Friedlander B and of Pneumococcus III SSS are relatively small. Of further interest is the variability from individual to individual on comparison of the effect of the various bacterial derivatives on their leukocytes. It seems reasonable to postulate that this may reflect the previous experience of the donor individual with the various bacteria concerned. Detailed studies are in progress to test this hypothesis.

Summary. By a method which detects cell injury by measurement of a lysozyme-like enzyme released from the cell, the adverse effect of various bacterial derivatives on human leukocytes is demonstrated. Variation in degree of effect from individual to individual is evident.

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Erythrocyte Potassium Levels in Pernicious Anemia and Non-Tropical Sprue. (19884)

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Taylor and coworkers(1) have shown that compounds known to inhibit cholinesterase activity interfere with the maintenance of the *in vitro* potassium concentration gradient of erythrocytes in normal human subjects. In these systems, the amount of inhibitor needed to effect the gradient was more than enough to bring cholinesterase activity to zero. In pernicious anemia, this enzyme activity is depressed during relapse, elevated during the period of reticulocytosis, and normal during remission(2). Although red cell cholinesterase never reaches zero in pernicious anemia in relapse, the degree of variation seen in the course of this disease made it of interest to determine whether erythrocyte potassium levels were abnormal in relapse, and whether any significant change took place during the period of reticulocytosis.

Methods. This study included one patient with non-tropical sprue and 5 persons with typical Addisonian pernicious anemia in relapse. Each case in the latter group showed hyperchromic macrocytic anemia, histamine-fast achlorhydria, and megaloblastic bone marrow. Roentgen examinations of the gastrointestinal tract, urinalyses and blood chemistry determinations disclosed no abnormalities. All of the patients were treated with intramuscular injections of liver extract. The patient with non-tropical sprue showed hyperchromic macrocytic anemia, histamine-fast achlorhydria, megaloblastic bone marrow and flat oral glucose tolerance curve. There were frequent liquid stools containing abundant fatty acid crystals. Roentgen evidence of spasm, segmentation and "puddling" of the barium column in the small intestines were reported. He was treated with citrovorum factor,* intravenously. The results of this study will be presented elsewhere(3). In all of the patients hemoglobin, red blood cell, hematocrit, plasma and whole blood potassium determinations were made three times a week, leukocyte counts once a week, and reticulocyte estimations daily. Potassium analyses were made with a flame photometer with lithium as an internal standard. Erythrocyte potassium values per liter were calculated by subtracting plasma potassium from whole blood values using the hematocrit, and correcting by a factor of 0.95 for trapped plasma.

Results. All of the patients showed satis-

* Citrovorum factor supplied by Dr. J. M. Ruegsegger, Lederle Laboratories Division, American Cyanamid Co., Pearl River, N. Y.

TABLE I. Potassium Levels in a Patient with Non-Tropical Sprue (A.N.) and 4 Patients with Pernicious Anemia from Relapse to Early Remission.

Name	RBC, $\times 10^6$	Retic., %	K meq/ l RBC	Day of treatment
A.N.	1.69	.5	97	1
	1.92	14.4	104.5	6
	2.62	4.2	95	10
	3.09	1.2	103	17
F.C.	1.30	1.3	99	1
	1.15	2.1	97	2
	1.60	17.8	93	5
	2.11	7.8	96	10
	2.47	2.2	106	13
	2.85	1.3	106	16
T.W.	1.85	.8	99	1
	1.58	1.8	97	4
	1.95	16.6	96.5	7
	2.42	5.1	97.5	12
	2.62	2.7	99	15
C.S.	2.63	1.5	91.5	1
	2.94	1.4	102	3
	2.63	4.8	97.5	7
	2.81	5.8	104	10
	3.15	3.2	103.5	15
	3.40	1	100	21
G.K.	1.82	.6	80.5	1
	2.16	18.6	89.5	8
	2.97	8.3	90.5	12
	3.19	2.2	84.5	16
	3.32	1.8	93	22
A.S.	2.82	1.1	87	1
	2.96	2.4	92	4
	2.95	2.1	97	7
	3.21	3.7	90	11
	3.81	2.2	88	16

factory hematologic and clinical remissions. Reticulocyte responses were in the optimal ranges and regeneration of red blood cells took place rapidly. Table I summarizes the pertinent data and shows that no significant change in erythrocyte potassium level was noted in any stage of red blood cell production. Patient G. K. showed a slightly lower level throughout the study than did the others. This may represent a depletion of total body storage of potassium as suggested by Hutt (4). Values for the other patients fell within the normal values suggested by other investigators(5). In view of these negative results experiments in K^{42} turnover under similar conditions appear warranted.

Summary. Erythrocyte potassium content is unaltered in the relapsed stage of pernicious anemia and non-tropical sprue. No change is noted during the period of reticulocytosis and red blood cell regeneration.

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Atheromatous Changes in Aorta, Carotid and Coronary Arteries of Choline-Deficient Rats.* (19885)

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Evidence suggesting an association of dietary deficiency in rats with the occurrence of vascular damage has not, to our knowledge, been previously reported.† We have recently observed in our laboratory pathological changes, which resemble in some respects those of atheroma, in the major arterial trunks (aortas and carotid arteries) and in the coronary arteries of rats maintained up to 216 days on diets low in choline. A preliminary account of the extent and nature of these lesions is embodied in this paper.

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† We have been informed personally (April, 1952) that in the chronic choline deficiency studies by Salmon, Copeland, and Engel, Agri. Exp. Station, Alabama Polytechnic Institute, lesions similar to those described in this paper have been observed in the aorta and other blood vessels of rats over a period of several years.