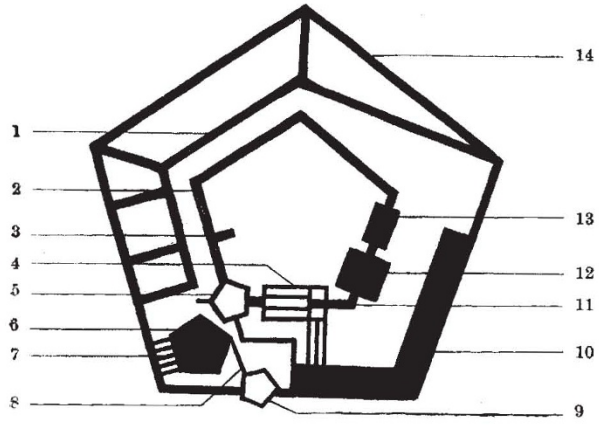

Fig. 1. Diagrammatic representation of the haemal system in relation to the digestive and reproductive systems. The haemal vessels and double haemal membranes which serve the epithelium, endoskeleton, pedicellarie, and the sphaeridia, the water vascular system, the nervous system, and the lantern complex are not shown. (1) Collateral vessel; (2) inner haemal vessel; (3) extension of inner haemal vessel on to caecum; (4) axial gland surface vessels; (5) peri-oesophageal haemal ring; (6) gonad; (7) haemal strands from second loop of intestine to gonads; (8) haemal vessel of gonoduct; (9) perianal haemal ring; (10) axial mesentery; (11) pulsating vessel; (12) first contractile chamber; (13) second contractile chamber; (14) outer haemal vessel.

a specimen with the test partly removed show rapid uptake of dye into the surface vessels. This is best explained as a result of the link between the perivisceral coelom and surface vessels.

The closed haemal vessels reported in *S. purpuratus* are probably artefacts, for, in some cases, vessels clearly open in life are closed or spongy in fixed material. This is further supported by the elaeocytes, abundant throughout the haemal system, which are also common in more constricted haemal passages, notably the strands which pass from the second intestinal loop to the gonads and test. Serial sections of these strands often appear solid, but elaeocytes are seen in all areas between the basement layers of the intestinal epithelium from which the strands extend.

While the pulsating vessel may not be such an efficient pump as was originally believed, we still think that it is important in the circulation of haemal fluid. A more probable interpretation, however, is that there is a series of local pumps, of which the most important is the pulsating structure of the axial complex and the collateral sinus. The inner and outer haemal vessels and possibly the oesophageal vessels play lesser parts. The vigorous peristaltic action of the entire digestive tract may also be important in fluid movement within intestinal surface vessels. Such an interpretation agrees with our observations and with those of Burton and others.

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RICHARD A. BOOLOOTIAN

Department of Zoology,
University of California,
Los Angeles.

JAMES L. CAMPBELL

Los Angeles Valley College,
Van Nuys, California.

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Failure of L-Glutamic Acid to increase Absorption of Vitamin B_{12} by Patients with Pernicious Anaemia

Heathcote and Mooney[1] reported results from which they concluded that vitamin B_{12} is more efficacious therapeutically in patients with pernicious anaemia when given by mouth with five times its weight of glutamic acid than when given alone. This claim was based on the haematological responses of two patients. The observation suggested that glutamic acid may enhance the absorption of vitamin B_{12} from the gut in pernicious anaemia. If confirmed, this could have an important bearing on theories concerning the mechanism of the absorption of vitamin B_{12} from the gut. We therefore decided to see whether addition of glutamic acid to test doses of cyanocobalamin labelled with cobalt-58 influenced the absorption by patients with pernicious anaemia, using the total body counter described by Warner and Oliver[2].

Table 1. FAILURE OF L-GLUTAMIC ACID TO INCREASE THE ABSORPTION OF ^{58}Co-VITAMIN B_{12} BY PATIENTS WITH PERNICIOUS ANAEMIA

Patient No.	Percentage of dose of 0·5 μg ^{58}Co-cyanocobalamin retained when given: Alone	With 50 mg hog intrinsic factor concentrate	With 5 μg glutamic acid	With 50 mg glutamic acid
1	0	72	0	—
2	4	73	8	—
3	16	57	17	10

L-Glutamic acid was dissolved in hot water and, after cooling, suitable quantities of the solution were added to 20 ml. of solution containing the test dose of 0·5 μg cyanocobalamin labelled with cobalt-58, shortly before it was given to the patients. The results (Table 1) show that neither 5 μg nor 50 mg glutamic acid increased absorption, although when an intrinsic factor preparation was given with the test doses, each patient absorbed much more. If glutamic acid does in fact enhance the therapeutic effect of vitamin B_{12} given by mouth, our results suggest that it must influence some process other than absorption.

G. H. SPRAY
G. T. WARNER

Nuffield Department of Clinical Medicine,
Radcliffe Infirmary,
Oxford.

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IMMUNOLOGY

Some Factors affecting the Cytotoxic Immune Reaction of Rat Mast Cells

EARLIER investigations have shown that incubation of isolated rat peritoneal mast cells with purified anti-rat IgG-globulin and fresh serum *in vitro* results in a cytotoxic immune reaction[1]. Data demonstrating that this process is inhibited by various agents, especially by alkyl phosphates and synthetic chymotrypsin substrates, indicate that the activation of a chymotrypsin-like esterase is of some importance for the reaction[2]. The enzyme, which is contained in the heat labile serum portion, shows many striking similarities to an enzyme of the complement complex (C'_1-esterase), and was therefore thought to be identical with it[3]. Further experiments, however, revealed that neither a euglobulin preparation with high C'_1-esterase activity nor purified human C'_{1a}-esterase, irrespective of whether or not antibody is also present, produces detectable morphological or pharmacological changes in isolated rat mast cells (ref. 3 and Lepow, I. H., personal communication). The question thus arose as to what extent the immunological behaviour