normal pressure and 12,300 cal. under 680 atm. pressure. The maximum rate occurs at above 50°C. At pH 7.03–7.07 the apparent activation energy, as indicated at temperatures between 15° and 20°C., is 8700 cal. under normal pressure and 9400 under 680 atm. pressure. The maximum rate occurs at 30°C., above which moderate increases in temperature inactivate the enzyme, apparently through an equilibrium reaction characterized, under these conditions, by a ΔH of 71,300 cal. and ΔS of 232 E.U. Analyses of the data indicate that the inactivation reaction proceeds with a large volume increase, ΔV amounting to 69 cc. per mole at 35° and 40°C. Thus, at 40°C., an increase of over 250 per cent takes place in the rate of hydrolysis under 680 atm. in comparison with the rate at normal pressure.

The results of this and other studies, and the significance of optical configuration, are discussed in relation to (*1*) the problems of protein structure and reactivity; (*2*) the formation of enzymes, genes, and viruses; and (*3*) the origin of life.

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