CONNECTICUT AGRICULTURAL EXPERIMENT STATION.

Bulletin 34.—Oct. 17, 1879.

ANALYSES OF HAY.

Samples of hay from A. J. Coe, West Meriden, received June 27, 1879.

LXI. Cut May 30, from dry upland, gravelly loam. Seeded with blue grass, white clover, timothy and red-top and mown three years.

LXII. Cut June 5, from dry upland. Seeded with red clover and timothy and mown two years.

LIX. Cut June 17, from dry upland. Seeded with timothy and red-top and mown three years.

LXIII. Cut June 18, from moderately dry irrigated intervale. Seeded with timothy and red-top and mown four years.

LX. Timothy. Cut June 23, from meadow never plowed. The growth was very rank, the stalks averaging 4–4½ feet high.

The water contents of these hays when received at the laboratory was as follows:

Per cent.		Per cent.	
LXI	13.42	LXIII	17.91
LXII	16.86	LX	16.77
LIX	14.73		

To render the results comparable with other analyses on record they are all reckoned on a water content of fourteen and three-tenths per cent. For comparison, are given Wolff's averages of German hay from Menzel & Lengerke's kalendar for 1879. See also report of this station for 1878, page 57.

	West Meriden, Ct.					Germany and Austria.			
	LXI.	LXII.	LIX.	LXIII.	LX.	Inferior.	Better.		Extra.
TIME OF CUTTING.	May 30.	June 5.	June 17.	June 18.	June				
Water	14.30	14.30	14.30	14.30	14.30	14.30	14.30	15.00	16 00
Ash	5.30	6.49	5.57	6.86	3.27	5.00	5.40	7.00	7.70
Albuminoids	14.42	11.62	7.85	8.97	4.88	7.50	9.20	11.70	13.50
Fiber	19.66	25.06	24.72	28.45	32.81	33.50	29.20	21.90	19.30
Non-nitrogenous Extract	43.23	42.07	45.08	39.20	43.29	38.20	39.70	41.60	40.40
Fat	3.09	2.46	2.48	2.22	1.45	1.50	2.00	2.80	3.00

Classified according to the results of German analyses these five samples would rank, LXI as "extra," LXII as "very good," LXIII as "better" and LIX and LX as "inferior." They were sent by Mr. Coe as samples of early-cut hay and it will be observed that, with one exception, the quality deteriorates with age. It is an undoubted fact that early-cut hay is, in general, superior in quality to late-cut, other things being equal, but while some of the variations of the above samples must be attributed to this cause they are probably also caused in part by differences in soil, manuring, species of grass, etc. Very likely the high percentage of Albuminoids in LXI and LXII is to some to be attributed to the clover which they contain, though the low percentage of Fiber, especially in LXI shows that the vegetation was still immature.

In comparing the results of these analyses with those previously made at this station (see Bulletin 23), we should consider separately those containing clover, and those free from it. To the former class belong XLVIII, LII, of Bulletin 23, LXI LXII, and of these the two latter, cut about the first of June, show a decided superiority, both as regards albuminoids and fiber, over the two former cut respectively in July and August. It is to be remarked, however, that coarse and rank grass like LII is generally woody, and poor in albuminoids as is well illustrated by LX.

Of those samples containing no clover, viz: XLIX, L, LI, LIII, LVII, LVIII, LIX, LXIII, and LX, the earlier cut ones reported in this bulletin, show a slight superiority as regards albuminoids over the later cut ones formerly reported, but none of them are equal to the average German hays as given by Wolff. From all the analyses thus far made it would appear that our hays as ordinarily met with are of a coarser and more woody quality than those of Germany and Austria. Whether this difference is due to soil, climate or the kind of grasses grown would be an interesting point to determine.

In three of the above samples an attempt has been made to separate the true albuminoids from the non-albuminoid nitrogenous matters. The albuminoids were determined by four different methods, with concordant results, as follows:

	Total Nitrogenous Matter. Per cent.	Albuminoids. Per cent.
LXI	14.42	11.41
LIX	7.85	7.13
LX	4.88	3.90

These results show that a not inconsiderable part of the so-called albuminoids in these samples consists in fact of substances whose nutritive value is much less. At the same time the differences are not nearly as large as those which have been obtained by various German observers and may possibly indicate that our apparently poorer hays contain relatively as much true albuminoids as the seemingly better German ones. The nature of the non-albuminoid nitrogenous matter is still under investigation.

This bulletin has been prepared at my request by Dr. Armsby, chemist to the station.

S. W. JOHNSON, *Director.*