

THE
Connecticut Agricultural Experiment Station.

NEW HAVEN, CONN.

BULLETIN No. 96.

JANUARY, 1889.

This Bulletin describes an attempt to establish a method of valuation for mill-products which are used as feed for dairy stock.

It also contains analyses just made, of a considerable number of feeds which are now being sold in Connecticut. Some of these feeds are of excellent quality and others are very poor or worthless, or are sold at exorbitant prices.

A condensed statement is also given of the proximate composition of all the feeds in common use, and of the digestible matters contained in a ton of each, together with the quantities of nitrogen, phosphoric acid and potash per ton.

ON THE VALUATION OF FEEDING STUFFS.

It is not possible to accurately express in figures the actual feeding value or nutritive effect of a feeding stuff any more than it is possible to give a figure which shall represent the *agricultural* value of a commercial fertilizer. The reasons are alike in both cases and are evident without explanation. But some way of comparing feeds by which both their chemical composition and cost prices shall be taken account of is very desirable. A large number of mill-products are now offered for sale in this State to feeders of dairy stock. Most of them, like wheat feed, rye feed, oat feed and buckwheat middlings are residues left from the preparation of flour or meal for table use. Some are evi-

dently worth a good deal more than is charged for them ; while others are of quite inferior value. Neither buyers nor sellers know their composition nor whether the prices charged are high or low as compared with other feeds, *when their composition is taken into account.*

An attempt has been made by this Station to find out and analyze all the feeds now in the Connecticut market whose average composition is not already known, and also to offer some method of comparison or "valuation" for them.

The method here to be described is not a new one. It has been used abroad, where feeds like fertilizers are sold under guarantee as to composition and the seller is obliged to make good any deficiency. The application of the method to American feeds and prices we believe has not been attempted before, probably because sufficient data have not been at hand.

An outline of the method is as follows :

The average market prices of the feeds which form the basis of calculation can be obtained from the market reports just as the market prices of nitrogen, phosphoric acid and potash are obtained from the weekly quotations of fertilizer chemicals. The chemical composition of the feeds can be determined by analysis as the composition of fertilizer chemicals is determined.

The next step is to calculate from the chemical composition of all the feeds and their retail prices, the most probable or average retail price of a pound of albuminoids or fat or carbohydrates (fiber and nitrogen-free extract together). This problem is by no means so simple as that of determining the cost of nitrogen, phosphoric acid or potash. Each of the last-named can be bought by itself ; potash for instance in muriate of potash and nitrogen in dried blood, and from the price of the muriate or the blood the cost per pound of potash or nitrogen can be directly deduced. But there are no feeds which contain only one or even only two food-ingredients. All of them contain at least three. Under these circumstances to calculate the cost of each food-ingredient can only be done algebraically by an application of the "method of least squares" so-called. The tedious details of the calculation would be out of place here. The data necessary for solving this problem are as follows :

By correspondence with dealers throughout the State as well as with purchasers, the average retail prices of fine feed (as distinguished from coarse feed, hay, stalks, straw, etc.) have been

obtained as accurately as possible. The average composition of these feeds is known from the tables of analyses which are annually revised and published by this Station. A considerable number of analyses have also been made within the last month of feeds new to our market, so that we have a tolerably complete statement of their composition.

The feeds used in calculating the average cost of albuminoids, fat and carbohydrates are as follows :

The selling prices per ton are believed to represent the average for December. The explanation of the column headed "Valuation" is given further on.

FINE FEEDS, COST AND VALUATION.

	Selling Price per ton.	"Valuation."
Cotton seed meal.....	\$27.75	\$30.37
Linseed meal, old process	32.25	25.92
Wheat bran	20.50	20.22
Wheat middlings.....	22.00	21.20
Rye bran	21.00	19.89
Corn meal	21.50	19.59
Gluten meal.....	23.00	25.38
Hominy chops.....	21.00	23.31
Malt sprouts	17.00	20.27
Oat middlings	25.00	24.31
Rye feed.....	20.00	19.62
	<u>\$251.00</u>	<u>\$250.08</u>

The calculation based on these feeds and their average composition and prices shows that the present (Dec. 1888) average retail cost of a pound each of albuminoids, fat and carbohydrates is as follows :

COST OF FOOD INGREDIENTS.

