

1155 East 57th Street  
Chicago 37, Illinois  
November 1, 1950

Sir Cyril Hinshelwood  
Dr. Lee's Professor of Chemistry  
University of Oxford  
Oxford, England

Dear Sir Cyril:

The enclosed manuscript might perhaps interest you. We are thinking of using the method described to distinguish between mutation and adaptation of the "Dauer Modifikation" type. In many cases we should be able to distinguish between adaptation and mutation simply by growing the bacteria in the Chemostat at some low bacterial concentration, say  $10^3$  bacteria per cc., as well as at some higher concentration of say  $10^8$  per cc. If we then find that the change in the bacteria does not take place at the low bacterial concentration but takes place at the high bacterial concentration, we shall know that we have to deal with a mutation rather than an adaptation.

We thought that among the various cases of "Dauer Modifikation" which you appear to have definitely established as non-mutational in character there might be some which would be suitable for investigation with the Chemostat, and we would appreciate your advice which of your cases you think we ought to select for our investigation. I would also appreciate your sending us those of your reprints which you think we ought to read before undertaking any such experiments.

Yours very truly,

Leo Szilard

1155 East 57th Street  
Chicago 37, Illinois  
December 13, 1950

Sir Cyril Hinshelwood  
Dr. Lee's Professor of Chemistry  
Physical Chemistry Laboratory  
South Parks Road  
Oxford, England

Dear Sir Cyril:

Many thanks for your very kind letter of November 28.  
We shall study your papers and will then probably come  
back with some questions.

Yours very truly,

Leo Szilard

wv

TEL: 48536.

PHYSICAL CHEMISTRY LABORATORY.

SOUTH PARKS ROAD.

OXFORD.

Dr L. Szilard,  
Institute of Radiobiology and  
Biophysics,  
1155 East 57th Street,  
Chicago,  
Ill., U.S.A.

28th November 1950

Dear Dr Szilard,

Thank you very much for your letter and for the advance copy of your paper. I am very glad indeed to have this and much interested in the results which you have so far reported.

As you ask, I am sending you under separate cover a number of reprints though their bearing on your project is not very direct. The nearest approach is perhaps in the 1948 Faraday Society paper about Arabinose.

With the strains on which we have worked absolute requirements seem to be very rare. In fact of scores of ultra-violet mutants we have always found them to return to normal (by whatever process) with greater or less readiness.

There is just one point arising not from your paper but from your letter on which I should like to comment. There seems to me to be one perfectly good reason, quite apart from mutational changes, why large bacterial populations should change more readily than low populations. During the phase of growth when all the processes are not properly coordinated, and indeed even after this, some of the essential intermediates diffuse into the medium. The concentration maintained will depend upon the total population so that all the cells benefit one another. This phenomenon certainly gives one the important influence of count on lag phase even with fully adapted cells where there is no question of adaptation or mutation. It would have to be carefully borne in mind in chemostat experiments. The matter can of course be tested with appropriate filtrates from grown cultures. I shall be very interested to hear of your findings in due course.

Yours very truly,

*C. A. H. H. H. H. H.*