by the findings of Lortat and Sabareaunu(6) who inhibited the epinephrine-induced sclerosis by extirpation of the thyroid gland.

Summary. 1. Combined injections of epinephrine and thyroxine were used to produce, in rabbits, aortic sclerosis which was characterized by lack of atheroma, and the presence of severe medial and intimal sclerosis. 2. 90% of all the control animals developed aortic sclerosis when treated with epinephrine and thyroxine. 3. Massive doses of inositol appeared to inhibit the influence and severity of these lesions, to only a slight degree. 4. Daily concomitant administration of 50 mg of ascorbic acid lowered the incidence of scleroses to 66%; 100 mg lowered the incidence to 61%; 500 mg lowered it to 55%. The severity of the lesions produced was also considerably lessened. The inhibition due to ascorbic acid was statistically significant.

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Effect of Bacteria and Their Products on Migration of Leukocytes.* (19851)

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In the course of studies of a purified toxic somatic antigen from *Salmonella typhosa*, Morgan(1) noted that leucocytes from guinea pig splenic explants failed to migrate towards a capillary tube containing this material. The technic used in this test was that of Chambers and Legrand(2) which consisted of placing the bacterial product in a capillary tube adjacent to the explant and noting the direction of migration of the leucocytes. The failure to migrate toward the typhoid somatic carbohydrate was interpreted as negative chemotaxis. When whole typhoid bacilli were employed, slight positive chemotaxis was noted. It was reported by Delauney and Pages(3) that the injection of the "endotoxins" of *Salmonella typhosa* prevented the diapedesis of leucocytes from the blood vessels of animals. Miles and Nivens(4) confirmed these findings and believed that this occurred because of poor tissue perfusion secondary to the circulatory failure produced by the endotoxins. The present study deals with the effect of a series of bacteria and some bacterial products on leucocytes. The tests were carried out in a special cell(5) which permits quantitation of the capacity of leucocytes to migrate from a buffy coat culture.

Methods and material. Human blood was used, silicone (GE No. 9986) treated glassware, syringes, and needles were employed throughout; heparin in final dilution of 1 μg per ml of blood was used to delay clotting. The organisms or purified bacterial products were added to the blood in quantities outlined in the tables. The bacterial products were suspended in isotonic saline and the final dilution of one part of the material to 9 parts of blood was used. The slide cell for centrifugation has been modified by the use of 2 lucite blocks held together by screws and separated by a rubber band (Fig. 1). Cells were filled to the midway mark with blood and the bolts

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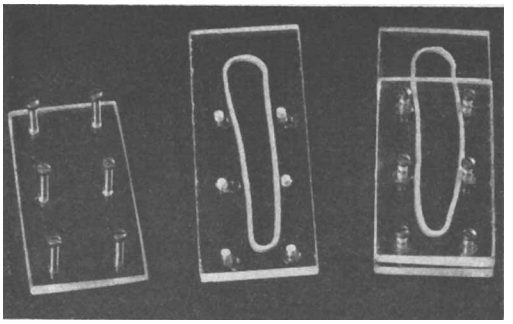

FIG. 1. Photograph of slide cell. The cell on the right is completely assembled while the two parts are shown on the left.

were tightened until the plates were approximately 0.25 mm apart. The cells were sealed with petrolatum. Centrifugation of the cells at 200 G. for 5 minutes gave adequate separation of plasma, white cells, and red cells. After incubation at 37°C for 5-15 minutes the plasma clotted. The slide cells were removed and examined at intervals under the microscope. The whole organisms tested were *S. typhosa* and *Ps. aeruginosa* from Dr. D. T. Smith and *D. pneumoniae* type I from Dr. M. McCarty. The organisms were grown on agar surface and diluted as necessary. The purified material included meningococcal filtrate from Dr. B. Black-Schaffer, typhoid somatic antigen from Dr. H. R. Morgan, Piromen from *Ps. aeruginosa* from Dr. L. Ginger of Baxter Co.; P25 polysaccharide from *Serratia marcescens* from Dr. M. J. Shear and type-specific polysaccharide from type III pneumococcus from Dr. O. T. Avery. The *M. aureus*, coagulase positive, was obtained from a patient with bacteremia.

Experimental results. The results presented in Table I indicated the effect of various bacteria on the oriented migration of human leucocytes. *S. typhosa* and *P. aeruginosa* in concentrations of 6×10^6 organisms per ml produced inhibition of migration. *M. aureus* and *D. pneumoniae* in concentrations of 6×10^8 organisms per ml produced no inhibition of migration.

