11.2 and this value was used for subsequent studies. Swelling decreases rapidly in the first years of life, then appears to remain constant until 35 years of age after which it decreases, to apparently remain constant at a low level. Collagen content, dry weight and amount of solids extracted during swelling do not vary with age. Heating myocardium causes a decrease in swelling ability. The possible role of thermal denaturation in myocardial aging and physiological implications of swelling changes are discussed.

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Red Cell Life Span in Newborn at Sea Level and High Altitudes. (24590)

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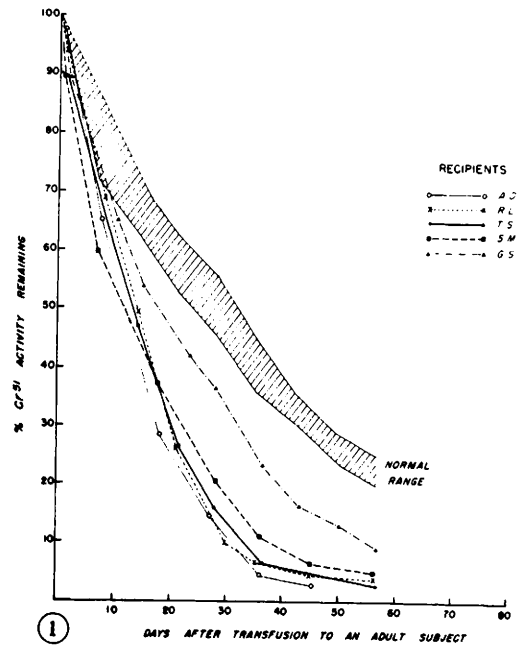
At sea level there is a marked decrease of erythrocytes in circulating blood of the newborn a few days after birth. The same process, to a lesser degree, has been described by Loret de Mola(1) in a study of newborns at high altitudes. While the decrease is chiefly due to depression in erythropoietic activity of bone marrow(2-5), a greater rate of cell destruction has been considered a contributing factor. Increased concentration of indirect bilirubin, especially during first few days after birth, has been interpreted by some investigators to favor the latter hypothesis. However, most authors believe that hyperbilirubinemia of early life has a hepatic origin. Hollingsworth(6) studied the life span of red cells in newborns at sea level, using radioactive chromium for "tagging" the blood taken at moment of birth, and before its injection into healthy adults. These studies demonstrated that red cells of newborns have a shorter life span than those of adult subjects. In Hollingsworth's opinion(6), this characteristic has no relation to quantity of fetal hemoglobin, degree of macrocytosis, or concentration of hemoglobin at birth; he suggested that the change from oxygen deficiency to normal supply might be a contributing factor. We, therefore, investigated newborns at high altitudes, where the hypoxic condition of intra-uterine life is not replaced, at birth, by normal oxygen pressure.

Methods. Two groups of 5 newborns were studied, one at Oroya, 3,730 meters (12,240 feet) and the other at sea level. About 15 cc of blood were obtained from umbilical cord at moment of birth, and placed in sterile flasks with a small quantity of heparin solution. After incubation at room temperature, with approximately 100 μc of Cr-51 in the form of Na^2Cr-5104, and washing twice with normal saline, the blood was injected into healthy adults, living at sea level. Fifteen minutes after transfusion, and then once a week thereafter, 4 cc of blood were obtained from recipients and degree of radioactivity measured in scintillation counter (well type). Radioactivity was expressed in percentage, considering the first sample as 100% (15 minutes after injection). All samples from each case were read simultaneously to avoid correction for physical decay of isotope.

Results. The results obtained, expressed in survival curves of the injected "tagged" red cells, are presented in Fig. 1 and 2, for newborns at sea level and at high altitudes, respectively. For comparative purposes we have also represented, in both diagrams, survival curves obtained in life span of red cells in 7 healthy adults at sea level, using auto-



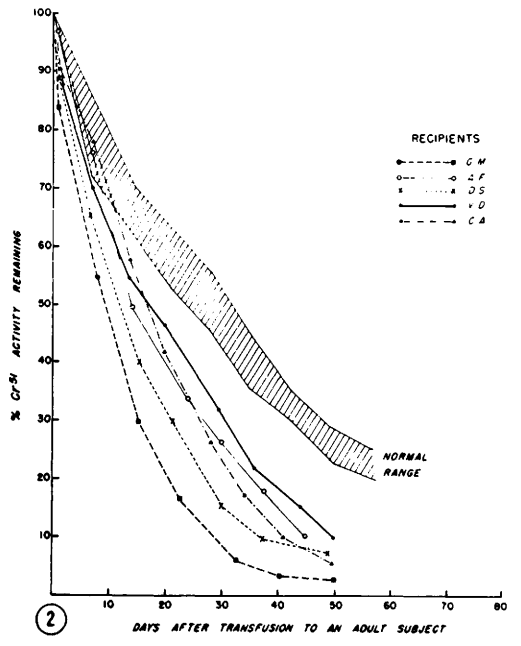


FIG. 1. Newborn red cell survival at sea level.
FIG. 2. Newborn red cell survival at high altitudes.

genous erythrocytes and following a similar technic with Cr^{51}.

