The dog was bled and when autopsied on October 9 presented evidence of a prolonged chronic infection. The spleen was small and tough and weighed but 33 grams, the dog weighing 11.7 kilos. The liver and kidney likewise were found to be unusually hard. Microscopical examination of the spleen, liver, kidneys, lungs, and bone-marrow showed enormous numbers of typical Leishman-Donovan bodies, free and intracellular, with no sign of the flagellate form. Cultures made from the spleen and liver gave at the end of five days exceedingly rich growths of the flagellated organism.

Tubes inoculated with the peripheral blood likewise gave good cultures though somewhat later, that is, on the tenth day. The latter fact indicates the value of the cultural method as a diagnostic means.

It will be seen therefore that, starting out with the flagellate form, it has been possible to produce a typical infection in the dog and to recover from the infected animal, by cultural means, the parasite in the flagellated stage. Undoubtedly this result can also be obtained by employing less massive doses than was deemed necessary in this preliminary experiment.

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New apparatus designed especially to facilitate the preservation of food for use in metabolism experiments.[1]

A demonstration.

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The writer exhibited a new form of apparatus that has been very serviceable in the preservation of fresh food by refrigeration. The apparatus consists in the main of a galvanized "angle iron" frame constructed to support glass trays specially designed as food containers. Fresh food, *e. g.*, hashed meat, may be very satisfactorily preserved, without change of general composition, by

[1] This method further improves the process described by the author some years ago in the *American Journal of Physiology* (1901, v, p. 235). See also Gies and collaborators: *Biochemical Researches*, 1903, i, p. 69 (Reprint No. 1).

placing it in *covered* trays of the kind referred to and transferring them immediately to such a frame in a freezing room. The general characters and relationships of the main parts of the apparatus are clearly shown in Figure 1. The structure and dimensions of the glass trays are indicated in detail in Figures 2 and 3. See pages 30 and 31.

In the form of this apparatus now in use in this laboratory, each "angle iron" skeleton is 20 inches high, 21 inches wide and 10 inches deep. Twenty five glass trays fit snugly into as many stalls,[1] which are just a trifle wider and longer than the trays, and are arranged in five tiers. The removable horizontal rods at the front are so arranged as to prevent the trays from falling from the frame if the latter happens to be tilted forward. The "angle iron" fixtures at the rear prevent movement of the trays in that direction when the frame is tilted backward.

The glass trays are the essential parts of the apparatus and are excellent food containers. Plates of ordinary glass furnish very satisfactory covers for the contents of the trays. Such a glass lid, trimmed to fit intimately, can easily be put in place and can readily be elevated with a finger at the depression in the edge of the tray, at one end. Air tight closure may be secured by placing over the tray a full-width strip of paraffined muslin before the closely fitting lid is pressed down tight upon the ledge in the tray which supports it.[2] Paraffined muslin will not appreciably absorb moisture from the contents, nor freeze fast to the latter, and can be washed free from the slight amounts of food that may adhere to it. If such a paraffined muslin strip is allowed to extend a little beyond one end of the tray, the protruding portion serves as a means of drawing the tray from the frame and also of lifting the lid of the tray. Such paraffined muslin strips may be used again and again.

The trays are composed of thick flint-glass and therefore are able to withstand unusally rough treatment. Neither the lids nor the trays have been cracked by alternate cooling and warming between the extremes of temperature to which they have com-

[1] Five additional trays may conveniently be placed directly underneath the lower tier of trays in the frame.

[2] Such closed trays full of meat may be kept weeks at a time in a refrigeration room without losing weight.

monly been subjected, *i. e.*, 5° C. and room temperature, nor have the lower temperatures made the glass brittle.

The covered trays hold about 550 grams of hashed, expressed, lean meat, or 325 grams of cracker meal.[1] The freezing of a closed trayful of lean meat is devoid of any appreciable expansive effects.

