected from this formula since the α position of the indole nucleus is free. In the older carboline formula this point remained a difficulty.

WALTER A. JACOBS
LYMAN C. CRAIG

THE ROCKEFELLER INSTITUTE
FOR MEDICAL RESEARCH
NEW YORK, N. Y.

THE CHROMOSOMES OF DROSOPHILA ANANASSAE[1]

DURING the autumn of 1933, *Drosophila ananassae* De Meijere (*D. caribbea* Sturtevant) was found frequently in Tuscaloosa, Alabama. Cytological examination of neurocytes of male larvae showed the presence of a J-shaped Y-chromosome. The stock differs, therefore, from the Panama and Cuba material with a rod-shaped Y, used by Metz[2] in his original description of the chromosomes of this species. Recently, through the kindness of Dr. W. P. Spencer, I have been privileged to examine a stock of *D. ananassae* from Dr. H. Kikkawa's laboratory in Kyoto. This also has a J-shaped Y. Further knowledge of the extent of distribution of the two types of Y-chromosome within the species awaits the study of material from those regions of tropical America from which *D. caribbea* has been reported.[3]

There are eight chromosomes in diploid cells of *D. ananassae;* four pairs of V-shaped chromosomes in the female; three pairs of V-shaped autosomes, a V-shaped X and the Y in the male. One pair of the autosomes are considerably shorter than the others. In the aceto-carmine preparations used for the present study, two of the longer autosomes show the same type of pronounced sub-median constriction which exists in the left arm of the second chromosome of *D. melanogaster.*[4] The other pair of long autosomes have constrictions in positions similar to those of the third chromosomes of *D. melanogaster.* The short autosomes are attached to the nucleolus (or nucleoli) during early prophase stages in ganglion cells of both sexes. In the male, however, the Y-chromosome forms the third member of a group which is associated with the nucleolus. The absence of a nucleolus-forming region from the X-chromosome of this species contrasts with the condition in other species of Drosophila, in which the nucleolus develops in the X.[4, 5]

Several of the ganglia studied, both male and female, contained patches of tetraploid tissue. Trisomics and XO individuals also were found.

BERWIND P. KAUFMANN
UNIVERSITY OF ALABAMA

SCIENTIFIC APPARATUS AND LABORATORY METHODS

CARDBOARD FOR ANATOMIC RECONSTRUCTION MODELS

IN 1905 (published in 1907) Mrs. S. P. Gage[1] demonstrated a method for making reconstruction models from microscopic sections, which involved the use of blotting paper instead of the usually employed wax. The technique of this method was further developed by Dr. S. W. Miller in 1931[2] and 1932.[3] He also described apparatus for cutting and mounting the paper sections. Blotting paper has the following advantages over wax: (1) it is less expensive, (2) the labor involved in rolling plates is saved, (3) it is not softened in hot weather, and (4) the resulting models are much more durable in other respects. A material which is still better than blotting paper, in my judgment, is described in this article.

About three years ago, I attempted to get blotting paper of uniform and special thickness. I was informed, however, by the paper dealers whom I consulted that only one thickness was available in large sheets and that was not uniform. I learned, however,

[1] A preliminary note.
[1] *Anat. Rec.*, 7: 166–169.
[2] *Anat. Rec.*, 48: 191–196.
[3] *Anat. Rec.*, 51: 249–250.

[2] C. W. Metz, *Amer. Nat.*, 50: 587–599, 1916.
[3] A. H. Sturtevant, Publ. 301, Carnegie Inst. of Wash., 1921.
[4] B. P. Kaufmann, *Jour. Morph.*, 56: 125–155, 1934.
[5] E. Heitz, *Zeitschr. Zellforsch. u. mikr. Anat.*, 20: 237–287, 1933.

that a cardboard could be obtained which is exceedingly uniform in thickness. Furthermore, ten different grades of thickness are available.

This cardboard comes in sheets 22 × 28 inches in area and they are called "ruby blanks." The five-ply is .547 millimeters in thickness. The one-ply is one half as thick and the ten-ply twice as thick. The other grades are intermediate. I have obtained our supply from Bradner Smith and Company, 333 S. Des Plaines Street, Chicago. A recent order for one hundred five-ply blanks cost $3.15.

