

## **The Effect of Type of Feed on the Solids-not-fat Content of Milk.**

By L. L. ROUX, M.Sc.(Ill.), Animal Husbandry Officer,  
G. N. MURRAY, M.Sc.(Agric.), Animal Husbandry Officer,  
Onderstepoort, and  
D. J. SCHUTTE, B.S.A., M.Sc., Senior Animal Husbandry  
Officer.

### **INTRODUCTION.**

COMPLAINTS, largely from cheese factories, regarding the low solids-not-fat (S.N.F.) content of milk from commercial herds, induced Schutte (1929) to make a statistical analysis involving 5,600 observations on the S.N.F. percentage of milk from cattle at Agricultural Schools and others belonging to commercial herds. The results of the analysis permitted the suggestion that in this country lack of selection and breeding for a high fat percentage also adversely influenced the S.N.F. percentage, as these two properties are closely correlated. Plane of nutrition and method of feeding are considered next in importance in influencing the percentage of S.N.F. Variations in different parts of the country are evident, while the school herds reflected smaller variations from month to month than did the commercial herds. Detrimental effects may also result from climatic and seasonable influences and indirectly through the feed in many herds where hardly any supplements are given.

An experiment was conducted at the Veterinary Research Laboratory, Ermelo, to determine the influence of three types of rations on the S.N.F. percentage when season and period of lactation are the same for all the groups. The rations used were compiled to supply identical amounts of protein and total digestible nutrients. The types of rations were: (1) high concentrate; (2) high dry roughage, and (3) high succulent. These rations more or less represent conditions on the farm at different seasons of the year when adequate amounts of food are given for maintenance and production.

### **MATERIALS AND METHODS.**

#### **EXPERIMENTAL ANIMALS AND RATIONS.**

Twenty-one grade Friesland cows which came into their first lactations during 31.3.32 to 2.5.32, were available. Eighteen of the cows were divided into three groups of equal numbers after they had been milking for three to five months. Milk production [fat-corrected-milk yield (F.C.M.)] and S.N.F. percentage were considered in making up the three groups, so as to get the productions more or less equal.

The following were the rations fed to the cows during the different periods:—

A. Up to 25.8.32 all cows received normal balanced rations consisting of maize silage at the rate of approximately 3 lb. per 100 lb. live weight, and teff hay at the rate of approximately 1 lb. per 100 lb. live weight, while the concentrate ration, consisting of 4 parts maize meal, 2 parts bran and 1 part peanut meal (all by weight), was fed at the rate of 3 lb. per gallon of milk produced. Bone meal and salt (2:1) was fed at the rate of 6 oz. per cow per day.

B. From the 26th August to the 31st December the following particular rations were fed to the respective groups:—

*Group I*—heavy grain feeding.

Teff hay:  $\frac{1}{2}$  lb. per 100 lb. live weight.  
 Maize silage: 1 lb. per 100 lb. live weight.  
 Concentrates: 6 lb. per gallon of milk produced.  
 Bone meal and salt (2:1): 6 oz. per cow per day.  
 (Group I concentrates: Ground maize—6 lb.  
 Bran, wheaten—3 lb.  
 Ground peanut cake—1 lb.)

*Group II*—heavy dry roughage feeding.

Teff hay: *ad lib.*  
 Maize silage: 1 lb. per 100 lb. live weight.  
 Concentrates: 2 lb. per gallon of milk produced.  
 Bone meal and salt (2:1): 6 oz. per cow per day.  
 (Group II concentrates: Ground maize—2 lb.  
 Bran, wheaten—2 lb.  
 Ground peanut cake—5 lb.)

*Group III*—heavy succulent feeding.

Maize silage: *ad lib.*  
 Teff hay:  $\frac{1}{2}$  lb. per 100 lb. live weight.  
 Concentrates: 2 lb. per gallon of milk produced.  
 Bone meal and salt (2:1): 6 oz. per cow per day.  
 (Group III concentrates: similar to that of Group II.)

The cows were milked at 5.30 a.m. and 4.30 p.m. During the day they were run in three separate dry camps situated near the byre and well supplied with shade. The hay rations were fed in suitable racks in the exercise camps at 8.30 a.m. The cows were watered at 8.30 a.m. and 4 p.m. as they went to and from the exercise camps.

C. From the 1st January, 1933, the supply of silage being exhausted, the cows were put out on pasture. The teff hay and concentrate rations remained unchanged. Groups I and II were put out on pasture daily for about two hours while the cows in Group III grazed for about 5 to 6 hours daily.

## SAMPLING AND B.F. AND S.N.F. DETERMINATIONS.

The cows were weighed weekly between 7 and 9 a.m. which was after milking and before feeding and watering.

The milk of each cow was weighed on a dairy scale immediately after each milking. It was then thoroughly mixed and an aliquot sample of the milk of each cow was taken at each milking, a Scoville Sampler being used for this purpose. Weekly composite milk samples were made for each cow. These samples were collected in two sets of glass-top fruit jars, into each of which, at the commencement of the week's sampling,  $\frac{1}{2}$  c.c. of formaldehyde was measured and a glass stirring rod was placed. The samples were well stirred whenever fresh milk was added. The weekly composite samples were tested as soon as possible after being completed.

The Gerber milk test was employed to obtain the percentage of butter fat (B.F.). Before the sample for the test was taken from composite samples, the jar containing the latter was placed in a hot water bath and the contents stirred until complete suspension of the cream was achieved. After the sample of milk was taken for the determination of the fat percentage, the remainder of the composite sample was placed in a beaker which was placed in a cold water bath and stirred from time to time. The temperature and lactometer readings were taken when the milk temperature was in the vicinity of 60° F.

## RESULTS.

(a) *Feed Consumption.*—The following table has been compiled from Appendix Tables I and II. The average daily per capita consumption is indicated for each group during the three periods.

TABLE I \*

*Average Daily Feed Consumption of the Cows in the Three Groups.*

	Ground maize.	Bran.	Ground peanut cake.	Silage.	Teff hay.	Dig. Crude protein.	Total Dig. nutrients.	Nutri- tive ratio.
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	
Period A.								
Group I..	4.52	2.28	1.06	15.42	9	1.468	12.98	1 : 7.84
Group II.	4.33	2.22	1.04	21.67	9	1.507	13.886	1 : 8.21
Group III	4.63	2.33	1.09	24.33	9	1.60	14.70	1 : 8.19
Period B.								
Group I..	8.84	4.42	1.47	9.17	4.5	2.002	14.80	1 : 6.39
Group II.	1.07	1.07	2.6	8.33	17.86	1.884	13.812	1 : 6.33
Group III	0.96	0.96	2.4	45.87	4.5	1.793	13.658	1 : 6.61
Period C.								
Group I..	8.84	4.42	1.47	—	4.5	1.901	13.177	—
Group II.	1.05	1.05	2.62	—	19.2	1.837	12.981	—
Group III	0.96	0.96	2.41	—	4.5	1.292	5.55	—

\* [The analyses given in Feeds and Feeding (Henry and Morrison) were used in the computations of nutritive values. The use of the analyses was considered suitable for comparative purposes.]

(b) *Weights and Production.*—The average weights, milk production, F.C.M.\*, B.F. percentage and S.N.F. percentage for four weekly periods are given in the following table. Details are contained in the appendix tables.

To illustrate more clearly the differences during the progress of the experiment, the relative weights, milk production, F.C.M., B.F. percentage and S.N.F. percentage have been determined; these are given in Table III, from which the graphs in diagram I have been drawn.

## DISCUSSION OF RESULTS.

(a) *Milk Production and Feed Consumption.*—Forbes and Kriss [Kriss (1931)] have devised a new method of application of the net-energy conception in order to derive at the energy requirements of milk production, optionally, in terms of metabolisable energy or total digestible nutrients. The method is based on three energy relationships. The first is the utilisation of metabolisable energy for milk production, which was found to be 69·3 per cent. The second is the utilisation of metabolisable energy for body increase, which was 58·4 per cent. for steers and cows, and 57·5 per cent. for cows only. The third is the relationship between the metabolisable energy of approximately complete rations and the total digestible nutrients of the same rations. It was found that the average metabolisable energy per pound of total digestible nutrients was 1·616 Therms.

In the analysis of the data of this experiment, the above relationships have been used to express the amount of milk produced in the form of total digestible nutrients, thus permitting a better method of comparing daily intake with the daily production on the rations of the three groups.

The average amount of milk produced by the cows in each of the three groups was first brought to the F.C.M. (Fat-corrected-milk-yield) by means of the formula given by Gaines (1928). Gaines also found that one pound of F.C.M. milk has an energy value of 340 calories. The F.C.M. can therefore be converted into therms and then by using the factors given above, the therms can be converted into metabolisable energy, and the metabolisable energy into total digestible nutrients. The results for the three groups during ten four-week periods are given in Table IV in which only the F.C.M. and the equivalent total digestible nutrients are given.

