objections raised to psychological work in state hospitals and institutions. The equipment described in this note obviates both of these objections and its simple construction commends it for general use. A line drawing of it is shown in Fig. 1.

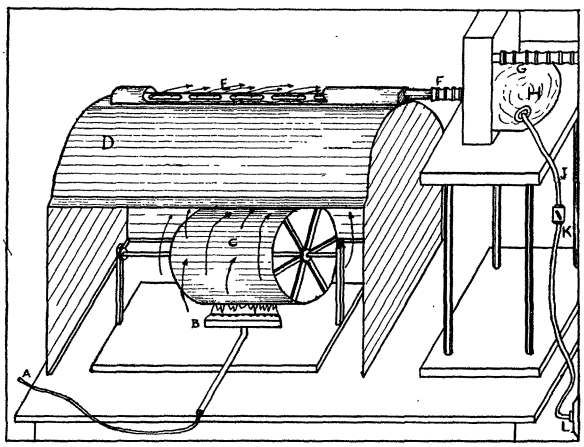

FIG. 1. Drawing of a simple form of equipment for smoking kymograph drums.

The essential parts of the equipment consist of a hood (D) made of about 22 gauge tin and a vacuum sweeper motor (H) mounted on a stand of suitable height and equipped with extension hose (G) which is furnished with the motor. The hood is made large enough to accommodate the drum on its stand (C). In the top are draught vent holes (E) through which the excess soot is drawn away from the flame (B). The soot from the hood is drawn into the intake of the motor by means of a short length of extension hose (F). It is then passed on through to the outlet of the motor and into the hose (G) which replaces the usual bag. The extension hose (G) can then be placed out through a convenient window and all excess soot is taken outside. No changes are made in the electrical connections of the motor (J), except to place a line switch (K) at a convenient place. The height of the motor stand and of the top of the hood depends on the height of the drum stand to be used.

The motor is obtained at any store dealing in used vacuum sweepers. They will also furnish, usually without extra charge, any reasonable length of hose. If carefully and competently chosen, the motor can be expected to give unlimited service after reconditioning. The model outlined here has been in use over three years without any expense for upkeep.

The entire equipment can be secured locally at a cost of about $10.00 to $12.00. The only objection that has appeared in three years of use is the noise made by the motor. This is, of course, similar to that made by a sweeper in ordinary household use. This particular model also works better when the gas is not previously passed through benzine, as is done in some laboratories. It has proved completely satisfactory as far as its main purpose is concerned, and is readily portable either from one room to another or from the laboratory to an outside institution.

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A PARAFFIN BLOCK COOLER FOR USE WITH THE MICROTOME[1]

IN the preparation of serial sections, it is desired to obtain paraffin ribbons that show little or no compression. Such a result with small blocks of tissue facilitates the enumeration of sections when this is a necessary prerequisite to mounting, and also greatly decreases the time entailed in spreading. When only a few sections are necessary, cooling the block on ice previous to cutting is the usual procedure, but for superior results in a long series a continuous supply of cold air is desired.

Foot and Strobell[2] in sectioning eggs of Allobophora devised an apparatus quite comparable to an air-conditioned room. The microtome is placed on a rubber sheet. The cooler, a double-chambered copper box, is superimposed, thus utilizing the rubber sheet as the bottom of the compartment. By means of a glass top that forms the upper surface of the inner chamber and arm holes in the side, one can operate the microtome *in situ* with full view of his movements. A freezing mixture of ice and salt placed between the two compartments allows for a reduction of temperature to twenty-five degrees Fahrenheit.

Grave and Glaser[3] utilized an apparatus that "is essentially a hollow truncated pyramid, open at both ends, and suspended in an inverted position from a standard, so adjusted that the lower end of the chute is at a convenient distance above the knife. At the upper end of the inverted pyramid, and surrounded by it, is a tray whose dimensions are less than those of the base of the chute. This tray is filled with crushed ice, and from one corner of it a drain leads the water to the escape from the lower end of the air channel."

With the idea of utilizing the principle of Grave and Glaser[2] but controlling the cold air supply, a cooler has been devised. The cooling chamber consists of a tin receptacle six inches in diameter and eight and one fourth inches in height. Copper tubing, one fourth inch in diameter, coiled within from the air inlet A, to the outlet B, serves as a medium for the passage of

[1] From the Department of Anatomy, The University of Rochester, School of Medicine and Dentistry, Rochester, N. Y.

[2] K. Foot and C. Strobell, *Biol. Bull.*, 9: 281–286, 1905.

[3] C. Grave and O. C. Glaser, *Biol. Bull.*, 19: 240–242, 1910.