Albuminoids (N. x 6.25).....	1.6 cents.
Fat	4.2 "
Carbohydrates96 "

To test the accuracy of these figures they have been applied to the feeds from which they were derived and the results are given above in the column headed "Valuation." It appears that the total calculated cost and the total actual cost agree within one dollar. It may be noted in passing that these figures differ radically from those used in Germany, which were derived in a

similar way from German market quotations and which in absence of any other data have been previously applied to American feeding stuffs.

To explain their use they are here applied to the sample of Malt Sprouts, No. CCCXXXII, the analysis of which is given further on in this Bulletin.

	The sample contains in 100 pounds.	The sample contains per ton.	Cost per pound.	Ton Value.
Albuminoids.....	23.87	477.4 @	1.6 cents.	\$7.64
Fat.....	1.38	27.6 @	4.2 "	1.16
Carbohydrates*.....	58.81	1176.2 @	.96 "	11.29
				<hr/> \$20.09
Cost.....			\$15.00	
"Valuation".....			20.09	

The meaning of this statement must be clearly borne in mind. It does *not* mean that this feed is certainly worth for feeding purposes \$5.09 more per ton than it costs. It does *not* mean that malt sprouts are certainly worth more than another feed which has a lower valuation. It does not mean that it is a palatable and easily digestible feed. What this numerical statement does mean is this: that in malt sprouts of this quality and price the purchaser gets the food ingredients named, for less than their average market price by \$5.09. This leaves a great deal to be known about the feed, to be sure, but it nevertheless is a very useful piece of information. To illustrate: To know that potash in muriate costs $4\frac{1}{4}$ cents a pound while in sulphate it costs $5\frac{1}{2}$ cents, leaves much still to be known about the agricultural uses of these two salts, and spite of the difference in cost there will be much use wisely made of the more costly one, but a knowledge of this difference is of great value to purchasers of potash salts. Just so to know that albuminoids, fat and carbohydrates cost very much less in malt sprouts or cotton-seed meal than in wheat bran, will not induce an intelligent dairyman to give up bran and feed malt sprouts or cotton seed meal wholly in its place, but it may induce him to try substituting one of these for a part of the bran or other feed which he uses, and when he finds a new feed offered he will be disposed to look not only on its gross cost but on the cost of the food-ingredients in it as compared with the usual market rates. These figures are provisional and will change

* The sum of nitrogen-free extract and fiber.

somewhat with the state of the market. They apply *only to one class of feeds*, namely, dry fine mill-products or brewery refuse like malt sprouts and dried brewers' grains. It would be desirable also to learn the cost per pound of *digestible* albuminoids, fat and carbohydrates. Calculations of that kind are now being attempted, but to make them reliable further data regarding the digestibility of feeds will be necessary.

ANALYSES OF FEEDING STUFFS.

COTTON SEED BRAN.

Sold by J. E. Soper & Co., Boston, Mass. Sampled and sent by R. E. Pinney, Suffield. Cost \$22 per ton in 100 lb. sacks.

ANALYSIS.

Water.....	11.99
Ash.....	2.18
Albuminoids.....	6.37
Fiber.....	30.83
Nitrogen-free extract.....	47.33
Fat.....	1.30
	100.00

This material contains less fat (ether extract) and no more albuminoids than hay of fair quality. The fiber probably comes from cotton seed hulls. The Cotton Seed Bran costs as much as wheat bran and is far less valuable as feed.

The "Valuation" by the method just explained is \$18.13 per ton, or \$4.00 less than the cost. Even this is too high an estimate because more than a third of the carbohydrates consists of fiber which is the least valuable and least digestible part of the carbohydrates.

THE COLUMBIA CURED FEED FOR HORSES AND CATTLE.

CCXC. This feed claims to be made "with oats and corn as a basis, reinforced by barley, wheat, rice and rye, and embodies putting into practice a theory generally held by thoughtful horse and dairy-men, that a greater variety in feed than is usually convenient would be of advantage to the animal." "It contains no tonic or medicine of any description to create a false appetite." "We claim it to be the strongest and most nutritious feed ever offered to the public."

The analysis of this article follows. The composition of wheat bran of average quality is also given for comparison.

