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THE IMPORTANCE of choline in nutrition is now more widely recognized as a result of new investigations showing its relationship to liver cirrhosis[1] and renal damage.[2] Under specific dietary conditions a deficiency of choline results in fatty infiltration of the liver in rats[3] and perosis in chicks.[4] Choline is definitely involved in the metabolism of the sulphur containing amino acids.[5, 6]

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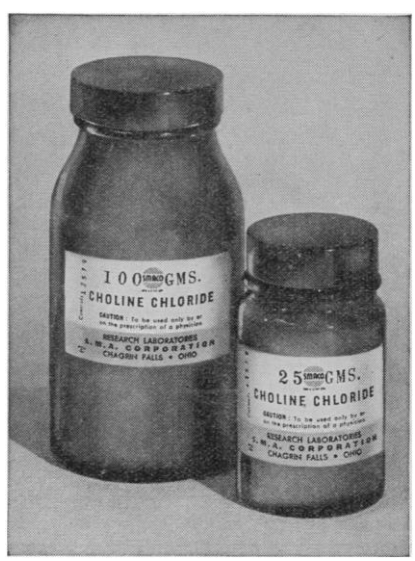

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IMMUNITY IN VIRUS INFECTIONS[1]

By THOMAS M. RIVERS, M.D.

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FOR many years it has been recognized that one attack of certain diseases, now classified as virus maladies, induces an enduring immunity. Because of this fact and since many workers believed that viruses are radically different from other types of infectious agents, there arose in some quarters the idea that immunological and serological phenomena in the virus field differ from those in other fields of infection. This was an erroneous idea because the basic principles underlying serological and immunological phenomena in all fields of biology are identical. These principles, however, may evidence themselves in different manners in the various fields, and the techniques of studying the phenomena associated with them in different fields frequently vary because of the nature and mode of action of the infecting agents. It will be impossible to discuss at this time all the different phenomena and peculiarities associated with immunity in the numerous virus diseases. Therefore, a few general remarks will be made, following which immunological and serological phenomena associated with vaccinia will be discussed in detail.

Immunity is resistance to infection or injury and is demonstrable only in a living host. Such resistance

[1] Delivered on September 26, 1941, as part of a symposium on immunity at the Fiftieth Anniversary Celebration of the University of Chicago.

The trap remains effective for approximately six weeks, but to get best results the location should be changed every ten days or two weeks. The snails are collected by removing the trap and screening the mud from an area about 15 inches square around it by means of a wire net (Fig. 1). The net consists of a frame of one quarter inch steel bar fashioned in the shape of an equilateral triangle one foot on a side, and having a tang three inches long at the apex mounted in a handle with a ferrule. Galvanized wire screen of three sixteenths inch mesh is soldered to the frame. The screen gradually deepens from the leading edge to form a bag two inches deep at the apex of the triangle. The leading edge is protected by a band of galvanized sheet iron three inches wide folded over the frame and soldered. The completed screen is very sturdy and will withstand hard usage.

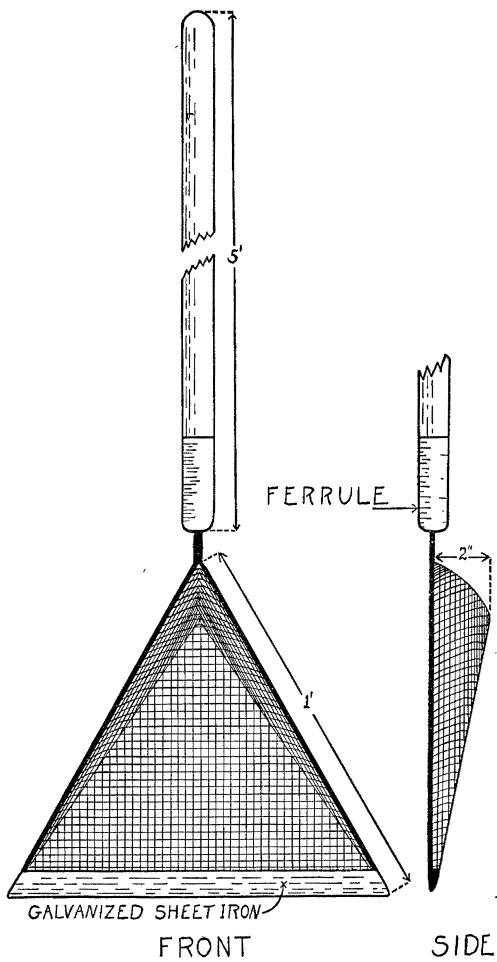

FIG. 1. Front and side view of collecting net.

It was suspected that in streams the current might carry the fecal extract which the snails followed to its source at the trap. This idea was tested by planting marked snails at various distances, two to 15 feet, upstream, as far as 20 feet downstream, and ten feet across the stream from a trap. In collections made at weekly intervals for five weeks, 28 of the 67 snails (41.7 per cent.) planted upstream, 24 of the 86 (26.7 per cent.) planted downstream, and 2 of the 9 (22.2 per cent.) planted across the stream were taken at the trap. Practically the same number of snails moved to the trap from 15 feet upstream and 20 feet downstream as from 2 feet up- and downstream. My data indicate that the snails move at random. Once arrived at the trap, however, they tend to stay as long as the food supply lasts.

In lakes the traps proved ineffective. Experiments to determine the reason for this have not been carried out. All the lakes tried had bottoms of sand underlaid by muck which perhaps provides sufficient food for *Campeloma* to nullify the effects of food concentrated at traps. Traps should be tried in lakes with clean, sandy bottoms.

In the streams tested the traps are specific for *Campeloma*. Other species of snails are not taken in the traps and only occasional bivalves, *Alasmidonta calceolus* and *Sphaerium* sp., have been collected from them.

LEONARD N. ALLISON

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BOOKS RECEIVED

BARBER, HERVEY H. and T. IVAN TAYLOR. *Semimicro Qualitative Analysis.* Pp. xvi + 446. Harper. $3.50.

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WENDT, GERALD. *Chemistry.* Volume in *The Sciences,* A Survey Course for Colleges. GERALD WENDT, editor. Pp. viii + 300. John Wiley. $1.75.