Forbes and Kriss (1931) found by direct determinations that the metabolisable energy required for the maintenance of a thousand pound cow was 8·487 Therms, and this is equivalent to 5·252 lb. total digestible nutrients. The amounts of total digestible nutrients consumed by the cows in the three groups is shown in Table I. Period A is up to the third month and Period B from the fourth to the seventh month that observations were commenced to be made. During Period A group I received daily 12·98 lb. T.D.N. of which, according to Forbes and Kriss, 5·252 lb. were necessary for maintenance, so that 7·728 lb. were available for milk production, which

[\* F.C.M. = Fat-corrected-milk yield derived from the formula  $\cdot 4 M. + 15 F.$  (M. lb. milk, F. lb. butterfat) constructed by Gaines (1928).]

is somewhat in excess of the equivalent T.D.N. produced as milk. During period B the excess was even larger. Similar results are reflected in the cases of groups II and III.

For protein requirements Forbes and Kriss (1931) allow 0.6 lb. per 1,000 lb. live weight per day, while for milk production an allowance of 1.25 to 1.75 times the estimated protein of the milk is made. When 0.6 lb. is subtracted from the digestible crude protein, as given in Table I, the amount available for milk production is rather low for all groups during period A. During period B, the protein intake would appear to have been adequate.

If the weights of the cows are taken as being indicative of sufficiency or insufficiency of the feed supplied, it appears that there was no serious deficiency in any of the rations supplied to the cows in the three groups. It will be seen from Tables II and III that the weights of groups I and III remained nearly the same up to the sixth month after which there was a gradual increase. Group II lost somewhat in weight from the fifth to the sixth month, but then started to increase.

The trends of the milk production of the cows in the three groups are shown in Tables II and III and diagrams I and II. As the experiment progressed the fall in the milk supply was less rapid in group I than in the other two groups. The same tendency is shown in the actual milk supply and in the F.C.M. The stimulating effect of the pasture is especially noticeable in the case of groups I and II which show marked increase in F.C.M. After the first month on pasture the drop is more rapid. The cows on the high succulent ration (group III) did not show the same reaction when they were put on pasture, there being no sudden increase in milk production. However, the subsequent decrease in milk production of Group III is as rapid as in the case of the other two groups.

(b) *Butter-fat Percentage.*—The F.C.M. production is a reflection of both butter fat and milk production and is an indication of the energy production of the cows. The B.F. percentage is shown in Tables II and III and Diagram I. It would appear that the slower decline in milk production of Group I resulted in a more or less constant B.F. percentage up to the seventh month after which the rise is quite sudden. In Groups II and III there is a more or less gradual rise, with fluctuations, up to the seventh month after which the rise is more marked, as in the case of Group I.

(c) *Solids-not-fat percentage.*—Schutte (1929) reviewed literature with regard to factors affecting the S.N.F. percentage of milk. It was found recorded that S.N.F. percentage increased gradually with the advance of lactation. B.F. percentage also increases with the advance of lactation, but at a more rapid rate. Kahlenberg and Voris (1931) found a correlation coefficient between B.F. and S.N.F. percentages of  $+0.69 \pm 0.03$ . Tables II and III and Diagram I reveal that the expected increase in S.N.F. percentages did not take place in the case of groups II (heavy dry roughage ration) and III (heavy succulent ration); the S.N.F. percentages were about the same at the end of the experiment as at the commencement. However, Group I showed a gradual increase in S.N.F. percentage, and a somewhat more rapid increase after the seventh month.

TABLE II.  
Average Live Weights and Productions of the Cows.

Four week periods.	1 21/6- 12/7.	2 19/7- 9/8.	3 16/8- 6/9.	4 13/9- 4/10.	5 11/10- 1/11.	6 8/11- 29/11.	7 6/12- 27/12.	8 3/1/33- 24/1.	9 31/1- 21/2.	10 28/2- 21/3.
GROUP I.										
Average weight per cow—lb.....	908.7	905.7	897.8	904.4	908.7	905.9	916.9	943.1	978.6	1,035.1
Average milk per cow per day—lb.....	26.47	25.0	24.61	25.85	24.52	23.08	22.52	22.92	18.72	15.04
Average F.C.M. per cow per day—lb.....	23.42	22.77	22.19	22.46	21.58	20.76	20.44	21.94	18.23	15.34
Average B.F.—%.....	3.233	3.404	3.346	3.125	3.2	3.329	3.383	3.718	3.817	4.133
Average S.N.F.—%.....	8.808	8.91	8.892	8.977	9.023	9.024	9.081	9.274	9.424	9.579
GROUP II.										
Average weight per cow—lb.....	834.0	843.5	815.7	843.5	822.2	783.6	785.8	808.3	838.0	839.0
Average milk per cow per day—lb.....	25.87	24.02	21.72	20.63	19.79	18.43	18.4	19.22	16.17	15.73
Average F.C.M. per cow per day—lb.....	22.69	21.51	20.09	18.83	18.12	17.11	17.1	18.42	15.64	15.01
Average B.F.—%.....	3.183	3.304	3.5	3.417	3.438	3.525	3.529	3.721	3.779	3.695
Average S.N.F.—%.....	8.88	8.87	8.76	8.66	8.68	8.67	8.66	8.73	8.671	8.703
GROUP III.										
Average weight per cow—lb.....	921.3	929.6	902.8	917.4	936.3	933.7	939.9	948.5	980.9	1,009.3
Average milk per cow per day—lb.....	24.79	22.01	21.27	20.65	19.60	18.79	18.80	18.15	15.06	11.77
Average F.C.M. per cow per day—lb.....	21.94	20.11	19.65	18.88	18.42	17.84	17.84	17.96	15.25	12.32
Average B.F.—%.....	3.233	3.425	3.491	3.429	3.6	3.663	3.658	3.933	4.083	4.313
Average S.N.F.—%.....	8.771	8.77	8.71	8.68	8.75	8.73	8.77	8.84	8.89	9.02

TABLE III.  
*Relative Weights and Productions of the Cows.*

Four week periods.	1	2	3	4	5	6	7	8	9	10
GROUP I.										
Average weight per cow—%	100	99.7	98.8	99.5	100.0	99.7	100.9	103.8	107.7	113.9
Average milk per cow per day—%	100	94.5	93.0	97.7	92.6	87.2	85.1	86.6	70.8	56.8
Average F.C.M. per cow per day—%	100	97.2	94.7	95.9	92.1	88.6	87.3	93.7	77.8	65.5
Average B.F.—%	100	105.3	103.5	96.6	99.0	103.0	104.6	115.0	118.0	127.8
Average S.N.F.—%	100	101.2	101.0	101.9	102.4	102.5	103.1	105.3	107.0	108.8
GROUP II.										
Average weight per cow—%	100	101.1	97.8	98.0	98.6	94.0	94.2	96.9	100.5	100.6
Average milk per cow per day—%	100	92.8	84.0	79.7	76.4	71.2	71.1	74.3	62.5	60.8
Average F.C.M. per cow per day—%	100	94.8	88.6	83.0	79.9	75.4	75.4	81.2	68.9	66.2
Average B.F.—%	100	103.8	110.0	107.4	108.0	110.7	110.9	116.9	118.7	116.1
Average S.N.F.—%	100	100.0	98.6	97.5	97.7	97.3	97.5	98.3	97.6	98.0
GROUP III.										
Average weight per cow—%	100	100.9	98.0	99.6	101.6	101.3	102.0	103.0	106.5	109.6
Average milk per cow per day—%	100	88.8	85.8	83.3	79.1	75.8	75.9	73.2	60.8	47.5
Average F.C.M. per cow per day—%	100	91.7	89.6	86.1	84.0	81.3	81.3	81.9	69.5	56.2
Average B.F.—%	100	105.9	108.0	106.1	111.3	113.3	113.1	121.6	126.3	133.4
Average S.N.F.—%	100	100.0	99.3	99.0	99.8	99.5	100.0	100.7	101.3	102.8

(Averages of the first four weeks are taken as 100 in all instances and subsequent observations expressed as percentages thereof.)

TABLE IV.  
Milk Production (F.C.M.) and the Equivalent Total Digestible Nutrients.

