pneumococci; and it was ascertained that the erythrocytes of these animals did not react beforehand with anti-*T*-sera. Such a reaction was never seen even on examination of a great number of non-inoculated animals. 1 ml. of 5–6 hr. pneumococcus 19 culture was injected subcutaneously into two animals, intraperitoneally into two, while the last two were given about 0·2 ml. of the culture intranasally under anæsthesia.

Blood samples were taken daily from the guinea pigs, and suspensions of washed erythrocytes from these samples were examined in potent anti-*T*-sera.

One animal died shortly after the subcutaneous injection without having shown the *T*-transformation. The other animal infected subcutaneously showed the transformation after 48 hr. Of the animals that were infected intraperitoneally, one showed transformation after a few days, the other no transformation. None of the animals infected intranasally showed transformation.

At the same time as the erythrocytes were examined, the sera of these animals were tested for ability to transform fresh guinea pig corpuscles. To one volume of packed sterile guinea pig erythrocytes two volumes of serum were added, and the mixture was incubated at 37°. At intervals samples of the suspensions were withdrawn, washed and tested for agglutination in anti-*T*-serum. In every instance where the corpuscles of the animals were transformed by the infection, the sera of these animals were found capable of transforming fresh erythrocytes *in vitro*.

In subsequent experiments, transformation of the erythrocytes in the guinea pig has been produced several times in various ways by infection with pneumococci.

A more extensive account of the experiments will be published later.

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Rapidity of Thyroid Reaction to Cold

It has been known for some time that histologically demonstrable activation of the thyroid may be produced in rats[1], guinea pigs and other mammals[2] upon their being subjected to cold for a period of various days. It is also known that this activation takes place by the mediation of the hypophysis[3]. Recent investigations, in which quantitative methods were employed (measures of the average height of the epithelium), led to the conclusion that in order to bring about significant changes the cold should be applied for at least three days[4].

By use of the cytological coefficient, a highly sensitive quantitative index of thyroid activity described elsewhere[5], we have attempted to show more rapid reactions of this type. For this purpose twenty-two guinea pigs, weighing between 150 and 250 gm., were used, of which ten were set aside as controls. The remaining twelve guinea pigs were exposed for a period of half an hour to a temperature of at least 10° C. less than that of the surroundings and thereafter immediately sacrificed. The findings are shown in the accompanying table.

	Individual cytological coefficients	
	Controls	Exposed to cold
	4	21
	5	19
	3	5
	6	8
	5	14
	3	15
	15	22
	5	19
	4	15
	4	16
		13
Means and standard errors	5 ± 1·1	14 15 ± 1·4

The difference between the two groups, 10 ± 1·8, is significant, and justifies the statement that in as short a period as thirty minutes, a decrease of 10° C. in temperature produces an activation of the thyroid in guinea pigs. This activation is inferior to that brought about in the same time interval by 0·001 Junkmann–Schoeller units of thyrotrophin[5].

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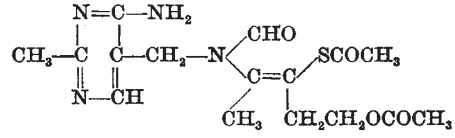
Enzymatic Hydrolysis of the —S—CO— Linkage

During biological and biochemical studies of a new derivative of thiamine, O,S-diacetyl thiamine, synthesized by Matsukawa and Kawasaki[1], it was found that this substance was readily hydrolysed to thiamine and acetic acid by liver extracts[2]. O,S-Diacetyl thiamine:



was found in the earlier work to be almost as efficacious as thiamine by the prevention assay of B_1-deficiency in *Uroloncha domestica*. Although a number of reports have appeared concerning the hydrolysis of ordinary esters by various esterases, no investigation seems to have been carried out on the enzymatic hydrolysis of the —S—CO— linkage except that on the "succinyl and acetyl coenzyme A deacylases" reported by Gergeley *et al.*[3]. We have therefore studied the hydrolysis of lower thioesters, such as methyl thioacetate and ethyl thioacetate, by animal tissue extracts, comparing them with methyl acetate and ethyl acetate. Manometric determination was used for enzyme assays in much of this work.

Table 1 shows that the distribution of thioesterase in extracts of various minced tissues of rats accords with that of the corresponding ordinary esterase, and that methyl and ethyl thioacetates are much more hydrolysable than methyl and ethyl acetates. Unsuccessful attempts were made to separate the methyl thioacetate-hydrolysing activity from ordinary esterase in acetone liver powders. In the case of acetone and ammonium sulphate fractionations of