

TEXAS AGRICULTURAL EXPERIMENT STATION

BULLETIN NO. 203

DECEMBER, 1916

DIVISION OF CHEMISTRY

The Productive Values of Some Texas Feeding Stuffs



B. YOUNGBLOOD, DIRECTOR,
COLLEGE STATION, BRAZOS COUNTY, TEXAS.

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BY

G. S. FRAPS, Ph. D., Chemist in Charge; State Chemist



B. YOUNGBLOOD, DIRECTOR,
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*As of December 1, 1916.

**In cooperation with United States Department of Agriculture.

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THE PRODUCTIVE VALUES OF SOME TEXAS FEEDING STUFFS.

BY

G. S. FRAPS, Ph. D., CHEMIST IN CHARGE; STATE CHEMIST.

The value of a feeding stuff for feeding purposes depends upon several things. These include its bulk, its palatability, its ash content, its suitability to the animal, its vitamine content, its digestible protein and its productive value. The most important of these from the point of animal nutrition are the digestible protein and the productive value.

DEFINITION OF TERMS.

Digestible Protein.—Protein is the constituent of the feed which is used to form lean meat, muscle, skin, hair, and similar portions of the body, secretions of the body which are necessary for life, and to replace and repair animal tissue. The protein is equal to nitrogen multiplied by 6.25.

The digestible protein is that which is digested and absorbed during the passage of the food through the animal body. The digestible protein represents the capacity of the food to furnish material for the production of lean meat, or for the repair or replacement of the tissues of the animal body.

It is made up of a variety of constituents and varies in character in the different feeding stuffs. In the same feeding stuff, there are usually several different kinds of chemical compounds in the protein. The proteins of some feeding stuffs appear to lack part of the essential constituents for the proper replacement or the repair of the animal tissues, and for this reason are not as effective as they should be. The investigations along this line are not yet sufficiently definite to permit satisfactory statements with regard to the qualities of different protein constituents in feeding stuffs.

Productive Value.—Productive value means the value of the feeding stuff to furnish the material for heat, for work, or for the production of fat. Protein, when digested, may be burned for the production of heat, or energy, or its nitrogen may be split off and the residue used for the formation of fat. Fats, when digested, may likewise be used for heat or energy, or may be stored up for fat. The same is true of the constituents of the nitrogen-free extract and of that portion of the crude fiber which is digested.

The work of digestion consumes a certain amount of energy which must be furnished from that of the feed digested. Energy is also used for metabolic changes consequent on the digestion of the food. The energy left after these uses are provided for may be used for productive purposes, and this is what we term the productive value of a feeding

stuff. It is the value of a feed for the purpose of producing fat, after all of the requirements consequent on the consumption of the food have been deducted. The fat may be burned for heat or used for work, or for material production of fat or milk.

Feeding stuffs vary considerably in the amount of loss in the processes consequent upon digestion. For example, the digested constituents of high grade cotton seed meal have a full value for the production of fat, but the digested constituents of wheat straw have only one-fifth the value, pound for pound, of those of cotton seed meal. Feeding stuffs rich in crude fiber suffer a great loss in digestion, and the productive value is consequently lowered.

The productive value is calculated from the results of tests with various feeds, in which the animal is first fed a measured ration sufficient to form a little fat and the quantity of fat determined. Then the animal is fed the same ration with the addition of the feed to be studied, and the quantity of fat again measured. The additional quantity of fat produced is due to the addition of the feed to be studied and represents its fat producing power.

Ash of feeding stuffs is particularly important in growing animals, as it is necessary for the formation of bone, and certain portions of it are also required for the blood.

Vitamines are substances which are believed essential in the life of the animal, some of which appear to be absent from highly-milled materials or from their by-products. For example, they are not present in polished rice. They are, however, present in seeds and in meat, and in the leaves of plants. It is believed there are two different groups, and that one group is present in the seeds and another present in the leaves. The relation of this matter to animal feeding requires further investigation. At present the matter appears of significance chiefly in connection with pigs, although possibly in connection with breeding animals.

DIGESTION EXPERIMENTS.

The productive values and the values for the digestible protein in this bulletin have been calculated from the results with digestion experiments on sheep. The method of conducting the experiments is the same as that described in Bulletins 147 and 166 of this Station. The production coefficients were calculated as described in our Bulletin 185. Details of the experiments are given in tables in the back of this bulletin or in connection with the feeds described.

DESCRIPTION OF THE FEEDS AND DISCUSSION OF RESULTS.

The composition of the feeds used and their average composition are shown in Table 1, together with the digestible protein and the productive value of the feed. The coefficients of digestibility are given in Table 2. Table 3 contains the production coefficients of the various feedings stuffs. A discussion of the individual feeding stuffs is given below.

TABLE 1. COMPOSITION AND FEEDING VALUE OF FEEDS USED IN THE EXPERIMENTS.

Lab No.		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.	Water.	Ash.	Reference No.	Pounds digestible protein.	Productive value.
11438-9	Acuff sorgo forage, D. E. 81	4.07	1.36	31.81	43.86	7.38	11.52		4	5.3
	Alfalfa hay, average (86)	14.76	1.93	28.42	37.35	9.12	8.39	1	11.0	8.7
8227-8	Alfalfa hay, D. E. 48, 53	12.02	1.41	31.85	39.17	8.06	7.49		8.2	7.2
8316-7	Alfalfa hay, D. E. 54, 58	10.19	1.46	37.57	34.09	8.89	7.81		6.8	7.0
9537-8	Alfalfa hay, D. E. 63 and 68	12.32	1.46	36.90	35.18	8.40	7.75		8.8	7.7
	Corn chops, average (245) Texas	9.23	3.85	2.32	70.97	12.82	1.37	1	6.2	19.8
8406-7	Argentine corn, chopped, D. E. 56	10.36	4.73	1.96	71.41	10.09	1.46		8.9	22.4
	Bermuda hay, average (11)	7.17	1.75	24.90	49.39	8.87	7.92	1	3.7	7.3
10981-2	Bermuda hay, D. E. 72	6.00	1.63	26.90	49.62	7.73	8.12		2.8	7.9
	Corn silage, well matured, average (121)	2.1	0.8	6.3	15.4	73.7	1.7	4	1.1	3.8
8168-9	Corn silage, D. E. 46	2.01	.47	7.42	13.61	74.65	1.85		1.2	3.8
	Cottonseed kernel, Texas, average	38.26	33.00	2.12	15.09	7.13	4.40	2		
9688-9	Cottonseed kernels, D. E. 65	40.92	31.61	2.36	15.73	4.93	4.48			
	Cottonseed hulls, average	4.08	0.69	49.20	32.93	10.26	2.84	2		
9726-7	Cottonseed hulls, D. E. 65	4.08	0.54	51.87	32.79	7.71	3.02			
	Cottonseed, D. E. 65	23.71	17.09	25.48	23.69	6.23	3.80		18.9	18.1
8108-9	Dolichos lablab hay, D. E. 45	14.82	1.36	33.62	33.61	9.85	6.75		10.7	8.3
	Feterita seed, average	12.69	2.75	2.42	69.18	11.13	1.84	5	11.4	20.7
8318-9	Feterita seed, D. E. 55	13.83	2.93	2.15	69.92	9.51	1.68		12.5	21.2
11127-8	Feterita fodder, D. E. 74	5.16	1.68	29.21	41.89	13.71	8.35		2.6	8.2
	Jack bean, average	24.94	3.27	8.08	50.36	10.56	2.79	5	22.4	24.6
8742-3	Jack bean, chopped, D. E. 59	27.18	2.87	8.14	49.41	9.56	2.86		24.2	19.6
9949-50	Kafir, immature, heads, D. E. 70	9.28	1.33	21.56	50.13	13.39	4.32			
	Kafir head chops, average 29	10.03	2.67	7.07	67.07	9.82	3.17	1	7.6	16.2
9951-2	Kafir stover, D. E. 70	7.03	1.63	25.63	44.65	12.54	8.53			
11299-00	Kafir stover, D. E. 79	5.22	1.95	30.88	45.75	6.40	9.80		0.9	5.4
	Kafir fodder, D. E. 70 (heads 9949, stover 9951)	7.36	1.59	25.02	45.45	12.66	7.91		4.6	10.3
	Milo head chops, average (17)	9.75	2.64	5.54	68.48	10.39	3.01	3	7.3	18.6
8590-1	Milo head chops, white and yellow, D. E. 57	8.62	2.21	7.37	69.22	9.17	3.43		6.8	18.4
9733-4	Milo head chops, D. E. 66	9.94	2.73	6.91	67.77	9.60	3.06		7.2	15.9
10042-3	Milo heads, D. E. 71	8.32	2.34	7.37	67.96	10.69	3.32			
11352-3	Milo stover, D. E. 80	3.34	1.58	33.47	44.98	6.41	10.22		0	6.8
10044-5	Milo stover, D. E. 71	2.94	1.34	31.93	44.99	8.40	10.40			
	Milo fodder, D. E. 71 (heads 10042 and stalk 10044)	6.25	1.95	16.79	59.11	10.64	3.26		2.4	13.6
8002-3	Moth bean hay, D. E. 44	14.79	1.46	25.30	34.27	13.82	10.38		10.0	8.3
7966-7	Peanuts, whole, D. E. 40	19.14	34.40	21.74	13.63	8.05	3.05		15.1	22.9
	Peanuts, whole, D. E. 77 (calculated)	22.72	35.16	18.12	13.65	5.44	4.91		18.8	22.4
	Peanut hulls (no meats) average (16)	6.10	1.29	63.47	16.18	9.03	3.92	5		
	Peanut hulls (meats present) average (4)	8.16	3.82	55.60	19.12	9.53	3.78	5		
8275-6	Peanut hulls (some bran and meats) D. E. 52	9.85	3.69	48.80	22.53	8.66	6.47		6.1	1.5

TABLE 1. COMPOSITION AND FEEDING VALUE OF FEEDS USED IN THE EXPERIMENTS—Continued.

Lab. No.		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.	Water.	Ash.	Reference No.	Pounds Digestible protein.	Pro-ductive value.
11233-6	Peanut hulls, D. E. 77.....	6.34	1.52	58.53	14.49	7.18	11.94			
	Peanut hay, with nuts (calculated), D. E. 40.....	11.05	11.96	21.66	37.60	10.71	7.02		7.9	14.4
	Peanut hay, with nuts (calculated), D. E. 77.....	15.64	17.83	23.16	29.18	7.20	6.98		12.1	15.3
	Peanut hay, with nuts, average (4).....	13.22	13.12	23.75	34.95	8.19	6.77	5	10.0	15.6
	Peanut hay, nuts removed, average (13).....	9.90	3.54	23.75	44.61	9.61	8.59	5	6.3	10.7
7975-6	Peanut hay (no nuts), D. E. 41.....	7.72	2.41	22.71	49.51	8.85	8.81		4.9	11.7
7964-5	Peanut hay (no nuts), D. E. 40.....	7.59	2.34	21.62	47.86	11.87	8.72			
9814-5	Peanut hay (no nuts) D. E. 69.....	10.11	3.63	23.33	44.44	7.10	11.36		6.7	10.8
11212-3	Peanut hay (no nuts), D. E. 76.....	9.43	3.03	27.87	44.05	8.38	7.24		6.0	10.3
11232-5	Peanut hay (no nuts), D. E. 77.....	9.70	3.31	27.39	42.21	8.67	8.72			
11234-7	Peanut kernels, D. E. 77.....	28.45	46.93	4.00	13.35	4.83	2.44			
9748-9	Peat, D. E. 67.....	17.12	0.83	10.01	34.90	10.09	27.05		0	0.4
	Prairie hay, Texas, average (10).....	4.38	2.13	28.97	48.79	8.16	7.57	5	0.5	7.1
7724-5	Prairie hay, S. W. Texas, D. E. 38.....	4.30	2.45	30.56	47.50	7.61	7.80		0	5.2
9337-8	Prairie hay, D. E. 61.....	4.99	2.01	32.21	45.19	8.66	6.96		1.3	9.3
11504-5	Rhodes grass hay, D. E. 82.....	5.44	1.68	32.12	43.07	7.20	10.49		2.4	8.2
	Rough rice, ground, average.....	8.09	1.80	8.89	64.52	11.68	5.02	6	6.1	15.9
8245-6	Ground rough rice, dry stock burnt, No. 1, No. 49.....	8.68	1.58	8.49	67.21	9.99	4.07		7.1	16.9
8251-2	Ground rough rice (X), musty and damaged, No. 50.....	8.13	1.01	8.32	67.08	11.62	3.86		5.6	16.0
8269-70	Ground rough rice, sound, No. 4, No. 51.....	8.10	1.51	8.32	67.89	10.00	4.19		6.1	16.4
11259-60	Rice hay, D. E., 78.....	5.66	1.37	30.99	39.91	6.95	15.12		2.2	5.4
11138-9	Shallu stover, D. E. 75.....	2.79	1.35	35.44	45.57	6.98	7.87		0.0	6.7
8223-4	Sorghum silage, No. 47.....	1.97	.85	6.86	19.77	68.42	2.13		.5	4.0
	Sorghum silage, vaverage (7).....	1.60	1.03	6.16	12.40	77.29	1.31	1	0	2.6
	Sorghum fodder, average (6).....	5.38	2.80	28.52	48.77	8.86	5.67	1	3.2	9.4
7991-2	Sorghum hay, No. 43.....	6.02	2.06	27.42	46.32	10.49	7.20		2.3	8.9
	Sudan hay, average (9).....	8.75	1.73	30.41	41.54	8.61	8.96	5	4.3	7.4
7763-4	Sudan hay, No. 39.....	4.42	1.47	30.63	47.90	10.43	5.17		0.8	7.8
7980-1	Sudan straw, No. 42.....	7.80	1.50	30.66	42.85	9.57	7.63		3.6	6.8
9290-1	Sudan hay, No. 60.....	10.75	1.73	30.99	38.23	9.44	8.87		6.2	6.1
9408-9	Sudan hay, No. 62.....	11.30	2.17	27.94	40.59	8.69	9.31		7.2	8.1
10987-8	Sudan hay, D. E. 73.....	7.82	1.89	30.14	43.05	8.92	8.18		4.5	8.6
9629-30	Wheat shorts, D. E. 64.....	16.01	2.52	1.10	69.53	9.87	0.97		14.7	21.9
	Wheat shorts, Texas, average.....	17.22	4.04	4.39	61.05	9.58	3.52	3	15.2	18.9

Acuff Sorghum Fodder Used in Experiment 81.

This was grown at Substation No. 8, Lubbock, Texas. The stalks averaged $\frac{1}{2}$ to $\frac{5}{8}$ of an inch in diameter at the butt end. There were no heads. This is a grain sorghum type.

The experiment shows that it has almost the same feeding value as kafir fodder (D. E. 79) and less than milo fodder.

Alfalfa Hay.

Alfalfa used in Digestion Experiment 48; sample No. 8227-8: This hay was purchased in Bryan, Texas. It was of fair quality, but contained some dead stems.

TABLE 2. COEFFICIENT OF DIGESTIBILITY OF FEEDS.

Laborat		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.	Ash.	Reference No.
11438-9	Acuff sorgo forage, D. E. 81.	9.1	37.1	58.2	45.6	1.4	.....
	Alfalfa hay, average.	75.3	38.4	46.2	68.8	49.9	1
8227-8	Alfalfa hay, D. E. 48, 53 (48)	67.7	14.5	41.9	72.2	52.5	.....
	D. E. 53.	66.3	20.7	32.5	67.2	37.6	.....
8316-7	Alfalfa hay, D. E. 54, 58 (54)	66.3	43.7	49.4	65.2	49.6	.....
	D. E. 58.	67.9	39.8	51.1	66.6	49.2	.....
9537-8	Alfalfa hay, D. E. 63.	70.7	27.7	53.2	70.8	55.1	.....
	D. E. 68.	67.7	15.2	53.5	69.5	52.8	.....
	Corn chops, average.	67.0	90.0	.....	92.0	.....	1
8406-7	Argentine corn, chopped, D. E. 56	86.3	91.3	94.2	97.9	99.4	.....
	Bermuda hay, average.	52.0	42.0	52.0	51.0	.....	4
10981-2	Bermuda hay, D. E. 72.	47.5	55.8	53.9	57.0	28.7	.....
	Corn silage, dent mature, average.	51.0	82.0	65.0	71.0	.....	4
8168-9	Corn ilage, D. E. 46.	59.2	69.4	74.7	76.3	43.8	.....
9726-7	Cottonseed, D. E. 65	79.5	96.3	52.5	68.1	58.4	.....
8108-9	Dolichos lablab hay, D. E. 45	72.3	52.0	54.7	64.6	26.5	.....
8318-9	Feterita seed, D. E. 55.	90.0	74.5	50.0	96.6	89.0	.....
11127-8	Feterita fodder, D. E. 74.	50.1	58.7	66.3	60.9	29.2	.....
842-3	Jack bean, chopped, D. E. 59.	89.6	81.6	80.2	96.8	89.6	.....
11299-300	Kafir forage, D. E. 79.	18.2	47.6	48.6	46.3	0	.....
	Kafir fodder, average.	46.0	60.0	60.0	67.0	.....	4
9949-50	Kafir fodder, immature heads and stalk, D. E. 70.	62.4	56.4	68.8	69.8	37.2	.....
	Kafir heads, average.	63.0	74.0	61.0	80.0	.....	4
	Milo head chops, average.	75.6	86.7	51.7	90.8	30.9	.....
8590-1	Milo head chops, white and yellow, D. E. 57.	79.4	88.6	84.4	93.1	61.7	.....
9733-4	Milo head chops, D. E. 66.	71.8	84.8	18.9	88.5	37.8	.....
11352-3	Milo forage, D. E. 80.	0	56.6	65.8	49.2	0	.....
	Milo fodder.	16.0	63.0	51.0	61.0	.....	4
	Milo stalk with heads, D. E. 71.	38.1	70.9	72.0	78.2	51.6	.....
8002-3	Moth bean hay, D. E. 44.	67.1	10.8	52.3	64.9	6.3	.....
8275-6	Peanut hulls, D. E. 52.	62.2	95.9	16.4	57.6	6.8	.....
	Penut hay, no nuts, average.	64.0	63.8	49.6	75.5	29.6	.....
	Penut hay, with nuts, average.	75.8	92.0	47.9	68.3	37.1	.....
7975-6	Penut hay, no nuts, D. E. 41.	63.5	48.9	53.0	80.2	67.7	.....
7964-5	Penut hay, with nuts, D. E. 40.	71.5	90.8	46.0	73.5	77.6	.....
9814-5	Penut hay, few nuts, D. E. 69.	65.7	71.3	45.6	76.8	0	.....
11212-3	Penut hay, no nuts, D. E. 76.	63.6	69.0	48.5	75.5	30.2	.....
11232-5	Penut hay and peanuts, D. E. 77.	77.3	95.3	45.3	57.1	12.3	.....
	Peanuts, whole, D. E. 40.	78.8	97.6	29.9	18.8	0	.....
	Peanuts, whole, D. E. 77.	82.8	89.0	39.0	6.7	0	.....
	Peanuts, whole, average.	80.8	93.3	34.4	12.8	0	.....
9748-9	Peat, D. E. 67.	0	100.0	0	0	1.6	.....
	Prairie hay, Texas, average.	10.8	42.0	58.4	51.8	9.4	.....
7724-5	Prairie hay, S. W. Texas, D. E. 38.	0	34.8	59.9	53.9	.....	.....
9337-8	Prairie hay, D. E. 61.	25.4	36.9	53.4	49.3	4.5	.....
11504-5	Rhodes grass hay, D. E. 82.	43.8	45.3	67.9	58.0	27.9	.....
	Rough rice, ground, average.	75.6	76.1	10.4	90.6	7.7	.....
8245-6	Rough rice, ground, dry stack burnt, No. 1, D. E. 49.	82.3	85.0	18.1	90.9	0	.....

