

as those of the virus of erythromyeloblastic leukosis.

Summary. A particulate material has been obtained from the plasma of chickens affected with the RPL 12 lymphoid tumor strain. Electron micrographs of the particles sedimented directly from plasma and of those in ultracentrifugal concentrates reveal spherical or spheroidal particles of sizes varying from 70 to 160 m μ in diameter and an average diameter of about 117 m μ . Particle counts on the individual plasmas of birds with advanced disease gave values of 1×10^7 to 160×10^7 particles per ml in contrast with the normal plasmas in which only occasional or no particles of this size range were observed. The findings with this form of the leukosis complex are remarkably similar to the results of analo-

gous studies on erythromyeloblastic leukosis. The particles seen in the present work are interpreted, tentatively, as representing the virus of one form of avian lymphomatosis.

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Serum Precipitable and Butanol Extractable Iodine of Bovine Sera. (19323)

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Dairy and beef cattle differ widely in their ability to secrete milk. Reece and Turner(1) have reported that the thyrotrophic content of the anterior lobe of the pituitary gland of cattle is greater than that in beef cattle. Throughout lactation objective measures of thyroid activity have not been satisfactory. Ruminants, especially lactating ones, are not good subjects for the determination of basal metabolic rates because rarely are they in a post-absorptive state. B.M.R., therefore, cannot be used as a measure of thyroid activity in these animals. Reports in the literature indicate a good relationship between thyroid activity and the serum precipitable iodine (SPI) of men and women(2). In this investigation an attempt was made to study thyroid activity of beef and dairy cattle by comparing sera of 20 dairy cows with sera of 20 beef cows for the content of iodine precipitated with protein. After these 40 sera

had been analyzed for SPI the butanol extractable iodines (BEI)(3) of 20 sera were compared with the SPIs of the same sera. The BEI is thought to contain the iodine of "thyroxine-like" compounds(3,4). Comparison of SPI and BEI of men and women had shown that ingestion of inorganic iodine might elevate the iodine precipitated with protein above the "thyroxine-like" iodine compounds by as much as 10 μ g %. The BEI correlated more closely than the SPI with the clinical state of patients(3).

Methods. Sera from venous blood were maintained at about 40°F for 1 to 4 days before analysis. SPIs of the first 20 samples were measured by a permanganate acid ashing technic(5,6). Subsequent SPIs were determined by the micro modification of this technic, which requires only 1 ml of serum for each of the duplicate aliquots(2). The BEI(3) values as well as the SPI measurements are the average of duplicate analyses.

Results. The BEIs of nonpregnant, lactat-

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TABLE I. A Comparison of SPI and BEI Determinations of Bovine Sera.

Breed	Animal No.	Age		Days in milk	Iodine, $\mu\text{g } \%$		
		Yr	Mo		SPI	BEI	SPI-BEI
Jersey	J23	3	2	50	5.1	3.1	2
	20	3	5	121	5.6	3.8	1.8
	30	4	5	95	3.6	1.6	2
	38	5	4	121	5	2.8	2.2
	26	6	5	59	3.8	1.3	2.5
Avg		4	7	89	4.6	2.5	2.1
Brown Swiss	675	3	5	26	3.7	3.1	.6
	679	3	8	116	3.4	2.2	1.2
	673	4	1	116	4	2.6	1.4
	669	4	9	106	4.2	2.8	1.4
	653	6	10	55	3.1	1.8	1.3
Avg		4	7	84	3.7	2.5	1.2
Jersey		Days					
	J73	28			11.9	3.7	8.2
	69	106			4.7	2.1	2.6
	70	102			4.6	1.5	3.1
	61	302			4.3	3	1.3
Avg	60	371			4.2	2.9	1.3
		182				2.6	
Brown Swiss	693	18			4.5	2.7	1.8
	692	47			7.2	4.6	2.6
	691	59			8.7	4.6	4.1
	689	276			4.9	3.8	1.1
	688	366			4.5	3.8	.7
Avg		153				3.9	

ing Jerseys and Brown Swiss were nearly identical (Table I). The BEIs of Jerseys varied between 1.3 and 3.8 with an average value of 2.5 $\mu\text{g } \%$. The BEIs of Brown Swiss in the same stage of lactation were between 1.8 and 3.1 with an average value of 2.5 $\mu\text{g } \%$. No explanation is apparent why the SPIs of Jerseys were somewhat higher than those of Brown Swiss. The SPIs of the Jerseys were between 3.6 and 5.6 with an average of 4.6 $\mu\text{g } \%$, while the SPIs of the Brown Swiss were between 3.1 and 4.2 with an average of 3.7 $\mu\text{g } \%$. It is difficult to attach any significance to this difference since the average BEIs of the 2 breeds of dairy cattle were identical and since SPI may contain noncalorigenic organic iodine compounds, such as diiodotyrosine.