	Concentrated Feed."	Wheat Bran.
Water	11.41	12.38
Ash.....	5.54	5.59
Albuminoids	15.06	15.36
Fiber.....	7.44	9.34
Nitrogen-free extract	54.83	53.50
Fat	5.72	3.83
	<hr/> 100.00	<hr/> 100.00

The claim that the feed is composed of a variety of grains is a just one. Corn, rice, oats and barley were identified with the microscope. Rye and wheat may also have been present. In chemical composition the most striking difference between the "Concentrated Feed" and wheat bran is that the feed contains about two per cent. more fat and two per cent. less fiber. Its price is \$25.00 per ton and its "valuation" \$21.57. Whether a desirable variety of food can more economically be provided by such ready-made mixtures as this or by purchase of the different grains singly and home-mixture must be determined by the purchaser.

**"THE CONCENTRATED FEED FOR HORSES, CATTLE, SHEEP, SWINE,
POULTRY, ETC."**

Manufactured at Pearl Mills. For sale by the Concentrated Feed Co., 33 Wendell St., Boston, Mass.

"There has been nothing invented for years," says the manufacturer's circular, "which has proved such a blessing to all classes of domestic animals as the above feed."

The directions which accompany the feed, show that it is offered as a medicinal or condimental food. Thus we read, "For an ordinary working or driving horse feed one single handful of the feed with one-fourth less his usual allowance of grain at each feed, wet or dry. For worms, twice the quantity for five days." For cows, "feed one half-pint or single handful of the feed with the usual amount of grain, wet or dry. For Garget, feed twice the quantity until it entirely disappears." Still more startling is the announcement, "this disease," hog cholera, "in its most

malignant form yields readily to the free use of the Concentrated Feed."

Following the claims of the seller and the directions for use are the usual number of testimonials from those who have used the feed with satisfaction.

This material, or a similar one under the same name, has been sold more or less in the State since 1882, and in the report for 1884, page 111, its merits were fully discussed. During the present year a sample was received from W. H. Hammond, Hampton, Conn., who says in regard to it: "The cost price is 6 cents per pound and is in 12 pound bags to be sold for \$1.00 or 8 cents per pound." "The above price" (8 cents per pound), "is as given me at ton lots, or 3 tons for \$300." "I have tried it and think it not up to the mark as advertised in their circular." The sample sent by Mr. Hammond was analyzed and reported to him and was also published in our weekly statement of No. 41, of Sept. 15. The analysis is as follows:

	Concentrated Feed. CCLXXXVIII.	Wheat Bran.
Water	11.39	12.38
Salt	13.20	----
Other mineral matters.....	14.22	5.59
Albuminoids	14.87	15.36
Fiber	4.48	9.34
Nitrogen-free extract.....	47.42	53.50
Fat.....	4.42	3.83
	<hr/>	<hr/>
	100.00	100.00

This "invention" which has proved "a blessing to all classes of domestic animals," apparently consists of a mixture of wheat and corn with 13 per cent. of salt and perhaps a little of some more concentrated feed. Disregarding the salt, an equal weight of wheat bran would supply as much nutriment and would cost perhaps \$20.50 per ton. The "invention" costs \$100 per ton in 3 ton lots or at the rate of \$160 per ton in small quantities.

THE CONCENTRATED EGG PRODUCER.

Made by the Concentrated Feed Co., No. 14, Wendell St., Boston, Mass. A sample of this material furnished by Mr. Hammond of Elliott, had the following composition.

	CCLXXXIX.
Water	10.15
Salt	17.20
Other mineral matters	6.40
Albuminoids	14.19
Fiber	3.37
Nitrogen-free extract	44.94
Fat	3.75
	100.00

The mineral matter contains a quite insoluble oxide of iron. The Egg Producer has a somewhat lower feeding value probably than the Concentrated Food for Cattle. It contains both corn and wheat and some more concentrated feed. Wheat bran contains, pound for pound, as much nutriment. The cost of the Concentrated Egg Producer is 50 cents a pound or a dozen pounds for \$4.00. This latter price is equivalent to \$660 per ton.