TABLE 2. COEFFICIENT OF DIGESTIBILITY OF FEEDS—Continued.

Laboratory No.		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.	Ash.	Reference No.
8251-2	Rough rice ground (X) musty, D. E. 50	69.5	69.5	13.2	90.2	11.8	.....
8269-70	Rough rice ground, sound No. 4, D. E. 51.....	75.0	73.9	0	90.8	11.3	.....
11259-60	Rice hay, D. E. 78.....	37.8	56.0	51.3	47.6	.....	.....
11138-9	Shallu forage, D. E. 75.....	0	32.3	64.7	50.4	49.2	.....
	Sorghum silage, average.....	0	56.0	58.0	64.0	4.0	.....
8223-4	Sorghum silage, No. 47.....	23.0	62.6	56.4	66.9	16.3	.....
	Sorghum fodder, average.....	38.0	65.0	61.0	63.0	4.0	.....
7991-2	Sorghum hay, No. 43.....	38.2	62.0	62.2	63.0	28.4	.....
	Sudan hay, average.....	49.4	54.0	61.2	52.9	24.8	.....
7763-4	Sudan hay, No. 39.....	17.7	48.7	63.1	57.6	30.0	.....
7980-1	Sudan stover (seed removed) No. 42....	45.9	34.5	60.0	47.7	6.8	.....
9290-1	Sudan hay, No. 60.....	58.3	45.2	58.6	41.8	23.5	.....
9408-9	Sudan hay, best quality, No. 62.....	64.2	61.1	60.2	52.6	15.0	.....
10987-8	Sudan hay, some crab grass, D. E. 73....	57.3	61.1	62.8	59.6	32.2	.....
	Wheat shorts, white average.....	88.0	86.0	36.0	88.0	.....	4
9629-30	Wheat shorts D. E. 64.....	92.1	86.7	50.0	98.5	35.5	.....

Alfalfa Hay used in Digestion Experiment 54: This hay was purchased in Bryan, Texas. It was coarse and of inferior quality, containing some hay from overripe alfalfa.

Alfalfa Hay used in Digestion Experiments 63 and 68: Purchased in Bryan, Texas. This hay was of poor quality and had formed seeds before it had been cut. The stalks were large and many of them were brown and held few leaves.

These three samples of alfalfa hay were of lower quality than the average, and also had lower feeding values. They evidently consisted largely of stems.

TABLE 3. PRODUCTION COEFFICIENTS.

Lab. No.		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.
11438-9	Acuff sorgo forage, D. E. 81.....	.021	.175	0	.114
	Alfalfa hay, average.....	.177	.202	— .025	.172
8227-8	Alfalfa hay, D. E. 48, 53.....	.157	.093	— .050	.174
8316-7	Alfalfa hay, D. E. 54, 58.....	.158	.220	— .014	.165
9537-8	Alfalfa hay, D. E. 63, 68.....	.163	.113	— .017	.175
	Corn Chops, average.....	.157	.538	0	.230
8406-7	Argentine corn, chopped, D. E. 56.....	.203	.546	— .090	.245
	Bermuda hay average.....	.122	.220	— .010	.128
10981-2	Bermuda hay D. E. 72.....	.115	.294	— .015	.143
	Corn silage, dent mature, average.....	.120	.389	— .078	.178
8168-9	Corn silage, D. E. 46.....	.139	.367	— .102	.191
9726-7	Cottonseed, D. E. 65.....	.187	.576	— .010	.170
8108-9	Dolichos lablab hay..... D. E. 45.....	.170	.273	0	.162
8318-9	Feterita seed, ground, D. E. 55.....	.212	.446	0	.242
11127-8	Feterita fodder, D. E. 74.....	.118	.278	.026	.152
8742-3	Jack bean, chopped, D. E. 59.....	.211	.488	— .060	.242
11299-300	Kafir forage, D. E. 79.....	.043	.226	— .020	.116
	Kafir fodder, average.....	.108	.284	— .010	.168
9949-50	Kafir fodder (immature heads and stalk) D. E. 70.....	.147	.337	— .032	.175
	Kafir heads, average.....	.148	.443	— .013	.200
	Milo head chops, average.....	.177	.518	— .011	.227
8590-1	Milo head chops, white and yellow, D. E. 57.....	.187	.530	— .070	.233
9733-4	Milo head chops, D. E. 66.....	.169	.507	— .090	.221
11352-3	Milo forage, D. E. 80.....	0	.268	— .025	.123
	Milo fodder.....	.038	.299	— .013	.153
	Milo stalk with heads, D. E. 71.....	.090	.424	— .040	.195

TABLE 3. PRODUCTION COEFFICIENTS—Continued.

Lab. No.		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.
8002-3	Moth bean hay, D. E. 44 . . . . .	.158	.057	.010	.162
8275-6	Peanut hulls, D. E. 52 . . . . .	.146	.454	— .100	.144
	Peanut hay, no nuts, average . . . . .	.150	.336	— .016	.189
	Peanut hay, with nuts, average . . . . .	.178	.484	— .020	.171
7975-6	Peanut hay, no nuts, D. E. 41 . . . . .	.149	.257	.00	.200
7964-5	Peanut hay, with nuts, D. E. 40 . . . . .	.168	.543	— .025	.184
9814-5	Peanut hay, few nuts, D. E. 69 . . . . .	.154	.375	— .026	.192
11212-3	Peanut hay, no nuts, D. E. 76 . . . . .	.149	.363	— .020	.189
11232-5	Peanut hay and peanuts, D. E. 77 . . . . .	.181	.501	— .026	.143
	Peanuts, whole, D. E. 40 . . . . .	.185	.584	— .070	.047
	Peanuts, whole, D. E. 77 . . . . .	.194	.532	— .050	.017
	Peanuts, whole, average . . . . .	.190	.557	— .060	.032
9748-9	Peat, D. E. 67	0	.474	0	0
	Prairie hay, Texas, average . . . . .	.025	.221	.006	.130
7724-5	Prairie hay, S. W. Texas, D. E. 38	0	.183	.010	.135
9337-8	Prairie hay, D. E. 61 . . . . .	.060	.194	.010	.123
11504-5	Rhodes grass hay, D. E. 82 . . . . .	.103	.238	.030	.145
	Rough rice ground, average . . . . .	.178	.456	— .114	.227
8245-6	Rough rice, ground dry stack burnt, No. 1, D. E. 49 . . . . .	.193	.509	— .095	.227
8251-2	Rough rice ground, musty (X) D. E. 50 . . . . .	.163	.416	— .110	.226
8269-70	Rough rice ground, sound, No. 4, D. E. 51 . . . . .	.176	.442	— .140	.227
11259-60	Rice hay, D. E. 78 . . . . .	.090	.295	— .010	.119
11138-9	Shallu forage, D. E. 75	0	.153	.022	.126
	Sorghum silage, average	0	.275	.060	.160
8223-4	Sorghum silage, No. 47 . . . . .	.054	.297	.056	.167
	Sorghum fodder, average . . . . .	.090	.308	.013	.158
7991-2	Sorghum hay, No. 43 . . . . .	.090	.326	.016	.157
	Sudan hay, average . . . . .	.116	.284	.013	.132
7763-4	Sudan hay, No. 39 . . . . .	.046	.126	.018	.144
7980-1	Sudan straw, seed removed, No. 42 . . . . .	.108	.182	.010	.119
9290-1	Sudan hay, No. 60 . . . . .	.137	.238	.006	.104
9408-9	Sudan hay, best quality, No. 62 . . . . .	.151	.321	.011	.132
10987-8	Sudan hay, some crab grass, D. E. 73 . . . . .	.135	.322	.017	.149
	Wheat shorts, white, average . . . . .	.207	.514	— .050	.220
9629-30	Wheat shorts, D. E. 64 . . . . .	.216	.518	— .015	.246

Argentine Corn Chops Used in Digestion Experiment 56.

This was a yellow variety of corn, the grains having a peculiar reddish tint. The grains were small, thick, and very hard. The sample showed indications of the corn having been heated and then dried. The corn was chopped before it was fed.

According to the experiment, the corn has a greater feed value than the average corn chops. If we thereby conclude that Argentine corn chops is better than American corn chops, however, we would probably be in error, as one experiment is not sufficient to draw general conclusions.

Bermuda Hay Used in Digestion Experiment 72.

This hay was purchased in Bryan, Texas, and was of fair quality. It had a feeding value slightly above the average for Bermuda hay.

Corn Silage Used in Digestion Experiment 46.

This silage was made from strawberry corn harvested during the latter part of July, and after the kernels were well glazed. A quantity was brought to the laboratory daily, of which 750 grams were fed twice a day, making a total of 1500 grams. Five hundred grams were dried each day of the digestion period, which lasted six days. The preliminary

period was six days. This silage was furnished by the Feeding and Breeding Station at College Station.

The composition and feeding value were very near the average. Since corn silage contains about 75 per cent. water, the dry matter of corn silage has a high feeding value.

Cotton Seed Used in Digestion Experiment 65.

These seed were secured from the Feeding and Breeding Station, and probably represented the average run of Texas seed, although the seed were not very well ginned, and carried a considerable quantity of lint. The seed were cut, and the hulls and kernels analyzed separately. They were then combined by calculation, in the proportion of 53.3 per cent. kernels to 46.7 per cent. hulls.

Cotton seed contains more digestible protein, and has a slightly lower fat producing value, than corn chops. On account of its high oil content, which is liable to interfere with digestion, it should not be fed in quantity to exceed 5 pounds per 1000 pounds live weight.

Dolichos Lablab Hay Used in Digestion Experiment 45.

This hay was furnished by Mr. A. B. Conner, Agronomist, and was grown at Substation No. 3, Angleton, Texas. This hay contained 27 per cent. of large coarse stems, which were discarded. It contains more protein and has a slightly higher fat producing power than Bermuda hay.

Feterita Seed Used in Digestion Experiment 55.

This seed was in good condition, but had been to some extent infested with weevils, and evidently treated with carbon bisulphide.

This sample of feterita seed fed chopped had a higher feeding value than corn chops. On account of the small, hard character of the seeds, it should be ground or chopped before feeding. Otherwise, considerable proportion of the seed may escape digestion, and the corresponding feeding value be lost.

Feterita Fodder Used in Digestion Experiment 74.

This was furnished from Substation No. 7, Spur, Texas. The stalks were about one-half inch in diameter at the large end, and there were very few heads. The sheep did not eat the large stalks very well. The part that was eaten has about 50 per cent. more feeding value than milo fodder and about 25 per cent. more than kafir fodder.

Jack Beans Used in Digestion Experiment 59.

These beans were about the size of ordinary Lima beans, but were much thicker. They were clean, sound, and in good condition, but extremely tough, with a tendency to gum when chewed. They were chopped coarsely on a food chopper. This experiment was started with

two sheep, but one of the sheep refused to eat the beans entirely, and had to be removed from the experiment. The other sheep did not eat them very well. The beans were evidently distasteful to the animals.

What was eaten, was well digested, and the feed has a high feeding value. It is possible that if the beans were soaked in water, and the water poured off, they would be eaten more readily.

Dwarf Blackhul Kafir Fodder Used in Digestion Experiment 79.

This feed was composed of stalks averaging about $\frac{1}{2}$ inch in diameter at the large end. It was a little musty. It was furnished by Substation No. 8, Lubbock. There was no seed.

Its feeding value was lower than the corresponding product from milo or feterita.

Kafir Fodder Used in Digestion Experiment 70.

This consisted both of the heads and of the stalks and was furnished by Lester Henry, Texline, Texas. The stalks were coarse, averaging about one inch in diameter. The fodder was well cured, bright and clean. The heads were fully formed, but contained very little grain. The grain had evidently failed to develop. The stalks and the heads were prepared separately and mixed in the proportions, namely, 213 grams of stalks to 37 grams of heads. This quantity was weighed out for each ration. Heads and stalks (or stover) were analyzed separately, and combined by calculation.

This feed has a comparatively high feeding value.

Milo Head Chops Used in Digestion Experiment 5.

This consisted of the entire heads of the white and yellow milo, the grains being crushed and the stems torn to shreds. It was sound and in good condition. The sample was from the Feeding and Breeding Station, and had been ground there. It had a high feeding value.

In Digestion Experiment 66. The feed consisted of the entire head of milo chopped up and was sound and in good condition.

Milo Fodder Used in Digestion Experiment 80.

Secured from Substation No. 8, at Lubbock, Texas. This consisted of the stalk of milo. There was no seed.

It was better than kafir fodder, but not as good as feterita fodder.

Milo Fodder, Heads and Stalks Used in Digestion Experiment 71.

This consisted of the entire plant used for feeding purposes. The heads were well filled out and of medium size, and the stalks were mature, clean, and in good condition. The heads and stalks were separated, chopped and weighed into the rations separately in the proportions of 154

grams of heads to 96 grams of stalks as occurred in the sample. The sample was received from Lester Henry, Texline, Texas.

This feed was equal to wheat bran in productive value, though much lower in its content of digestible protein.

Moth Bean Hay Used in Digestion Experiment 44.

This was grown at Substation No. 3, at Angleton, Texas. It was planted July 4 in 6-foot rows, and germinated to a good stand in four days. On account of the dry weather of July and August, the growth was slow, and the plants bloomed, but failed to produce beans. When the early fall rains started in September, the vines put on new growth and were cut in this condition for hay, on November 8. The vines were cut with a hoe and taken immediately into a house and cured under shelter. This represents the hay of average quality.

It had practically the same feeding value as dolichos lablab hay, and a little lower than average alfalfa.

Peanut Hulls Used in Digestion Experiment 52.

This feed consisted of the crushed peanut hulls, containing the outside covering of the peanut kernels, or peanuts, with a small amount of peanut fragment. Some stems from the vine were also present.

These had a very low feeding value, and the feeding value present was probably due to the particles of meats left in them.

Peanut Hay With Nuts.

Hay used in Digestion Experiment 40: This consisted of the peanut vines carrying the nuts. The vines and nuts were separated and prepared and weighed separately into the rations. The rations consisted of 175 grams of vines and 75 grams of nuts. The peanuts with the vines contained 70 per cent. vines and 30 per cent. nuts. It was of good quality.

Peanut Hay with Nuts, used in Digestion Experiment 77, contained 136.8 grams peanuts to 163.2 grams hay. This hay was separated, prepared separately and weighed out separately in the rations at the rate of 135 grams of nuts to 165 grams of hay. The hay contained the leaves, stems, roots and the nuts. The peanuts were grown at Substation No. 11, at Nacogdoches, and were furnished through Mr. A. B. Conner.

Peanut hay with the nuts on is a rich feed, better than wheat bran. It has, however, a high fat content, and for this reason, and also on account of its high value, should be fed in connection with other roughage. If fed alone, it is a highly fattening food, and the animal would be liable to get too much fat so as to impair digestion.

Peanut Hay Without Nuts.

The feed used in Digestion Experiment No. 76, consisted of the hay from which the nuts had been removed. They were furnished by Substation No. 11, Nacogdoches, Texas, through Mr. A. B. Conner, Agronomist

Peanut Hay used in Digestion Experiment 41 is the same feed as used in Digestion Experiment 40, and consisted of the hay from which the nuts had been removed.