Table II outlines the effect of various bacterial products on the migration of leucocytes. There is a striking difference between the effect of the polysaccharide of the pneumococcus and the other bacterial products. The leucocytes start migrating at a normal rate in all tests but within 1½ to 2 hours the leucocytes exposed to material from *S. typhosa, Ser. marcescens, P. aeruginosa* and filtrate of the *N. intracellularis* show marked slowing. Table II shows wide variation in the concentration necessary to inhibit the migration. This is due to the marked variation from individual to individual in the level required to produce inhibition. As the concentration is decreased, a zone of stimulation is reached. This is manifested by greater rate and distance of migration. It should be mentioned that these substances, like the *M. tuberculosis,* cause clumping of leucocytes in the slide cell.

Discussion. Inhibition of the migration of leucocytes is produced by a group of bacteria and their soluble products. This inhibition is in contrast to the lack of effect of another group of bacteria and their products. The organisms producing inhibition are characterized by the production of endotoxins. These endotoxins have certain characteristic effects noted when given intravenously to animals. It would seem that the leucopenia and fever noted *in vivo* may be related to the *in vitro* effect reported here. The direct effect of this material on leucocytes as well as the shock may contribute to the altered inflammatory response noted by previous workers when some of these materials are given intraven-

TABLE I. Effect of Whole Bacteria on Migration of Leucocytes.

		Org./ml
S. typhosa *P. aeruginosa*	Inhibition	6×10^6
M. aureus *D. pneumoniae* Type III	No inhibition	6×10^8

TABLE II. Effect of Purified Bacterial Products on Migration of Leucocytes.

		γ/ml
Typhoid somatic carbohydrate (Morgan)	Inhibition	.058– .58
P. aeruginosa carbohydrate (Baxter Piromen)		.25 –5
Meningococcal filtrate		.005– .01
Polysaccharide from Serratia (Shear)		.036– .36
Polysaccharide pneumococcus Type III		2000

ously(3,4,6). Sarcoma 37 in contrast to the leucocyte does not behave in the same manner toward the material from Serratia since there is no demonstrable effect in tissue culture (7,8).

The inhibition by the material from Gram negative organisms would appear to be more complex than "negative chemotaxis" since the material is distributed throughout the medium of red cells, white cells and plasma. The zone of stimulation noted with decreasing concentrations of the material would be more in favor of a direct effect on the leucocyte.

Summary. The complex carbohydrate from *S. typhosa, P. aeruginosa,* and Serratia as well as a filtrate from *N. intercellularis* inhibited the migration of human leucocytes. The same effect was noted with whole bacteria of *S. typhosa* and *P. aeruginosa.* No inhibition was seen with *M. aureus, D. pneumoniae* Type III or with the polysaccharide of Type III.

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Role of Pancreas in Hypoglycemia Responsiveness and Associated Rise of Circulating Eosinophiles.* (19852)

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In the normal organism the intravenous administration of a small dose of crystalline insulin (0.1 unit/kilo) causes an abrupt decline of the blood sugar with the nadir at 20 to 30 minutes followed by a sharp secondary rise reaching the fasting level by 150 minutes (1). This secondary rise is probably not due to a termination of the insulin effect, since in experiments in which the duration of action of insulin is measured by the time during which glucose must be injected in order to prevent the blood sugar level from declining, it has been found that 5 units of insulin have a duration of action of 6 hours(2). This evidence, together with the fact that hypophysectomized and adrenalectomized animals in which the apparent duration of insulin action is much greater than in the normal, has led to the hypothesis that the secondary rise of the blood sugar level in the insulin tolerance test is a result of stimulation of a body homeostatic mechanism which tends to restore the original blood sugar level(3,4). This phenomenon is properly termed hypoglycemia responsiveness and in order for it to make its appearance two conditions must be met: (1) There must be a sufficient reserve of hepatic glycogen to allow for the observed rise in the blood sugar concentration and (2) a mechanism for glycogenolysis must be activated by the falling blood sugar level(5). It has been hypothecated that the mechanisms stimulated by hypoglycemia are located in the hypophysis, the adrenal cortex, or the sympathetic nervous system(3,4). In a previous study it was observed that insulin administered to normal individuals is accompanied by a marked rise of the absolute lymphocyte count(6). In diabetic patients, however, the extent of the

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