This method of food preservation, where the necessary refrigeration facilities are at hand, offers the following special advantages:

The trays are in effect bottles that rest on one side and open on the opposite side. The paraffined muslin cover and the glass lid may be removed together as easily as a stopper may be taken from a bottle. The trays can be filled or emptied easily and quickly. The thick side of the tray furnishes a very stout fulcrum for strong leverage with a heavy knife through frozen food, such as hashed meat. Consequently, frozen food in such a tray may easily be sectioned with a knife into blocks without any risk of breaking the tray.

The trays are comparatively shallow. Therefore, percolation of liquid in fresh food (such as the juice in hashed meat) before freezing sets in must be very slight, if it occurs at all.[2] The influence of such possible percolation on the uniformity of composition of portions removed daily is negligible, especially if the food is used in sections *cut from top to bottom.*

The uniformity of the dimensions of the tray makes it easy to mark off very accurately given quantities of any relatively homogeneous product. Upright partitions, of paraffined card-board for example, may be used between weighed quantities of food, placed side by side, without any danger of admixture or difficulty of removal.

Since the trays can easily be marked for identification, many different dietary mixtures can be systematically preserved at the same time in the apparatus described, and may be used separately without confusion. After fresh food has been frozen, trays containing it may safely be kept in an ordinary refrigerator for a day or more, thus increasing the convenience of handling material preserved in this way.

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[1] The covered trays hold about 575 c.c. of water.

[2] Thus far no visible percolation has occurred, in such trays, in meat previously expressed in an ordinary "tincture press."