Hay used in Digestion Experiment 69: This sample was secured by Mr. H. M. Eliot, of the Extension Service, from Mr. H. B. Shackelford, of Cross Plains, Texas. This hay contained only a small amount of nuts. The three samples gave closely agreeing results in productive values, though somewhat different in digestible protein. It is a good feed.

Peat Used in Digestion Experiment 67.

This peat was furnished by the Weidmer Chemical Company, of Saint Louis, and is a natural deposit which is dried and heated to a comparatively high temperature. The manufacturers do not claim a feeding value for this material, but claim that it acts as an absorbent to take up or counteract the bad effect of molasses or sweetened animal food. The material was labeled, "humus for fertilizer and stock food." It had the appearance somewhat of finely ground charcoal, except that it contained some finely divided brown to gray material.

The digestion experiment showed that this material was not only not digested, but that it apparently decreased the digestibility of the alfalfa hay, with which it was fed.

Prairie Hay.

Southwest Texas Prairie Hay, used in Digestion Experiment 38, was commercial southwest Texas prairie hay.

Prairie Hay used in Digestion Experiment 61 was cut from the wild prairie grass, the middle of June, 1914, on the experiment farm near Angleton. It grew on flat, poorly drained soil and had an abundance of rainfall until within three weeks of the time it was cut for hay. It was almost mature when cut. The hay consisted chiefly of two native wild grasses and a mixture of various weeds. The smell of bitterweed was very noticeable. The hay was furnished by Mr. N. E. Winters, Superintendent of Substation No. 3, Angleton, Texas.

Rhodes Grass Hay Used in Digestion Experiment 82.

This hay was furnished by Mr. E. H. Clark, La Feria, Texas, and was grown in the lower Rio Grande Valley. It was cut late, and is, therefore, somewhat more woody than the best quality of Rhodes grass hay would be.

It has a good feeding value.

Rough Rice.

These three samples used in Digestion Experiments 49, 50, and 51, were furnished by Mr. E. A. Eignus, Secretary of the Southern Rice Growers' Association, at Beaumont, Texas, and consisted of the rough rice, that is, the grain and the husks, which had been ground up. The

rough rice used in Digestion Experiment 49 was "stack burnt," that is, had undergone a heat or fermentation while stacked up; that used in Digestion Experiment 50 was musty and damaged; that used in Digestion Experiment 51 was sound and of the best quality. All this rice was of the Honduras variety.

There is little difference in the feeding values of the three grades of rice as shown in the digestion experiments. Rough rice has a good feeding value. It should be ground, as otherwise the hard grains will escape mastication.

Rice Hay Used in Digestion Experiment 78.

This consists of second growth rice hay harvested when in milk to early dough stage. It was produced from stubble about seven weeks after the rice harvest, and yielded about one to one and a half tons to the acre. This hay was secured from Substation No. 4, Beaumont, Texas, through Mr. A. B. Conner, Agronomist.

The feeding value is not high, about the same as prairie hay.

Sorghum Silage Used in Digestion Experiment 47.

This silage was furnished by the Feeding and Breeding Station and was brought to the laboratory every day and 1500 grams fed to the animals. Five hundred grams were weighed out and dried for the estimation of dry matter. The silage was made from the Sumac variety, planted in cultivated rows, and was harvested in August as soon as the seed were entirely ripe.

This sorghum silage was 50 per cent. better than the average.

Sorghum Hay Used in Digestion Experiment 43.

This hay was of good quality. About half of the heads were not ripe. Its value was slightly below the average.

Shallu Fodder.

Furnished by Substation No. 8, at Lubbock, Texas. This forage was of good quality, although some of the stalks were rather large.

This is about equal to milo fodder and slightly better than kafir fodder.

Sudan Hay.

Sudan Hay used in Digestion Experiment 39 was cut when headed and approaching the milk stage.

Sudan Hay used in Digestion Experiment 60 was about four feet high and most of it in full tassel when cut.

Sudan Hay used in Digestion Experiment 62 was cut just before it was in full bloom and when it was well headed. It is supposed to have been cut at the best stage for making hay.

Sudan Hay used in Digestion Experiment 73 was a late cutting of

the Sudan Grass and some of it was rather coarse. There was also a high percentage of Crab Grass present, the amount being estimated at 40 per cent. Mr. A. B. Conner states that it is probable that in cutting, in a good many sections, the last cutting of Sudan Grass will contain considerable Crab Grass.

Sudan Hay varies from 0.8 to 7.2 in digestible protein and 6.1 to 8.6 in productive value. The average is about the same as Bermuda Hay. Cut at the best stage of growth, just before it was in full bloom, and when well headed, it had a productive value about the same as alfalfa, though the digestible protein was less.

Sudan Straw.

This was used in Digestion Experiment 42 and is Sudan Straw, after the seed crop has been removed, and the remaining straw baled up. It has a lower feeding value than Sudan Hay.

Wheat Shorts.

This sample was almost pure white and contained little of the bran particles. It is really almost a low grade flour, rather than wheat shorts. This sample was much better than average wheat shorts in digestibility. It was used in Digestion Experiment 64.

MAINTENANCE REQUIREMENTS.

In Experiments 72 to 82 we collected and analyzed the urine. The animal stood on an iron screen above a galvanized funnel. The urine went into a suitable receptacle. Every day it was made up to volume (usually 500 cc.) in a graduated flask, and two portions of 1 per cent. each measured out for analysis (usually 5 cc.). One-tenth of the urine was put into a bottle each day and at the end of the period, the combined aliquots were also subjected to analysis. The average daily analysis and the analysis of the total urine usually showed an excellent agreement. The average of all was taken to be the daily excretion of nitrogen. The urine was usually made up to 500 cc., but in some cases the excretions were excessive and it was made up to 2000 cc.

Table 4 shows the nitrogen digested and excreted and the nitrogen balance. It also shows the weights of the sheep from Experiment 76 on, and the productive value in terms of fat, of the feed digested. In Bulletin 170, we gave the maintenance ration of sheep of coarse breeds as being 1 pound proteids and 2.08 pounds production value per 100 pounds of live weight. This ration would be equivalent to 50 grams proteids and 104 grams productive value per 50 kg. sheep, which is approximately the sizes of those used in the experiments. This ration is not the ration which would just sustain the body, but permits growth of wool and some growth of body organs. The true maintenance requirements would thus be less.

TABLE 4. NITROGEN BALANCE AND PRODUCTIVE VALUE OF PROTEINS.

Feed.	Exp. No.	Total protein digested.	Daily protein digested.	Daily nitrogen digested.	Nitrogen in urine daily.	Loss_ or gain daily.	Weight of Sheep Kg.		Water drank at Av.	Productive value of feed digested, gm.
							1st & 2nd day.	13th & 14th day. *†		
Bermuda hay—										
Sheep No. 1, 600 gms.....	72	115.9	16.6	2.66	4.54	-1.88				
Sheep No. 2.....	72	120.7	17.2	2.75	4.35	-1.60				
Sudan grass—										
Sheep No. 1, 600 gms.....	73	186.9	26.7	4.27	4.78	-0.51				
Sheep No. 2, 600 gms.....	73	185.7	26.5	4.24	4.82	-0.58				
Feterita forage—										
Sheep No. 1, 600 gms.....	74	99.3	14.2	2.27	2.43	-0.16				
Sheep No. 2.....	74	102.8	14.7	2.35	3.08	-0.73				
Shallu forage—										
Sheep No. 2, 600 gms.....	75	-9.1	-1.3	-0.21	2.03	-2.24				
Peanut hay—										
Sheep No. 1, 600 gms.....	76	253.3	36.2	5.79	5.06	+0.73	51100	50370		65.1
Sheep No. 2.....	76	249.7	35.7	5.71	5.38	+0.33	48560	46630		61.9
Peanut hay and peanuts—										
Sheep No. 1, 600 gms.....	77	441.9	63.1	10.10	8.64	+1.46	48890	50220		83.1
Sheep No. 3, 600 gms.....	77	493.8	70.5	11.28	11.48	-0.20	54890	49950		87.2
Rice hay—										
Sheep No. 1.....	78	47.4	6.8	1.09	2.62	-1.53	49830	50220	778	14.4
Sheep No. 2.....	78	92.7	13.2	2.11	2.71	-0.60	45190	45740	1257	33.1
Kafir forage—										
Sheep No. 2.....	79	45.0	6.4	1.02	2.57	-1.55	44280	44340	1324	33.0
Sheep No. 3.....	79	20.0	2.9	0.46	3.25	-2.79	51115	47475	2009	19.0
Milo forage—										
Sheep No. 1.....	80	-22.0	-7.1	-1.14	1.97	-3.11	49500	48140	1117	16.0
Sheep No. 2.....	80	-2.9	-0.4	-0.06	1.50	-1.56	43340	43310	1507	27.0
Acuff sorgo forage—										
Sheep No. 2.....	81	14.7	2.1	0.34	1.36	-1.02	42245	41485	1182	26.0
Sheep No. 3.....	81	8.7	1.4	0.22	2.71	-2.49	52400	49130	2210	22.2
Rhodes grass hay—										
Sheep No. 1.....	82	72.9	10.4	1.66	3.75	-2.09	52850	52735	1310	25.5
Sheep No. 2.....	82	99.8	14.2	2.27	2.91	-0.64	50725	48360	2715	31.8

Only one of the rations studied furnished the 8 grams nitrogen in excess of the daily maintenance requirement for a 50 kg. sheep. This is No. 77, with peanut hay. There are gains of nitrogen when the ration contains 5 grams nitrogen (Experiment 76) and comparatively small losses with 4.78 grams per day. Some of the rations fed were very low in protein, and with these the animal was able to reduce its use of nitrogen to three grams per day in many cases, or even to two grams or less. This would be equivalent to 0.25 pounds proteids per 1000 pounds live weight. The actual body use is thus reduced to a very low amount, as is shown also in experiments on stormy days.

None of the rations examined had a productive value of 104 grams per 50 kg. sheep. Yet, to judge from the live weight, several of these rations maintained the weight of the animals. This occurs in the following cases:

Sheep No. 1, peanut hay,	83 grams productive value.
Sheep No. 2, rice hay,	33 grams productive value.
Sheep No. 3, rice hay,	19 grams productive value.
Sheep No. 2, kafir forage,	33 grams productive value.
Sheep No. 2, milo forage,	27 grams productive value.
Sheep No. 1, Rhodes grass hay,	26 grams productive value.

With other sheep on the same ration, as given in the table, weight was not maintained. These weights covered a period of 12 days. It has been pointed out by the Missouri Station that an animal may maintain its weight but lose in condition or fitness.* Therefore the maintenance of weight alone is an unsafe method of testing rations for maintenance. If we judged from the weights in these experiments, we might conclude that a ration containing 35 grams productive value is sufficient for the maintenance of a 50 kg. sheep. This would be equivalent to 0.7 pounds productive value instead of 2.08 per 1000 pounds live weight. We do not, however, draw this conclusion, but merely observe that the ration with 2.08 pounds productive value is probably more largely in excess of the maintenance requirements than it was supposed to be when formulated. Investigations along this line will be continued, for the knowledge of the maintenance requirements is important in studying the productive values of feed and of rations.

*Mo. Research Bul. 18.

TABLE 5. COMPOSITION OF FEEDS COMPILED.

Laboratory No.		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.	Water.	Ash.
	Feterita Seed.						
8125	Substation No. 5, Temple.....	13.27	3.39	2.66	67.73	10.75	2.20
8257	T. S. No. 81.....	12.60	3.20	2.32	69.85	10.15	1.88
8258	D. R. No. 60.....	12.46	2.89	1.96	70.37	10.88	1.44
8280	Temple.....	12.66	2.56	1.91	68.92	12.50	1.45
9411	.....	13.62	3.25	2.32	68.87	10.70	1.24
9634	Coleman.....	12.83	1.35	3.23	63.60	15.75	3.24
8318-9	Used in D. E. 55.....	13.83	2.93	2.15	69.90	9.51	1.68
3000	.....	10.21	2.40	2.80	74.22	8.77	1.60
	Average.....	12.69	2.75	2.42	69.18	11.13	1.84
	Jack Bean (Cornavalina ensiformia).						
4225	Mincola.....	21.84	3.74	7.85	49.81	14.26	2.50
7222	Texas Station No. 744.....	25.80	3.20	8.25	51.86	7.86	3.03
8742-3	Used in D. E. 59.....	27.18	2.87	8.14	49.41	9.56	2.86
	Average.....	24.94	3.27	8.08	50.36	10.56	2.79
	Peanut Hulls.						
2200	Texas.....	5.00	1.57	64.59	16.48	9.23	3.13
2201	Texas.....	4.75	0.56	66.81	14.93	10.15	2.80
11233-6	Texas.....	6.34	1.52	58.53	14.49	7.18	11.94
11562	Texas.....	6.26	0.57	63.01	17.89	8.43	3.84
11563	Texas.....	6.66	0.96	57.07	20.08	8.67	6.56
11570	Texas.....	5.00	0.57	65.75	17.96	8.61	2.11
10654	Texas.....	7.69	1.72	54.27	21.97	9.40	4.95
	Mass., 1906.....	7.10	1.90	62.20	19.00	7.00	2.80
	Georgia Bulletin 13.....	6.47	1.87	64.56	12.93	10.0	4.17
	Georgia Bulletin 13.....	4.49	1.90	71.30	9.61	10.0	2.70
	North Carolina 32, No. 11.....	4.56	0.81	67.31	14.62	10.0	2.70
	North Carolina 32, No. 11.....	6.13	0.82	65.32	18.54	5.47	3.72
	North Carolina 90b.....	8.54	.91	56.62	18.45	10.78	4.70
	Tenn. Vol. 4, No. 2.....	5.82	1.21	66.88	15.45	8.81	1.83
	Tenn. Vol. 4, No. 2.....	7.87	2.15	65.18	13.36	7.81	3.63
	Mass. Bull. 56.....	4.99	1.65	66.04	13.14	12.98	1.18
	Average.....	6.10	1.29	63.47	16.18	9.03	3.92
	Hull with Meats Probably Present.						
	Farmers Bull. 25, German.....	6.90	3.19	62.08	14.53	10.50	2.80
	Farmers Bull. 25, German.....	7.32	3.31	59.64	16.23	10.30	3.20
8275-6	From factory.....	9.85	3.69	48.80	22.53	8.66	6.47
11430	From factory (some kernel and bran present).....	8.57	5.09	51.87	23.21	8.63	2.63
	Average.....	8.16	3.82	55.60	19.12	9.53	3.78
	Peanut Hay, Nuts Removed.						
	North Carolina Report, 1889.....	10.32	3.57	25.96	42.92	10.44	6.80
	Georgia Bull. 13, cut before bloom.....	11.43	5.67	22.32	41.57	10.00	9.01
	Georgia Bull. cut when fruit ripe.....	10.53	4.34	25.61	39.41	10.00	10.11
	Georgia Bull., cut before bloom.....	11.31	5.26	17.90	45.35	10.00	10.18
	North Carolina Bull. 90b.....	9.90	5.23	19.44	48.44	10.00	6.99
2068	Troup, Texas.....	9.38	2.13	25.67	48.84	8.11	5.89
	Tenn. Vol. 4, No. 2.....	10.81	1.69	20.44	43.56	7.83	15.67
	North Carolina Bull. 97.....	10.31	3.57	25.96	42.92	10.44	6.80
	Texas.....	7.72	2.41	22.71	49.50	8.86	8.81
7975-6	.....	7.59	2.34	21.62	47.86	11.87	8.72
7964-5	.....	10.31	3.57	25.96	42.92	10.44	6.80
9814-5	.....	9.43	3.03	27.87	44.55	8.38	7.24
11212-3	.....	9.70	3.31	27.39	42.21	8.67	8.72
11232-5	.....					
	Average.....	9.90	3.54	23.75	44.61	9.61	8.59
	Peanut Hay, with Nuts.						
	Georgia Bull. 13, cut when first ripe.....	8.92	4.69	32.39	32.39	10.00	11.61
	Mississippi Report, 1895.....	8.26	1.61	40.23	33.06	10.00	6.84
	Mississippi Report, 1895.....	7.68	1.56	42.01	31.58	10.00	7.17
	Peanut Hay, with Nuts.						
	New York Bull. 16.....	12.65	14.12	27.34	34.00	6.23	5.64
	Tex Bull. 147.....	13.56	8.56	22.82	39.02	8.60	7.44
	Texas, D. E. 40.....	11.05	11.96	21.66	37.60	10.71	7.02
	Texas, D. E. 77.....	15.64	17.83	23.16	29.19	7.20	6.98
	Average.....	13.22	13.12	23.75	34.95	8.19	6.77

TABLE 5. COMPOSITION OF FEEDS COMPILED—Continued.