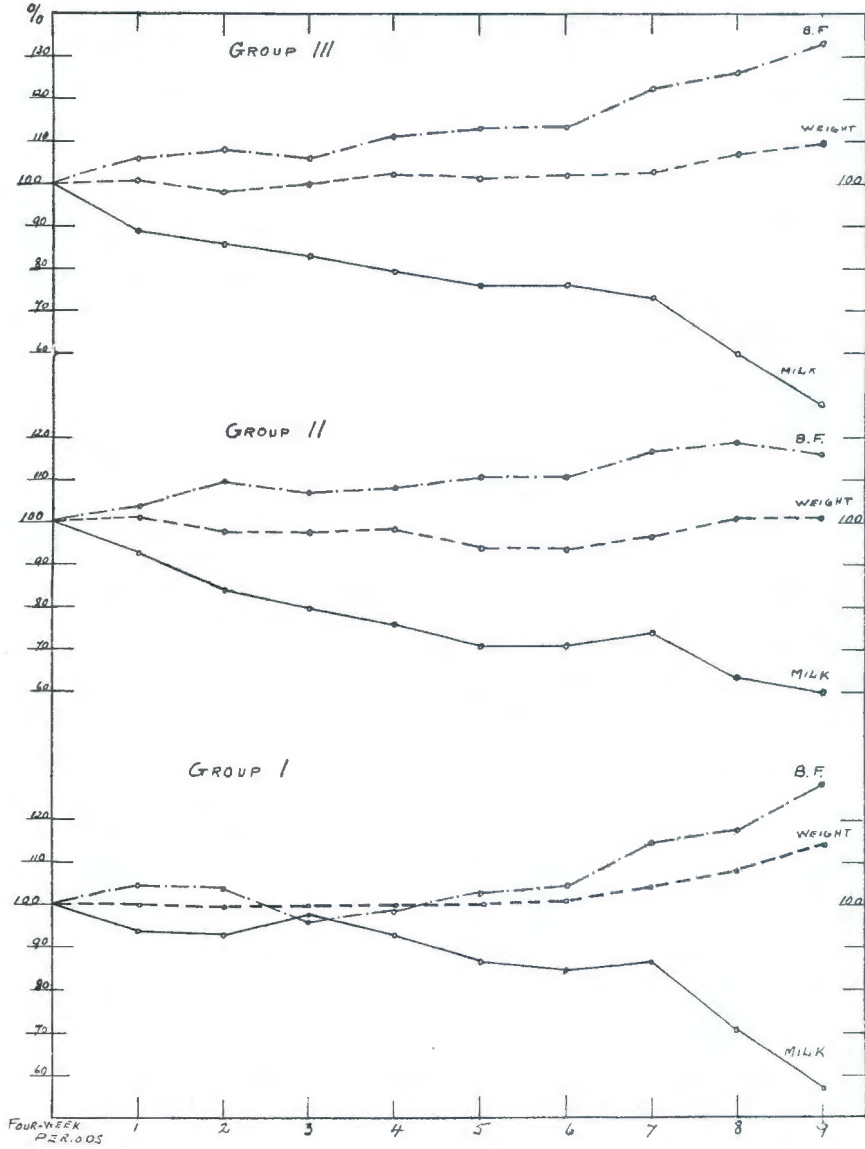
Period.	1	2	3	4	5	6	7	8	9	10
GROUP I.										
F.C.M. per cow per day—lb.....	23.42	22.77	22.19	22.46	21.58	20.76	20.44	21.94	18.23	15.34
T.D.N. per cow per day—lb.....	7.110	6.913	6.737	6.819	6.552	6.303	6.206	6.661	5.535	4.657
GROUP II.										
F.C.M. per cow per day—lb.....	22.69	21.51	20.09	18.83	18.12	17.11	17.1	18.42	15.64	15.01
T.D.N. per cow per day—lb.....	6.889	6.530	6.099	5.717	5.501	5.195	5.192	5.592	4.748	4.557
GROUP III.										
F.C.M. per cow per day—lb.....	21.94	20.11	19.65	18.88	18.42	17.84	17.84	17.94	15.25	12.32
T.D.N. per cow per day—lb.....	6.661	6.105	5.966	5.732	5.592	5.416	5.416	5.452	4.630	3.740

(Between the periods 3 and 4 and 7 and 8 the changes in feeding were made.)

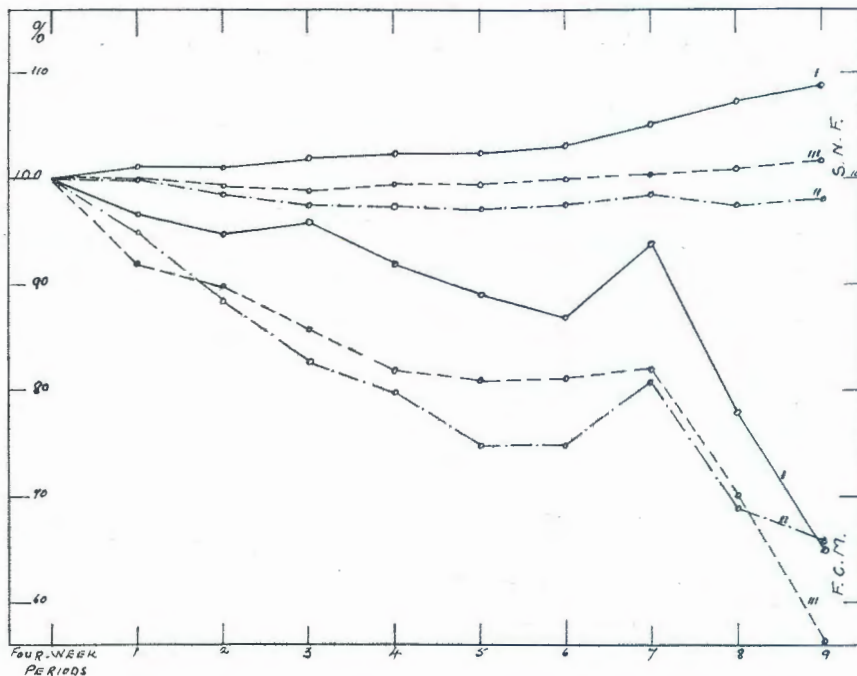


DIAGRAM I.

*Relative Milk Yields, Butter-fat Percentages and Live Weights.*



## DIAGRAM II.

*Relative F.C.M. Yields and S.N.F. Percentages.*

Although the tendencies shown by the S.N.F. percentages are so consistent, the standard deviations and coefficients of variability have been determined so that the significance of the differences can be tested. It is also possible to obtain an indication as to the reliability of the means, i.e. whether there were not perhaps large fluctuations in the tests of individual cows. These results are given in Table V.

From Table V it appears that only towards the conclusion of the experiment, when some of the cows started to dry up, is there an increase in the coefficient of variability in the case of Groups I and III. The variability of the S.N.F. percentage of group II remains the same throughout.

In order to test the significance of the differences, the standard errors of the differences between the means of the same group at different periods have been calculated and also the standard errors of differences between means of the different groups at the same periods. The periods selected are the following months: 1, 3, 6 and 9; these have been marked by letters: Group I being A.B.C.D. respectively, Group II being E.F.G.H. respectively, and Group III being W.X.Y.Z. respectively. Fishers table of "t" was used to determine the degree of significance. These differences with their standard errors and their significance are given in Table VI.

TABLE V.  
*Mean S.N.F. Percentages with their Standard Deviations and Coefficients of Variability.*

Month.	GROUP I.			GROUP II.			GROUP III.		
	Mean.	Standard deviation.	Coeff. of variability.	Mean.	Standard deviation.	Coeff. of variability.	Mean.	Standard deviation.	Coeff. of variability.
	% <sup>A</sup>	%	%	% <sup>E</sup>	%	%	% <sup>W</sup>	%	%
1.....	8.81	0.219	2.48	8.88	0.22	2.48	8.77	0.184	2.1
2.....	8.91	0.193	2.16	8.87	0.273	3.08	8.77	0.213	2.43
3.....	8.89	0.207	2.32	8.76 <sup>F</sup>	0.269	3.08	8.71 <sup>X</sup>	0.239	2.74
4.....	8.98	0.235	2.62	8.66	0.239	2.76	8.68	0.166	1.91
5.....	9.02	0.226	2.51	8.68	0.264	3.04	8.75	0.184	2.1
6.....	9.02	0.192	2.13	8.64 <sup>G</sup>	0.249	2.88	8.73 <sup>Y</sup>	0.174	2.04
7.....	9.08	0.251	2.76	8.66	0.212	2.45	8.77	0.203	2.31
8.....	9.27	0.302	3.26	8.73	0.244	2.8	8.84	0.243	2.75
9.....	9.42	0.412	4.38	8.67 <sup>H</sup>	0.221	2.55	8.89 <sup>Z</sup>	0.410	4.62
10.....	9.58	0.391	4.09	8.7	0.181	2.08	9.02	0.791	8.77