As food, neither the Concentrated Feed for Cattle or the Egg Producer are worth more than a small fraction [about one-fifth in the case of the Feed for Cattle and one-thirtieth in the case of the Egg Producer] of what they cost. As condiments they are worthless. It has been abundantly proved that condimental foods have no advantage over others by reason of the condiments in them.

As medicines, they may well be distrusted in view of the absurd claims made by the seller.

RYE FEED.

CCCXX. The residue from the manufacture of rye flour. From Betts & Alling, New Haven. Cost \$20.00 per ton.

Water	12.77
Ash	2.62
Albuminoids	13.56
Fiber	2.75
Nitrogen-free extract	65.80
Fat	2.60
	100.00

Cost \$20.00 per ton.

"Valuation" 19.59 per ton.

OAT MIDDINGS.

CCCXXI. From Betts & Alling, New Haven, cost \$25.00 per ton. This is the residue from mills where oat meal is prepared. It is claimed that only the brightest and heaviest oats can be used for the purpose. The quality of the middlings of course depends both on the oats and also on the way they are ground and screened. To illustrate this an analysis is given below, made in 1886, of oat middlings from a different source.

	CCCXXI. Betts & Alling.	CCXVII. B. F. Case.
Water	9.19	8.19
Ash	3.24	4.24
Albuminoids	20.00	12.64
Fiber	3.80	12.48
Nitrogen-free extract	56.19	56.31
Fat	7.58	6.14
	<u>100.00</u>	<u>100.00</u>
Cost	\$25.00 per ton.	
"Valuation"	\$24.29 per ton.	

BARLEY SCREENINGS.

Sent by C. L. Gold, West Cornwall. The two samples differ in price by \$2.00 per ton, which represents the cost of grinding. CCCXXVII is fine ground.

	CCCXXII.	CCCXXVII.
Water	12.42	12.02
Ash	3.60	3.51
Albuminoids	12.12	12.50
Fiber	7.62	7.00
Nitrogen-free extract	61.60	62.03
Fat	2.64	2.94
	<u>100.00</u>	<u>100.00</u>
Cost per ton in car lots	\$15.00	17.00
"Valuation" per ton	\$19.39	19.72

By the single ton the prices would probably be from \$1.00 to \$1.50 higher.

OATS.

CCCXXIV. Mixed Oats, No. 2. 34 pounds in the bushel.
Cost 33 cents per bushel of 32 pounds.

CCCXXV. White Oats, No. 2. 32 pounds to the bushel.
Cost 34½ cents per bushel.

Both samples were sent by C. L. Gold, West Cornwall.

	CCCXXIV.	CCCXXV.
Water	11.59	11.28
Ash	3.15	3.59
Albuminoids	14.25	12.43
Fiber	7.78	9.77
Nitrogen-free extract	58.12	57.69
Fat	5.11	5.24
	<hr/>	<hr/>
	100.00	100.00
Cost per ton in car lots	\$20.62	21.71
"Valuation" per ton	\$21.50	21.34

The analyses show nothing to warrant a difference of \$1.00 in the price of the two samples. The White Oats are brighter, though not as heavy as the Mixed Oats. Mixed Oats ground with corn make the meal dark-colored and so lessen its market- if not its feeding-value.

VARIOUS FEEDS.

CCCXXVIII. Old Process Linseed Meal. Price, \$27.00 per ton in car lots. Sent by C. L. Gold, West Cornwall.

CCCXXXI. "Gluten No. 1 Feed," also called Dry Sugar Feed. Price, \$19.70 per ton in Middlefield in car lots.

CCCXXXII. Malt Sprouts from a Meriden brewery. Price, \$15.00 per ton.

The last two samples were sent by C. E. Lyman, Middlefield.

CCCXXXVIII. Glen Cove Starch Feed. Sold by Bradley & Davis, New Haven. Cost, 20 cents a bushel. A bushel weighs about 60 pounds, though the weight varies somewhat in different lots.