Laboratory No.		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.	Water.	Ash.
Texas Prairie Hay.							
607	Prairie hay.....	4.75	2.19	27.88	47.26	9.88	8.04
609	Farney hay.....	4.00	2.27	24.40	52.84	7.96	8.53
610	Prairie hay.....	4.62	2.66	33.45	43.99	7.28	8.00
4335	Prairie hay, South Texas.....	3.73	1.77	30.67	50.12	7.40	6.31
4365	Prairie hay, Brazos county.....	4.31	2.59	28.78	48.54	7.70	8.08
6064-5	South Texas, cut before frost, D. E. 22..	4.37	2.05	29.28	47.93	9.13	7.24
6143-4	South Texas, cut after frost, D. E. 23..	3.70	2.15	30.20	46.36	8.73	8.86
4243	Prairie hay.....	4.34	1.87	29.25	50.18	8.78	5.58
2952	Prairie hay.....	4.87	1.69	29.98	49.43	6.08	7.95
737	Farney hay.....	5.06	2.02	25.78	51.42	8.61	7.11
	Average.....	4.38	2.13	28.97	48.81	8.16	7.57
Sudan Hay.							
9388	Second growth, cut at beginning of bloom.....	10.92	1.70	26.31	40.06	12.08	8.93
10601	Average quality Sudan hay.....	8.68	2.10	32.42	38.78	8.06	9.96
11279	Used in feeding experiment.....	8.94	1.72	31.32	44.09	5.88	8.05
11280	From Robstown, Texas, used in feeding experiment.....	6.50	1.33	33.61	42.20	5.96	10.40
11387	From Robstown, Texas, used in feeding experiment.....	9.47	1.46	30.35	39.00	7.94	11.78
7763-4	Headed, approaching milk stage, D. E. 39	4.42	1.47	30.63	47.88	10.43	5.17
9290-1	Cut in bloom, D. E. 60.....	10.75	1.73	30.99	38.23	9.44	8.87
9408-9	Cut in bloom and in good stage for hay D. E. 62.....	11.30	2.17	27.94	40.59	8.69	9.31
10987-8	Late cut, contains crab grass, D. E. 73..	7.82	1.89	30.14	43.05	8.92	8.18
	Average.....	8.75	1.73	30.4	41.54	8.61	8.96
7980-1	Sudan straw, after seed gathered, D. E. 42.....	7.80	1.50	30.66	42.85	9.57	7.63

TABLE 6. REFERENCES.

1. Texas Bulletin 166.
2. Texas Bulletin 189.
3. Texas Bulletin 170.
4. Henry & Morrison's Feeds and Feeding.
5. See Table 4.
6. Texas Bulletin 191.

TABLE 7. COMPOSITION OF FEEDS, RESIDUE AND EXCREMENTS.

Laboratory No.		Protein	Ether extract.	Crude fibre.	Nitrogen free extract.	Water.	Ash.
7763	Sudan grass, D. E. 39, Sp. 1.....	4.23	1.51	30.28	48.15	10.71	5.12
7764	Sudan grass, D. E. 39, Sp. 2.....	4.60	1.43	30.97	47.64	10.15	5.21
7724	S. W. Texas, prairie hay, D. E. 38, Sp. 1.....	4.22	2.31	30.30	47.82	7.45	7.90
7725	S. W. Texas, prairie hay, D. E. 38, Sp. 2.....	4.38	2.58	30.82	46.76	7.76	7.70
7778	Residue, D. E. 38, Sheep 3.....	4.03	3.40	31.51	40.44	12.28	8.34
7779	Residue, D. E. 38, Sheep 4.....	4.84	3.97	29.45	40.08	12.11	9.55
7799	Excre. Sheep 3, D. E. 38, prairie hay.....	7.66	3.05	23.22	43.28	7.05	15.74
7800	Excre. Sheep 4, D. E. 38, prairie hay.....	9.61	3.04	23.77	40.84	6.73	15.98
7964	Peanut vines, D. E. 40, Sp. 1.....	7.37	2.17	22.53	47.36	11.95	8.62
7965	Peanut vines, D. E. 40, Sp. 2.....	7.80	2.51	20.71	48.37	11.79	8.82
7966	Peanut, D. E. 40, Sp. 1.....	19.69	34.42	21.29	13.46	8.10	3.04
7967	Peanut, D. E. 40, Sp. 2.....	18.59	34.38	22.18	13.79	8.00	3.06
7968	Residue, D. E. 39, Sheep 1.....	7.41	1.47	33.25	41.45	9.79	6.63

TABLE 7. COMPOSITION OF FEEDS, RESIDUE AND EXCREMENTS—Continued.

Laboratory No.		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.	Water.	Ash.
7969	Residue, D. E. 39, Sheep 2.	5.44	1.27	34.63	39.81	13.43	5.42
7970	Excre. Sheep 1, D. E. 39, sudan grass	8.73	1.84	25.56	47.40	7.88	8.59
7971	Excre. Sheep 2, D. E. 39, sudan grass	8.12	1.67	27.23	47.03	7.74	8.21
7975	Peanut vine hay, D. E. 41, Sp. 1.	7.97	2.26	22.71	49.08	9.06	8.92
7976	Peanut vine hay, D. E. 41, Sp. 2.	7.48	2.56	22.70	49.92	8.64	8.70
7977	Excre. Sheep 3, D. E. 40, peanut hay.	9.28	3.15	35.00	28.62	6.79	17.16
7978	Excre. Sheep 4, D. E. 40, peanut hay.	8.82	3.18	32.20	28.65	7.01	20.14
7980	Sudan grass, D. E. 42, Sp. 1.	7.95	1.58	31.50	42.12	9.42	7.43
7981	Sudan grass, D. E. 42, Sp. 2.	7.64	1.42	29.82	43.58	9.72	7.82
7989	Residue, D. E. 42, Sheep 1.	6.49	1.72	33.81	41.22	7.68	9.08
7990	Residue, D. E. 42, Sheep 2.	6.68	1.49	31.08	41.71	8.66	10.38
7991	Sorghum hay D. E. 43, Sp. 1.	6.05	2.31	27.69	46.25	10.72	6.98
7992	Sorghum hay, D. E. 43, Sp. 2.	5.99	1.80	27.14	47.39	10.26	7.42
7996	Excre. D. E. 41, Sheep 3, peanut vines.	8.20	3.59	31.11	28.53	8.34	20.23
7999	Excre. D. E. 42, Sheep 1, sudan straw	8.28	1.76	24.20	43.81	8.71	13.24
8000	Excre. D. E. 42, Sheep 2, sudan straw	8.28	1.73	23.71	44.13	7.60	14.55
8001	Residue, D. E. 43, Sheep 3.	2.44	1.50	34.57	45.42	10.89	5.18
8002	Moth bean, D. E. 44, Sp. 1.	14.34	1.72	24.93	34.85	14.02	10.14
8003	Moth bean, D. E. 44, Sp. 2.	15.24	1.19	25.66	33.69	13.61	10.61
8009	Residue, D. E. 44, Sheep 1, moth bean.	10.54	1.11	11.85	17.02	6.33	53.15
8010	Residue, D. E. 44, Sheep 2, moth bean.	7.00	1.00	10.54	19.46	9.15	52.85
8011	Excre. D. E. 43, Sheep 3, sorghum hay.	8.78	1.81	25.53	43.50	7.99	12.39
8012	Excre. D. E., Sheep 4, sorghum hay.	9.81	2.12	25.61	41.56	7.58	13.32
8013	Excre. D. E. 44, Sheep 1, moth bean.	12.10	3.11	28.50	29.14	8.68	18.47
8014	Excre. D. E. 44, Sheep 2, moth bean.	11.04	3.10	29.22	28.31	7.71	20.62
8108	Dolichos lablab hay, D. E. 45, Sp. 1.	14.60	1.22	34.17	33.40	9.99	6.62
8109	Dolichos lablab hay D. E. 45, Sp. 2.	15.04	1.50	33.06	33.82	9.71	6.87
8121	Residue, dolichos hay, Sheep 1, D. E. 45	8.33	0.64	46.02	30.37	7.63	7.01
8122	Residue, dolichos hay, Sheep 2, D. E. 45	7.87	0.72	49.16	28.41	7.28	6.56
8123	Excre. D. E. 45, Sheep 1, dolichos hay	11.08	1.82	36.49	30.15	7.71	12.75
8124	Excre. D. E. 45, Sheep 2, dolichos hay	10.06	1.56	38.83	30.06	7.28	12.21
8168	Corn silage, D. E. 46, Sp. 1.	1.93	.38	7.55	13.67	74.79	1.67
8169	Corn silage, D. E. 46, Sp. 2.	2.09	.55	7.28	13.55	74.51	2.02
8170	Excre., D. E. 46, Sheep 4, corn silage.	10.66	1.85	24.41	41.96	7.59	13.53
8196	Rough rice (No. 1) dry stack burnt type.	8.55	1.20	7.01	67.31	12.28	3.65
8197	Rough rice (No. 4) sound rice.	7.96	1.47	7.99	66.38	12.09	4.11
8198	Rough rice (X) a musty and damaged grade	7.98	1.13	6.36	68.86	12.33	3.34
8223	Sorghum silage, D. E. 47, Sp. 1.	2.18	.90	6.20	21.46	67.20	2.06
8224	Sorghum silage, D. E. 47, Sp. 2.	1.76	.81	7.52	18.07	69.63	2.21
8225	Excre. Sheep 3, D. E. 47, sorghum silage.	10.85	2.20	22.46	44.49	7.28	12.72
8226	Excre. Sheep 4, D. E. 47, sorghum silage.	10.67	2.31	20.03	47.94	6.48	12.57
8227	Alfalfa hay, D. E. 48, Sp. 1.	12.50	1.55	30.66	39.47	8.12	7.70
8228	Alfalfa hay, D. E. 48, Sp. 2.	11.54	1.26	33.04	38.87	8.02	7.27
8245	Rough rice (No. 1) D. E. 49, Sp. 1.	8.63	1.55	8.73	67.29	9.92	3.88
8246	Rough rice (No. 1) D. E. 49, Sp. 2.	8.72	1.60	8.25	67.12	10.06	4.25
8249	Excre. Sheep 5, D. E. 48, alfalfa hay.	9.08	2.93	44.75	25.56	8.77	8.91
8250	Excre. Sheep 6, D. E. 48, alfalfa hay.	9.65	2.89	44.50	27.02	7.68	8.26
8251	Rough rice No. (X), D. E. No. 50, Sp. 1.	7.86	1.23	9.76	65.49	11.33	4.33
8252	Rough rice No. (X), D. E. No. 50, Sp. 2.	8.40	.78	6.87	68.66	11.91	3.38
8269	Rough rice, No. 4, D. E. 51, Sp. 1.	8.01	1.60	9.51	66.39	9.82	4.67
8270	Rough rice, No. 4, D. E. 51, Sp. 1.	8.19	1.42	7.13	69.39	10.17	3.70
8271	Excre. D. E. 49, Sp. 5, alfalfa and rice No. 1	8.27	2.29	41.88	28.02	7.18	12.35
8272	Excre. D. E. 49, Sp. 6, alfalfa and rice No. 1	8.80	2.03	41.64	27.69	7.88	11.96
8273	Excre. D. E. 50, Sp. 5, alfalfa and rice, No. (X)	9.50	2.20	41.51	28.26	6.64	11.89
8274	Excre. D. E. 50, Sheep 6, alfalfa and rice No. (X)	10.17	2.28	41.55	27.90	7.09	11.01
8275	Peanut hulls, D. E. 52, sam. 1.	9.47	3.75	49.98	20.25	9.85	6.70
8276	Peanut hulls, D. E. 52, sam. 2.	10.22	3.63	47.62	24.82	7.47	6.24
8291	Excre. Sheep 5, D. E. 51, alfalfa and rice.	8.71	2.37	42.24	27.15	7.79	11.76
8292	Excre. Sheep 6, D. E. 51, alfalfa and rice.	9.38	2.32	41.07	27.43	7.94	11.86
8297	Excre. Sheep 5, D. E. 52, alfalfa and peanut hulls.	7.35	1.21	53.93	19.78	7.49	10.24
8298	Excre. Sheep 6, D. E. 52, alfalfa and peanut hulls.	6.69	1.18	56.90	19.22	7.65	8.36
8316	Alfalfa hay, D. E. 54, Sp. 1.	9.24	2.17	39.84	33.68	8.78	7.69
8317	Alfalfa hay, D. E. 54, Sp. 2.	11.14	2.15	35.30	34.49	9.00	7.92
8318	Feterita seed, D. E. 55, Sp. 1; 300 gms.	14.07	2.89	1.98	69.51	9.78	1.77
8319	Feterita seed, D. E. 55, Sp. 2; 150 gms.	13.58	2.96	2.32	70.32	9.24	1.58
8397	Excre. Sheep 5, D. E. 53, alfalfa.	8.49	2.19	45.89	26.45	7.29	9.69
8398	Excre. Sheep 6, D. E. 53, alfalfa.	8.58	2.52	44.14	27.44	7.36	9.96
8399	Residue Sheep 5, Per. 1 and 2, D. E. 53, alfalfa.	7.58	1.88	44.16	30.34	7.78	8.26
8404	Excre. Sheep 1, D. E. 54, alfalfa.	8.10	2.09	45.30	28.19	6.59	9.73
8405	Excre. Sheep 2, D. E. 54, alfalfa.	8.31	1.83	45.61	28.66	6.58	9.01

TABLE 7. COMPOSITION OF FEEDS, RESIDUE AND EXCREMENTS—Continued.

Laboratory No.		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.	Water.	Ash.
9771	Residue, D. E. 67, Sheep 1.	17.54	.49	10.44	37.81	6.66	27.06
9772	Residue, D. E. 67, Sheep 2.	17.81	.55	9.19	39.33	6.91	26.21
9773	Excre. D. E. 67, Sheep 1.	14.07	1.33	29.80	32.30	6.05	16.45
9774	Excre. D. E. Sheep 2.	13.37	1.48	30.56	32.58	4.82	17.19
9811	Excre. D. E. 68, Sheep 1.	9.89	3.21	45.15	27.19	5.90	8.66
9812	Excre. D. E. 68, Sheep 2.	9.72	2.91	45.68	26.46	5.82	9.41
9814	Peanut hay, D. E. 69.	9.99	3.28	24.46	45.65	6.91	9.71
9815	Peanut hay, D. E. 69.	10.31	3.97	22.21	43.22	7.28	13.01
9949	Kafir heads, D. E. 70.	9.00	1.39	21.47	50.63	13.19	4.32
9950	Kafir heads, D. E. 70.	9.55	1.27	21.65	49.62	13.59	4.32
9951	Kafir stalks, D. E. 70.	7.23	1.67	25.42	44.98	12.98	8.61
9952	Kafir stalks, D. E. 70.	6.82	1.58	25.84	44.31	13.00	8.45
9956	Excre. Sheep 3, D. E. 69.	8.97	2.57	32.24	25.42	6.16	24.64
9957	Excre. Sheep 6, D. E. 69.	8.08	2.54	30.03	25.13	5.69	28.53
9958	Residue, Sheep 3, D. E. 69.	1.93	.63	4.67	6.07	.94	85.76
10139	Residue, Sheep 3, D. E. 70.	5.00	1.64	36.74	43.03	6.38	7.21
10140	Excre. Sheep 2, D. E. 70.	9.28	2.20	24.44	42.80	6.05	15.23
10141	Excre. Sheep 3, D. E. 70.	8.16	2.14	24.34	43.06	6.46	15.84
10185	Excre. Sheep 3, D. E. 71.	12.07	1.84	22.27	44.52	6.06	13.24
10186	Excre. Sheep 3, D. E. 71.	10.21	1.74	22.15	46.52	6.31	13.07
10187	Residue, Sheep 3, D. E. 71.	2.12	1.10	37.12	39.01	10.39	10.26
10042	Milo heads, D. E. 71.	8.45	2.31	7.40	68.46	10.04	3.34
10043	Milo heads, D. E. 71.	8.19	2.36	7.35	67.45	11.35	3.30
10044	Milo stalk, D. E. 71.	2.90	1.21	31.86	45.46	8.13	10.44
10045	Milso stalk.	2.98	1.46	31.99	44.52	8.68	10.37
10981	Bermuda hay, Sample No. 1, D. E. 72.	5.91	1.65	26.80	50.52	7.26	7.86
10982	Bermuda hay, Sample No. 2, D. E. 72.	6.09	1.62	27.01	48.72	8.19	8.37
11102	Excre. Sheep 2, D. E. 72.	6.53	1.53	27.08	46.00	6.75	12.11
11103	Excre. Sheep 1, D. E. 72.	7.04	1.58	26.13	46.08	6.54	12.63
11104	Residue, Sheep 2, D. E. 72.	6.91	1.32	30.10	38.92	7.37	15.38
11105	Residue, Sheep 1, D. E. 72.	6.04	1.21	33.61	36.62	8.32	14.20
10987	Sudan grass, Sample No. 1, D. E. 73.	7.85	1.90	29.56	43.11	9.31	8.27
10988	Sudan grass, Sample No. 2, D. E. 73.	7.79	1.88	30.72	42.99	8.52	8.10
11123	Residue, Sheep 1, D. E. 73.	5.25	1.24	35.90	41.54	9.35	6.72
11133	Excre. Sheep 1, D. E. 73.	7.70	1.63	27.40	42.08	8.05	13.14
11134	Excre. Sheep 2, D. E. 73.	8.46	1.93	26.34	41.54	8.14	13.59
11127	Feterita forage, Sample No. 1, D. E. 74.	5.56	1.91	28.72	42.68	12.64	8.49
11128	Feterita forage, Sample No. 2, D. E. 74.	4.75	1.46	29.69	41.10	14.79	8.21
11136	Residue, Sheep 1, D. E. 74.	2.75	1.49	34.66	48.41	6.91	5.78
11137	Residue, Sheep 2, D. E. 74.	2.35	1.65	33.67	47.14	9.30	5.89
11142	Excre. Sheep 1, D. E. 74.	7.44	1.70	26.55	43.02	5.93	15.36
11143	Excre. Sheep 2, D. E. 74.	7.54	2.07	24.79	42.79	5.61	17.20
11138	Shallu forage, Sample No. 1, D. E. 75.	2.78	1.30	35.98	44.99	7.23	7.72
11139	Shallu forage, Sample No. 2, D. E. 75.	2.80	1.39	34.91	46.15	6.72	8.03
11209	Excre. Sheep 2, D. E. 75.	6.50	1.91	23.95	44.79	6.61	16.24
11210	Residue, Sheep 2, D. E. 75.	1.57	0.92	39.07	43.22	8.54	6.68
11212	Peanut hay, Sample No. 1, D. E. 76.	9.66	3.34	27.48	43.47	8.85	7.20
11213	Peanut hay, Sample No. 2, D. E. 76.	9.19	2.72	28.27	44.63	7.91	7.28
11242	Excre. Sheep 1, D. E. 76.	9.00	2.83	38.60	28.10	7.70	13.77
11243	Excre. Sheep 2, D. E. 76.	9.35	2.19	38.16	29.65	7.41	13.24
11232	Peanut hay, Sample No. 1, D. E. 77.	9.16	2.75	28.03	42.73	8.63	8.70
11235	Peanut hay, Sample No. 2, D. E. 77.	10.24	3.87	26.75	41.68	8.71	8.75
11234	Peanut kernels, Sample No. 1, D. E. 77.	28.33	47.21	4.26	12.45	5.04	2.41
11237	Peanut kernels, Sample No. 2, D. E. 77.	28.26	46.66	3.74	14.25	4.61	2.48
11233	Peanut hulls, Sample No. 1, D. E. 77.	6.38	1.59	58.56	14.53	7.07	11.87
11236	Peanut hulls, Sample No. 2, D. E. 77.	6.29	1.45	58.51	14.45	7.29	12.01
11261	Residue, Sheep 1, D. E. 77.	21.32	20.82	20.47	16.65	5.61	6.13
11281	Excre. Sheep 1, D. E. 77.	8.72	2.37	31.85	32.74	6.13	18.19
11282	Excre. Sheep 3, D. E. 77.	9.25	2.54	34.23	33.95	5.87	14.16
11259	Rice hay, Sample No. 1, D. E. 78.	5.63	1.09	30.90	39.88	7.36	15.14
11260	Rice hay, Sample No. 2, D. E. 78.	5.69	1.65	31.08	39.94	6.54	15.10
11301	Residue, Sheep 1, D. E. 78.	4.91	1.27	32.62	39.06	2.32	14.82
11302	Residue, Sheep 2, D. E. 78.	3.76	0.77	34.85	39.07	7.33	14.22
11308	Excre. Sheep 1, D. E. 78.	6.48	1.09	26.29	34.36	6.46	25.32
11309	Excre. Sheep 2, D. E. 78.	6.33	1.02	22.63	36.80	6.40	26.82
11299	Dwarf black hulled kafir forage, Sample No. 1, D. E. 79.	5.25	1.94	31.43	45.22	6.32	9.84
11200	Dwarf black hulled kafir forage, Sample No. 2, D. E. 79.	5.19	1.97	30.33	46.28	6.48	9.75
11354	Residue, Sheep 2, D. E. 79.	3.32	1.78	31.89	46.33	6.73	9.95
11355	Residue, Sheep 3, D. E. 79.	3.25	1.62	27.86	44.34	6.76	15.97
11373	Excre. Sheep 2, D. E. 79.	7.44	1.90	23.94	41.80	6.12	18.80
11374	Excre. Sheep 3, D. E. 79.	7.10	1.58	28.87	40.72	6.68	15.05
11352	Standard milo maize forage, Sample No. 1, D. E. 80.	3.29	1.54	34.16	44.78	6.43	9.80