TABLE VI.  
*Differences between the Mean S.N.F. Percentages and the Significance of the Differences.*

Periods and groups.	Means.	Differences and S.E.	Significance.	Periods and groups.	Means.	Differences and S.E.	Significance.
B — A.....	8.89 — 8.81	0.08 ± .0614	Insig.	E — A....	8.88 — 8.81	0.07 ± .0626	Insig.
C — A....	9.02 — 8.81	0.21 ± .0594	Sig.	E — W...	8.88 — 8.77	0.11 ± .0578	Insig.
D — A.....	9.42 — 8.81	0.61 ± .0953	Sig.	B — F....	8.89 — 8.76	0.13 ± .0693	Insig.
E — F.....	8.88 — 8.76	0.12 ± .0704	Insig.	B — X....	8.89 — 8.71	0.18 ± .0644	Sig.
E — G.....	8.88 — 8.64	0.24 ± .0672	Sig.	C — G....	9.02 — 8.64	0.38 ± .0642	Sig.
E — H.....	8.88 — 8.67	0.21 ± .0629	Sig.	C — Y....	9.02 — 8.73	0.29 ± .0534	Sig.
W — X....	8.77 — 8.71	0.06 ± .0615	Insig.	Y — G....	8.73 — 8.64	0.09 ± .0625	Insig.
Z — W.....	8.89 — 8.77	0.12 ± .0618	Insig.	D — H....	9.42 — 8.67	0.75 ± .0954	Sig.
				D — Z....	9.42 — 8.89	0.53 ± .1187	Sig.
				Z — H....	8.89 — 8.67	0.22 ± .0951	Sig.

In the case of Group I, Table VI shows an insignificant difference in S.N.F. percentage between the averages of the first and third months (just before the animals were put on to the experimental ration). However, from then onwards, all differences are significant, i.e., the rise in the S.N.F. percentage is significant as the experiment progressed. The difference between the first and third means of Group II are insignificant, but differences of later months are significantly smaller than that of the first month. Although the decrease in S.N.F. percentage is small, it is nevertheless significant. Group III shows insignificant differences throughout, with the exception of the last observation, which is just significantly larger than that of the first month.

With regard to the differences between the groups, Table VI indicates that when the experiment was started there was no significant differences between the mean S.N.F. percentage of the three groups. At the third month, Groups I and III show a small but significant difference, while Groups I and III and II and III show no significant differences. The difference between Groups II and III at six months is still insignificant, but at nine months the difference is just significant. From the fourth month onward the differences between Group I and the other two groups are all significant.

According to these findings, the progressive increase of the S.N.F. per cent. of Group I, is not only significant, but also the difference in the S.N.F. per cent. of Group I after the third month up to the conclusion of the experiment, is higher than that of the other groups. Since, as already mentioned, investigators have found that S.N.F. percentage increases gradually with advance in lactation, it appears that in the case of Group I the S.N.F. per cent. followed the normal trend, and that the increase in S.N.F. per cent. was not a reaction to the particular ration fed. With regard to Groups II and III, however, it would appear that the rations had a slight depressing effect on the S.N.F. percentage. On the other hand, the B.F. percentage of the latter two groups followed the normal trend.

### SUMMARY.

A study was made of the effect on the S.N.F. percentage of milk of three types of rations, namely, heavy concentrates, heavy dry roughage and heavy succulent rations, when these were fed throughout the lactation period. The total digestible nutrients and the protein intakes of the three rations were in excess of the maintenance and production requirements of the cows in the groups. These nutrients were somewhat less in the case of the heavy dry roughage and heavy succulent rations than in the heavy concentrate ration.

The results obtained reveal that: (a) when a heavy concentrate ration was fed the S.N.F. percentage of the milk followed the ordinary trend with the advance of stage of lactation, (b) when heavy dry roughage and heavy succulent rations were given, there appears to have been a depressing effect on the S.N.F. percentage.

The milk production of the cows on the heavy concentrate ration did not drop as fast as the productions of those on the heavy dry roughage and heavy succulent rations. On the other hand the B.F. percentage of the cows on the former ration did not increase to the same extent as that of the cows on the latter two rations, but this was probably due to the slower decline in milk production of the former.

---

REFERENCES.

- GAINES, W. L. (1928). The Energy Basis of Measuring Milk Yield in Dairy Cows. *Ill. Agric. Exp. Stn. Bull.* 308.
- KAHLENBERG, O. J., AND VORIS, LE ROY (1931). The Percentage of Fat as a Basis for Estimating the Composition of Milk. *Jnl. Agric. Sc.*, Vol. 43, No. 8, pp. 749-755.
- KRISS, MAX (1931). A Comparison of Feeding Standards for Dairy Cows with Especial Reference to Energy Requirements. *Jnl. Nutrition*, Vol. 4, No. 1, pp 141-161.
- SCHUTTE, D. J. (1929). Solids-not-fat Content of Cows' Milk. *Farming in South Africa*, July, 1929.

APPENDIX.—TABLE I.

## GROUP I.—FEED CONSUMPTION.

## PERIOD I.

	No. of cow.	Date of service.	Maize. lb.	Bran. lb.	Peanut. lb.	Silage. lb.	Teff. lb.	Bone meal and salt. lb.
29/5/32—	3730	20/8/32	462·8	231·4	106·8	1,246	801	33·4
25/8/32	3731	14/9/32	391·6	195·8	89	1,157	801	33·4
	3738	29/8/32	391·6	195·8	89	1,246	801	33·4
	3741	17/8/32	391·6	195·8	89	1,157	801	33·4
	4124	19/8/32	391·6	195·8	89	1,068	801	33·4
	4134	21/9/32	384	200	103·8	2,360	801	33·4
Total for 89 days.....	—	—	2,413·2	1,214·6	566·6	8,234	4,806	200·4
Total for 67 days..... (21/6—25/8)	—	—	1,816·7	914·4	426·5	6,199	3,618	150·9
Average per cow per day	—	—	4·519	2·275	1·061	15·42	9·0	·375

## PERIOD II.

26/8/32—	3730	—	1,290·2	645·1	215	1,280	576	48
31/12/32 =	3731	—	1,105·9	553	184	1,024	576	48
128 days.	3738	—	1,075·2	537·6	179·2	1,280	576	48
	3741	—	921·6	460·8	153·6	1,152	576	48
	4124	—	1,044·5	522·2	174·1	1,152	576	48
	4134	—	1,351·7	675·8	225·3	1,152	576	48
Total for 128 days.....	—	—	6,789·1	3,394·5	1,131·2	7,040	3,456	288
Average per cow per day	—	—	8·84	4·42	1·473	9·167	4·5	·375

## PERIOD III.

1/1/33—	3730	—	877	438·5	146	—	391·5	32·6
28/3/33 =	3731	—	751·7	375·8	125·3	—	391·5	32·6
87 days.	3738	—	730·8	365·4	121·8	—	391·5	32·6
	3741	—	626·4	313·2	104·4	—	391·5	32·6
	4124	—	709·9	355	118·3	—	391·5	32·6
	4134	—	918·7	459·4	153·1	—	391·5	32·6
Total for 87 days.....	—	—	4,614·5	2,307·3	768·9	—	2,349	195·6
Average per cow per day	—	—	8·84	4·42	1·473	—	4·5	·375

## EFFECT OF FEED ON SOLIDS-NOT-FAT CONTENT OF MILK.

## GROUP II.—FEED CONSUMPTION.

## PERIOD I.

	No. of cow.	Date of service.	Maize. lb.	Bran. lb.	Peanut. lb.	Silage. lb.	Teff. lb.	Bone meal and salt. lb.
	3728	17/9/32	397.2	198.6	90.4	1,864	801	33.4
	3736	3/9/32	391.6	213.6	89	2,492	801	33.4
	3739	24/10/32	391.6	195.8	89	2,314	801	33.4
	4128	27/9/32	391.6	195.8	89	2,136	801	33.4
	4131	(not served)	208.2	113	55.2	1,520	801	33.4
	4132	18/9/32	534	267	142.4	1,246	801	33.4
Total for 89 days.....	—	—	2,314.2	1,183.8	555	11,572	4,806	200.4
Total for 67 days.....	—	—	1,742.2	891.2	417.8	871.2	3,618	150.9
Average per cow per day	—	—	4.334	2.217	1.039	21.67	9.0	.375