CCCXXXIII. Apple Pomace from J. H. Dickerman, Mt. Carmel.

	Old Process Linseed Meal. CCCXXVIII.	Gluten No. 1 Feed. CCCXXXI.	Malt Sprouts. CCCXXXII.	Glen Cove Starch Feed. CCCXXXVIII.	Apple Pomace. CCCXXXIII.
Water	10.27	11.66	10.10	66.53	69.90
Ash	5.12	.56	5.84	.25	.71
Albuminoids	36.06	17.81	23.87	6.01	1.58
Fiber	7.36	3.08	10.76	2.00	4.86
Nitrogen-free extract	34.53	59.56	48.05	22.47	21.24
Fat	6.66	7.33	1.38	2.74	1.71
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	100.00	100.00	100.00	100.00	100.00
Cost per ton	\$27.00	19.70	15.00	6.66	?
Valuation per ton	\$25.16	23.88	20.02	8.92	

In Linseed Meal albuminoids, fat and carbohydrates cost more than in any other concentrated feed which is in common use.

Gluten No. 1 Feed is made in Buffalo, N. Y., and is a waste product from the manufacture of glucose. Its digestibility has not been determined, but it is probably not greatly inferior to corn meal in this regard, and at this price is a cheap feed, regarded simply from the point of view of composition as shown by the analysis. By the single ton it would cost from \$1.00 to \$2.00 more than by car load. It has been used by a few farmers in Wallingford and is thought to be excellent for producing milk and butter.

Starch Feed when it can be fed fresh is popular with those who sell milk. Two-thirds of its weight consists of water, so that it quickly sours if exposed to the air in warm weather.

Apple Pomace is prized by those who have it as a food for cattle and horses. This sample, which is free from straw and consists wholly of the apple "cheese" from the cider press, contains about as much albuminoids, ten per cent. more carbohydrates and four times as much fat (ether extract) as green fodder maize. It has a faint vinous smell and contains about a quarter of one per cent. of free acetic acid. Ensilaged like maize fodder it would be a valuable winter feed.

BUCKWHEAT MIDLINGS.

A mill-product obtained in making buckwheat flour. Made by the Quinebaug Store, Danielsonville.

CCCXXXVII. Made in December, 1888. CCXIII. Made in 1886.

ANALYSES.		
	CCCXXXVII.	CCXIII.
Water	13.71	16.33
Ash	4.35	5.50
Albuminoids	31.25	30.31
Fiber	5.70	4.02
Nitrogen-free extract	36.93	36.29
Fat	8.06	7.55
	100.00	100.00
Cost per ton		\$21.00
Valuation per ton		24.95

This is one of the cheapest and richest feeds in market and in the opinion of some who are using it is unsurpassed in favorable effect on the quality and quantity of the milk-yield.

MAIZE KERNEL.

Old and New Crop compared.

CCCXLI. No. 2 New York Corn. *Old Crop.* Sold by Bradley & Davis, New Haven. Cost, 56 cents per bushel.

CCCXXVI. No. 2 High Mixed Corn. *Old Crop.* Sent by C. L. Gold, West Cornwall. Cost, 56 cents per bushel. A struck bushel weighs 58 pounds.

CCCXXIX. No. 2 High Mixed Corn. *New Crop.* Sent by C. L. Gold. Cost, 46 cents per bushel. A struck bushel weighs 50 pounds.

CCCXXXIX. Good Western Corn. *New Crop.* Sent by C. E. Lyman, Middlefield. Cost, 46 cents per bushel *in car lots.*

CCCXL. Mason Co. Yellow Corn of best quality. *New Crop.* Sold by Bradley & Davis, New Haven. Cost, 53 cents per bushel.

ANALYSES AND VALUATIONS.

	CCCXLI. No. 2. Old Crop.	CCCXXVI. High Mixed. Old Crop.	CCCXXIX. High Mixed. New Crop.	CCCXXXIX. West'n Corn. New Crop.	CCCXL. Best Yellow. New Crop.
Water	14.64	13.09	20.00	19.73	20.30
Ash	1.12	1.20	1.25	1.06	1.10
Albuminoids	9.30	9.40	8.06	8.68	8.40
Fiber	1.42	1.53	1.54	1.61	1.38
Nitrogen-free extract.	69.57	70.67	65.38	64.87	65.20
Fat	3.95	4.11	3.77	4.05	3.62
	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>
Cost per ton	\$20.00	20.00	16.42*	16.42*	18.92
Valuation per ton....	\$19.93	20.32	18.60	18.93	18.51

* In car lots. Probably about \$17.80 to \$18.00 by the ton.