TABLE 7. COMPOSITION OF FEEDS, RESIDUE AND EXCREMENTS—Continued.

Laboratory No.		Protein.	Ether extract.	Crude fibre.	Nitrogen free extract.	Water.	Ash.
11353	Standard milo maize forage, Sample No. 2, D. E. 80.	3.38	1.63	32.77	45.19	6.39	10.64
11436	Residue, Sheep 1, D. E. 80.	2.75	1.37	32.81	43.90	10.01	9.16
11437	Residue, Sheep 2, D. E. 80.	2.13	1.41	33.82	42.77	9.91	9.96
11487	Excre. Sheep 1, D. E. 80.	8.69	1.36	20.03	41.27	6.62	22.03
11488	Excre. Sheep 2, D. E. 80.	7.54	1.23	23.03	45.11	6.56	16.53
11438	Acuff sorgo forage, Sample No. 1, D. E. 81.	4.22	1.38	32.39	42.96	7.46	11.59
11439	Acuff sorgo forage, Sample No. 2, D. E. 81.	3.91	1.34	31.24	44.76	7.29	11.46
11502	Residue, Sheep 2, D. E. 81.	2.41	.77	34.74	40.17	11.44	10.47
11503	Residue, Sheep 3, D. E. 81.	2.69	0.87	33.48	40.78	10.38	11.80
11524	Excre. Sheep 2, D. E. 81.	7.10	1.74	22.18	43.34	6.81	18.83
11525	Excre. Sheep 3, D. E. 81.	6.57	1.44	24.59	42.20	8.55	16.65
11504	Rhodes grass hay, Sample No. 1, D. E. 82	5.44	1.67	32.35	42.37	7.26	10.91
11505	Rhodes grass hay, Sample No. 2, D. E. 82	5.44	1.69	31.88	43.78	7.15	10.06
11561	Residue, Sheep 1, D. E. 82.	4.97	1.48	32.16	43.90	7.78	9.71
11567	Excre. Sheep 1, D. E. 82.	7.69	2.35	21.81	42.11	7.53	18.51
11568	Excre. Sheep 2, D. E. 82.	6.61	1.98	25.09	43.11	6.54	16.67
9748	Peat, Sample No. 1, D. E. 67.	17.14	.90	7.45	37.32	10.19	27.00
9749	Peat, Sample No. 2, D. E. 67.	17.10	.75	12.58	32.47	10.00	27.10

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD.

	Protein.	Ether extract.	Crude fiber.	Nitrogen free extract.	Water.	Ash.
Digestion Period No. 38 With Prairie Hay.						
Sheep No. 3—						
Fed 4000 gms. 8 days. No. 7724-5.	172.00	98.00	1222.40	1892.00	.....	312.00
Residue 97 gms. No. 7778.	3.91	3.30	30.56	39.23	.....	8.08
Eaten.....	168.09	94.70	1181.84	1852.77	.....	303.02
Excreted 2127 gms. No. 7799.	162.92	64.87	493.89	920.57	.....	334.79
Digested.....	5.17	29.83	687.95	932.20	.....	—31.77
Percentage digested.....	3.08	31.50	58.21	50.31	.....	.....
Sheep No. 4—						
Fed 4000 gms.	172.00	98.00	1222.40	1892.00	.....	312.00
Residue 50 gms. No. 7779.	2.42	1.98	14.73	20.04	.....	4.78
Eaten.....	169.58	96.02	1207.67	1871.96	.....	307.22
Excreted 1953 gms. No. 7800.	187.68	59.37	464.23	797.61	.....	312.10
Digested.....	—18.1	36.65	743.44	1074.35	.....	—4.88
Percentage digested from prairie hay.	0	38.17	61.56	57.45	.....	.....
Average percentage prairie hay digested	0	34.84	59.89	53.88	.....	.....
Digestion Period No. 39 With Sudan Grass.						
Sheep No. 1—						
Fed 4000 gms. No. 7763-4.	176.80	58.80	1225.20	1916.00	.....	206.80
Residue 25 gms. No. 7968.	1.90	.40	8.30	10.40	.....	1.70
Eaten.....	174.90	58.40	1226.90	1905.60	.....	205.10
Excreted 1662 gms. No. 7970.	145.10	30.60	424.8	787.8	.....	142.8
Digested.....	29.8	27.8	802.1	1117.8	.....	62.3
Percentage digested.....	17.04	47.60	65.62	58.66	.....	30.38
Sheep No. 2—						
Fed 4000 gms.	176.8	58.8	1225.2	1916.0	.....	6.8
Residue 46 gms. No. 7969.	2.5	.6	15.9	18.3	.....	2.5
Eaten.....	174.3	58.2	1209.3	1897.7	.....	204.3
Excreted 1751 gms. No. 7971.	142.2	29.2	476.8	823.5	.....	143.8
Digested.....	32.1	29.0	732.5	1074.2	.....	60.6

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD.
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen free extract.	Water.	A h.
Percentage digested from sudan grass.....	18.42	49.83	60.57	56.61	.....	29.61
Average percentage sudan grass digested.....	17.73	48.72	63.10	57.64	.....	30.00
Digestion Period No. 40 With Peanut Hay and Peanuts. Sheep No. 3—						
Fed 2800 gms. hay, No. 7964-5 and 1200 gms. nuts, No. 7966-7.....	212.5 229.7	65.6 412.8	605.4 260.9	1340.1 163.6	332.4 96.6	244.2 36.6
Total fed.....	442.2	478.4	866.3	1503.7	429.0	280.8
Eaten.....	442.2	478.4	866.3	1503.7	429.0	280.8
Excreted 1396 gms. No. 7977.....	129.5	44.0	488.6	399.5	94.8	239.6
Digested.....	312.7	434.4	377.7	1104.2	334.2	41.2
Digested from hay.....	135.0	32.1	320.9	1074.8	225.0	51.5
Digested from peanuts.....	177.7	402.3	56.8	29.8	109.2	0
Percentage digested from hay with nuts.....	70.71	90.80	43.60	73.43	77.90	14.67
Percentage digested from peanuts.....	77.24	97.63	21.76	18.16	11.24	0
Sheep No. 4—						
Eaten.....	442.2	478.4	866.3	1503.7	429.0	280.8
Excreted 1386 gms. No. 7978.....	122.2	44.1	446.3	397.1	97.2	279.1
Digested.....	320.0	434.3	420.0	1106.6	331.8	1.7
Digested from hay.....	135.0	32.1	320.9	1074.8	225.0	51.5
Digested from peanuts.....	185.0	402.2	99.1	31.8	106.8	0
Percentage digested from hay with nuts.....	72.37	90.78	48.48	73.59	77.35	.60
Percentage digested from peanuts.....	80.41	97.61	37.96	19.38	11.0	0
Average percentage digested hay with nuts.....	71.54	90.79	46.04	73.51	77.62	7.64
Average percentage digested peanuts.....	78.82	97.62	29.86	18.77	11.12	0
Digestion Period No. 41 With Peanut Vine. Sheep No. 3—						
Fed 4000 gms. No. 7975-6.....	308.8	96.4	908.4	1980.4	354.0	352.4
Residue 0 gms.....	0.0	0.0	0.0	0.0	0.0	0.0
Eaten.....	308.8	96.4	908.4	1980.4	354.0	352.4
Excreted 1373 gms. No. 7996.....	112.6	49.3	427.1	391.7	114.5	277.8
Digested.....	196.2	47.1	481.3	1588.7	239.5	74.6
Percentage digested.....	63.54	48.86	52.98	80.22	67.66	21.14
Digestion Period No. 42 With sudan Straw. Sheep No. 1—						
Fed 4000 gms. No. 7980-1.....	312.0	60.0	1226.4	1714.0	.....	305.2
Residue 122 gms. No. 7989.....	7.9	2.1	41.5	50.4	.....	11.1
Eaten.....	304.1	57.9	1184.9	1663.6	.....	294.1
Excreted 2119 gms. No. 7999.....	175.5	37.3	512.8	928.3	.....	280.6
Digested.....	128.6	20.6	672.1	735.3	.....	13.5
Percentage digested.....	42.29	25.58	56.72	44.20	.....	4.59
Sheep No. 2—						
Fed 4000 gms.....	312.0	60.0	1226.4	1714.0	.....	305.2
Residue 15 gms. No. 7990.....	1.0	2.2	4.6	6.3	.....	1.6
Eaten.....	311.0	57.8	1221.8	1707.7	.....	303.6
Excreted 1889 gms. No. 8000.....	156.4	32.7	447.9	833.6	.....	274.8
Digested.....	154.6	25.1	773.9	874.1	.....	28.8

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD.
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen free extract.	Water.	Ash.
Sheep No. 2—Continued.						
Percentage digested from sudan straw.....	49.71	43.43	63.34	51.19	.....	9.49
Average percentage sudan straw digested.....	45.90	34.51	60.03	47.70	.....	6.84
Digestion Period No. 43 With Sorghum Hay.						
Sheep No. 3—						
Fed 4000 gms. No. 7991-2.....	240.8	82.4	1096.8	1852.8	419.6	288.0
Residue 133 gms. No. 8001.....	3.2	2.0	46.0	60.4	14.5	6.9
Eaten.....	237.6	80.4	1050.8	1792.4	405.1	281.1
Excreted 1600 gms. No. 8011.....	140.5	29.0	408.5	696.0	127.8	198.2
Digested.....	97.1	51.4	642.3	1096.4	277.3	82.9
Percentage digested.....	40.45	63.93	61.12	61.17	68.45	29.53
Sheep No. 4—						
Fed 4000 gms.....	240.8	82.4	1096.8	1852.8	419.6	288.0
Residue 2 gms. No. 7991-2.....	.1	.4	.5	.9	.2	.1
Eaten.....	240.7	82.0	1096.3	1851.9	419.4	287.9
Excreted 1571 gms. No. 8012.....	154.1	33.3	402.3	652.9	119.1	209.2
Digested.....	86.6	48.7	694.0	1199.0	300.3	78.7
Percentage digested from sorghum hay.....	35.98	60.12	63.30	64.74	71.58	27.34
Average percentage sorghum hay digested.....	38.22	62.03	62.21	62.96	70.02	28.44
Digestion Period No. 44 With Moth Bean.						
Sheep No. 1—						
Fed 3000 gms. No. 8002-3.....	443.7	43.8	759.0	1028.1	414.6	311.4
Residue 154 gms. No. 8009.....	16.2	1.7	18.2	26.2	9.7	81.9
Eaten.....	427.5	42.1	740.8	1001.9	404.9	229.5
Excreted 1174 gms. No. 8013.....	142.1	36.5	334.6	342.1	101.9	216.8
Digested.....	285.4	5.6	406.2	659.8	303.0	12.7
Percentage digested.....	66.76	13.30	54.83	65.85	74.83	5.53
Sheep No. 2—						
Fed 3000 gms.....	443.7	43.8	759.0	1028.1	414.6	311.4
Residue 44 gms. No. 8010.....	3.1	.4	4.6	8.6	4.0	23.3
Eaten.....	440.6	43.4	754.4	1019.5	410.6	288.1
Excreted 1299 gms. No. 8014.....	143.4	40.2	379.6	367.7	100.2	267.9
Digested.....	297.2	3.2	374.8	651.8	310.4	20.2
Percentage digested from moth bean.....	67.43	7.37	49.68	63.93	75.60	7.01
Average percentage moth bean digested.....	67.10	10.84	52.26	64.89	75.21	6.27
Digestion Period No. 45 With <i>Dolichos lablab</i> .						
Sheep No. 1—						
Fed 4000 gms. No. 8108-9.....	592.8	54.4	1344.8	1344.4	394.0	270.0
Residue 311 gms. No. 8121.....	26.7	2.1	147.7	97.5	24.5	22.5
Eaten.....	566.1	52.3	1197.1	1246.9	369.5	247.5
Excreted 1408 gms. No. 8123.....	156.0	25.6	513.8	424.5	108.6	179.5
Digested.....	410.1	26.7	683.3	822.4	260.9	68.0
Percentage digested.....	72.44	51.05	57.05	65.96	70.61	27.47

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen free extract.	Water.	Ash.
Sheep No. 2—						
Fed 4000 gms.	592.8	54.4	1344.8	1344.4	394.0	270.0
Residue 35 gms. No. 8122.	2.8	.3	17.2	9.9	2.5	2.3
Eaten.....	590.0	54.1	1327.6	1334.5	391.5	267.7
Excreted 1633 gms. No. 8124.	164.3	25.5	634.1	490.9	118.9	199.4
Digested.....	425.7	28.6	693.5	843.6	272.6	68.3
Percentage digested from <i>Dolichos</i> <i>lablab</i>	72.15	52.87	52.24	63.21	69.63	25.51
Average percentage <i>Dolichos lablab</i> digested.....	72.30	51.96	54.65	64.59	70.12	26.49
Digestion Period No. 46 With Sheep No. 4—						
Fed 900 gms. No. 8168-9.	180.9	42.3	667.8	1224.9	6718.5	166.5
Residue 5 gms. No. 8168-9. ....	.1	.0	.4	.7	3.7	.1
Eaten.....	180.8	42.3	667.4	1224.2	6714.8	166.4
Excreted 692 gms. No. 8170.	73.8	12.8	168.9	290.4	52.5	93.6
Digested.....	107.0	29.5	498.5	933.8	6662.3	72.8
Percentage digested.....	59.18	69.74	74.69	76.28	99.22	43.75
Digestion Period No. 47 With Sorghum Silage. Sheep No. 3—						
Fed 9000 gms. No. 8223-4.	177.3	76.5	617.4	1779.3	.....	191.7
Residue 3 gms. No. 8223-4. ....	.1	.0	.2	.6	.....	.1
Eaten.....	177.2	76.5	617.2	1778.7	.....	191.6
Excreted 1210 gms. No. 8225.	131.3	26.6	271.8	538.3	.....	153.9
Digested.....	45.9	49.9	345.4	1240.4	.....	37.7
Percentage digested.....	25.90	65.23	55.93	69.68	.....	19.68
Sheep No. 4—						
Fed 9000 gms.	177.3	76.5	617.4	1779.3	.....	191.7
Residue 11 gms. No. 8223-4. ....	.2	.1	.8	2.2	.....	.2
Eaten.....	177.1	76.4	616.6	1777.1	.....	191.5
Excreted 1326 gms. No. 8226.	141.5	30.6	265.6	635.7	.....	166.7
Digested.....	35.6	45.8	351.0	1141.4	.....	24.8
Percentage digested from sorghum silage.....	20.10	59.95	56.93	64.17	.....	12.95
Average percentage sorghum silage digested.....	23.00	62.59	56.43	66.93	.....	16.32
Digestion Period No. 48 With Alfalfa Hay. Sheep No. 5—						
Fed 3000 gms. No. 8227-8.	360.6	42.3	955.5	1175.1	241.8	224.7
Residue 6 gms. No. 8227-8. ....	.7	.1	1.9	2.4	.5	.4
Eaten.....	359.9	42.2	953.6	1172.7	241.3	224.3
Excreted 1213 gms. No. 8249.	110.1	35.5	542.8	310.0	106.4	108.1
Digested.....	249.8	6.7	410.8	862.7	134.9	116.2
Percentage digested.....	69.41	15.88	43.08	73.56	55.91	51.81
Sheep No. 6—						
Fed 3000 gms.	360.6	42.3	955.5	1175.1	241.8	224.7
Residue 4 gms. No. 8227-8. ....	.5	.1	1.3	1.6	.3	.3
Eaten.....	360.1	42.2	954.2	1173.5	241.5	224.4
Excreted 1271 gms. No. 8250.	122.7	36.7	565.6	343.5	97.6	105.0
Digested.....	237.4	5.5	388.6	830.0	143.9	119.4
Percentage digested from alfalfa hay	65.93	13.03	40.73	70.73	59.59	53.21
Average percentage alfalfa hay digested.....	67.67	14.46	41.91	72.15	57.75	52.51