These ruby blanks are easier to cut with a smooth edge than blotting paper and, being harder, the pieces stand up better in patterns involving small parts. The variety of thicknesses is a great advantage, as it is possible to choose a thickness adopted to the magnification desired.

So far, we have used only the five-ply grade, which happens to have been convenient for the type of work we have been doing. Drawings are made directly on this paper, and the less complicated features are cut with shears. When the pattern is complicated, a scroll saw is employed.

In order to determine the effect of paste on the thickness of a model, a number of small squares of the paper were pasted together and dried in a paper press. The total thickness of the dried pack, when divided by the number of pieces, gives the exact thickness value of each piece in a finished model, if reasonable care is used in the application of the cementing medium and in the amount of pressure applied in the press.

The scroll saw used is made by the Delta Manufacturing Company, 3775 N. Holton Street, Milwaukee, Wisconsin, and it has the catalog number 700. A large variety of saw blades is available. We have found blade No. 16054-24J to be a convenient and durable size for cutting cardboard. Files and sandpaper pads are made for this outfit, and they save much labor in polishing surfaces of the "piled" model. We have used plastic wood to fill in large irregularities. Lacquers are convenient for painting, as they dry in a few moments, and one can pass rapidly from one color to another. The scroll saw mentioned above can not be set so quickly for interior cutting as the "cutawl" used by Professor Miller, though it takes only a moment or so to do it. The "cutawl" has only one end of the blade mounted, the other end being free, whereas both ends of the scroll saw blade are locked, and one must be freed to make the change. I believe the scroll saw is a more useful machine because of the greater variety of work it can do both in making models and in other laboratory work.

R. M. STRONG

LOYOLA UNIVERSITY SCHOOL
OF MEDICINE, CHICAGO

AN IMPROVED THERMOREGULATOR

THE chief requirements which the expansible fluid in a thermoregulator must possess are: (1) A high coefficient of thermal expansion; (2) good heat conduction; (3) a low specific heat per unit volume; (4) chemical stability; (5) inexpensiveness; and (6) a low density. In thermoregulators for precise temperature control, mercury has been the fluid of choice, although it fails to meet requirements 5 and 6 and is only fair regarding 1. Organic solvents, especially toluene, and gases have been used for less sensitive regulators. The objection against these fluids is that they are poor heat conductors.

During the past year, an improved toluene regulator was employed in this laboratory to control the temperature of a gas-heated thermostat to ± .01° C. (the precision with the usual toluene regulator is ± .05° C.). The increased precision is due to placing a rapidly conducting metal foil, such as copper, in the bulb of the ordinary regulator, as shown in Fig. 1. This

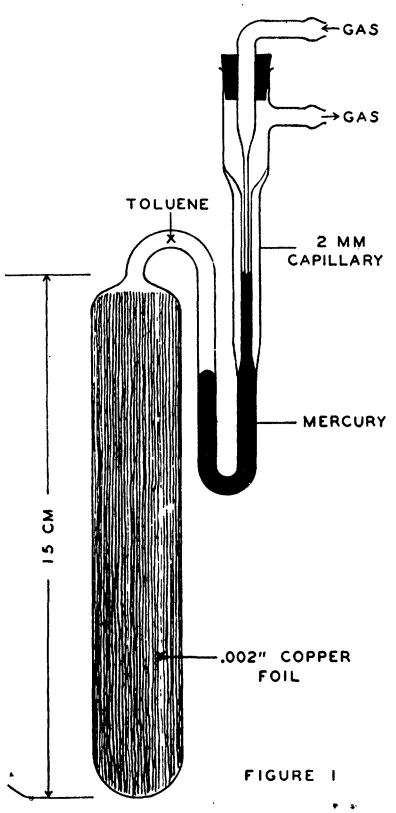

FIGURE 1

principle can be extended to any regulator using an inert organic solvent or gas. By the use of a smaller capillary and electrical control a degree of sensitivity should be attained which equals or surpasses the best mercury regulators.

ROBERT D. STIEHLER

WILMER OPHTHALMOLOGICAL INSTITUTE
THE JOHNS HOPKINS UNIVERSITY