following factors: (a) a true change in the permeability of the muscle cell membrane to galactose due to physical and/or chemical changes in the membrane environment during fasting (pH, ionic composition, hormonal influences, etc.); (b) a change in the equilibrium state of the sugar-carrier system⁹ of the membrane as a result of changed intracellular free glucose concentration; (c) (increased?) utilization of galactose; and (d) an artefact due to the inadequacy of reduction methods¹⁰ for sugar determination.

No conclusive evidence of any one of these factors operating in the fasted state has been obtained; a detailed report of the experiments and their results together with an analysis will be published in another connexion.

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Inhibition by Thyroxine of Enzymes requiring Pyridoxal-5-Phosphate

SINCE vitamin B₆ is beneficial to rats treated with thyroxine¹, the activity of some enzymes known to require pyridoxal-5-phosphate has been determined in the liver of rats treated with thyroxine.

The rats received 10 µgm. of DL-thyroxine (B.D.H.), during fifteen days. The activity of cysteine disulphhydrase, serine and threonine dehydrases, alanine-glutamic and aspartic-glutamic transaminases was measured in the liver homogenates (technique of Tonhazy *et al.*²).

It was found that cysteine disulphhydrase activity disappeared from the livers of the treated rats, and serine and threonine dehydrases and alanine-glutamic transaminase activity were reduced by 40 per cent as compared with normal values. Aspartic-glutamic transaminase showed little change. By *in vitro* addition of 0.05 micromole of pyridoxal-5-phosphate to the enzyme preparations, these inhibitions were reversed to the normal level. Likewise, these inhibitions did not appear if, simultaneously with thyroxine, pyridoxine-hydrochloride was administered to the animals, 5 mgm./rat/day, during 15 days.

Table 1. ACTIVITY OF SERINE DEHYDRASE
Determinations at 10, 30 and 60 min. expressed as micromoles of pyruvate formed per gram of dry weight liver (*in vitro* additions)

	Enzyme alone	Enzyme 0.05 mM pyr.-5-phos.	Enzyme 0.025 mM thyroxine	Enzyme 0.025 mM thyroxine 0.05 mM pyr.-5-phos.
10 min.	33	60	16	53
30 min.	66	165	33	132
60 min.	90	263	39.6	224

In vitro addition of 0.025 micromole of DL-thyroxine at pH 7.4 to normal liver homogenates produced similar inhibitions, though of lesser degree, to those found in the animal treated with thyroxine. This *in vitro* inhibition was also completely reversed by addition of 0.05 micromole of pyridoxal-5-phosphate.

This interrelationship between a hormone and a coenzyme is being studied further. However, in the light of Snell's theory of the formation of a Schiff base between an amino-acid and pyridoxal-5-phosphate, it seems that these inhibitions mean more than just a higher nutritional requirement of the vitamin in the hyperthyroid state. It could be part of the mechanism of action of the hormone.

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Actively Acquired Tolerance to Tuberculo-Protein

ANIMALS confronted in foetal life, or shortly after birth, with antigenic substances may fail to develop an antibody response to such antigens in adult life. This inhibition of antibody response, termed 'actively acquired tolerance', is antigenically highly specific, and has been demonstrated with several unrelated antigens¹.

The possibility of rendering animals incapable of specific antibody responses by foetal inoculation suggests a new approach to the study of acquired immunity to infectious disease. It is often difficult to assess the significance of a particular antibody response to immunity because several responses may be elicited simultaneously by the different antigens of the infecting micro-organism. Such an assessment might be possible, however, by comparing animals capable of a response to a specific antigen with animals rendered immunologically tolerant to it. In connexion with a study of the role of delayed-type hypersensitivity to tuberculo-protein (tuberculin sensitivity) in immunity to tuberculosis, we attempted to eliminate tuberculin sensitivity in the guinea pig by injecting the foetuses with tuberculo-protein and whole tubercle bacilli.

Pregnant guinea pigs were subjected to laparotomy and the foetuses injected through the uterine wall with one of the following substances: 1 mgm. (100 tuberculin units) of Old Tuberculin; 1 mgm., wet weight, tubercle bacilli of the attenuated B.C.G. strain, killed by heating at 70° C. for 10 min.; or 0.5 mgm., wet weight, living B.C.G. The volume of the inocula was 0.1 ml. The time of injection varied from one to forty-six days before birth.

Of 250 guinea pigs operated on, less than 5 per cent died as a result of the operation, and more than half delivered living young. When the young had reached a weight of 250 gm., they were tested for tuberculin sensitivity by the intradermal injection of 0.2 ml. of a 1:10 dilution of Old Tuberculin (2,000 tuberculin units). Skin reactions were observed over a period of 72 hr. The reactions were considered positive if the area of induration exceeded 6 mm. in diameter. After the initial tuberculin test, the animals were vaccinated intraperitoneally with either 200γ or 800γ, dry weight, of phenol-killed tubercle