## PERIOD II.

	3728	—	119.5	119.5	298.6	1,024	2,286.5	48
	3736	—	153.3	153.3	333.4	1,280	2,286.5	48
	3739	—	130.8	130.8	327.2	1,024	2,286.5	48
	4128	—	125.2	125.2	312.8	1,024	2,286.5	48
	4131	—	102.4	102.4	256	768	2,286.5	48
	4132	—	187.7	187.7	469.4	1,280	2,286.5	48
Total for 128 days.....	—	—	818.9	818.9	1,997.4	6,400	13,719	288
Average per cow per day	—	—	1.066	1.066	2.6	8.333	17.863	.375

## PERIOD III.

	3728	—	81.2	81.2	203	—	1,670.4	32.6
	3736	—	73.3	73.3	183.4	—	1,267.2	24.75
	3739	—	88.9	88.9	222.4	—	1,670.4	32.6
	4128	—	85.1	85.1	212.6	—	1,670.4	32.6
	4131	—	69.6	69.6	174	—	1,670.4	32.6
	4132	—	127.6	127.6	319	—	1,670.4	32.6
Total for 87 days.....	—	—	525.7	525.7	1,314.4	—	9,619.2	187.8
Average per cow per day	—	—	1.049	1.049	2.624	—	19.2	.375



## GROUP III.—FEED CONSUMPTION.

## PERIOD I.

	No. of cow.	Date of service.	Maizc. lb.	Bran. lb.	Peanut. lb.	Silage. lb.	Teff. lb.	Bone meal and salt. lb.
	3733	20/12/32	391.6	195.8	89	2,314	801	33.4
	3740	31/8/32	353.2	176.6	81.3	1,944	801	33.4
	3743	7/11/32	391.6	195.8	89	2,492	801	33.4
	4125	18/8/32	391.6	195.8	89	2,314	801	33.4
	4126	24/8/32	409.4	213.6	89	1,335	801	33.4
	4130	20/8/32	534	267	142.4	2,594	801	33.4
Total for 89 days.....	—	—	2,471.4	1,244.6	579.7	12,993	4,806	200.4
Total for 67 days.....	—	—	1,860.5	936.95	436.4	9,781.2	361.8	150.9
Average per cow per day	—	—	4.628	2.331	1.086	24.33	9.0	.375

## PERIOD II.

	3733	—	136.6	136.6	341.3	6,036	576	48
	3740	—	96.7	96.7	233.5	5,602	576	48
	3743	—	113.7	113.7	284.6	5,908	576	48
	4125	—	85.5	85.5	213	5,858	576	48
	4126	—	136.6	136.6	342	6,232	576	48
	4130	—	170.6	170.6	426.8	5,588	576	48
Total for 128 days.....	—	—	739.7	739.7	1,841.2	35,224	3,456	288
Average per cow per day	—	—	.963	.963	2.397	45.865	4.5	.375

## PERIOD III.

	3733	—	92.8	92.8	232	—	391.5	32.6
	3740	—	65.7	65.7	164.4	—	391.5	32.6
	3743	—	77.3	77.3	193.4	—	391.5	32.6
	4125	—	58	58	145	—	391.5	32.6
	4126	—	92.8	92.8	232	—	391.5	32.6
	4130	—	116	116	290	—	391.5	32.6
Total for 87 days.....	—	—	502.6	502.6	1,256.8	—	2,349	195.6
Average per cow per day	—	—	.963	.963	2.408	—	4.5	.375

## EFFECT OF FEED ON SOLIDS-NOT-FAT CONTENT OF MILK.

TABLE II.

## GROUP I.—DAILY CONSUMPTION OF DIG. NUTRIENTS PER COW.

## PERIOD I.

	lb.	Total dry matter. lb.	Crude protein. lb.	Carbo- hydrates. lb.	Fat. lb.	Total Dig. Nut. lb.
Maize.....	4.519	3.773	.316	2.861	.194	3.615
Bran.....	2.275	2.045	.284	.946	.068	1.385
Peanut.....	1.061	.991	.428	.239	.098	.886
Silage.....	15.42	4.055	.170	2.313	.108	2.729
Teff.....	9.0	7.956	.270	3.852	.108	4.365
Total.....		18.820	1.468	10.211	.576	12.980

N.R. = 1 : 7.84.

## PERIOD II.

Maize.....	8.84	7.381	.619	5.596	.380	7.072
Bran.....	4.42	3.974	.553	1.839	.133	2.692
Peanut.....	1.473	1.376	.594	.331	.136	1.230
Silage.....	9.167	2.411	.101	1.375	.064	1.623
Teff.....	4.5	3.978	.135	1.926	.054	2.183
Total.....		19.120	2.002	11.067	.767	14.800

N.R. = 1 : 6.39.

## PERIOD III.

Maize.....	8.84	7.381	.619	5.596	.380	7.072
Bran.....	4.42	3.974	.553	1.839	.133	2.692
Peanut.....	1.473	1.376	.594	.331	.136	1.230
Silage.....	—	—	—	—	—	—
Teff.....	4.5	3.978	.135	1.926	.054	2.183
Total.....		16.709	1.901	9.692	.703	13.177

## GROUP II.—DAILY CONSUMPTION OF DIG. NUTRIENTS PER COW.

## PERIOD I.

Maize.....	4.334	3.619	.303	2.743	.186	3.467
Bran.....	2.217	1.993	.277	.922	.067	1.350
Peanut.....	1.039	.970	.419	.234	.096	.868
Silage.....	21.67	5.700	.238	3.251	.152	3.836
Teff.....	9.0	7.956	.270	3.852	.108	4.365
Total.....		20.238	1.507	11.002	.609	13.886

N.R. = 1 : 8.21.

	lb.	Total dry matter. lb.	Crude protein. lb.	Carbo- hydrates. lb.	Fat. lb.	Total Dig. Nut. lb.
PERIOD II.						
Maize.....	1·066	·890	·075	·675	·046	·853
Bran.....	1·066	·958	·133	·443	·032	·649
Peanut.....	2·6	2·428	1·048	·585	·239	2·171
Silage.....	8·333	2·192	·092	1·250	·058	1·475
Teff.....	17·863	15·791	·536	7·645	·214	8·664
Total.....		22·259	1·884	10·598	·589	13·812

N.R. = 1 : 6·33.

PERIOD III.						
Maize.....	1·049	·876	·073	·664	·045	·839
Bran.....	1·049	·943	·131	·436	·031	·639
Peanut.....	2·624	2·451	1·057	·590	·241	2·191
Silage.....	—	—	—	—	—	—
Teff.....	19·2	16·973	·576	8·218	·230	9·312
Total.....		21·243	1·837	9·908	·547	12·981

## GROUP III.—DAILY CONSUMPTION OF DIG. NUTRIENTS PER COW.

PERIOD I.						
Maize.....	4·628	3·864	·324	2·930	·199	3·702
Bran.....	2·331	2·096	·291	·970	·070	1·420
Peanut.....	1·086	1·014	·438	·244	·100	·907
Silage.....	24·33	6·399	·277	3·650	·170	4·306
Teff.....	9·0	7·956	·270	3·852	·108	4·365
Total.....		21·329	1·600	11·646	·647	14·700

N.R. = 1 : 8·19.

PERIOD II.						
Maize.....	·963	·804	·067	·610	·041	·770
Bran.....	·963	·866	·120	·401	·029	·586
Peanut.....	2·397	2·239	·966	·539	·221	2·001
Silage.....	45·865	12·062	·505	6·880	·321	8·118
Teff.....	4·5	3·978	·135	1·926	·054	2·183
Total.....		19·948	1·793	10·356	·666	13·658

N.R. = 1 : 6·61.

PERIOD III.						
Maize.....	·963	·804	·067	·610	·041	·770
Bran.....	·963	·866	·120	·401	·029	·586
Peanut.....	2·408	2·249	·970	·542	·222	2·011
Silage.....	—	—	—	—	—	—
Teff.....	4·5	3·978	·135	1·926	·054	2·183
Total.....		7·897	1·292	3·479	·346	5·550