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fibre.	Nitro- gen free extract.	Water.	Ash.
Digestion Period No. 49 With Alfalfa and Rough Rice.						
Sheep No. 5—						
Fed 1800 gms. alfalfa No. 8227-8 . . .	216.4	25.4	573.3	705.1	145.1	134.8
1800 gms. rough rice No. 8245-6 . . .	156.2	28.4	152.8	1209.8	179.8	73.3
Total fed 3600 gms.	372.6	53.8	726.1	1914.9	324.9	208.1
Residue 1 gm. No. 8227-8. . . . .	.1	.0	.3	.4	.1	.1
Eaten.	372.5	53.8	725.8	1914.5	324.8	208.0
Excreted 1197 gms. No. 8271.	99.0	27.4	501.3	335.4	85.9	147.8
Digested.	273.5	26.4	224.5	1579.1	238.9	60.2
Digested from alfalfa	144.9	4.5	213.1	491.1	83.0	60.7
Digested from rough rice	128.6	21.9	11.4	1088.0	155.9	. . . . .
Percentage digested from rough rice	82.33	77.12	7.46	89.94	86.71	. . . . .
Sheep No. 6—						
Fed 3600 gms.	372.6	53.8	726.1	1914.9	324.9	208.1
Residue 1 gm. No. 8227-8. . . . .	.1	.0	.3	.4	.1	.1
Eaten.	372.5	53.8	725.8	1914.5	324.8	208.0
Excreted 1126 gms. No. 8272.	99.1	22.9	468.9	311.8	88.7	134.7
Digested.	273.4	30.9	256.9	1602.7	236.1	73.3
Digested from alfalfa	144.9	4.5	213.1	491.1	83.0	60.7
Digested from rough rice	128.5	26.4	43.8	1111.6	153.1	12.6
Percentage digested from rough rice	82.27	92.96	28.66	91.87	85.15	17.19
Average percentage rough rice digested.	82.30	85.04	18.06	90.91	85.93	. . . . .
Digestion Period No. 50 With Alfalfa and Rough Rice.						
Sheep No. 5—						
Fed 1800 gms. alfalfa No. 8227-8 . . .	216.4	25.4	573.3	705.1	145.1	134.8
1800 gms. rough rice No. 8251-2 . . .	146.3	18.2	149.8	1207.4	209.2	69.5
Total fed 3600 gms.	362.7	43.6	723.1	1912.5	354.3	204.3
Residue 20 gms. No. 8227-8. . . . .	.2	.0	.6	.8	.2	.1
Eaten.	362.5	43.6	722.5	1911.7	354.1	204.2
Excreted 1203 gms. No. 8273.	114.3	26.5	499.4	340.0	79.9	143.0
Digested.	248.2	17.1	223.1	1571.7	274.2	61.2
Digested from alfalfa	144.8	4.5	213.0	490.8	83.0	60.7
Digested from rough rice	103.4	12.6	10.1	1080.9	191.2	.5
Percentage digested from rough rice	70.54	69.23	67.4	89.47	91.35	35
Sheep No. 6—						
Fed 3600 gms.	362.7	43.6	723.1	1912.5	354.3	204.3
Residue 1.0 gms No. 8227-8. . . . .	.1	.0	.3	.4	.1	.1
Eaten.	362.6	43.6	722.8	1912.1	354.2	204.2
Excreted 1156 gms. No. 8274.	117.6	26.4	480.3	322.5	82.0	127.3
Digested.	245.0	17.2	242.5	1589.6	272.2	76.9
Digested from alfalfa	144.9	4.5	213.1	491.1	83.0	60.7
Digested from rough rice	100.1	12.7	29.4	1098.5	189.2	16.2
Percentage digested from rough rice.	68.35	69.78	19.61	90.96	90.39	23.31
Average percentage rough rice digested.	69.45	69.51	13.18	90.22	90.87	11.83

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen free extract.	Water.	Ash.
Digestion Period No. 51 With Alfalfa and Rough Rice.						
Sheep No. 5—						
Fed 1800 gms. alfalfa No. 8227-8 ..	216.4	25.4	573.4	705.1	.....	134.8
1800 gms. rough rice No. 8269-70 ..	145.8	27.2	149.8	1222.0	.....	75.4
Total fed 3600 gms.	362.2	52.6	723.2	1927.1	.....	210.2
Residue 4.0 gms. No. 8227-8 .....	.5	.1	1.2	1.5	.....	.3
Eaten	361.7	52.5	722.0	1925.6	.....	209.9
Excreted 1229 gms. No. 8291	107.0	29.1	518.9	333.7	.....	144.5
Digested	254.7	23.4	203.1	1591.9	.....	65.4
Digested from alfalfa	144.7	4.5	212.8	490.4	.....	60.6
Digested from rough rice	110.0	18.9	—9.7	1101.5	.....	4.8
Percentage digested from rough rice ..	75.45	69.49	.....	90.14	.....	6.37
Sheep No. 6—						
Fed 3600 gms.	362.2	52.6	723.2	1927.1	.....	210.2
Residue 1.0 gms. No. 8227-8 .....	.1	.0	.3	.4	.....	.1
Eaten	362.1	52.6	722.9	1926.7	.....	210.1
Excreted 1157 gms. No. 8292	108.5	26.8	475.2	317.4	.....	137.2
Digested	253.6	25.8	247.7	1609.3	.....	72.9
Digested from alfalfa	144.9	4.5	213.1	491.1	.....	60.7
Digested from rough rice	108.7	21.3	34.6	1118.2	.....	12.2
Percentage digested from rough rice ..	74.55	78.31	23.10	91.51	.....	16.18
Average percentage rough rice digested	75.00	73.90	.....	90.83	.....	11.28
Digestion Period No. 52 With Alfalfa and Peanut Hulls.						
Sheep No. 5—						
Fed 1800 gms. alfalfa No. 8227-8 ..	216.4	25.4	573.4	705.1	.....	134.8
1800 gms. peanut hulls No. 8275-6 ..	177.3	66.4	878.4	405.5	.....	116.5
Total fed 3600 gms.	393.7	91.8	1451.8	1110.6	.....	251.3
Residue 6 gms. No. 8227-8 .....	.7	.1	1.9	2.4	.....	.4
Eaten	393.0	91.7	1449.9	1108.2	.....	250.9
Excreted 1827 gms. No. 8297	134.3	22.1	985.3	361.4	.....	187.1
Digested	258.7	69.6	464.6	746.8	.....	63.8
Digested from alfalfa	144.5	4.5	212.5	489.6	.....	60.5
Digested from peanut hulls	114.2	65.1	252.1	257.2	.....	3.3
Percentage digested	64.41	98.04	28.69	63.51	.....	2.83
Sheep No. 6—						
Total fed 3600 gms.	393.7	91.8	1451.8	1110.6	.....	251.3
Residue 1.0 gms. No. 8227-8 .....	.1	.0	.3	.4	.....	.1
Eaten	393.6	91.8	1451.5	1110.2	.....	251.2
Excreted 2129 gms. No. 8298	142.4	25.1	1211.4	409.2	.....	178.0
Digested	251.2	66.7	240.1	701.0	.....	73.2
Digested from alfalfa	144.9	4.5	213.1	491.1	.....	60.7
Digested from peanut hulls	106.3	62.2	27.0	209.9	.....	12.5
Percentage digested from peanut hulls	59.95	93.67	3.07	51.76	.....	10.73
Average percentage peanut hulls digested	62.18	95.86	16.4	57.64	.....	6.78

TABLE 8. NUTRIENTS FED, DIGESTED AND EXECUTED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitrogen free extract.	Water.	Ash.
Digestion Period No. 53 With Alfalfa.						
Sheep No. 5—						
Fed 3000 gms. No. 8227-8.....	360.6	42.3	955.5	1175.1	241.8	224.7
Residue 39 gms. No. 8399.....	3.0	.7	17.2	11.8	3.0	3.2
Eaten.....	357.6	41.6	938.3	1163.3	238.8	221.5
Excreted 1515 gms. No. 8397.....	128.6	33.2	695.2	400.7	110.4	146.8
Digested.....	229.0	8.4	243.1	762.6	128.4	74.7
Percentage digested.....	64.04	20.19	25.91	65.55	53.77	33.72
Sheep No. 6—						
Fed 3000.....	360.6	42.3	955.5	1175.1	241.8	224.7
Residue 1.0 gms. No. 8227-8.....	.1	.0	.3	.4	.1	.1
Eaten.....	360.5	42.3	955.2	1164.7	241.7	224.6
Excreted 1321 gms. No. 8398.....	113.3	33.3	583.1	362.5	97.2	131.6
Digested.....	247.2	9.0	372.1	802.2	144.5	93.0
Percentage digested from alfalfa....	68.57	21.28	38.99	68.88	59.79	41.41
Average percentage alfalfa digested..	66.31	20.74	32.45	67.22	56.78	37.57
Average of No. 48 and No. 53....	66.99	17.60	37.18	69.69	57.27	45.04
Digestion Period No. 54 With Alfalfa Hay, Sheep No. 1—						
Fed 3000 gms. No. 8316-7.....	305.7	43.8	1127.1	1022.7	266.7	234.3
Residue 108 gms. No. 8408.....	11.5	1.7	41.9	35.4	7.2	10.3
Eaten.....	294.2	42.1	1085.2	987.3	259.5	224.0
Excreted 1263 gms. No. 8404.....	102.3	26.4	572.1	356.0	83.2	122.9
Digested.....	191.9	15.7	513.1	631.3	176.3	101.1
Percentage digested.....	65.23	37.29	47.28	63.94	67.94	45.13
Sheep No. 2—						
Fed 3000 gms.....	305.7	43.8	1127.1	1022.7	266.7	234.3
Residue 9 gms. No. 8316-7.....	.9	.1	3.4	3.1	.8	.7
Eaten.....	304.8	43.7	1123.7	1019.6	265.9	233.6
Excreted 1193 gms. No. 8405.....	99.1	21.8	544.1	341.9	78.5	107.5
Digested.....	205.7	21.9	579.6	677.7	187.4	126.1
Percentage digested from alfalfa....	67.45	50.11	51.58	66.47	70.48	53.98
Average percentage alfalfa digested..	66.34	43.70	49.43	65.21	69.21	49.56
Digestion Period No. 55 With Alfalfa and Feterita Seed.						
Sheep No. 1—						
Fed 1800 gms. alfalfa No. 8316-7...	183.4	26.3	676.3	613.6	160.0	140.6
1800 gms. feterita No. 8318-9...	248.9	52.7	38.7	1258.6	171.2	30.2
Total fed 3600 gms.....	432.3	79.0	715.0	1872.2	331.2	170.8
Residue 3 gms. alfalfa.....	.3	.4	1.1	1.0	.2	.2
Eaten.....	432.0	78.6	713.9	1871.2	331.0	170.6
Excreted 946 gms. No. 8580.....	88.3	26.1	406.9	285.0	61.8	77.9
Digested.....	343.7	52.5	307.0	1586.2	269.2	92.7
Digested from alfalfa.....	122.9	10.8	339.4	403.7	114.1	69.3
Digested from feterita seed.....	220.8	41.7	-32.4	1182.5	155.1	23.4
Percentage digested from feterita seed	88.67	76.65	0	93.91	75.33	77.99

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen free extract.	Water.	Ash
Sheep No. 2—						
Fed 3600 gms.	432.3	79.0	715.0	1872.2	331.2	170.8
Residue 12 gms. No. 8289.	1.2	.2	4.5	4.0	1.0	1.2
Eaten.	431.1	78.8	710.5	1868.2	330.2	169.6
Excreted 749 gms. No. 8581.	81.3	29.6	308.2	216.6	48.2	65.1
Digested.	349.8	49.2	402.3	1651.6	282.0	104.5
Digested from alfalfa.	122.3	11.0	337.7	401.7	114.2	68.8
Digested from feterita seed.	227.5	38.2	64.6	1249.9	167.8	35.7
Percentage digested from feterita seed.	91.40	72.49	100.0	99.39	98.01	100.00
Average percentage feterita seed digested.	90.03	74.52	50.0	96.60	86.67	88.99
Digestion Period No. 56 With Alfalfa and Argentine Corn.						
Sheep No. 1—						
Fed 1800 gms. alfalfa No. 8316-7.	183.4	26.3	676.3	613.6	160.0	140.6
1800 gms. Argentine corn No. 8406-7.	186.5	85.1	35.3	1285.4	181.6	26.3
Total fed 3600 gms.	369.9	111.4	711.6	1899.0	341.6	166.9
Residue 8.5 gms. No. 8316-7. ....	.9	.1	3.2	2.9	.8	.7
Eaten.	369.0	111.3	708.4	1896.1	340.8	166.2
Excreted 852 gms. No. 8593.	91.4	24.0	359.7	247.2	57.6	72.1
Digested.	277.6	87.3	348.7	1648.9	283.2	94.1
Digested from alfalfa.	122.5	10.9	338.4	402.5	114.4	69.1
Digested from Argentine corn.	155.1	76.4	10.3	1246.4	168.8	25.0
Percentage digested from Argentine corn.	83.16	89.78	29.18	96.96	92.95	95.06
Sheep No. 2—						
Fed 3600 gms.	369.9	111.4	711.6	1899.0	341.6	166.9
Residue 5.0 gms. No. 8316-7. ....	.5	.1	1.8	1.7	.4	.4
Eaten.	369.4	111.3	709.8	1897.3	341.2	166.5
Excreted 757 gms. No. 8594.	79.9	22.4	314.5	224.6	45.6	70.0
Digested.	289.5	88.9	395.3	1672.7	295.6	96.5
Digested from alfalfa.	122.7	10.9	339.1	403.2	114.7	69.2
Digested from Argentine corn.	166.8	78.9	56.2	1269.5	180.9	27.3
Percentage digested from Argentine corn.	89.44	92.71	159.21	98.76	99.61	103.80
Average percentage Argentine corn digested.	86.30	91.25	94.20	97.20	96.28	99.43
Digestion Period No. 57 With Alfalfa and Milo Maize Head Chops.						
Sheep No. 1—						
Fed 1800 gms. alfalfa No. 8316-7.	183.4	26.3	676.3	613.6	160.0	140.6
1800 gms. milo maize head chops No. 8590-1.	155.2	39.8	132.7	1246.0	165.1	61.7
Total fed.	338.6	66.1	809.0	1859.6	325.1	202.3
Residue 25 gms. No. 8794.	2.3	.3	9.8	8.8	1.8	2.0
Eaten.	336.3	65.8	799.2	1850.8	323.3	200.3
Excreted 862 gms. No. 8792.	89.7	18.0	330.1	284.5	51.8	87.9
Digested.	246.6	47.8	469.1	1566.3	271.5	112.4
Digested from alfalfa.	121.6	10.9	335.1	398.6	113.7	68.4
Digested from milo maize head chops Percentage digested from milo maize head chops.	125.0	36.9	134.0	1167.7	157.8	44.0
	80.5	92.7	101.0	93.7	95.6	71.3

