TABLE I.
Concentrations of Vitamin C mg. %.

Blood without KCN	1.42	2.92	5.40	8.16
Blood with KCN	1.88	2.88	5.14	7.54

ferences at the higher concentrations are consistent and are not due to experimental error.

These observations on the rate of destruction of the indophenol-reducing power of plasma at normal vitamin C levels do not agree with the findings of Pijoan, *et al.*,[1, 3, 5] who found an average half-life of about 60 minutes for vitamin C in separated plasma.

There is no evidence that the differences in reducing power observed in bloods at normal vitamin C levels are due to an inhibition of the oxidation of vitamin C. It may be that the greater reduction of the dye is due to the activation of some other redox system by the cyanide. It seems to us, on the basis of these observations, that there is no reason for the addition of KCN to blood for the determination of plasma vitamin C.

We are unable to explain the fact that at the higher levels of vitamin C KCN added to the blood actually resulted in a lessened reduction of the dye, an observation that we have confirmed repeatedly. Experiments bearing on this point are in progress.

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Longevity of Erythrocyte and Reticulocyte in Normal and Splenectomized Guinea Pigs.

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We have employed the method of Escobar and Baldwin[1] to determine the longevity of the erythrocyte of the normal and splenectomized guinea pig. This consists in subjecting the animals to pressures sufficiently low to result in a significant increase in red cell count, and then recording the time necessary for the count to reach its original level. Use of this method has also been made for estimating the longevity of the circulating reticulocyte in such animals.

[5] Pijoan, M., and Eddy, E., *J. Lab. Clin. Med.*, 1937, **22**, 1227.

[1] Escobar, R. A., and Baldwin, F. M., *Am. J. Physiol.*, 1934, **107**, 249.

Young normal and splenectomized guinea pigs (weight 350-400 gm.) were placed in a specially constructed low pressure chamber and subjected for 10 days to pressures of 380 mm. Hg.* They were removed from the chamber once daily for about half an hour to clean the cages and replace the food. Red cell counts were made in duplicate from freely flowing blood drawn from the ear, each of us counting the cells on 400 squares of a Levy-Hausser haemacytometer. The counts were required to agree within 4%. Reticulocytes stained with brilliant cresyl blue were observed in wet mounts. At least 1000 erythrocytes were counted and the reticulocytes expressed as a percentage of these.

Representative results for 3 normal and 3 splenectomized guinea pigs are shown in Table I. The splenectomized animals were exposed to the low pressure stimulus 17 days after the operation which corresponds to the time when maximum effects following splenectomy are obtained.[2] The numbers of red cells are given in millions

TABLE I.

Days out of Chamber	Controls						Splenectomized					
	Reds			Retics.			Reds			Retics.		
	1	2	3	1	2	3	4	5	6	4	5	6
0	6.5	7.2	7.4	9.4	8.2	8.8	6.8	6.5	7.1	7.8	8.2	9.6
2	6.3	7.0	7.2	3.9	2.7	2.3	7.2	6.9	7.4	5.4	2.6	4.6
4	6.2	6.9	7.0	**0.4**	**0.3**	**0.5**	8.2	7.3	7.8	**0.6**	**0.7**	0.8
6	6.0	6.7	6.9	0.1	0.2	0.2	8.3	7.5	8.2	0.2	0.1	**0.4**
8	6.0	6.4	6.7	0.2	0.1	0.1	8.7	7.7	8.3	0.1	0.1	0.6
10	5.8	6.3	6.6	0.2	0.1	0.1	8.3	7.6	8.2	0.2	0.2	0.2
12	5.7	6.1	6.4	0.1	0.2	0.3	7.9	7.4	8.0	0.1	0.1	0.1
14	5.6	6.1	6.1	0.1	0.2	0.1	7.5	7.2	7.8	0.3	0.2	0.2
16	5.6	5.9	6.0	0.1	0.2	0.2	7.3	7.2	7.5	0.2	0.1	0.1
18	5.5	5.8	5.9	0.2	0.1	0.2	7.0	6.9	7.2	0.1	0.2	0.2
20	5.2	**5.6**	5.7	0.1	0.1	0.1	6.8	6.7	6.8	0.2	0.1	0.1
22	**5.0**		5.4	0.1		0.1	6.6	6.2	6.6	0.1	0.3	0.2
24			**5.2**			0.4	6.4	6.0	6.5	0.2	0.2	0.1
26							6.1	5.9	6.2	0.1	0.4	0.1
28							5.9	5.8	5.9	0.2	0.1	0.2
30							5.8	5.6	5.5	0.2	0.2	0.1
32							5.6	5.4	**5.2**	0.1	0.2	0.1
34							**5.4**	5.3		0.2	0.2	
36								**5.0**			0.1	

The numbers 1, 2, 3, 4, 5, 6, at the tops of the columns refer to the specific 6 animals whose red cell and reticulocyte counts are shown. 0 days out of the chamber refers to the counts taken immediately on withdrawal of the animals from the low pressure apparatus after 10 days' exposure. The normal counts are indicated in bold type on the days they are attained.