## APPENDIX.—TABLE III.

*Weekly Weights of Individual Cows in Pounds.*

Date.	GROUP I.						
	No. of Cow.						
	3730.	3731.	3738.	3741.	4124.	4134.	Total.
21/6/32.....	982	850	978	865	878	948	5,501
28/6/32.....	947	842	926	870	843	942	5,370
5/7/32.....	970	835	955	869	880	947	5,456
12/7/32.....	980	844	954	880	869	955	5,482
19/7/32.....	970	849	923	880	887	915	5,424
26/7/32.....	980	833	952	875	880	935	5,455
2/8/32.....	981	825	975	875	845	938	5,439
9/8/32.....	982	836	925	895	862	919	5,419
16/8/32.....	940	827	963	891	863	904	5,388
23/8/32.....	978	825	983	889	850	925	5,450
30/8/32.....	972	837	939	877	848	894	5,367
6/9/32.....	937	825	941	859	882	899	5,343
13/9/32.....	968	856	931	880	872	873	5,380
20/9/32.....	970	829	975	866	854	915	5,409
27/9/32.....	976	860	987	845	877	923	5,468
4/10/32.....	995	856	976	827	883	912	5,449
11/10/32.....	982	864	964	845	882	919	5,456
18/10/32.....	964	860	951	843	850	936	5,404
25/10/32.....	968	880	990	854	886	930	5,508
1/11/32.....	973	877	968	845	856	921	5,440
8/11/32.....	966	864	969	821	842	909	5,371
15/11/32.....	1,020	883	993	831	890	903	5,520
22/11/32.....	991	888	879	832	882	895	5,467
29/11/32.....	958	847	993	838	850	898	5,384
6/12/32.....	958	847	993	838	850	898	5,384
13/12/32.....	960	880	984	835	851	893	5,403
20/12/32.....	1,010	888	1,024	856	891	912	5,584
27/12/32.....	997	895	1,020	—	890	916	4,718
3/1/33.....	1,012	925	1,049	—	917	932	4,835
10/1/33.....	1,005	902	1,038	779	912	930	5,566
17/1/33.....	1,020	908	1,043	777	909	929	5,586
24/1/33.....	1,042	935	1,051	796	926	955	5,705
31/1/33.....	1,062	949	1,075	779	943	988	5,796
7/2/33.....	1,067	979	1,053	805	963	1,009	5,876
14/2/33.....	1,050	950	1,084	806	982	1,004	5,876
21/2/33.....	1,077	980	1,076	812	978	1,015	5,938
28/2/33.....	1,083	1,013	1,110	839	1,009	1,034	6,088
7/3/33.....	1,102	1,005	1,111	849	1,030	1,048	6,145
14/3/33.....	1,102	1,018	1,135	880	1,048	1,051	6,234
21/3/33.....	1,122	1,065	1,160	889	1,048	1,091	6,375

Date.	GROUP II.						Total.
	No. of Cow.						
	3728.	3736.	3739.	4128.	4131.	4132.	
21/6/32.....	800	952	825	845	589	979	4,990
28/6/32.....	805	924	834	842	596	953	4,954
5/7/32.....	810	959	818	845	592	986	5,010
12/7/32.....	830	955	855	835	600	988	5,063
19/7/32.....	835	952	864	849	581	985	5,066
26/7/32.....	805	965	820	860	599	973	5,122
2/8/32.....	845	957	816	842	592	975	5,027
9/8/32.....	795	985	841	843	577	987	5,028
16/8/32.....	792	952	836	811	568	934	4,893
23/8/32.....	817	954	843	829	600	961	5,004
30/8/32.....	821	943	825	820	553	943	4,905
6/9/32.....	816	928	783	773	543	931	4,774
13/9/32.....	804	944	810	807	561	936	4,862
20/9/32.....	809	949	790	822	575	950	4,895
27/9/32.....	817	963	828	825	571	947	4,951
4/10/32.....	801	968	800	825	557	965	4,016
11/10/32.....	806	954	819	809	570	954	4,912
18/10/32.....	809	965	822	812	538	941	4,887
25/10/32.....	815	970	823	827	573	962	4,970
1/11/32.....	829	951	817	823	574	970	4,964
8/11/32.....	755	928	769	759	529	918	4,658
15/11/32.....	759	928	777	785	550	945	4,744
22/11/32.....	765	952	815	800	581	956	4,869
29/11/32.....	728	867	770	740	540	890	4,535
6/12/32.....	728	867	770	740	540	890	4,535
13/12/32.....	752	919	805	761	549	905	4,691
20/12/32.....	805	953	830	802	576	959	4,925
27/12/32.....	752	916	820	745	552	923	4,708
3/1/33.....	778	949	834	773	557	933	4,824
10/1/33.....	759	935	821	779	544	927	4,765
17/1/33.....	775	962	819	805	568	949	4,877
24/1/33.....	775	974	821	820	581	962	4,933
31/1/33.....	772	993	834	809	583	969	4,960
7/2/33.....	774	1,021	858	835	570	980	5,038
14/2/33.....	778	1,051	861	852	575	1,010	5,127
21/2/33.....	772	968	861	837	565	983	4,986
28/2/33.....	779	908	870	853	573	999	4,982
7/3/33.....	771	926	891	860	581	1,005	5,034
14/3/33.....	794	—	909	885	585	1,008	4,181
21/3/33.....	805	—	918	914	585	1,037	4,259

## EFFECT OF FEED ON SOLIDS-NOT-FAT CONTENT OF MILK.

Date.	GROUP III.						Total.
	No. of Cow.						
	4125.	3733.	3740.	3743.	4126.	4130.	
21/6/32.....	940	839	760	946	924	1,038	5,447
28/6/32.....	932	833	787	936	932	1,020	5,440
5/7/32.....	954	842	793	963	957	1,033	5,542
12/7/32.....	968	862	—	938	943	1,051	4,762
19/7/32.....	959	847	—	955	942	1,033	4,736
26/7/32.....	960	864	—	950	956	1,050	4,780
2/8/32.....	950	860	733	940	975	1,053	5,511
9/8/32.....	957	845	696	931	970	1,025	5,424
16/8/32.....	954	866	697	947	943	1,013	5,420
23/8/32.....	948	843	700	938	963	1,019	5,411
30/8/32.....	960	837	718	950	947	1,000	5,412
6/9/32.....	955	837	699	969	932	1,032	5,424
13/9/32.....	959	836	721	973	946	1,026	5,461
20/9/32.....	979	848	718	983	959	1,000	5,487
27/9/32.....	975	839	719	990	975	1,025	5,523
4/10/32.....	975	840	729	988	980	1,034	5,546
11/10/32.....	977	848	747	1,031	987	1,035	5,625
18/10/32.....	983	857	747	1,000	993	1,026	5,606
25/10/32.....	990	865	743	1,005	978	1,039	5,620
1/11/32.....	992	865	759	991	995	1,017	5,619
8/11/32.....	997	860	746	987	967	1,019	5,576
15/11/32.....	982	853	768	1,000	986	1,045	5,634
22/11/32.....	1,001	845	766	1,000	970	1,052	5,634
29/11/32.....	975	850	753	987	964	1,035	5,564
6/12/32.....	975	850	753	987	964	1,035	5,564
13/12/32.....	998	856	752	997	960	1,022	5,585
20/12/32.....	1,025	865	757	1,010	992	1,057	5,706
27/12/32.....	1,010	858	777	1,001	980	1,076	5,702
3/1/33.....	992	836	761	983	971	1,057	5,600
10/1/33.....	1,001	855	764	985	970	1,068	5,643
17/1/33.....	1,020	870	789	1,002	984	1,080	5,745
24/1/33.....	1,027	885	788	1,011	971	1,094	5,776
31/1/33.....	1,041	912	813	1,030	997	1,105	5,898
7/2/33.....	1,050	902	818	1,024	1,000	1,104	5,898
14/2/33.....	1,043	892	823	1,032	995	1,095	5,890
21/2/33.....	1,054	883	816	1,033	976	1,104	5,866
28/2/33.....	1,067	907	842	1,036	1,015	1,122	5,989
7/3/33.....	1,085	924	831	1,046	1,014	1,126	6,026
14/3/33.....	1,093	905	863	1,045	1,016	1,125	6,047
21/3/33.....	1,101	928	880	1,056	1,049	1,157	6,162

