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T2 DNA is shown in Plate I. Of the 13 labelled molecules shown, 7 have a length between 49 and 53 μ ; of the other 6, 4 are shorter and 2 are longer. The grain about the center of the scale) seems from its grain about its center. Other samples of DNA prepared on the same conditions as those shown in Plate I, and that the maximum length, when adsorbed on to a surface of molecular weight this is subject to certain variations which the molecules might assume, giving rise to a range of lengths. (Langridge, Wilson, Hooper, Wilkins & Hamilton, 1958). Particularly in the case of T2 DNA (Hamilton *et al.*, 1958), the length is about 3.4 μ per base pair.

The image and not the molecule itself which is seen, is a projection and measuring will produce an apparent length which is a rare occurrence with stripping film. It is as a series of grains which one may assume to be a continuous line. It is simple to show for this case, where the mean length L is more than about 10, that the mode is (that is, between the centres of the outermost grains) $L(1 - 2/M)$ and $L^2(2/M^2)$ respectively. For molecules such as these, marked with 50 to 100 grains, the mode would be underestimated by 2 to 4%.

The length can best be judged by the fact that the grains are of the apparent line of each labelled molecule. The length of any molecule is overestimated by more than 10%.

The molecules selected as the most likely for T2 DNA, that is, of 3.4 μ per base pair and 357 as the average molecular weight of T2 DNA, this indicates a molecular weight of 3.0×10^6 . These are slightly below the value of 3.5×10^6 by enough to warrant, at this stage, postulating a double helix as the form of the T2 DNA molecule.

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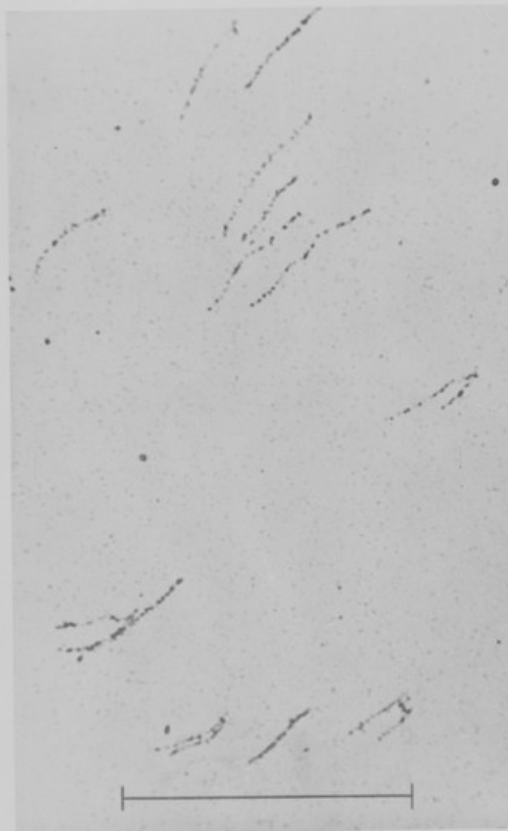


PLATE I. T2 DNA, labelled with ^3H thymine (11.2 c/m-mole), extracted with phenol in the presence of 1000-fold excess of cold T2, and adsorbed to glass at a total DNA concentration of 25 $\mu\text{g/ml}$ in 0.15 phosphate buffer pH 5.6. The autoradiographic exposure was 63 days. The scale shows 100 μ .