* Certain of our experiments with guinea pigs indicate that for this period of exposure to low pressures, erythropoietic hyperactivity ends almost immediately on removal of the animals from the chamber.

2 Gordon, A. S., and Kleinberg, W., *Am. J. Physiol.*, 1937, **118**, 757.

per cubic millimeter and the reticulocytes as a percentage of the total reds.

With this method, and taking into account the period of subjection to low pressures by adding on approximately half the number of days of exposure (as do Escobar and Baldwin), the longevity of the erythrocyte of 21 normal animals was found to range from 22-28 days. For 14 animals placed in the chamber 13-17 days after splenectomy, the longevity ranged from 32-38 days.† It will be seen from Table I that although the red cell counts in the control animals begin to fall almost immediately upon withdrawal of the stimulus, the counts in the splenectomized animals continue to rise for several days after interruption of the low oxygen tensions. These post-exposure rises in the splenectomized animals have been attributed to (1) the removal, with the spleen, of a large portion of the reticulo-endothelial system normally concerned with red cell phagocytosis and destruction, and (2) the increased resistance of the red cells following splenectomy.[2] The greater longevity of the splenectomized animal's erythrocyte is due, most likely, to the same factors. The longevity of the erythrocyte begins to diminish after about 30 days following splenectomy, with finally the value in the splenectomized animal becoming equal to that in the controls approximately 2½ months subsequent to spleen removal. This decrease in longevity of the splenectomized animal's erythrocyte is probably due to reticulo-endothelial compensation in other organs (*i. e.*, liver, lymph nodes, etc.) and to the gradual return of the red cell resistance to normal.[2]

The value for the longevity of the normal guinea pig erythrocyte obtained in this study corresponds closely to the one obtained by Escobar and Baldwin for man's erythrocyte. Since the normal red cell count of the animals employed in these experiments is approximately the same as man's normal count, this may be considered additional evidence in favor of Escobar and Baldwin's hypothesis that longevity is regulated to an extent by some relation between red cell population density and red cell fragility.

Table I shows that the longevity of the circulating reticulocyte is unaffected by splenectomy. In the course of studies, during the past few years, on approximately 150 animals, both normal and splenectomized, subjected to low pressures varying from 5 to 15

† Although a post-operative anemia which may last for 2 months develops in the splenectomized animals, it is possible to calculate the value of the "normal" count at any time after interruption of the stimulus from available extensive data on the course of this anemia.

days, which resulted in reticulocyte increases from 6% to 14%, the longevity of the reticulocyte was found to be remarkably constant. It ranged from 4 to 6 days. This value is in close agreement with those obtained by Heath and Daland[3] for the *in vitro* and *in vivo* maturation of reticulocytes of pernicious anemia patients.‡

Summary. 1. The red cell longevity in normal guinea pigs ranges from 22-28 days. 2. This value increases after splenectomy, reaching a maximum of 32-38 days approximately a month following the operation, and then falls off, becoming normal in about 2½ months. 3. The longevity of the circulating reticulocyte ranges from 4 to 6 days in both normal and splenectomized animals.

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Decreased Choline-Esterase Activity of Serum in Jaundice and in Biliary Disease.*

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In a previous communication,[1] the choline-esterase activity of human serum was determined by the Ammon method[2] with the reaction continuing over a 2-hour period at 30°C. Choline-esterase activity was expressed in cubic millimeters of CO_2 liberated, in a total volume of 2 cc., from 7.5 mg. acetylcholine chloride by 0.5 cc. of diluted serum (diluted 50 times). It was found that in a control group of 60 normal adults, the average reading was 67.6 mm.^{3} CO_2 liberated, and that all of the cases, except 7, fell between 44 and 80 mm.^{3} In a series of over 500 determinations in pathological conditions it was stated that in cases of jaundice there was a tendency toward depressed values.[1]

[3] Heath, C. W., and Daland, G. A., *Arch. Int. Med.*, 1930, **46**, 533.

‡ The close correspondence between Heath and Daland's values for the *in vitro* maturation of reticulocytes and ours for the *in vivo* longevities would further support the contention that marrow hyperactivity ceases quite abruptly after withdrawal of the stimulus.

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[1] Antopol, W., Tuchman, L., and Schifrin, A., PROC. SOC. EXP. BIOL. AND MED., 1937, **36**, 46.

[2] Ammon, R., and Voss, G., *Pfluger's Arch. f. d. ges. Physiol.*, 1935, **235**, 393.