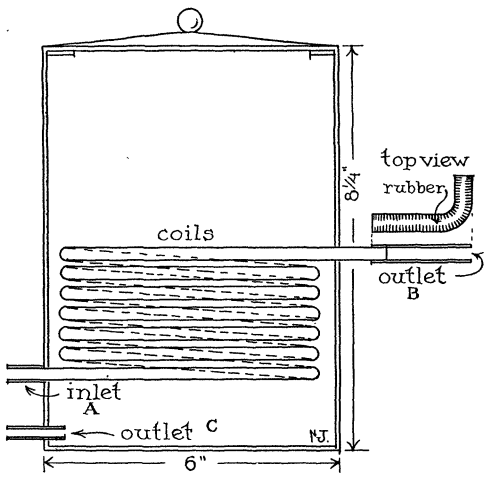

FIG. 1

air throughout the cooling chamber. The inner surface of the latter is painted with black asphaltum, while the exterior is overlaid with asbestos. The protruding portion of the copper tubing forming the inlet A is connected by rubber tubing to a calcium chloride tube for the purpose of dehydration, and in turn to a compressed air supply. The copper tubing, insulated with rubber, passing through the wall of the cooling chamber to form the outlet B, is bent at right angles horizontally, thus permitting direction of air at the surface of the block, and yet allowing for placing the cooler to one side and in front of the microtome. The height of the tubing at this point is variable with the type of microtome employed, but should be so placed as to allow full utilization of the cold air supply. If desirable, an outlet C, as a drain, may be inserted.

In actual operation, the ice chamber is filled with cracked ice, ice and salt or other freezing mixtures. For purposes of this laboratory, the former gave a temperature range sufficiently cool for cutting during the summer months. The microtome and cooler are so oriented that the cold air emitted at the outlet B will play directly on the cutting surface of the preparation. The distance of the former from the latter may be determined by the extent of cooling desired. A few sections are cut without turning on the compressed air. Having thus obtained the basis for a ribbon, a gentle stream of air is directed at the block and cutting is resumed.

Contrary to an opinion that may occur to the reader, the air draft created does not hinder manipulation. During a period of seven months' use, no difficulties were experienced with electrification of the paraffin ribbon.

GERMAIN CROSSMON

SPECIAL ARTICLES

CRYSTALLINE CARBOXYPOLYPEPTIDASE

CARBOXYPOLYPEPTIDASE splits the amide linkages of certain amino-acid compounds, such as chloracetyl tyrosine, tyrosyl tyrosine and leucyl glycyl tyrosine, with the liberation in each case of an amino-acid which in the intact compound has a free carboxyl group.[1] I have isolated from bovine pancreas a crystalline water-insoluble protein which attacks chloracetyl tyrosine. Peptic digests are also attacked, even in the presence of formaldehyde. Other substrates have not been tested, so it is not yet certain that all the supposed substrates of carboxypolypeptidase are digested by a single enzyme. It may be that what has hitherto been called carboxypolypeptidase is a group of different enzymes.

Recrystallization of the globulin does not change its carboxypolypeptidase activity but frees it of proteinase. Heating a solution of the crystalline globulin until half the protein is coagulated results in destruction of half the solution's activity. These facts are strong but not conclusive evidence that the crystalline protein is identical with the enzyme whose activity has been measured. A solution of the crystalline globulin diluted to attack chloracetyl tyrosine at the same rate as a given crude extract of pancreas likewise attacks a formolized peptic digest at the same rate as the crude extract. This fact is strong evidence that the enzyme in the crude extract which attacks chloracetyl tyrosine is likewise responsible for the digestion of the formolized peptic digest. Finally, the fact that the crystalline globulin digests a peptic digest even in the presence of formaldehyde proves that the presence of the free amino groups of neither enzyme nor substrate is essential for carboxypolypeptidase activity. No proteolytic enzyme of the pancreas other than carboxypolypeptidase is known to be active in the presence of formaldehyde.

In outline the preparation of the crystals is as follows. To the spontaneously activated turbid fluid which exudes when frozen pancreas is allowed to stand overnight at 5° C., 5 N acetic acid is added until the solution is green to brom cresol green. The acid solution is kept at 37° C. for two hours and the clotted suspended matter is filtered off. The filtrate is diluted with ten times its volume of water. The resulting precipitate is allowed to settle, the supernatant solution is rejected and the suspension is filtered. Water is added to the precipitate to give a suspension twice as active as the original turbid fluid and then 0.2 M

[1] E. Waldschmidt-Leitz, *Physiol. Rev.*, 11: 358, 1931; M. Bergmann, SCIENCE, 79: 439, 1934.