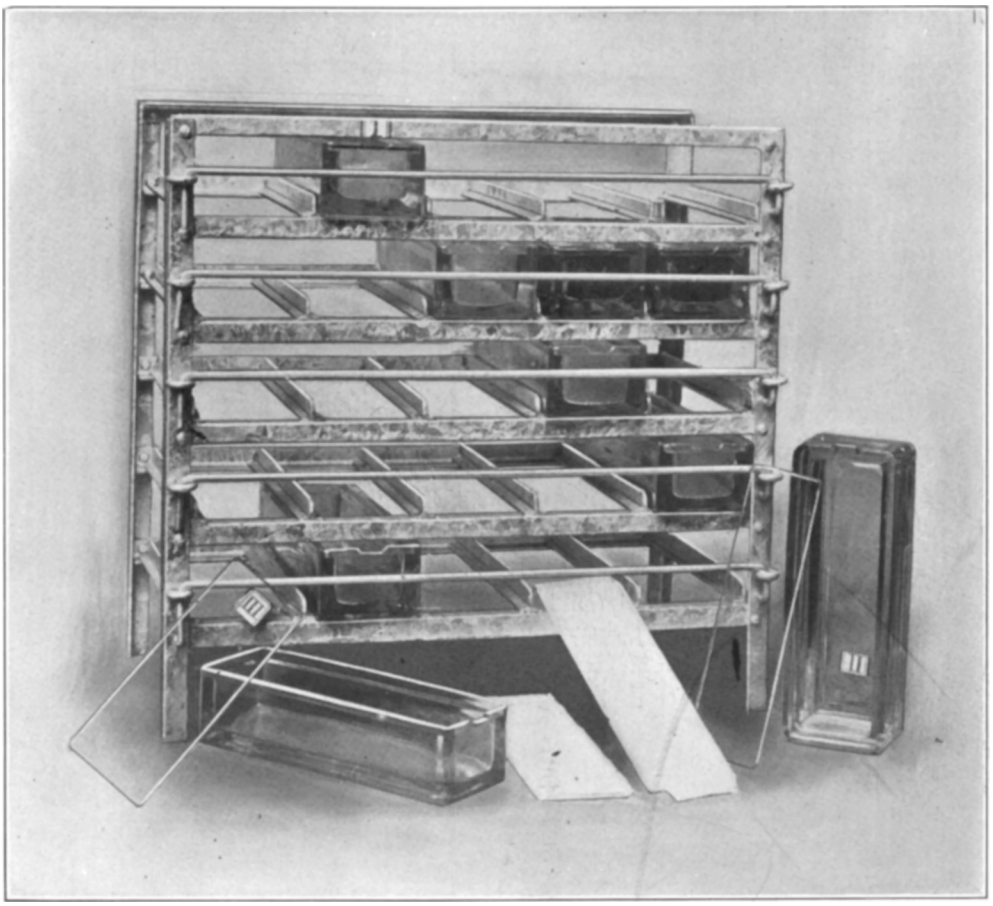

FIG. 1. A view of the "angle iron" frame holding seven glass trays. Two additional trays in different positions, with their glass lids leaning against them, are shown. The white objects in the foreground are paraffined muslin strips, which are used with the glass lids to effect air tight closure of the trays.

Tray I in the second stall of the first tier has a glass lid in place, which shows distinctly in the picture. The trays in the stalls diagonally downward to the right of Tray I, and also the tray in the second stall of the lowest tier, are empty and without lids. The two covered trays in the fourth and fifth stalls of the second tier contain frozen hashed meat and show the usual appearance of full trays in reserve in the frame.

Trays II and III outside the frame show clearly the inside appearance of the trays.

The removable horizontal rods are in position to prevent forward movement of the trays. The special turns on the ends of the rods should be noted.

It is needless to dwell upon the obvious fact that the apparatus described may be used very satisfactorily for many other purposes. The trays are excellent crystallization dishes, for example, and serial recrystallizations may be effected in them very conveniently.

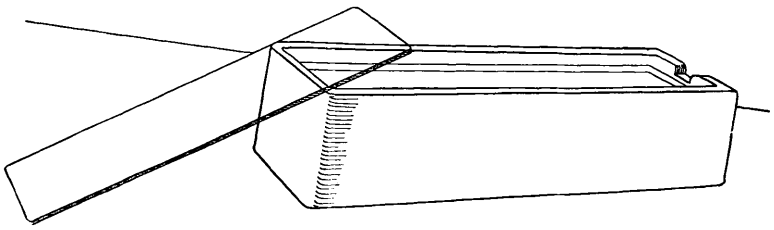

FIG. 2. A diagram of a tray with the lid out of place, to show especially the ledge upon which the lid rests when the tray is covered. The depression in the edge of the tray at one end, where the lid may readily be lifted with a finger, is also indicated sharply. This depression does not extend to the surface of the ledge. Therefore, when the lid is in place, the tray is completely closed.

The general structure of the apparatus permits its placement in out of the way positions. The whole of it can readily be protected by an easily removable impervious covering.

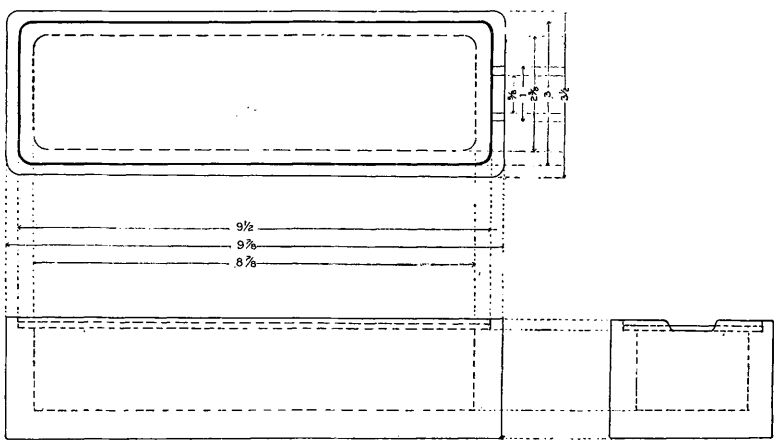

FIG. 3. A diagram showing the relationships of the parts of the tray, including the lid, and giving the main dimensions.

I am indebted to my assistants, Mr. Walter H. Eddy and Dr. Archibald E. Olpp, for the photograph and drawings of the apparatus. Mr. Christian Seifert, of this laboratory, executed admirably the plans for the frame. The glass trays were made to order by the Whitall Tatum Co.