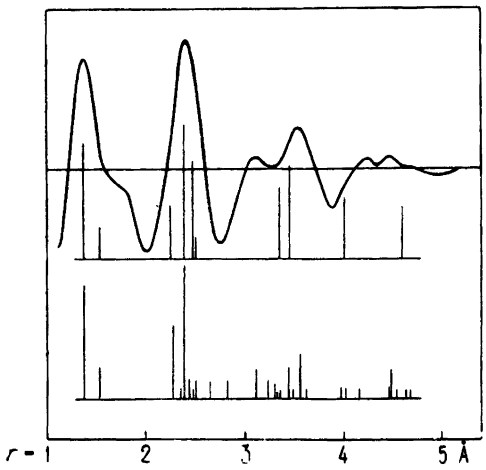

Fig. 2. $\frac{\sigma(r)}{r}$*-curve of decafluoro-cyclopentane.*

indicated in the line diagram just below the curve, it is seen that the positions of the remaining peaks are not in accordance with the pentagonal model described above. A less symmetrical structure, however, will give a satisfactory agreement with the experimental curve. We have not been able to demonstrate that the five-membered ring must necessarily be non-planar, but it seems rather probable that a deviation from a planar carbon ring is present. Models having atomic distances in agreement with the experimental curve may be obtained in different ways, all leading to more favourable F—F distances than those of the highsymmetrical model. A definitive solution of the problem can not be given at present based on the electron diffraction method. The model for instance having the internuclear distances represented by the line diagram at the bottom of Fig. 2 seems to be rather satisfactory, but other models may be regarded to be just as probable. The line diagram in the lower part of Fig. 2 corresponds to a model in which the carbon ring is non-planar, the carbon atom 1 being situated below the plane containing the carbon atoms 2, 4, 5 and the carbon atom 3 above this plane. The directions of the C—F bonds are chosen in a way which makes the average value of the shortest F—F distances greater than in the symmetrical model.

The dodecafluoro-cyclohexane used in this investigation was purchased from the Chemistry Department of Purdue University. A sample of very pure decafluoro-cyclopentane was offered us by professor G. H. Cady, Seattle, and we wish to express our gratitude to him for his kindness.

Received April 4, 1949.

On the Influence of pH and Inhibitors on the Ammonia and Nitrate Assimilation by Azotobacter

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Virtanen, Csáky and Rautanen [1] found in low nitrogen *Torula* yeast a relatively more rapid protein formation on nitrate feeding than on ammonia feeding. In the case of nitrate assimilation small amounts of oxime N were found, whereas no formation of oxime N could be detected when ammonia was assimilated. It could therefore be assumed that the nitrate assimilation possibly can proceed in a different way *i. e.* that it is not absolutely necessary to assume that the only way of assimilation of nitrate is the reduction to ammonia and assimilation of the latter.

In order to get some idea of the ammonia and nitrate assimilation by azotobacter, the influence of pH and some inhibitors on the assimilation of nitrate and ammonia by azotobacter has been studied. The bacteria *(Azotobacter chroococcum)* were cultivated on a nutrient medium containing salts and 0.5 % glucose [2, 3]. The same amount of N (5 mg %) was administered

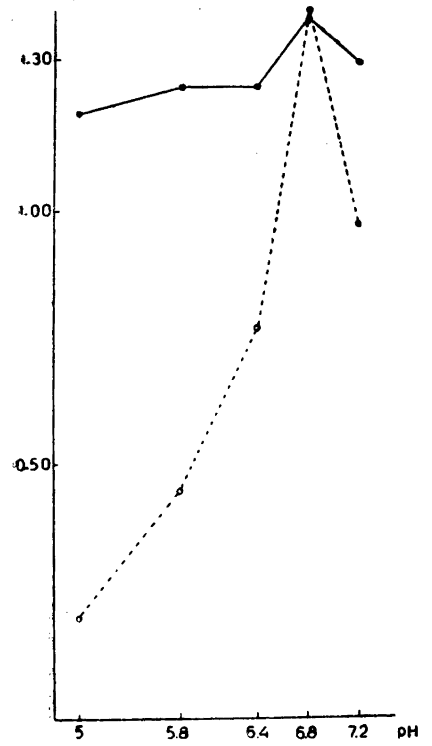

Fig. 1. Growth of azotobacter on ammonia (interrupted line) and nitrate (full line) within 5 days at different pH values. Ordinate: turbidity (extinction), abscissa: pH.

in one case as ammonium sulphate and in the other as potassium nitrate. The growth was registered by measuring the turbidity with an electric photometer.

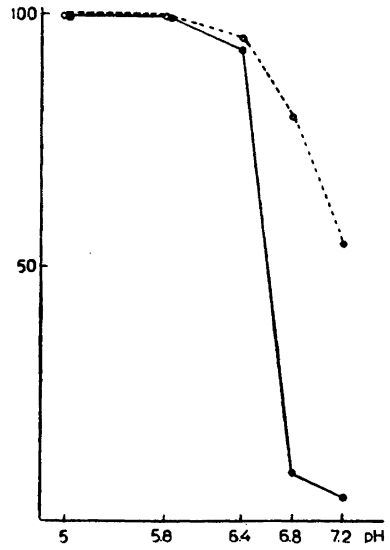

Fig. 2. Inhibitory effect of sodium fluoride (10^{-2} M) on the growth of azotobacter on ammonia (interrupted line) and nitrate (full line) in 5 days experiment at different pH values. Ordinate: inhibition in %; abscissa: pH.

The growth on ammonia is very much influenced by the initial pH of the solution while the growth on nitrate is nearly independent of it (Fig. 1).

Sodium fluoride (10^{-2} *M*) inhibits the growth on ammonia while the assimilation of nitrate is unaffected. Salicylaldehyde (10^{-3} *M*) inhibits the growth on ammonia to 62 %, on nitrate to 22 %, while 8-oxyquinoline (10^{-4} *M*) totally inhibits the nitrate uptake and up to about 59 % the

Table 1. Effect of inhibitors on the growth of azotobacter on ammonia or nitrate feeding within 5 days.

Inhibitors	Initial pH	Turbidity (Extinction)		Inhibition %	
		ammonia	nitrate	ammonia	nitrate
None	6.8	1.000	1.010	—	—
Sodium fluoride 10^{-2} *M*	6.8	0.215	1.020	78	0
Salicylaldehyde 10^{-3} *M*	6.8	0.376	0.775	62	22
8-Oxy-quinoline 10^{-4} *M*	6.8	0.410	0.002	59	100