

addendum

Sir —

May I draw your readers' attention to three more important contributions which I omitted from my obituary of Linus Pauling (*Nature Structural Biology*, 1, 667–671):

Part of Pauling's PhD thesis was on the structure of the mineral molybdenite (MoS_2), which he determined by X-ray analysis. After this, minerals became his first interest; he became intrigued especially by the silicates whose complex structures formed the pride of W.L. Bragg's school at Manchester in the nineteen-twenties. In 1929, Pauling formulated a set of simple rules of coordination, based on ionic charges and radii, and the postulate of local neutralisation of charges, which allowed the structures of silicates and of many other minerals to be understood and often predicted. With these rules, he put an entire subject on a rational chemical basis.

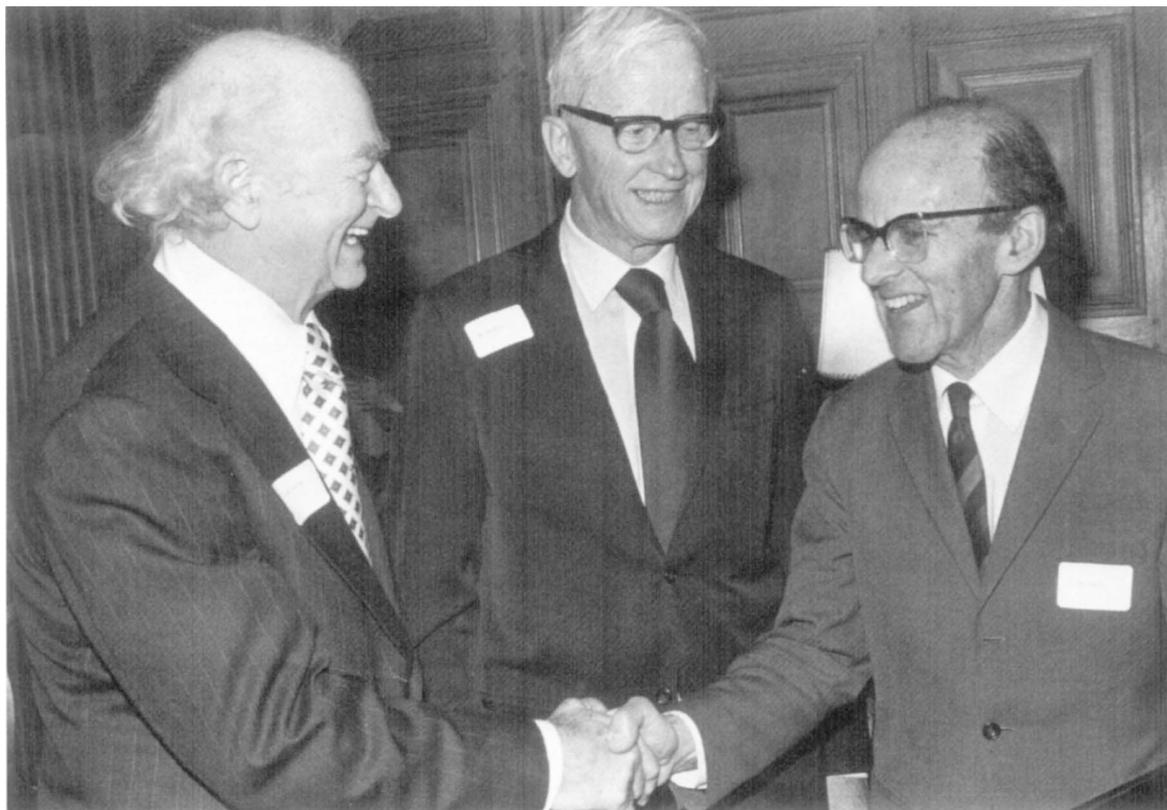
In 1940, Linus Pauling and Max Delbrück anticipated molecular complementarity which later proved to be the basis of DNA structure and replication. They attacked the German theoretician Pascual Jordan, who had advanced the idea that there exists a quantum-mechanical stabilizing interaction, operating preferentially between identical or near-identical molecules, which is impor-

tant in biological processes such as the reproduction of genes. Pauling and Delbrück pointed out that interactions between molecules were now rather well understood and gave stability to two molecules of *complementary* structure in juxtaposition, rather than to two molecules with necessarily *identical* structures. Complementariness should be given primary consideration in the discussion of the specific attraction between molecules and their enzymatic synthesis.

In 1948, Pauling followed this up with the prediction: "I think that enzymes are molecules that are complementary in structure to the activated complexes of the reactions that they catalyze, that is, the molecular configuration that is intermediate between the reacting substances and the products of the reaction." Seventeen years later, lysozyme, the first enzyme structure solved, bore out that prediction.

Yours faithfully,

Dr. M. F. Perutz
Medical Research Council Laboratory of Molecular
Biology
Hills Road
Cambridge, CB2 2QH, U.K.



Pasadena, 1976. From the left: Linus Pauling, Max Delbrück and Max Perutz at Pauling's 75th birthday party.