

guaiac to guaiac blue. This prevention is due to the number of bacteria present. Up to about three millions of bacteria per cc the action of the oxidases is accelerated and from then on their action is retarded.

IRVING KUSHNER

ALEX. S. CHAIKELIS

COLLEGE OF THE CITY OF NEW YORK,
LABORATORY OF PHYSIOLOGY

CULTIVATION OF THE VIRUS OF TOBACCO MOSAIC BY THE METHOD OF OLITSKY

RECENT publications of Olitsky¹ on the cultivation of the virus of mosaic disease of tobacco and tomato attracted unusual attention. The intense but fruitless search which has been made by numerous workers for the causal agent of this pathological condition has made it evident that the problem presents many difficulties. Perhaps no type of plant disease has been more seriously studied by pathologists during recent years than mosaic. It is not surprising, therefore, that Dr. Olitsky's announcement of artificial cultivation of the virus should receive immediate and enthusiastic consideration.

The objective aspect of Olitsky's experiments is extremely simple and should be easily duplicated by any one caring to make the test. The bearing of positive results in this connection on future studies of the general problem of mosaic would undoubtedly be very great, and any effort to verify the findings reported is fully warranted. With this in view, an exact repetition of the experiments described was undertaken. The method followed is essentially as follows. Eighty grams of young tomato tissues were minced and then mortared to a pulp. This was mixed with 250 cc of sterile, distilled water. The mixture was centrifuged for one hour at 1,500 to 2,000 revolutions per minute. The supernatant liquid was passed successively through two Berkefeld N size filters and disposed in 3 to 5 cc portions in small test tubes. This, if it was found to have a pH value between 5.3 and 6.0, constituted the "culture" medium. This medium was held at 28 to 30 degrees C. for seven days to insure sterility. The inoculum used at first consisted of Berkefeld V filtrate from inoculated tobacco and tomato extract. Later sap was drawn directly from the stems of infected plants by means of capillary glass tubes and placed at once into the culture medium. Each culture tube received either 0.1 to 0.2 cc of the infectious filtrate or 0.01 cc of the sap as an inoculum. Succeeding transfers were made

by putting 0.1 to 0.2 cc from the first culture into a second as a subplant and so on indefinitely. This procedure, of course, made a series of dilutions of the original inoculum, and Olitsky concludes that growth must have taken place if a decrease of infectiousness did not accompany the succeeding transfers. Every detail of Olitsky's procedure was carried out as completely as possible with one single exception, namely, the use of tobacco instead of tomato plants as tests of the infectiousness of the various cultures. This should not, however, influence the results, as tobacco is quite as susceptible to mosaic as are tomatoes. An additional check (not used by Olitsky) was introduced by the use of sterile, distilled water as a "culture" medium. All dilutions or transfers were made at the same time and in the same manner in both the water and tomato extract. Ten plants were inoculated with each dilution in each of three series; so that the figures given below represent the number of infections in a population of 30 plants for each transfer number. The results of the three separate series of experiments, including more than 260 plants, are given in summary form here.

NUMBER OF PLANTS INFECTED IN THIRTY INOCULATIONS

Transfer No.	Water.	Extract.
1	5	5
2	3	3
3	1	1
4	3	0
5	1	0

The original undiluted filtrate which was used as an inoculum gave 21 infections in 30 inoculations. It is clear that so far as these results are concerned Olitsky's findings are not confirmed, for there is no indication of an increase of the virus as the transfers proceed. The water cultures gave a rate of infection slightly higher than those made in tomato extract in the higher dilutions. These data are, no doubt, too meager to establish conclusions contrary to those reached by Olitsky, but they suggest the desirability of greater accumulation of experimental evidence, and are given here in hopes that they may assist in keeping the question open until the facts are fully established. It appears to the writer not impossible that Olitsky's results may have an interpretation other than that indicated in his articles.

MAURICE MULVANIA

NORTH CAROLINA ACADEMY OF SCIENCE

THE twenty-fourth annual meeting of the North Carolina Academy of Science was held at State College, Raleigh, May 1 and 2, 1925. The academy is making an especial effort to help the cause of science

¹ Olitsky, Peter K., "Experiments on the cultivation of the active agent of mosaic disease of tobacco and tomato." *SCIENCE*, Vol. LX, No. 1565, 1924, p. 592; "Experiments in the cultivation of the active agent of mosaic disease in tobacco and tomato plants." *Jour. of Exp. Med.*, Vol. XLI, No. 1, pp. 129-136, 1925.