

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.

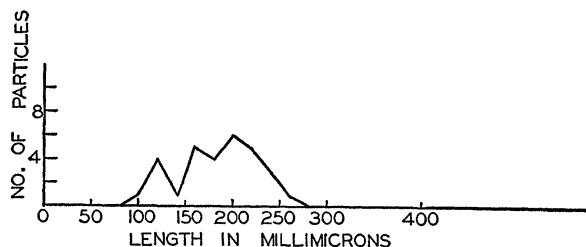


FIG. 2. Length distribution curve for particles of rib-grass strain of tobacco mosaic virus.

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.

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ENZYME ACTION

THE very interesting investigation of H. C. Eyster¹ 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.

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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.

two horns on his exceptionally broad flat head and one of the skirted figures has three feathers across the top of the head. All the figures are standing except one male which is lying horizontally.

Two nude figures, each one showing a large phallus, and two long slender skirted female figures were covered with a thick coating of transparent stalagmitic deposit.

The four figures covered with stalagmitic deposit were about the middle of the row where it seemed the mineral had flowed down across them from above. The usual thickness of the mineral deposit was about that of a table knife.

The writer has visited the spot twice and there was then no evidence of water or dampness on the wall. There is no spring flow nor seep there now. The ledge is high up near the top of a dry limestone ridge and the area above the ledge is so small that there would not be any dripping over of water except for brief periods during or immediately following rains. The carbonate of lime deposit is so thick over one of the paintings that it can not be copied, although it seems to be that of a long-skirted figure.

The various female figures are represented as in motion. One skirted figure is carrying a long-handled racquet-like object high above the head in the right hand. Another skirted figure shows the arms extended and a ball in the air beneath the left one.

All the nine large figures show an extreme flatness of the vertex, and in the males the head is exceptionally flat and broad across the top. One which shows the ears indicates very little skull above them.

When one considers the unusual artistic merit of the drawings he can not believe that this repeated depiction of exceptional vertical flatness is either accidental or coincidental. It might be a true prehistoric artist's conception of some long extinct type of Texas inhabitants whose skulls were exceptionally flat.

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SOME EARLY AMERICAN MUSEUMS

THE extremely interesting article in *SCIENCE* for September 18 by Dr. Simpson about the oldest natural history museum in America deserves additional comment. While the present writer accepts all Dr. Simpson's conclusions as to what may be the oldest museum now in existence on this continent, he feels constrained to point out that neither Philadelphia nor Charleston can claim the first public museum to be established in America, for that honor belongs to Matape in Sonora, where Father Eusebio Francisco Kino established a museum of natural history as early as 1681, nearly a century before the two cities mentioned by Dr. Simpson. The story has been told by Dr. Herbert E. Bolton in "Rim of Christendom."

In this connection it is appropriate to recall another early museum—that opened in 1791 by José Longinos Martínez in Mexico City. The influence of this all but forgotten pioneer has recently been recognized by the dedication of a bronze plaque to commemorate the sesquicentennial anniversary of his arrival in San Diego. Incidentally there is very little known about this early scientific explorer other than that he was an associate of Martín Sesse y Lacosta. If any of the readers of this letter should happen to have any further information about him, the writer would appreciate a communication.

Finally, although it has nothing to do with the matter under discussion, I would like to submit a comment on the censorship to which *SCIENCE* has been subjected. To the editorial from *The New York Times* quoted on pp. 274-5 I would like to offer an unqualified Amen. Both the pacifist and the conscientious non-pacifist can agree that whatever individual opinions they may hold toward the institution of war, the withholding of information that might lead to the alleviation of human suffering is contrary to the principles of Christian philosophy.

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SCIENTIFIC BOOKS

ELECTRICAL TERMS

American Standard Definitions of Electrical Terms.

Sponsored by The American Institute of Electrical Engineers. 311 pp. New York: Published by the American Institute of Electrical Engineers.

THIS book, which carries the approval of the American Standards Association and of the Canadian Engineering Standards Association, and which is also sponsored by the American Institute of Electrical Engineers, should prove a very valuable volume to a large group of physicists and engineers. In addition

to fulfilling the purpose which its title indicates, it carries in some cases in condensed form quite a little experimental material. In fact, one who is a little rusty on matters in vector analysis, potential theory, damped oscillations, etc., might reestablish much of his mental equipment by reading the first portions of the book.

If one should wish to be controversial, there are few domains providing a wider field for his acrimonious activities than one having to do with definitions. Hence there will doubtless be some differences of