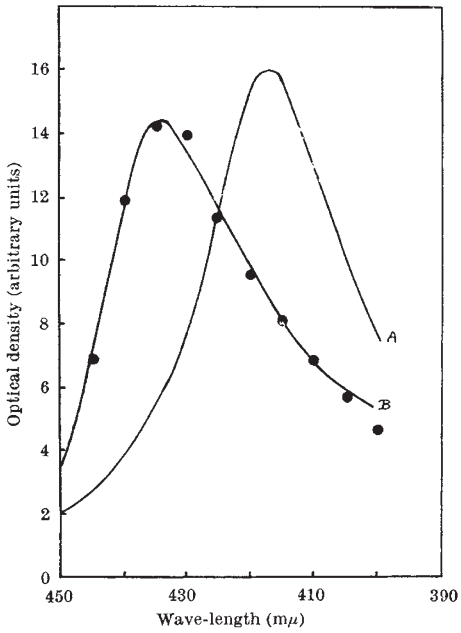

Fig. 1. The continuous lines show the absorption spectra for solutions of reduced myoglobin and oxymyoglobin determined with a spectrophotometer. The points represent the spectrum of the product of flash photolysis of oxymyoglobin. *A*, oxymyoglobin; *B*, myoglobin

flash photolysis may become a useful tool in studies of enzyme action.

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5-Hydroxytryptamine and Anaphylactic Shock

It is generally accepted that histamine plays an important part in anaphylactic shock. In recent years, attention has been directed to 5-hydroxytryptamine, since this substance, together with histamine, is liberated from the platelets by the antigen–antibody reaction[1]. Further, 5-hydroxytryptamine causes a shock syndrome in guinea pigs which is similar to that caused by anaphylaxis[2]. Although Herxheimer was unable to protect guinea pigs from anaphylactic shock using lysergic acid diethylamide, a potent and specific antagonist of 5-hydroxytryptamine, Pallotta and Ward[3] have observed significant protection using intravenous doses of lysergic acid diethylamide.

We have now attempted to determine, using the Dale–Schultz reaction, whether the substance responsible for the contraction of the sensitized guinea pig and rat uteri in the presence of antigen is histamine or 5-hydroxytryptamine. It was found that the guinea pig uteri (whether from sensitized or normal animals) are at least 1,000 times more sensitive to histamine than they are to 5-hydroxytryptamine, the threshold concentration of histamine being 10^{-8} gm./ml. Guinea pigs were sensitized to horse serum and used for the Dale–Schultz reaction 3–4 weeks later.

Table 1. The Sensitivity of the Guinea Pig and Rat Uteri to Histamine and 5-Hydroxytryptamine (5-HT), and the Effect of Antagonists on the Dale–Schultz Reaction in those Species

	Sensitivity of uterus		Prevention of Dale–Schultz reaction	
Species	Histamine	5-HT	Mepyramine	'BOL 148'
Guinea pig	+	0	+	0
Rat	0	+	0	+

One half of the horn of the uterus of such animals was set up in the organ bath and shown to contract maximally to the first addition of the specific antigen. The reaction of the other half of the horn to the antigen was then tested in the presence of either mepyramine (10^{-6} gm./ml.) or the bromo derivative of lysergic acid diethylamide, 'BOL 148' (10^{-5} gm./ml.). In each of the four tests, mepyramine blocked the reaction, but 'BOL 148' when tested similarly was without effect.

When similar experiments were performed with rat uteri, however, a completely different result was obtained (see Table 1). Uteri of rats (whether from sensitized or normal animals) are at least 1,000 times more sensitive to 5-hydroxytryptamine than they are to histamine, the threshold concentration of the former being 10^{-9} gm./ml. Rats were sensitized by one intraperitoneal injection of either fresh eggwhite alone (2 ml. 50 per cent solution) or horse serum (1 ml.) with *Hæmophilus pertussis* vaccine ($20{,}000 \times 10^{6}$ organisms, phase I), and used for the Dale–Schultz reaction 12–20 days later. One horn of the uterus of such animals was set up in the organ bath and shown to contract on the first addition of the specific antigen. The reaction of the other horn to the antigen was then tested in the presence of either 'BOL 148' (10^{-6} gm./ml.) or mepyramine (10^{-5} gm./ml.). In each of four tests, 'BOL 148' completely blocked the reaction but mepyramine was without effect when tested similarly, as was also atropine (10^{-7} gm./ml.).

These results illustrate an important species difference in the anaphylactic reaction of the isolated actively sensitized uterus. It appears that, in such a reaction, histamine plays a major part in the guinea pig, whereas in the rat (as in the mouse[4]) 5-hydroxytryptamine plays a more important part than histamine. However, Brocklehurst[5] has recently noted that lysergic acid diethylamide did not antagonize the Dale–Schultz reaction in a passively sensitized rat. Further experiments are now in progress to determine the role of 5-hydroxytryptamine in the general anaphylactic reaction in various species.

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Inhibition of Ascorbic Acid Oxidase by Thiourea

Although ascorbic acid oxidase is regarded as a copper enzyme, thiourea has not been reported as an inhibitor of it. Previous reports, in fact, point out a lack of inhibition of the oxidase by thiourea[1,2], although phenol thiourea has been stated to be inhibitor[3,4]. During a study of the ascorbic acid

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