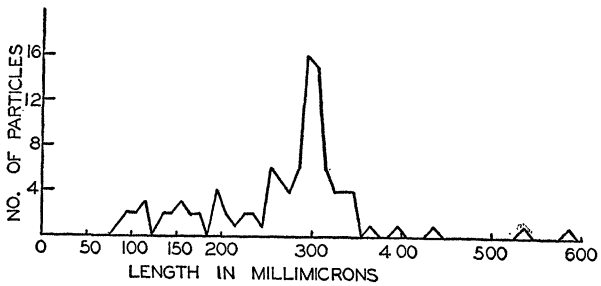

FIG. 1. Length distribution curve for tobacco mosaic virus particles.

The lengths of the particles of rib-grass strain of tobacco mosaic virus were measured on the electron micrograph shown in Fig. 2 of Holmes.[9] We have prepared a frequency curve of these lengths which is shown in Fig. 2.

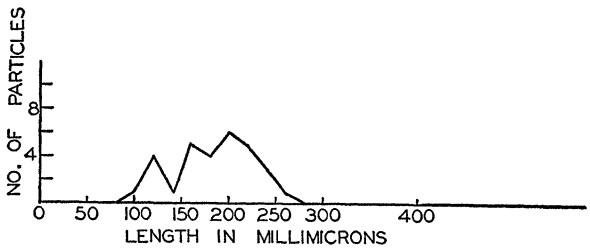

FIG. 2. Length distribution curve for particles of rib-grass strain of tobacco mosaic virus.

If one assumes that the particles of these two rod-shaped viruses are molecules and that the most common length is the most probable value for the molecular length it is evident that in each of the two rod-shaped viruses there are numerous particles too much longer and shorter than this molecular length for the difference to be due to error in measurement. It is also evident that the longer particles are not composed of 2 or more molecules of the most frequent length joined end to end.

The fact that virus particles of a given rod-shaped virus have various lengths and that the longer lengths do not appear to be multiples of the most characteristic length appears to indicate that they are not molecules.

There are several respects in which the micrographs of virus particles resemble those of bacteria. The particles of a rod-shaped virus, like many rod-shaped bacteria, are very uniform in width but vary greatly in length. The particles of a spherical virus, like most spherical bacteria, apparently have a relatively uniform diameter.

T. E. RAWLINS

DIVISION OF PLANT PATHOLOGY,
UNIVERSITY OF CALIFORNIA, BERKELEY

ENZYME ACTION

THE very interesting investigation of H. C. Eyster[1] having for its purpose the explanation of the effect of narcotics on the luminous bacteria revives a problem which has been extensively discussed in the pharmacological literature. The displacement of adsorbed material from charcoal particles by narcotics was thoroughly studied by Warburg,[2] who demonstrated in several instances the adsorption of narcotics and consequent blanketing of active surfaces. Several attempts have also been made to explain the action of narcotics upon ferment action by the adsorption-theory of Traube and Warburg.[2]

The application of the results of these model-experiments on the narcosis of the living cells themselves meets, however, several difficulties. It is, for instance, demonstrated that narcotics which retard the action of the isolated diastatic ferment are markedly increasing the diastatic activity of the liver cells.[3] We doubt, therefore, whether by the experiments described by Mr. Eyster, the mechanism of the narcosis of the luminous bacteria can be satisfactorily explained.

E. GEIGER

VANCAMP LABORATORIES,
TERMINAL ISLAND, CALIF.

TRANSPARENT CALCIUM INCRUSTATION OVER ROCK PAINTINGS

ENOUGH has been written about American cave and rock shelter paintings to indicate that the different types of paintings were done throughout a long period of time, and some were made up to so late as the historic period.

In a site in Stephens County, Texas, situated ten miles northeast of Moran there is a rock shelter containing thirteen prehistoric paintings which show several unusual features. Four pictures are small, three are of problematical objects and one of a small human figure unlike the large ones. These four perhaps may have been made later than the large figures. The pictures of unusual interest are nine large red human figures. Several of these are three feet or more tall. The tallest is three feet and five inches.

Five paintings show the phallus and are of very flat-headed nude figures. Four are skirted figures with relatively more narrow heads. One of the skirted figures has the arms in position as though whirling in a dance. One of the male figures shows

[1] SCIENCE, 96: 2484, 141, 1942.
[2] A. G. Clark, "General Pharmacology," page 59. Berlin, 1937.
[3] Lesser and Zipf, *Biochem. Zeits.*, 140, page 435, 1923; E. Geiger, Proceedings 15th International Congress of Physiology, Moscow.