a chemical change and the figures for incident energy must therefore be corrected for the percentage of incident light actually absorbed. Measurements of absorption by thin layers of *S. aureus* pressed between quartz plates gave the first values used for this correction. For a layer of organisms one coccus thick the figures for the absorption of light lay between 4.4 per cent at 3022 A.U. and 10.7 per cent at 2535 A.U. When this correction was applied to the observations on incident energy it was found that the absorbed energy involved in the death of *S. aureus* was approximately equal at different wave lengths from 2482 A.U. to 2804 A.U., an interval that corresponds roughly to a broad absorption band of these organisms in the far ultraviolet.

Further consideration suggests, however, that the absorption of ultraviolet light by *S. aureus*, or any cell, is not a function of the entire organism, but the summation of the absorption factors of numerous chemical entities composing its protoplasm. It is necessary to look further for the particular substances that are responsible for light absorption, with the prospect that one or more may be found to be light-sensitive to the degree implied by the bactericidal power of ultraviolet light. Although other protoplasmic constituents may absorb light, they are not necessarily involved in this particular phenomenon. This phase of the subject is at present under investigation.

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### A chart showing graphically the respiratory quotient and the percentage of calories furnished by protein, fat and carbohydrate.

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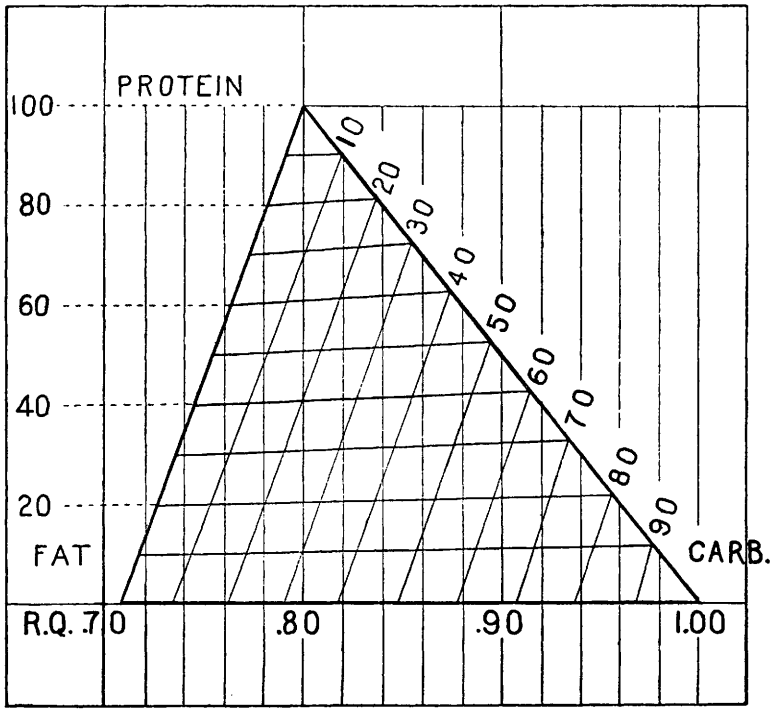
The percentages of calories furnished by the various foodstuffs can be shown graphically and with satisfactory accuracy on a chart which is almost an equilateral triangle. The base represents the respiratory quotient. The lower left hand corner

(R. Q. 0.707) represents the theoretical point at which 100 per cent of the calories are obtained from fat, the lower right corner (R. Q. 1.00) represents 100 per cent of the calories from carbohydrate. The top of the triangle, which is over the R.Q. of 0.801 is the protein corner. The percentage of calories furnished by protein is shown by means of lines almost parallel to the base. The percentage furnished by carbohydrate is shown by lines parallel to the left side of the triangle. These parallel lines are almost but not quite equidistant.




Almost all the phenomena of the respiratory metabolism can be represented graphically on this "metabolism map" and we can follow the changes which result from the ingestion of protein or carbohydrate. In the lower left hand corner is the zone of ketosis. Outside and to the left of the triangle is the zone in which protein is partially converted into carbohydrate. To the right of the triangle is the zone in which carbohydrate is converted into fat.