The average BEI of 2.6 of the Jersey heifers was similar to that of 2.5 $\mu\text{g } \%$ of the mature Jerseys. The range of values was also similar. The Brown Swiss heifers, however, which do not mature so rapidly as Jersey heifers, had higher BEI (average 3.9 $\mu\text{g } \%$) than mature Brown Swiss with an average BEI of 2.5 $\mu\text{g } \%$. This difference between the average BEIs of heifers and of mature

Brown Swiss is significant because the standard deviation of the duplicates from the averages of 30 determinations was calculated to be 0.28 $\mu\text{g } \%$. The range of SPI for the immature animals varied so widely that no comparison between the two breeds of dairy cattle is justified.

In our first investigation of bovine SPI a comparison was made of Jersey and Aberdeen Angus sera. Four such comparisons were made, each comparison consisting of sera from 5 Jerseys and 5 Aberdeen Angus with the animals in approximately the same stage of lactation or pregnancy. The SPI values for Jersey and Aberdeen Angus sera are recorded in Table II. In 3 of the 4 comparisons the average SPI of the Jerseys was higher than the SPI of the Aberdeen Angus by 1.8, 1.1, and 0.9 $\mu\text{g } \%$. These differences do not indicate greater thyroid activity in Jerseys than in Aberdeen Angus unless the amount which SPI exceeds BEI of Aberdeen Angus is the same as that of the Jersey cow. If the non "thyroxine-like" portion of the SPI differs in the Jersey and Aberdeen Angus, as it did in the Jersey and Brown Swiss, 2.1 and

TABLE II. A Comparison of SPI in Jersey and Aberdeen Angus Sera. 5 animals in each series.

Breed	Age		Days in milk	Days pregnant	SPI, $\mu\text{g } \%$					Avg
	Yr	Mo			1	2	3	4	5	
AA*	4	4	60	0	2.6	2.7	2.8	4	4.2	3.3
J†	4	7	72	0	3.7	4.5	5.2	5.6	6.7	5.1
AA	3	0	Dry	216	4.2	4.9	4.9	5.5	5.6	5
J	2	7	Dry	206	4	4.1	4.2	4.3	4.9	4.3
AA	4	4	71	0	4.1	4.3	4.5	4.9	5.1	4.6
J	4	2	51	0	5.2	5.3	5.5	6	6.3	5.7
AA	3	10	Dry	213	3.3	4	4.1	4.2	4.3	4
J	3	10	Almost dry	207	4.4	4.6	4.8	5.2	5.6	4.9

* AA = Aberdeen Angus.

† J = Jersey.

1.2 $\mu\text{g } \%$, the differences between the Jersey and Aberdeen Angus BEI may be negligible. A study is now being planned of SPI and BEI of Jersey and Aberdeen Angus sera.

Discussion. The average amount, 1.6 $\mu\text{g } \%$, by which the SPI of 5 nonpregnant, lactating Jerseys exceed the BEI is greater than the average difference, 0.5 $\mu\text{g } \%$, by which the SPI exceeds the BEI of men and women who are not receiving inorganic iodide. This greater difference for cattle may be the result of the iodide contained in the salt blocks available to the dairy animals. For this reason variations in SPI of cattle receiving iodized salt may not be indicative of differences in thyroid activity unless the averages of SPI vary by more than 1.6 $\mu\text{g } \%$, the average difference between SPI and BEI of mature animals. The greater differences between SPI and BEI in young calves may be the result of greater differences in the ingestion of iodized salt.

Summary. Four comparisons (10 sera in each comparison) were made of the SPI content of Jersey and Aberdeen Angus sera. The

average SPI of the Jersey sera was 5.0 $\mu\text{g } \%$, whereas that of the Aberdeen Angus sera was 4.2 $\mu\text{g } \%$. In a comparison of Jersey and Brown Swiss sera the former was found to be higher in PBI than the latter, 4.6 and 3.7 $\mu\text{g } \%$ respectively; the average BEI of the sera, however, was identical (2.5 $\mu\text{g } \%$). The range of SPI for Jersey and Brown Swiss heifers was so great that no comparison is justified; the average BEI was 2.5 $\mu\text{g } \%$ and 3.9 $\mu\text{g } \%$ respectively.

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Effect of BAL on Survival of Rats after Lethal Doses of Polonium.*† (19324)

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Earlier experiments(1) have shown that

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BAL (2,3-dimercaptopropanol) administered intramuscularly after single intravenous doses of polonium doubles the 10-day total excretion

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