The new crop corn contains over six per cent. more of water than old crop corn, and correspondingly less of food-ingredients. This additional water makes the corn, and especially the meal ground from it, more liable to spoil by heating. It also makes the kernels plumper and considerably lighter, bulk for bulk, than old corn. Repeated trials have shown that old corn of the best quality weighs from 58 to 59 pounds per struck bushel, while a bushel of the best new corn weighs only 50 to 52 pounds.

The valuation of the new corn is about \$1.45 per ton less than that of old corn, which represents a difference of 4 cents per bushel; and this seems to be about the difference made in dealers' quotations.

THE AVERAGE COMPOSITION OF FEEDS FOR DAIRY STOCK.

The following table shows the average composition of all the commonly used feeds; also the pounds of digestible food-ingredients in a ton of each, and the quantities of nitrogen, phosphoric acid and potash per ton.

The different kinds of hay, in absence of direct experiments, have been assumed to have the same digestibility as meadow hay of medium quality. Hominy chops and starch feed are assumed to be as digestible as maize kernel, gluten meal to be as digestible as linseed meal. The same digestibility is assumed for all wheat feeds and also for rye bran. Oat feed is reckoned as digestible as oats, and fresh maize fodder as digestible as maize stover. These assumptions are more or less arbitrary, but are the best that can be done in absence of direct feeding experiments with the feeding stuffs named. The last three columns of the table give in pounds the quantities of nitrogen, phosphoric acid and potash contained in one ton of each feed. These fertilizing ingredients can be almost wholly recovered in the solid and liquid excreta of dairy stock except what little goes into the calf dropped yearly and what is carried off in the milk. 1000 gallons of milk contain about 46 pounds of nitrogen, 17 pounds of phosphoric acid and 14 pounds of potash.

AVERAGE COMPOSITION OF THE WINTER FOOD OF DAIRY STOCK IN CONNECTICUT.

	Percentage Composition.						Pounds of Digestible Matter in one Ton.				Pounds of Nitrogen and Phosphoric Acid in one ton.		
	Water.	Ash.	Albuminoids.	Fiber.	Nitrogen-free Extract.	Fat.	Albuminoids.	Fiber.	Nitrogen-free Extract.	Fat.	Nitrogen.	Phosphoric Acid.	Potash.
Clover Hay	11.38	6.23	12.55	26.85	40.55	2.44	124.0	256.1	468.0	20.8	40.2	13.2	44.0
"Clover Hay" [Baled]	15.11	3.17	6.44	39.77	43.73	1.78	63.6	379.4	504.5	15.2	20.6	6.0	22.0
Oat Hay [cut when in milk]	10.68	6.42	8.53	29.92	41.94	2.51	96.4	345.9	523.4	24.0	27.2	---	---
Hay from Hungarian Grass	7.15	5.83	7.22	28.25	49.41	2.14	81.6	326.6	616.6	20.5	23.2	7.0	25.6
Hay from Orchard Grass	8.32	5.72	6.69	32.25	44.04	1.98	75.6	384.4	549.6	18.9	21.4	5.6	32.8
Hay from Red-top	8.32	6.14	7.50	29.62	46.72	1.70	84.8	342.4	583.0	16.3	24.0	---	---
Hay from Mixed Meadow Grasses	15.96	4.62	6.38	29.90	41.05	2.09	72.1	345.6	512.3	20.0	20.4	---	---
Timothy Hay	10.21	4.19	6.15	30.35	46.98	2.12	69.5	349.8	586.2	20.3	19.6	7.0	31.4
"Timothy Hay, Prime Quality Baled"	15.95	3.93	6.20	26.60	45.13	2.19	70.1	307.5	563.2	20.9	19.8	5.8	26.2
Maize Fodder, Field-cured	30.60	4.17	5.14	19.61	39.08	1.40	53.5	258.9	499.6	14.6	16.4	4.0	32.8
Maize Stover, Field-cured	24.44	4.53	5.29	24.17	40.09	1.48	55.0	319.6	513.2	15.4	17.0	4.4	35.2
Wheat Bran	12.38	5.59	15.36	9.34	53.50	3.83	239.6	61.6	825.0	52.8	49.0	60.2	32.2
Wheat Middlings	12.10	3.68	16.77	4.57	58.46	4.42	261.6	30.1	901.5	61.0	53.6	27.2	13.6
Wheat Shorts	12.74	4.25	13.83	7.45	57.59	4.14	215.7	49.2	888.0	57.8	44.2	46.2	24.6
Maize Kernel Flint, Raised in New England	12.23	1.42	10.91	1.37	69.16	4.91	171.3	16.9	1262.9	83.2	34.8	12.6	8.0
Maize Kernel Dent, Raised in New England	10.76	1.52	10.12	1.78	71.39	4.43	158.9	22.0	1303.6	75.0	32.4	13.4	8.6

