TABLE II. Serial Total Exchangeable Potassium Values in a Patient (B.D., 32-Year-Old Female) with Systemic Lupus Erythematosus on Various Steroid Regimens.

	Wt, kg	Ke, meq	Ke, meq/kg	Urinary K^{39}, meq/l	Therapy
Dec. 1958	58	1995	34.2	27	Triamcinolone, 8-32 mg every day for 9 mo; marked proximal muscle weakness
Jan. 1959	58	1464	25.1	48	Triamcinolone continued plus cortisone, 50 mg every day; K Triplex, 6 g every day for subsequent 5 wk; exceedingly weak; no change in clinical picture
March 1959	58	1731	29.8	9.5	Triamcinolone DC—2 mo; cortisone DC—1 mo; hydrocortisone, 50 mg every day for 1 mo, strength normal

patients with SLE did not vary from those of the normal control subjects.

It is concluded that total exchangeable potassium in patients with SLE did not vary significantly from that of normal female control subjects and that triamcinolone as well as other corticosteroids did not appear to have a demonstrable effect on it.

Summary. Total exchangeable potassium, using K^{42}, was determined in a group of female control subjects and 2 groups of patients with systemic lupus erythematosus. One of these groups was receiving adrenal cortical steroids including triamcinolone, the other salicylates and antimalarials only. Serial determinations were also done on one patient receiving long term steroid therapy. No significant differences in total exchangeable potassium values could be demonstrated among the 3 groups, and steroid therapy, including triamcinolone, did not appear to have an effect on total exchangeable potassium.

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Erythropoietic Stimulating Factor Production in Pubescent Mice after a Single Exposure to Hypoxia. (26213)

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After chronic exposure of mature animals to hypoxia, the first morphological evidence of the resulting polycythemia is reticulocytosis which becomes maximal on the third or fourth day after initial exposure(1). After that, the number of mature erythrocytes gradually increases for 7 or 8 weeks(*,2). The results of the present experiment show that BDF1 mice have a reticulocytic response greater than baseline value after puberty when subjected to a single hypoxic exposure, but do not have this capacity before puberty. Furthermore, if production of erythropoietic stimulating factor (ESF) is accepted as the prerequisite to the reticulocytosis, it can be said that the endocrine changes at puberty are concomitant with the animals' ability to increase production of ESF.

* Unpublished results.

Methods. The experiment was carried out

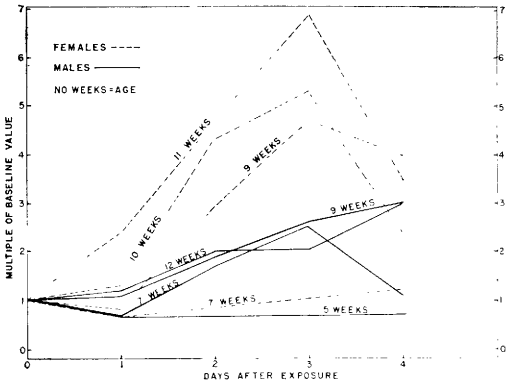

FIG. 1. Increase in reticulocytes in BDF1 mice after a single 6 hr exposure to 22,000 ft.

on BDF1 mice of age groups that included not only the age of puberty but also short intervals before and after that period. They had free access to rat chow and water. Their weights varied from 16-27 g depending on their age grouping. The hypoxic exposure period was 6 hours at 22,000 feet. The animals were subjected to the hypoxic incident in groups of 7 of similar sex and age, placed in a large glass desiccator which served as the decompression chamber. Air was drawn through the chamber continuously as such a rate that its total volume of 5500 ml was changed every 72 seconds; at this rate, rebreathing of expired air is negligible. After the hypoxic exposure, cardiac punctures were made on the 1st, 2nd, 3rd, or 4th day for hematocrit and reticulocyte determinations. A different group was used for each day and each group was used only once. Hematocrits were done by the micro method and the counts were made by the wet-staining technic using methylene blue but without counterstaining. As the determined value of each parameter the mean of each group of 7 animals was tabulated.

To eliminate the differences which occur in reticulocyte counts due to variations in personal interpretations, the counts were all done by one person. The smear used in the counting was thin enough so that random fields could be used over the entire slide; counting errors due to clumping on certain sections of the slide were thereby minimized. Types O-IV cells, which include all earliest to latest forms were enumerated. All of the counting was done by phase microscopy using a "dark-medium" objective. This technic makes it possible to observe protein differences in the reticulocyte as it matures. Thus, the earliest, normoblastic form has a definite pink cytoplasm that gradually fades as the cell approaches maturity.

