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Observation on the origin of biotypes (microbic dissociation) in pure lines of bacteria.

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The experiments reported show that bacterial variability can be identified with the pleomorphic cycle. The strain studied was a bacillus that formed giant coccoids under certain conditions. The morphologic and staining changes occurring in these are indicative of biochemic reorganization that conditions variability in the strain, However, variability only occurs if the coccoids are transplanted to an environment that is selective enough to further the changes that are indicated by the pleomorphism itself.

In this case the pleomorphic giant coccoids when transplanted at 20 C° grew after about two weeks, when usually they grow best at 37° in 24 to 48 hours. Under the former conditions a bacillary variant was produced instead of the original bacillus. The variant was a distinct type morphologically and culturally, although immunologically it agglutinated the antiserum for the original bacillus better than the homologous strain itself did. The titre of the latter was 640, for the variant 1,280. The variant also absorbed all the agglutinins from the serum.

This strain has been under observation for six years as a pure line culture, and is prone to form rudimentary branching forms as well as giant coccoids. The reorganization occurring in the giant coccoids made possible the dissociation of the branching phase as a distinct type. Pleomorphism for this strain is regarded as a true life cycle, and in reality represents potential variation. The biologic nature of the giant coccoids is shown in the following study.