## APPENDIX.—TABLE IV.

*Weekly Milk Yields of Individual Cows in Pounds.*

Date.	GROUP I.						
	No. of Cow.						
	3730.	3731.	3738.	3741.	4124.	4134.	Total.
21/6/32.....	238.0	184.2	188.1	161.6	161.9	217.2	1121.0
28/6/32.....	206.9	180.9	183.6	157.2	165.6	226.1	1120.3
5/7/32.....	206.6	173.2	185.7	151.7	164.2	221.0	1102.4
12/7/32.....	204.9	176.3	177.5	154.1	165.4	224.5	1102.7
19/7/32.....	204.5	176.9	169.2	152.5	166.4	211.0	1080.5
26/7/32.....	202.5	174.3	169.7	142.8	157.7	213.7	1060.7
2/8/32.....	198.8	168.0	164.4	136.3	158.5	207.1	1033.1
9/8/32.....	197.8	162.5	161.3	141.9	159.8	203.1	1026.4
16/8/32.....	194.0	168.8	160.6	141.6	159.7	197.9	1022.6
23/8/32.....	198.0	167.5	155.4	138.5	159.6	202.2	1021.2
30/8/32.....	199.0	173.0	157.5	125.1	167.0	209.4	1031.0
6/9/32.....	199.8	181.6	152.4	138.8	165.5	220.8	1058.9
13/9/32.....	201.5	198.9	155.4	151.4	164.0	223.2	1094.4
20/9/32.....	203.1	182.8	143.9	157.6	170.8	232.5	1090.7
27/9/32.....	208.4	189.9	138.1	147.3	171.1	230.0	1084.8
4/10/32.....	198.6	191.9	136.4	141.7	175.5	228.6	1072.7
11/10/32.....	204.0	188.6	136.4	143.0	175.9	219.9	1067.8
18/10/32.....	200.9	189.6	135.1	146.4	173.7	223.4	1069.1
25/10/32.....	195.5	175.6	129.7	144.6	168.1	200.2	1013.7
1/11/32.....	169.4	170.2	129.8	137.8	162.4	198.8	968.7
8/11/32.....	166.3	166.0	123.8	139.3	161.2	188.5	945.1
15/11/32.....	171.3	173.4	127.1	143.1	173.6	212.8	1001.3
22/11/32.....	174.4	171.5	126.0	137.2	156.9	206.0	972.0
29/11/32.....	180.0	161.8	123.2	136.9	154.3	203.5	959.7
6/12/32.....	184.5	152.6	124.4	131.8	159.1	211.3	963.7
13/12/32.....	185.1	140.0	127.4	132.9	156.1	204.5	946.0
20/12/32.....	162.5	144.7	125.9	123.5	156.8	194.6	908.0
27/12/32.....	168.5	152.7	127.6	7.2*	154.7	204.8	808.3
3/1/33.....	184.7	158.2	133.1	25.9	153.3	209.9	839.2
10/1/33.....	191.9	166.7	131.1	69.3	159.2	214.9	863.8
17/1/33.....	194.3	163.5	131.1	99.1	144.5	211.8	944.3
24/1/33.....	189.6	153.3	124.2	87.3	127.6	200.2	882.2
31/1/33.....	189.0	154.8	95.8†	98.3	114.2	190.1	842.2
7/2/33.....	174.4	150.9	107.7	121.3	100.2	166.1	820.6
14/2/33.....	174.8	139.1	103.9	106.1	88.2	148.6	760.7
21/2/33.....	169.2	132.6	99.4	105.1	81.3	137.4	725.0
28/2/33.....	164.7	140.7	94.3	106.4	74.5	119.6	700.2
7/3/33.....	161.4	130.9	87.3	99.8	72.0	117.3	668.7
14/3/33.....	152.8	115.5	75.5	96.8	60.2	109.4	610.2
21/3/33.....	144.7	100.9	65.6	84.9	46.2	105.3	547.6

\*No. 3741 went off feed 20/12/32, and had a temperature of 105-107° up to 30/12/32. Brought back to byre 6/1/33, and given  $\frac{3}{4}$  concentrate ration and full ration 12/1/33.

†No. 3738 off feed 28-29/1/33. Temperature normal but hoven. 30/1/33 normal feeding again.

## EFFECT OF FEED ON SOLIDS-NOT-FAT CONTENT OF MILK.

Date.	GROUP II.						Total.
	No. of Cow.						
	3728.	3736.	3739.	4128.	4131.	4132.	
21/6/32.....	170.7	183.8	196.8	167.3	152.5	242.0	1113.1
28/6/32.....	165.4	184.8	186.4	170.4	150.8	242.7	1100.5
5/7/32.....	163.8	183.8	175.8	166.7	149.5	239.5	1079.1
12/7/32.....	154.7	181.5	179.4	162.6	140.9	234.9	1054.0
19/7/32.....	147.3	177.5	175.5	158.7	134.2	239.3	1032.5
26/7/32.....	148.5	170.6	163.6	159.6	129.0	237.7	1009.0
2/8/32.....	150.3	175.1	166.5	154.8	127.6	226.2	1000.5
9/8/32.....	145.9	170.0	164.0	154.0	127.3	232.2	993.4
16/8/32.....	145.8	165.1	159.6	153.1	126.0	227.8	977.4
23/8/32.....	146.9	166.4	160.5	157.2	124.3	227.7	983.0
30/8/32.....	129.7	159.2	147.1	144.6	110.2	202.4	893.2
6/9/32.....	117.9	132.7	121.9	138.9	91.9	192.4	795.7
13/9/32.....	127.6	143.5	135.6	147.0	87.7	201.3	842.7
20/9/32.....	129.7	152.1	139.9	155.8	94.8	213.1	885.4
27/9/32.....	131.2	150.0	132.1	151.0	99.9	213.0	877.2
4/10/32.....	125.0	143.3	135.7	150.6	96.1	210.0	860.7
11/10/32.....	116.8	139.3	133.8	153.8	95.9	217.3	856.9
18/10/32.....	110.1	132.6	134.9	155.2	97.1	218.6	848.5
25/10/32.....	108.1	139.5	125.7	149.3	94.3	212.7	829.6
1/11/32.....	102.2	127.5	123.2	138.4	90.6	205.9	787.8
8/11/32.....	100.7	127.7	129.9	141.5	85.2	206.0	791.0
15/11/32.....	106.2	131.1	117.2	145.4	95.9	204.7	800.5
22/11/32.....	101.6	125.6	115.2	142.6	93.7	188.6	767.3
29/11/32.....	104.5	114.7	113.2	136.2	99.7	168.4	736.8
6/12/32.....	103.2	122.1	114.8	132.5	99.1	184.7	756.4
13/12/32.....	105.9	123.9	115.7	132.3	111.7	185.8	775.3
20/12/32.....	103.8	119.1	117.0	138.4	101.4	195.2	774.9
27/12/32.....	104.4	123.2	124.0	138.8	104.7	188.8	783.9
3/1/33.....	109.6	129.8	121.2	136.8	102.3	194.1	793.8
10/1/33.....	123.4	129.5	117.8	137.2	108.5	197.6	814.0
17/1/33.....	121.5	125.8	108.6	142.0	108.6	195.7	832.2
24/1/33.....	119.4	123.7	105.9	138.1	108.6	193.5	789.2
31/1/33.....	108.6	111.9	99.8	126.8	97.8	186.1	731.0
7/2/33.....	102.2	103.3	99.0	118.4	92.9	176.7	692.5
14/2/33.....	107.6	89.4	104.1	110.8	93.8	170.6	676.3
21/2/33.....	99.6	63.1*	99.6	96.3	90.9	167.4	616.9
28/2/33.....	98.2	76.5	101.8	92.5	96.9	170.9	636.8
7/3/33.....	106.8	80.4	104.9	96.4	99.6	170.7	658.8
14/3/33.....	103.9	—	104.5	89.3	105.7	165.7	569.1
21/3/33.....	103.2	—	98.2	82.9	106.6	162.2	553.1

\* No. 3736 off feed 19/2/33, attack of hoven and temperature 103.6°. 22/2/33 temperature normal and feeding properly. Died 12/3/33.