Baseline values were determined using similar animals without exposure to hypoxia.

Results. Fig. 1 and Table I show the variation in number of reticular cells with time after a single hypoxic exposure of pubescent BDF1 mice. This experiment demonstrates that the male and female of this species have increased capacity for erythropoietic response after reaching the age of 6 weeks, the approximate age of puberty.

The character of the delayed reticulocytic response of the acutely hypoxic, mature females was the same as that of female rats chronically exposed to hypoxia in an earlier experiment(1). The reticulocytosis caused by production of ESF is followed by full

TABLE I. Change in Reticulocyte Counts in Pubescent BDF1 Mice after Exposure to Hypoxia.

Age (wk)	Baseline	Reticulocytes/1000 erythrocytes 1st day	2nd day	3rd day	4th day
		Females			
7	12.3 ± 3	9.1 ± 3	—	12.4 ± 6	13.1 ± 2
9	10.7 ± 4	10.6 ± 5	32.1 ± 20	52.6 ± 18	44.3 ± 17
10	11.1 ± 7	12.7 ± 5	46.9 ± 16	49.1 ± 3	26.5 ± 12
11	11.0 ± 6	26.3 ± 13	52.8 ± 14	75.8 ± 20	37.9 ± 10
		Males			
5	141 ± 50	95.2 ± 18	90.2 ± 6	99.3 ± 20	95.4 ± 14
7	43.1 ± 12	38.8 ± 19	72.7 ± 21	110 ± 33	49.6 ± 15
9	32.2 ± 8	33.8 ± 8	62.4 ± 26	85.3 ± 21	96.1 ± 31
12	10.7 ± 6	12.3 ± 8	22.6 ± 7	23.3 ± 8	31.0 ± 9

Each value is the mean of 7 animals, S.E. by the method of R. B. Dean and W. J. Dixon, *Anal. Chem.*, 1951, v23, 636.

polycythemia in animals (†,2) after chronic exposure to hypoxia for several weeks. Since the reticulocytosis in the present experiment is equivalent to that of chronic exposure, it may be concluded that ESF was produced in the animals during the 6 hour residence at 22,000 feet.

There were no significant changes from baseline values in the mean hematocrits of the heptal groups during the 4 days following acute hypoxic exposure.

Discussion. Gordon and Charipper(3) pointed out that there were definite erythropoietic effects following injection of gonadotropic hormones in rats. Their research showed that the adenohypophysis was not involved since androgens had positive effects even on hypophysectomized animals, while estrogens produced an intensification of the marrow hypoplasia of such animals. This experiment further indicates that gonadotropic changes occur at the same time that the animal has increased capacity to respond to hypoxia by production of ESF.

In measuring production of ESF by means of reticulocytosis, other stimuli that produce it must be ruled out. Radiation(4) and nerve stimulation(5) produce a degree of immediate mobilization of reticulocytes rather than the true physiologic response of ESF. Acapnia, resulting from the hyperventilation in an altitude experiment such as this, could be interpreted as the cause of erythropoietic activity. However, bone marrow activity also results when carbon dioxide tension is at normal and elevated levels(6). Grant and Root(7) have concluded that there is no demonstrable relation between erythropoietic activity and carbon dioxide tension.

Plum(8) has pointed out that reticulocytosis can be caused by injection of various chemicals and other causes, but these responses cannot be "considered pure in the same sense that other factors can be left completely out of consideration." In our experiment, since no extraneous factors were introduced, it was concluded that the reticulocytosis was due to the true physiologic stimulation of ESF.

Summary. These results indicate that ESF is produced in BDF1 mice after a 6-hour exposure to 22,000 feet. It is further demonstrated that these mice have augmented response to hypoxia at time of increased endocrine function at puberty.

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A Persistent Hog Cholera Viremia in Young Pigs.* (26214)

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When an attenuated hog cholera virus is given susceptible pigs, expectations are that a viremia will develop within 2 weeks after inoculation, followed shortly by clearance of virus from the blood as the pigs develop immunity. During epidemiological studies on hog cholera, some young pigs did not clear virus from their blood as expected. This persistent virus strain has been found to be cytopathogenic(1) in contrast to its ances-

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