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen free extract.	Water.	Ash.
Sheep No. 2—						
Fed 3600 gms.	338.6	66.1	809.0	1859.6	325.1	202.3
Residue 8 gms. No. 8316-7. ....	.8	.1	3.0	2.7	.7	.6
Eaten.	337.8	66.0	806.0	1856.9	324.4	201.7
Excreted 963 gms. No. 8793.	93.8	21.5	377.6	302.5	67.2	100.4
Digested.	244.0	44.5	428.4	1554.4	257.2	101.3
Digested from alfalfa.	122.5	10.9	338.5	402.6	114.5	69.1
Digested from milo maize head chops	121.5	33.6	89.9	1151.8	142.7	32.2
Percentage digested from milo maize head chops.	78.29	84.43	67.75	92.44	86.43	52.19
Average percentage milo maize head chops digested.	79.4	88.6	84.4	93.1	91.0	61.7
Digestion Period No. 58 With Alfalfa Hay.						
Sheep No. 1—						
Fed 3000 gms. No. 8316-6.	305.7	43.8	1127.1	1022.7	266.7	234.3
Residue 16 gms. No. 8797.	2.1	.2	6.0	4.4	1.3	2.0
Eaten.	303.6	43.6	1121.1	1018.3	265.4	232.3
Excreted 1203 gms. No. 8795.	98.5	26.9	551.2	350.2	66.6	109.5
Digested.	205.1	16.7	569.9	668.1	198.8	122.8
Percentage digested.	67.56	38.30	50.83	65.61	74.91	52.86
Sheep No. 2—						
Fed 300 gms.	305.7	43.8	1157.1	1022.7	266.7	234.3
Residue 11.0 gms. No. 8798.	1.5	.1	4.2	3.3	.9	1.0
Eaten.	304.2	43.7	1122.9	1019.4	265.8	233.3
Excreted 1195 gms. No. 8796.	96.8	25.7	545.9	330.4	69.0	127.3
Digested.	207.4	18.0	577.0	689.0	196.8	106.0
Percentage digested from alfalfa hay	68.18	41.19	51.38	67.59	74.04	45.44
Average percentage alfalfa hay digested.	67.87	39.75	51.11	66.60	74.48	49.15
Average percentage digested No. 54 & 58.	67.11	41.73	50.27	65.90	71.85	49.36
Digestion Period No. 59 With Alfalfa and Jack Bean.						
Sheep No. 2—						
Fed 1800 gms. alfalfa No. 8316-7.	183.4	26.3	676.3	613.6	160.0	140.6
1800 gms. jack beans No. 8742-3	489.2	51.7	146.5	889.4	172.1	51.5
Total fed.	672.6	78.0	822.8	1503.0	332.1	192.1
Residue 13 gms. No. 8824.	2.4	.2	3.5	4.7	1.4	.8
46 gms. No. 8823.	12.3	1.1	4.1	22.7	4.3	1.4
Eaten.	657.9	76.7	815.2	1475.6	326.4	189.9
Excreted 874 gms. No. 8822.	109.3	24.5	362.8	235.5	66.0	76.0
Digested.	548.6	52.2	452.4	1240.1	260.4	113.9
Digested from alfalfa.	121.5	10.9	338.2	401.3	114.0	69.0
Digested from jack beans.	427.1	41.3	114.2	838.8	146.4	44.9
Percentage digested from jack beans	89.6	81.6	80.2	96.8	87.2	89.6
Digestion Period No. 60 With Sudan Hay						
Sheep No. 1—						
Fed 4000 gms. No. 9290-1.	430.0	69.2	1239.6	1529.2	377.6	354.8
Residue 49 gms. No. 9344.	5.8	.8	13.8	17.5	3.5	7.6
Eaten.	424.2	68.4	1225.8	1511.7	374.1	347.2
Excreted 1939 gms. No. 9342.	175.7	36.5	486.5	834.7	155.7	249.9
Digested.	248.5	31.9	739.3	677.0	218.4	97.3
Percentage digested.	58.58	46.64	60.31	44.78	58.38	28.02

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fibre.	Nitro- gen free extract.	Water.	Ash.
Sheep No. 2—						
Fed 4000 gms.	430.0	69.2	1239.6	1529.2	374.6	354.8
Residue 15.5 gms. No. 9345.	13.2	2.1	56.9	56.2	10.3	16.3
Eaten.	416.8	67.1	1182.7	1473.0	367.3	338.5
Excreted 2052 gms. No. 9343.	175.4	37.8	510.9	902.1	151.6	274.1
Digested.	241.4	29.3	671.8	570.9	215.7	64.4
Percentage digested from sudan hay	57.92	43.67	56.80	38.76	58.72	19.02
Average percentage sudan hay digested.	58.25	45.15	58.56	41.77	58.55	23.52
Digestion Period No. 61 With Prairie Hay						
Sheep No. 1—						
Fed 4000 gms. No. 9337-8.	199.6	80.4	1288.4	1807.6	346.4	278.4
Residue 136 gms. No. 9374.	4.6	1.5	52.9	49.4	10.1	17.6
Eaten.	195.0	78.9	1235.5	1758.2	336.3	260.8
Excreted 2041 gms. No. 9371.	145.9	60.0	561.7	874.4	146.5	252.5
Digested.	49.1	18.9	673.8	883.8	189.8	8.3
Percentage digested.	25.18	23.95	54.54	50.27	56.44	3.18
Sheep No. 2—						
Fed 4000 gms.	199.6	80.4	1288.4	1807.6	346.4	278.4
Residue 105.5 gms. No. 9375.	3.9	1.5	44.4	38.2	7.7	9.9
Eaten.	195.7	78.9	1244.0	1769.4	338.7	268.5
Excreted 2097 gms. No. 9372.	145.7	39.6	593.2	912.6	152.9	252.9
Digested.	50.0	39.3	650.8	856.8	185.8	15.6
Percentage digested from prairie hay	25.55	49.81	52.32	48.42	54.86	5.81
Average percentage prairie hay digested.	25.37	36.88	53.43	49.34	55.65	4.50
Digestion Period No. 62 With Sudan Hay.						
Sheep No. 1—						
Fed 4000 gms. No. 9408-9.	452.0	86.8	1117.6	1623.6	347.6	372.4
Residue 17 gms. No. 9529.	2.0	.3	3.1	5.5	.6	5.4
Eaten.	450.0	86.5	1114.5	1618.1	347.0	367.0
Excreted 1828 gms. No. 9531.	175.3	34.4	442.4	763.6	95.4	317.0
Digested.	274.7	52.1	672.1	854.5	241.6	50.0
Percentage digested.	61.04	60.23	60.21	52.80	69.62	13.62
Sheep No. 2—						
Fed 4000 gms.	452.0	86.8	1117.6	1623.6	347.6	372.4
Residue 13 gms. No. 9530.	1.6	.2	3.7	5.1	.7	1.7
Eaten.	450.4	86.6	1113.9	1618.5	346.9	370.7
Excreted 1799 gms. No. 9532.	147.3	32.9	442.7	770.3	95.7	310.0
Digested.	303.1	53.7	671.2	848.2	251.2	60.7
Percentage digested from sudan hay	67.29	62.01	60.26	52.41	72.41	16.38
Average percentage sudan hay digested.	64.17	61.16	60.24	52.61	71.02	15.00
Digestion Period No. 63 With Alfalfa Hay.						
Sheep No. 1—						
Fed 3000 gms. No. 9537-8.	369.6	43.8	1170.0	1055.4	156.6	233.2
Residue 3 gms. No. ....	.4	.....	1.2	1.0	.2	.5
Eaten.	369.2	43.8	1168.8	1054.4	156.4	232.7
Excreted 1142 gms. No. 9676.	110.1	31.1	532.5	306.4	63.5	98.4
Digested.	259.1	12.7	636.3	748.0	92.9	134.3
Percentage digested from alfalfa hay	71.83	29.00	54.44	70.94	59.38	57.62

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen free extract.	Water.	Ash.
Sheep No. 2—						
Fed 3000 gms.	369.6	43.8	1170.0	1055.4	156.6	233.2
Residue 4 gms. No. ....	.5	.1	1.5	1.4	.3	.3
Eaten.....	369.1	43.7	1168.5	1054.0	156.3	232.9
Excreted 1194 gms. No. 9677.....	112.1	32.2	560.7	309.6	69.0	110.3
Digested.....	257.0	11.5	607.8	744.4	87.3	122.6
Percentage digested from alfalfa hay	69.62	26.31	52.04	70.63	55.85	52.60
Average percentage alfalfa hay digested.....	70.72	27.66	53.24	70.79	57.62	55.11
Digestion Period No. 64 With Alfalfa and Wheat Shorts						
Sheep No. 1—						
Fed 1800 gms. alfalfa No. 9537-8 ..	221.8	26.3	664.2	633.2	115.2	139.5
1800 gms. wheat shorts No. 9629-30.....	288.2	45.4	19.8	1251.7	177.7	17.5
Total fed.....	510.0	71.7	684.0	1884.9	292.9	157.0
Residue 14 gms. No. 9728.....	2.2	.2	1.3	8.8	.7	.7
Eaten.....	507.8	71.5	682.7	1876.1	292.2	156.3
Excreted 824 gms. No. 9730.....	102.3	29.4	336.8	226.4	44.8	84.0
Digested.....	405.5	42.1	345.9	1649.7	247.4	72.3
Digested from alfalfa.....	152.0	5.0	353.9	438.1	66.5	76.0
Digested from wheat shorts.....	253.5	37.1	0	1211.6	180.9	-3.7
Percentage digested from wheat shorts.....	88.0	81.7	0	96.8	101.8	0
Sheep No. 2—						
Fed 3600.....	510.0	71.7	684.0	1884.9	292.9	157.0
Residue 12.0 gms. No. 9729.....	1.9	.2	1.0	7.5	.7	.7
Eaten.....	508.1	71.5	682.0	1877.4	292.2	156.3
Excreted 670 gms. No. 9731.....	78.7	24.9	277.6	183.8	37.4	67.5
Digested.....	429.4	46.6	404.4	1693.6	254.8	88.8
Digested from alfalfa.....	152.2	5.0	354.1	439.0	66.5	76.0
Digested from wheat shorts.....	277.2	41.6	50.3	1254.6	188.3	12.8
Percentage digested from wheat shorts.....	96.2	91.6	100.0	100.2	106.0	71.04
Average percentage wheat shorts digested.....	92.1	86.7	50.0	98.5	103.9	35.52
Digestion Period No. 65 With Alfalfa and Cottonseed.						
Sheep No. 1—						
Fed 1800 gms. alfalfa No. 9537-8....	221.8	26.3	664.2	633.2	115.2	139.5
843 gms. hulls No. 9726-7....	34.4	4.6	437.3	276.4	64.9	25.5
957 gms. kernels No. 9688-9....	391.6	302.3	22.6	150.4	42.3	42.9
Total fed.....	647.8	333.2	1124.1	1060.0	227.4	207.9
Residue 3 gms. No. 9739.....	.6	.1	.....	.....	.2	.4
Eaten.....	647.2	333.1	1124.1	1060.0	227.2	207.0
Excreted 1211 gms. No. 9738.....	160.8	32.9	525.6	326.1	76.5	89.1
Digested.....	486.4	300.2	598.5	733.9	150.7	118.4
Digested from alfalfa.....	153.1	5.0	354.6	444.3	66.8	76.0
Digested from cottonseed.....	333.3	295.2	243.9	289.6	83.9	42.4
Percentage digested from cottonseed	78.2	96.2	53.0	67.9	74.8	62.33

TABLE 8.—NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen|free extract	Water.	Ash.
Sheep No. 2—						
Fed	647.8	333.2	1124.1	1060.0	227.4	207.9
Residue 2 gms. No. 9740 .....	.3	.0			.1	.4
Eaten	647.5	333.2	1124.1	1060.0	227.3	207.5
Excreted 1212 gms. No. 9741	150.5	32.6	531.0	324.6	78.8	94.5
Digested	497.0	300.6	593.1	735.4	148.5	113.0
Digested from alfalfa	153.3	5.0	354.6	444.3	66.8	76.0
Digested from cottonseed	343.7	295.6	238.5	291.1	81.7	37.0
Percentage digested from cotton- seed	80.7	96.3	51.9	68.2	72.8	54.39
Average percentage cottonseed digested	79.45	96.25	52.45	68.05	73.80	58.36
Digestion Period No. 66 With Alfalfa and Milo Maize Head Chops.						
Sheep No. 1—						
Fed 1800 gms. alfalfa No. 9537-8	221.8	26.3	664.2	633.2	115.2	139.5
1800 gms. maize head chops No. 9733-4	178.9	49.1	124.4	1219.9	172.8	55.1
Total fed	400.7	75.4	788.6	1853.1	288.0	194.6
Excreted 1040 gms. No. 9763	118.7	28.6	410.4	323.6	62.2	96.5
Digested	282.0	46.8	378.2	1529.5	225.8	98.1
Digested from 1800 gms. alfalfa	153.5	5.0	354.6	444.3	66.9	76.0
Digested from milo maize head chops head chops	128.5	41.8	23.61	1085.2	158.9	22.1
Percentage digested from maize head chops	71.8	85.1	19.0	89.0	92.0	40.18
Sheep No. 2—						
Fed	400.7	75.4	788.6	1853.1	288.0	194.6
Excreted 1053 gms. No. 9764	119.0	28.9	410.6	334.7	61.7	98.1
Digested	281.7	46.5	378.0	1518.4	226.3	95.5
Digested from 1800 gms alfalfa	153.5	5.0	354.6	444.3	66.9	76.0
Digested from maize head chops	128.2	41.5	23.4	1074.1	159.4	19.5
Percentage digested from maize head chops	71.7	84.5	18.8	88.0	92.2	35.45
Average percentage maize head chop dige ted	71.8	84.8	18.9	88.5	92.1	37.81
Digestion Period No. 67 With Alfalfa and Peat.						
Sheep No. 1—						
Fed 1800 gms. alfalfa No. 9537-8	221.8	26.3	664.2	633.2	115.2	139.5
1800 gms. peat No. 9748-9	308.2	14.9	180.2	628.2	181.6	486.9
Total fed	530.0	41.2	844.4	1261.4	296.8	626.4
Residue 1085 gms. Mo. 9771 (practi- cally all peat)	190.3	5.3	113.3	410.2	72.3	293.6
Peat assumed eaten	117.9	9.6	66.9	218.0	109.3	193.3
Eaten	339.7	35.9	731.1	851.2	224.5	332.8
Excreted 1464 gms. No. 9773	206.0	19.5	436.3	472.9	88.6	240.8
Digested	133.7	16.4	294.8	378.3	135.9	92.0
Digested from alfalfa	153.5	5.0	354.6	444.3	66.9	76.0
Digested from peat .....	.0	11.4	0	0	69.0	16.0
Percentage digested from peat		100.0			63.1	3.28

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber	Nitrogen free extract.	Water.	Ash.
Sheep No. 2—						
Fed.....	530.0	41.2	844.4	1261.4	296.8	626.4
Residue 1281 gms. No. 9772 (practically all peat).....	228.1	7.0	117.7	503.8	88.5	335.8
Peat assumed eaten.....	80.1	7.9	62.5	124.4	93.1	151.1
Eaten.....	301.9	34.2	626.7	757.6	208.3	290.6
Excreted 1319 gms. No. 9774.....	176.4	19.5	403.1	429.8	63.6	226.7
Digested.....	125.5	14.7	223.6	327.8	144.7	63.9
Digested from alfalfa.....	153.5	5.0	354.6	444.3	66.9	76.0
Digested from peat.....	0.	9.7	0.	0.	77.8	0.
Percentage digested from peat.....		100.			83.6	0.
Average percentage peat digested.....		100.			73.4	1.64
Digestion Period No. 68 With Alfalfa Hay.						
Sheep No. 1—						
Fed 3000 gms. No. 9537-3.....	369.6	43.8	1170.0	1055.4	156.6	233.2
Residue 3 gms.....	.4	.0	1.1	1.1	.2	.2
Eaten.....	369.2	43.8	1168.9	1054.3	156.4	233.0
Excreted 1168 gms. No. 9811.....	115.5	37.5	528.2	317.6	68.9	101.1
Digested.....	253.7	6.3	640.7	746.7	87.5	131.9
Percentage digested.....	68.70	14.38	56.52	70.82	55.94	56.60
Sheep No. 2—						
Eaten.....	369.2	43.8	1168.9	1054.3	156.4	233.2
Excreted 1265 gms. No. 9812.....	123.0	36.8	577.9	334.7	61.0	119.0
Digested.....	246.2	7.0	591.0	719.6	95.4	114.2
Percentage digested from alfalfa hay.....	66.67	15.98	50.56	68.26	60.98	49.00
Average percentage alfalfa hay digested.....	67.69	15.18	53.54	69.54	58.46	52.80
Average percentage alfalfa hay. D. E. 63 and 68.....	69.21	21.42	53.39	70.16	58.04	53.95
Digestion Period No. 69 With Peanut Hay.						
Sheep No. 3—						
Fed 4000 gms. peanut hay No. 9814-5.....	404.4	145.2	933.2	1777.6	284.0	454.4
Residue 35 gms. No. 9958.....	0.7	0.2	1.6	2.1	0.3	30.0
Eaten.....	403.7	145.0	931.6	1775.5	283.7	424.4
Excreted 1579 gms. No. 9956.....	141.6	40.6	509.1	401.4	97.3	389.1
Digested.....	262.1	104.4	422.5	1374.1	186.4	35.3
Percentage digested.....	64.92	71.99	45.33	77.39	65.96	8.31
Sheep No. 6—						
Fed 4000 gms.....						
Eaten.....	403.7	145.0	931.6	1775.6	283.7	454.4
Excreted 1677 gms. No. 9957.....	135.5	42.6	503.6	421.4	95.4	428.4
Digested.....	268.2	102.4	428.0	1354.1	188.3	26.0
Percentage digested from peanut hay.....	66.43	70.61	45.92	76.26	66.36	5.7
Average percentage peanut hay digested.....	65.68	71.30	45.62	76.82	66.16	
Digestion Period No. 70 With Kafir Stalk and Heads.						
Sheep No. 2—						
Fed 3408 gms. stalk No. 9952-1.....	239.6	55.6	873.5	1521.7	427.4	290.7
592 gms. head No. 9949-50.....	54.9	7.9	127.6	296.8	79.3	25.6
Total fed.....	294.5	63.5	1001.1	1818.5	506.7	316.3
Eaten.....	294.5	63.5	1001.1	1818.5	506.7	316.3
Excreted 1192 gms. No. 10140.....	110.6	26.2	291.3	510.2	72.1	181.5
Digested.....	183.9	37.3	709.8	1308.3	434.6	134.8
Percentage digested.....	62.45	58.75	70.91	71.94	85.79	42.62