As shown by curves in Figs. 1 and 2, red cells from the newborn, at high altitudes and at sea level, were destroyed in a shorter time than red cells from healthy adults. The biologic half life ranged from 11 to 17 days in newborns at sea level, and similar values were observed in newborns at high altitudes (Table I). The biologic half life in red cells of adult subjects at sea level ranged 26 to 32 days, in agreement with observations made by other investigators(6,7,8). Our values for newborns are slightly lower than those obtained by Hollingsworth(6).

TABLE I.
Biological Half Life of Cr-51 "Tagged" Newborn Red Blood Cells, in 10 Subjects.

	Half life of Cr-51	
	Sea level	High altitude
	12	9
	14	14
	13	12
	11	17
	17	17
Avg	13	14

Discussion. Evidence obtained in our investigation indicates that red cells of newborns, at sea level and at high altitudes, are destroyed faster than red cells of adult men, when injected into healthy adult subjects. We do not know, however, whether or not the results would be the same if the "tagged" red cells were reinjected into the same infant. If we assume that the same results would be obtained by the 2 experimental procedures, the icterus of the newborn and the decrease in circulating red cells which take place shortly after birth would be based, at least in part, on the accelerated rate of red cell destruction.

The fact that red cells of newborns at high altitudes have the same life span observed in newborns at sea level is not in entire agreement with the supposition that their shorter survival is due to change to an environment having better oxygen supply. At high altitudes there is a prolongation of the hypoxic condition after birth due to lowered ambient pressure, although it is probable that this hypoxia is less severe than the one existing in intra-uterine life.

Summary. The life span of red cells of 5 newborns at high altitudes and 5 newborns at sea level was determined by "tagging" the cells with Cr^{51} and subsequently injecting them

into healthy adults. Survival time of red cells in newborns is shorter than that observed in adult subjects. There was no appreciable difference in results obtained in newborns at sea level and at high altitudes.

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Effect of Pyridoxine in Acute Alcoholic Intoxication. (24591)

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Wordsworth(1) stated that "Vit. B_6 is a specific antidote to alcohol." He based this conclusion on his experience with 6 human cases of acute alcoholic intoxication observed clinically. Small and co-workers(2) made a more extensive and objective investigation of the possible antagonism between alcohol and pyridoxine in patients suffering from acute alcoholic intoxication and in volunteers given varying doses of alcohol. A battery of tests of nervous function was used, and an attempt made to correlate degree of intoxication as appraised by these tests with blood alcohol concentration. The plan of the experiments was to give repeated doses of whiskey until a fairly marked degree of intoxication was demonstrated, then to give pyridoxine in large doses to see whether a sobering effect was produced. In no case was a significant amelioration of the intoxication demonstrated. The authors comment on the difficulty in assessment of a drug for treatment of such a complex of psychic and organic alterations as is comprised in human alcoholic intoxication; they found variations in performance which did not correlate with blood alcohol levels or clinical state of the subjects. It seemed worth while to investigate the problem in an experimental situation more readily controlled than when human drunkenness was involved.

Methods. Over many years we found that degree of alcoholic intoxication in the dog may be quite reliably estimated by the trained observer, utilizing an arbitrary scale of 9 degrees, stage 9 being abolition of corneal reflex, stage 1 slight ataxia on climbing a flight of stairs(3). Seven female dogs varying in weight from 10 to 15 kg received intravenous infusion of 3 g of ethyl alcohol/kg, diluted with physiological salt solution to 15% w/v, in approximately 30 minutes. One hour from start of infusion, and subsequently at hourly intervals for 7 hours, samples of venous blood from a foreleg were analyzed for alcohol(4) and degree of intoxication observed and recorded. These constituted the control runs. The same animals were subsequently subjected to the same procedure, except that they received 100 mg of pyridoxine intravenously just prior to alcohol infusion; while on another occasion 3 dogs received pyridoxine 2 hours after start of infusion. The rate of fall of blood alcohol concentration in mg/100 ml of blood/hour, a reliable criterion of rate of alcohol metabolism, was calculated by subtracting final blood alcohol concentration from that found on first sample and dividing by number of hours elapsed between the 2 samples.

Results. In control runs this averaged 20.6