AVERAGE COMPOSITION OF THE WINTER FOOD OF DAIRY STOCK IN CONNECTICUT—Continued.

	Percentage Composition.						Pounds of Digestible Matter in one Ton.						Pounds of Nitrogen and Phosphoric Acid in one ton.				
	Water.	Ash.	Albuminoids.	Fiber.	Nitrogen-free Extract.	Fat.	Albuminoids.	Fiber.	Nitrogen-free Extract.	Fat.	Nitrogen.	Phosphoric Acid.	Potash.	Nitrogen.		Phosphoric Acid.	
														one ton.	one ton.	one ton.	one ton.
Maize Kernel Western Yellow, Old Crop.....	14.64	1.12	9.30	1.42	69.57	3.95	146.0	17.5	1270.3	66.8	29.8	9.9	6.4	29.8	9.9	6.4	
Maize Kernel Western Yellow, New Crop.....	20.30	1.10	8.40	1.38	65.20	3.62	131.8	17.1	1190.5	61.3	26.9	9.7	6.2	26.9	9.7	6.2	
Maize Kernel Western, High Mixed, New Crop.....	20.00	1.25	8.06	1.54	65.38	3.77	126.5	19.1	1193.8	63.8	25.7	10.9	7.1	25.7	10.9	7.1	
Maize Kernel Ground, "Corn Meal".....	15.60	1.45	9.15	1.98	67.96	3.84	143.7	24.5	1241.2	65.0	29.2	12.6	8.0	29.2	12.6	8.0	
Oat Bran, "Oat Feed".....	8.19	4.24	12.64	12.48	56.31	6.14	185.4	41.7	830.0	101.2	45.0	22.2	13.2	45.0	22.2	13.2	
Rye Bran.....	11.49	3.59	15.28	3.52	63.66	2.46	238.4	23.2	981.6	33.9	48.8	27.8	18.0	48.8	27.8	18.0	
Cotton Seed Meal.....	8.32	7.26	42.39	5.69	22.98	13.36	752.0	---	---	---	---	---	---	---	---	---	
Linseed Meal, Old Process.....	9.21	5.79	32.26	9.13	35.26	8.35	525.8	---	---	---	---	---	---	---	---	---	
Linseed Meal, New Process.....	10.75	5.57	32.85	9.46	38.29	3.08	535.5	---	---	---	---	---	---	---	---	---	
Hominy Chops.....	11.14	2.50	9.84	3.58	64.51	8.43	154.5	44.3	1178.0	142.6	31.4	23.8	12.2	31.4	23.8	12.2	
Malt Sprouts.....	10.28	5.67	22.96	10.72	48.59	1.79	368.1	70.5	661.8	35.8	73.4	28.0	32.0	73.4	28.0	32.0	
Gluten Meal.....	9.28	7.77	29.73	1.56	52.08	6.58	463.8	10.3	803.2	90.7	95.0	9.0	1.2	90.7	95.0	9.0	
Brewers' Grains, Wet.....	75.01	1.01	5.57	3.87	12.86	1.68	81.3	30.2	164.6	28.2	17.8	6.2	1.0	28.2	17.8	6.2	
Brewers' Grains, Dry.....	6.78	3.68	20.01	11.21	52.55	5.77	292.1	87.4	672.6	96.9	64.0	22.0	3.6	96.9	64.0	22.0	
"Starch Feed".....	64.71	.23	6.17	3.19	22.52	3.18	96.9	38.4	412.6	53.8	19.6	---	---	---	---	---	