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen free extract.	Water.	Ash.
Sheep No. 3—						
Fed.....	294.5	63.5	1001.1	1818.5	506.7	316.3
Residue 30 gms. No. 10139.....	1.5	.5	11.0	12.9	1.9	2.2
Eaten.....	293.0	63.0	990.1	1805.6	504.8	314.1
Excreted 1353 gms. No. 10141.....	110.4	29.0	329.3	582.6	87.4	214.3
Digested.....	182.6	34.0	660.8	1223.0	417.4	99.8
Percentage digested.....	62.32	53.96	66.74	67.73	82.69	31.78
Average percentage digested.....	62.39	56.36	68.83	69.84	84.24	37.20
Digestion Period No. 71 With Milo Stalk and Heads.						
Sheep No. 2—						
Fed 2464 gms. stalk No. 10044-5 ...	72.4	33.0	786.8	1108.6	207.0	256.3
1536 gms. head No. 10042-3....	127.8	35.9	113.2	1043.9	164.2	51.0
Total fed.....	200.2	68.9	900.0	2152.5	371.2	307.3
Eaten.....	200.2	68.9	900.0	2152.5	371.2	307.3
Excreted 1091 gms. No. 10185.....	131.7	20.1	243.0	485.7	66.1	144.4
Digested.....	68.5	48.8	657.0	1666.8	305.1	162.9
Percentage digested.....	34.22	70.81	73.00	77.43	82.19	53.01
Sheep No. 3—						
Fed.....	200.2	68.9	900.0	2152.5	371.2	307.3
Residue 115 gms. No. 10187.....	2.4	1.3	42.7	44.9	11.9	11.8
Eaten.....	197.8	67.6	857.3	2107.6	359.3	295.5
Excreted 1125 gms. No. 10186.....	114.9	19.6	249.2	523.4	71.0	147.0
Digested.....	82.9	48.0	608.1	1584.2	288.3	148.5
Percentage digested from milo stalks and heads.....	41.90	70.99	70.90	78.91	80.24	50.25
Average percentage milo stalks and heads digested.....	38.07	70.90	71.95	78.17	81.22	51.63
Digestion Period No. 72 With Bermuda Hay.						
Sheep No. 1—						
Fed 4200 gms. No. 10981-2.....	252.0	68.5	1129.8	2084.0	324.7	341.4
Residue 81.8 gms. No. 11105.....	4.9	1.0	27.5	30.0	6.8	11.6
Eaten.....	247.1	67.5	1102.3	2054.0	317.9	329.8
Excreted 1863.5 gms. No. 11103....	131.2	29.4	486.9	858.7	121.9	235.4
Digested.....	115.9	38.1	615.4	1195.3	196.0	94.4
Percentage digested.....	46.90	56.45	55.82	58.19	61.65	28.62
Sheep No. 2—						
Fed 4200 gms.....	252.0	68.5	1129.8	2084.0	324.7	341.4
Residue 11.8 gms. No. 11104.....	.8	.2	3.6	4.6	.9	1.8
Eaten.....	251.2	68.3	1126.2	2079.4	323.8	339.6
Excreted 1997.8 gms. No. 11102....	130.5	30.6	541.0	919.0	134.9	241.9
Digested.....	120.7	37.7	585.2	1160.4	188.9	97.7
Percentage digested from bermuda hay.....	48.05	55.20	51.95	55.80	58.34	28.77
Average percentage bermuda hay digested.....	47.47	55.82	53.88	57.00	60.00	28.70
Digestion Period No. 73 With Sudan Grass.						
Sheep No. 1—						
Fed 4200 gms. No. 10987-8.....	328.4	79.4	1265.9	1808.1	374.6	343.6
Residue 102 gms. No. 11123.....	5.6	1.3	36.6	42.4	8.2	7.4
Eaten.....	322.8	78.1	1229.3	1765.7	366.4	336.2
Excreted 1765.5 gms. No. 11133....	135.9	28.8	483.7	742.9	142.1	232.0
Digested.....	186.9	49.3	745.6	1022.8	224.3	104.2
Percentage digested.....	57.90	63.12	60.64	57.93	61.22	31.01

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen free extract.	Water.	Ash.
Sheep No. 2—						
Eaten.....	328.4	79.4	1265.9	1808.1	374.6	343.6
Residue 6 gms.....	.5	.1	1.8	2.6	.5	.5
Eaten.....	327.9	79.3	1264.1	1805.5	374.1	343.1
Excreted 1681.2 gms. No. 11134.....	142.2	32.4	442.8	698.4	136.8	228.5
Digested.....	185.7	46.9	821.3	1107.1	237.3	114.6
Percentage digested from sudan grass.....	56.63	59.14	64.97	61.32	63.43	33.40
Average percentage sudan grass digested.....	57.27	61.13	62.81	59.63	62.33	32.21
Digestion Period No. 74 With Feterita Forage Sheep No. 1—						
Eaten.....	216.7	70.6	1226.8	1759.4	575.8	350.7
Residue 505 gms. No. 11136.....	13.9	7.5	175.0	244.5	34.9	29.2
Eaten.....	202.8	63.1	1051.8	1514.9	540.9	321.5
Excreted 1390.9 gms. No. 11142.....	103.5	23.6	369.3	598.4	82.5	213.6
Digested.....	99.3	39.5	682.5	916.5	458.4	107.9
Percentage digested.....	48.96	62.60	64.88	60.50	84.75	33.56
Sheep No. 2—						
Eaten.....	216.7	70.6	1226.8	1759.4	575.8	350.7
Residue 681 gms. No. 11137.....	16.0	11.2	229.3	321.0	63.3	40.1
Eaten.....	200.7	59.4	997.5	1438.4	512.5	310.6
Excreted 1298.5 gms. No. 11143.....	97.9	26.9	321.9	555.6	90.6	223.3
Digested.....	102.8	32.5	675.6	882.8	421.9	87.3
Percentage digested from feterita forage.....	51.22	54.71	67.73	61.37	82.32	24.90
Average percentage feterita forage digested.....	50.09	58.66	66.31	60.94	83.54	29.23
Digestion Period No. 75 With Shallu Forage. Sheep No. 2—						
Eaten.....	117.2	56.7	1488.5	1913.9	293.2	330.5
Residue 747 gms. No. 11210.....	11.7	6.9	291.9	322.9	63.8	49.9
Eaten.....	105.5	49.8	1196.6	1591.0	229.4	280.6
Excreted 1762.6 gms. No. 11209.....	114.6	33.7	422.1	789.5	116.5	286.2
Digested.....	.....	16.1	774.5	801.5	112.9	.....
Percentage digested from shallu forage.....	0	32.33	64.73	50.38	49.21	.....
Digestion Period No 76 With Peanut Hay. Sheep No. 1—						
Eaten.....	396.1	127.3	1170.5	1850.1	352.0	304.1
Residue 0 gms.....	.....	.....	.....	.....	.....	.....
Eaten.....	396.1	127.3	1170.5	1850.1	352.0	304.1
Excreted 1584.4 gms. No. 11242.....	142.8	44.9	612.4	445.8	122.2	218.4
Digested.....	253.3	82.4	558.1	1404.3	229.8	85.7
Percentage digested from peanut hay	63.9	64.7	47.7	75.9	65.3	28.2

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TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERCENT—Continued.

	Protein.	Ether extract.	Crude fibre.	Nitro- gen free extract.	Water.	Ash.
Sheep No. 2—						
Fed 4200 gms.	396.1	127.3	1170.5	1850.1	352.0	304.
Residue 11.1 gms.	1.0	.3	3.1	4.9	.9	
Eaten	395.1	127.0	1167.4	1845.2	351.1	303.3
Excreted 1554.6 gms. No. 11243.	145.4	34.0	593.2	460.9	115.2	205.3
Digested	249.7	93.0	574.2	1384.3	235.9	97.3
Percentage digested from peanut hay	63.2	73.2	49.2	75.0	67.2	32.
Average percentage peanut hay digested	63.6	69.0	48.5	75.5	66.3	30.
Digestion Period No. 77 With Peanut Hay, Peanuts and Peanut Hulls.						
Sheep No. 1—						
Fed 2310 gms peanut hay No. 11232-5	224.1	76.5	632.7	975.1	200.3	201.4
1400 gms. peanuts No. 11234-7 490 gms. peanut hulls No. 11233-6	398.3	657.0	56.0	186.9	67.6	34.7
	31.1	7.4	286.8	71.0	35.2	58.3
Total fed 4200 gms.	653.5	740.9	975.5	1233.0	303.1	294.1
Residue 437.8 gms. No. 11261.	93.3	130.6	89.6	72.0	24.6	26.3
Eaten	560.2	610.3	885.9	1160.1	278.5	267.3
Excreted 1356.6 gms. No. 11281.	118.3	32.2	432.1	444.2	83.2	246.3
Digested	441.9	588.1	453.8	715.9	195.3	20.3
Digested from peanut hay, estimated	83.2	48.3	263.4	681.2	116.5	52.7
Digested from peanuts	338.7	539.8	190.4	34.7	78.8	0.
Percentage digested from peanut hay and whole peanuts	78.9	96.4	51.2	61.7	70.1	7.7
Percentage digested from whole peanuts	83.61	80.97	55.41	13.45	76.50	0
Sheep No. 2—						
Fed 4200 gms.	653.5	740.9	975.5	1233.0	303.1	294.1
Residue 0 gms.	0.0	0.0	0.0	0.0	0.0	0.0
Eaten	653.5	740.9	975.5	1233.0	303.1	294.1
Excreted 1726.4 gms. No. 11282.	159.7	43.9	590.9	586.1	101.3	244.3
Digested	493.8	697.0	384.6	646.9	201.8	49.6
Digested from peanut hay	142.53	52.79	306.86	736.20	132.8	60.8
Digested from peanuts	351.27	644.21	77.74	-89.30	69.00	-11.2
Percentage digested from peanut hay and whole peanuts	75.6	94.1	39.4	52.5	66.6	16.9
Percentage digested from whole pea- nuts	81.88	97.01	22.66	0	66.99	0
Average percentage peanut hay and whole peanuts digested	77.3	95.3	45.3	57.1	68.4	12.3
Average percentage whole peanuts digested	82.75	88.99	39.04	6.72	71.74	0
Digestion Period No. 78 With Rice Hay.						
Sheep No. 1—						
Fed 4200 gms. No. 11259-60.	237.7	57.5	1301.6	1676.2	291.9	635.0
Residue 1948.3 gms. No. 11301.	95.7	24.7	635.5	761.0	142.6	288.7
Eaten	142.0	32.8	666.1	915.2	149.3	346.3
Excreted 1459.7 gms. No. 11308.	94.6	15.9	383.8	501.6	94.3	369.6
Digested	47.4	16.9	282.3	413.6	55.0	0
Percentage digested from rice hay ..	33.4	51.5	42.4	45.2	36.8	.....

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitrogen free extract.	Water.	Ash.
Sheep No. 2—						
Fed 4200 gms. No. 11259-60.....	237.7	57.5	1301.6	1676.2	291.9	635.0
Residue 200.3 gms. No 11302.....	7.5	1.5	69.8	78.3	14.7	28.5
Eaten.....	230.2	56.0	1231.8	1597.9	277.2	606.5
Excreted 2172.3 gms. No. 11309....	137.5	22.2	491.6	799.4	139.0	582.6
Digested.....	92.7	33.8	740.2	798.5	138.2	23.9
Percentage digested from rice hay.....	42.1	60.4	60.1	50.0	49.9	3.9
Average percentage rice hay digested.....	37.8	56.0	51.3	47.6	43.4	.....
Digestion Period No. 79 With Dwarf Black Kafir Forage.						
Sheep No. 2—						
Fed 3500 gms. No. 11299-300.....	182.7	68.3	1080.8	1601.3	224.0	343.0
Residue 124.3 gms. No. 11354.....	4.1	2.2	39.6	57.6	8.4	12.4
Eaten.....	178.6	66.1	1041.2	1543.7	215.6	330.6
Excreted 1795.6 gms. No. 11373....	133.6	34.1	429.9	750.6	109.9	337.6
Digested.....	45.0	32.0	611.3	793.1	105.7	.....
Percentage digested.....	25.2	48.4	58.7	51.4	49.0	.....
Sheep No. 3—						
Fed.....	182.7	68.3	1080.8	1601.3	224.0	343.0
Residue 109.2 gms. No. 11355.....	3.5	1.8	30.4	48.6	7.4	17.4
Eaten.....	179.2	66.5	1050.4	1552.7	216.6	325.6
Excreted 2242.1 gms. No. 11374....	159.2	35.4	647.3	913.0	149.8	337.4
Digested.....	20.0	31.1	403.1	639.7	66.8	.....
Percentage digested from kafir forage.....	11.2	46.8	38.4	41.2	30.8	.....
Average percentage kafir forage digested.....	18.2	47.6	48.6	46.3	39.9	.....
Digestion Period No. 80 With Standard Milo Maize Forage.						
Sheep No. 1—						
Fed 3150 gms. No. 11352-3.....	105.2	49.8	1054.3	1416.9	201.9	321.9
Residue 1449.0 gms. No. 11436.....	39.8	19.9	475.4	636.1	145.0	132.7
Eaten.....	65.4	29.9	578.9	780.8	56.9	189.2
Excreted 1005.5 gms. No. 11487....	87.4	13.7	201.4	415.0	66.6	221.5
Digested.....	.....	16.2	377.5	365.8	0	0
Percentage digested.....	.....	54.2	65.2	46.8	0	0
Sheep No. 2—						
Fed 3150 gms.....	105.2	49.8	1054.3	1416.9	201.9	321.9
Residue 514.1 gms. No. 11437.....	11.0	7.2	173.9	219.9	50.9	51.2
Eaten.....	94.2	42.6	880.4	1197.0	151.0	270.7
Excreted 1287.8 gms. No. 11488....	97.1	15.8	296.6	580.9	84.5	212.9
Digested.....	.....	26.8	583.8	616.1	66.5	57.8
Percentage digested from milo forage.....	0	62.9	66.3	51.5	44.0	21.4
Average percentage milo forage digested.....	0	56.6	65.8	49.2	.....	.....
Digestion Period No. 81 With Acuff Sorgo Forage.						
Sheep No. 2—						
Fed 3360 gms. No. 11438-9.....	136.8	45.7	1068.8	1473.7	248.0	387.1
Residue 398 gms. No. 11502.....	9.6	3.1	138.3	159.9	45.5	41.7
Eaten.....	127.2	42.6	930.5	1313.8	202.5	345.4
Excreted 1584.5 gms. No. 11524....	112.5	27.6	351.4	686.7	107.9	298.4
Digested.....	14.7	15.0	579.1	627.1	94.6	47.0
Percentage digested.....	11.6	35.2	62.2	47.7	46.7	13.6

TABLE 8. NUTRIENTS FED, DIGESTED AND EXCRETED, IN GRAMS PER PERIOD
—Continued.

	Protein.	Ether extract.	Crude fiber.	Nitro- gen free extract.	Water.	Ash.
Sheep No. 3—						
Fed 3360 gms	136.8	45.7	1068.8	1473.7	248.0	387.1
Residue 200 gms. No. 11503	5.4	1.7	67.0	81.6	20.8	23.6
Eaten	131.4	44.0	1001.8	1392.1	227.2	363.5
Excreted 1867.5 gms. No. 11525	122.7	26.9	459.2	788.1	159.7	310.9
Digested	8.7	17.1	542.6	604.0	67.5	52.6
Percentage digested from Acuff sorgo forage	6.6	38.9	54.2	43.4	29.7	14.5
Average percentage Acuff sorgo forage digested	9.1	37.1	58.2	45.6	38.2	14.1
Digestion Period No. 82 With Rhodes Grass Hay.						
Sheep No. 1—						
Fed 4220 gms. No. 11504-5	228.5	70.6	1349.0	1808.9	302.4	440.6
Residue 1250 gms. No. 11561	62.1	18.5	402.0	548.8	97.3	121.4
Eaten	166.4	52.1	947.0	1360.1	205.1	319.2
Excreted 1216.5 gms. No. 11567	93.5	28.6	265.3	512.3	91.6	225.2
Digested	72.9	23.5	681.7	847.8	113.5	94.0
Percentage digested	43.8	45.1	72.0	62.3	55.3	29.4
Sheep No. 2—						
Fed 4200 gms. No. 11504-5	228.5	70.6	1349.0	1808.9	302.4	440.6
Residue 5 gms	.3	.1	1.6	2.2	.4	.5
Eaten	228.2	70.5	1347.4	1806.7	302.0	440.1
Excreted 1941.8 gms. No. 11568	128.4	38.4	487.2	837.1	127.0	323.7
Digested	99.8	32.1	860.2	969.6	175.0	116.4
Percentage digested from Rhodes grass hay	43.7	45.5	63.8	53.7	57.9	26.4
Average percentage Rhodes grass hay digested	43.8	45.3	67.9	58.0	56.6	27.9

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SUMMARY AND CONCLUSIONS.

This bulletin contains information concerning the productive values and digestible protein of alfalfa hay, sorghum, corn, Bermuda hay, corn silage, cotton seed, *Dolichos lablab*, feterita, kafir, milo, moth bean, peanut hay, peanuts, prairie hay, Rhodes grass hay, rice, Shallu, sorghum, Sudan hay, and wheat shorts. The relative values of the feeding stuffs, the digestibility, the productive coefficient and the composition are shown in appropriate tables.