Date.	GROUP III.						Total.
	No. of Cow.						
	4125.	3733.	3740.	3743.	4126.	4130.	
21/6/32.....	114.2	196.9	177.8	152.2	193.1	240.0	1074.2
28/6/32.....	123.6	190.5	179.1	151.8	192.9	232.6	1070.5
5/7/32.....	109.1	182.6	169.5	151.3	189.8	235.1	1037.4
12/7/32.....	111.3	180.0	128.5	149.5	184.8	228.7	982.8
19/7/32.....	105.2	177.2	96.7	149.1	184.5	223.7	936.4
26/7/32.....	103.0	170.6	102.6	141.5	178.8	218.7	915.2
2/8/32.....	105.5	172.7	125.4	138.6	171.4	216.7	930.3
9/8/32.....	102.9	171.8	120.8	141.3	165.7	213.4	915.9
16/8/32.....	100.3	166.4	121.8	140.2	167.9	205.3	901.9
23/8/32.....	103.1	163.9	137.7	136.5	173.3	210.8	925.3
30/8/32.....	100.2	162.0	136.3	136.7	165.1	192.9	893.2
6/9/32.....	117.2	154.1	123.5	126.8	154.5	177.2	853.3
13/9/32.....	96.5	152.3	124.5	132.1	167.5	167.2	840.1
20/9/32.....	96.5	158.8	129.8	132.9	172.2	180.1	870.3
27/9/32.....	97.4	161.4	133.5	130.2	170.6	183.7	876.8
4/10/32.....	95.5	164.3	135.0	134.7	170.5	181.2	881.2
11/10/32.....	90.0	159.0	131.4	135.9	166.1	172.9	855.3
18/10/32.....	93.4	159.2	128.2	132.4	161.9	177.2	852.3
25/10/32.....	92.5	143.4	121.2	126.7	158.1	168.3	810.2
1/11/32.....	87.4	140.4	109.2	121.5	152.8	163.3	774.6
8/11/32.....	90.3	141.0	114.6	124.7	145.7	164.0	780.3
15/11/32.....	91.5	145.7	123.2	143.8	151.1	171.2	826.5
22/11/32.....	88.2	144.2	116.6	125.2	138.4	162.2	774.8
29/11/32.....	82.9	144.2	109.6	127.5	147.4	163.1	774.7
3/12/32.....	84.7	149.3	120.9	124.2	147.2	159.6	785.9
13/12/32.....	84.5	149.0	122.8	122.0	145.7	156.8	780.8
20/12/32.....	80.8	148.5	124.6	125.0	151.2	159.1	789.2
27/12/32.....	81.7	153.1	131.5	125.2	152.4	159.4	803.3
3/1/33.....	83.5	156.4	120.2	123.7	156.2	159.3	799.3
10/1/33.....	76.9	155.1	115.9	123.9	153.6	147.2	772.6
17/1/33.....	77.4	149.4	109.7	122.2	149.3	147.6	755.6
24/1/33.....	67.7	142.8	100.8	120.3	144.8	144.9	721.3
31/1/33.....	58.4	133.3	88.9	113.6	137.2	133.5	664.9
7/2/33.....	53.2	131.5	86.0	110.5	139.7	128.9	649.8
14/2/33.....	45.7	129.5	83.3	108.7	136.8	126.4	630.4
21/2/33.....	38.7	125.2	74.2	103.7	128.6	115.0	585.5
28/2/33.....	30.3	120.5	70.3	93.1	114.3	105.8	534.3
7/3/33.....	21.9	119.1	63.8	93.4	115.2	102.6	516.0
14/3/33.....	16.7	115.7	56.2	91.5	108.0	93.9	482.0
21/3/33.....	9.5	114.0	50.9	82.9	100.3	88.0	445.6

## EFFECT OF FEED ON SOLIDS-NOT-FAT CONTENT OF MILK.

APPENDIX.—TABLE V.

*Weekly Butter-fat (%) Tests of Individual Cow's Milk.*

Date.	GROUP I.						Total.
	No. of Cow.						
	3730.	3731.	3738.	3741.	4124.	4134.	
21/6/32.....	3.2	3.3	3.3	3.3	3.2	3.3	19.6
28/6/32.....	3.2	3.1	3.2	3.3	3.1	3.3	19.2
5/7/32.....	3.2	3.2	3.3	3.4	3.1	3.2	19.4
12/7/32.....	3.1	3.3	3.3	3.4	3.1	3.2	19.4
19/7/32.....	3.2	3.3	3.3	3.6	3.1	3.5	20.0
26/7/32.....	3.3	3.4	3.5	3.5	3.3	3.3	20.3
2/8/32.....	3.3	3.5	3.5	3.7	3.2	3.4	20.6
9/8/32.....	3.3	3.4	3.4	3.7	3.3	3.7	20.8
16/8/32.....	3.3	3.4	3.5	3.6	3.2	3.4	20.4
23/8/32.....	3.3	3.3	3.5	3.8	3.2	3.4	20.5
30/8/32.....	3.2	3.3	3.5	3.6	3.0	3.3	19.9
6/9/32.....	3.2	3.1	3.6	3.6	2.9	3.1	19.5
13/9/32.....	3.2	3.0	3.4	3.3	2.9	3.0	18.8
29/9/32.....	3.1	3.1	3.3	3.2	2.8	3.0	18.5
20/9/32.....	3.1	3.2	3.3	3.2	2.9	3.1	18.8
4/10/32.....	3.3	3.2	3.4	3.1	2.9	3.0	18.9
11/10/32.....	3.1	3.3	3.5	3.1	3.0	3.1	19.1
18/10/32.....	3.0	3.2	3.4	3.1	2.9	3.0	18.6
25/10/32.....	3.0	3.4	3.5	3.2	3.0	2.9	19.0
1/11/32.....	3.1	3.7	3.8	3.5	3.2	2.8	20.1
8/11/32.....	3.1	3.6	3.7	3.4	3.2	2.8	19.8
15/11/32.....	3.0	3.5	3.8	3.4	3.1	3.1	19.9
22/11/32.....	2.8	3.5	3.7	3.4	3.3	3.1	19.8
29/11/32.....	3.1	3.6	3.8	3.4	3.2	3.3	20.4
6/12/32.....	3.1	3.6	3.8	3.5	3.2	3.1	20.3
13/12/32.....	3.1	3.8	3.8	3.6	3.5	3.1	20.9
20/12/32.....	2.8	3.7	4.0	3.5	3.3	2.7	20.0
27/12/32.....	2.9	3.6	4.0	—	3.2	2.9	16.6
3/1/33.....	3.1	3.8	4.1	—	3.6	2.9	17.5
10/1/33.....	3.3	3.7	4.3	—	3.5	3.3	18.1
17/1/33.....	3.6	3.7	4.1	4.1	3.7	3.3	22.5
24/1/33.....	3.7	3.9	4.3	4.3	3.8	3.4	23.7
31/1/33.....	3.4	3.8	4.5	3.8	3.8	3.4	22.7
7/2/33.....	3.6	3.9	4.1	3.8	3.9	3.6	22.9
14/2/33.....	3.7	3.9	4.2	3.9	3.8	3.7	23.2
21/2/33.....	3.7	3.5	4.3	3.9	3.8	3.6	22.8
28/2/33.....	3.8	3.8	4.3	4.1	3.9	3.7	23.6
7/3/33.....	3.8	4.1	4.6	4.3	3.9	3.6	24.3
14/3/33.....	3.9	4.4	4.7	4.3	4.2	3.6	25.1
21/3/33.....	4.1	4.4	4.9	4.6	4.6	3.6	26.2

Date.	GROUP II.						Total.
	No. of Cow.						
	3728.	3736.	3739.	4128.	4131.	4132.	
21/6/32.....	3·3	3·1	3·3	3·4	2·9	3·0	19·0
28/6/32.....	3·3	3·1	3·3	3·4	2·8	3·0	18·9
5/7/32.....	3·3	3·1	3·5	3·6	2·8	3·0	19·3
12/7/32.....	3·5	3·0	3·2	3·6	2·8	2·9	19·0
19/7/32.....	3·5	3·2	3·5	3·6	2·8	3·0	19·6
26/7/32.....	3·6	3·3	3·3	3·5	2·8	3·0	19·5
2/8/32.....	3·6	3·3	3·5	3·7	2·8	3·0	19·9
9/8/32.....	3·8	3·4	3·6	3·6	2·8	3·1	20·3
16/8/32.....	3·8	3·3	3·6	3·9	2·7	3·0	20·3
23/8/32.....	3·7	3·3	3·6	3·7	2·8	3·1	20·2
30/8/32.....	3·7	3·5	3·9	4·0	2·8	3·3	21·2
6/9/32.....	3·8	3·9	4·1	4·1	3·1	3·3	22·3
13/9/32.....	3·6	3·3	3·7	3·8	3·0	3·0	20·4
20/9/32.....	3·6	3·3	3·7	3·9	3·0	3·2	20·7
27/9/32.....	3·6	3·4	3·6	3·8	3·0	3·1	20·5
4/10/32.....	3·5	3·4	3·6	4·0	3·0	2·9	20·4
11/10/32.....	3·5	3·4	3·6	4·0	3·0	3·0	20·5
18/10/32.....	3·4	3·4	4·1	4·0	3·0	3·1	21·0
25/10/32.....	3·4	3·3	3·5	3·8	3·0	3·1	20·2
1/11/32.....	3·5	3·6	3·5	4·0	3·1	3·1	20·8
8/11/32.....	3·6	3·6	3·6	3·9	3·0	3·1	20·8
15/11/32.....	3·7	3·6	3·7	3·9	3·1	3·2	21·2
22/11/32.....	3·7	3·7	3·6	3·9	3·1	3·2	21·2
29/11/32.....	3·6	3·7	3·6	3·9	3·1	3·5	21·4
6/12/32.....	3·6	3·6	3·7	3·8	3·2	3·3	21·2
13/12/32.....	3·7	3·7	3·8	3·7	3·2	3·2	21·3
20/12/32.....	3·6	3·7	3·7	3·7	3·2	3·1	21·0
27/12/32.....	3·8	3·7	3·7	3·7	3·2	3·1	21·2
3/1/33.....	3·8	3·8	3·8	3·7	3·4	3·3	21·8
10/1/33.....	3·8	3·9	4·2	3·8	3·4	3·4	22·5
17/1/33.....	3·9	3·9	4·3	3·7	3·4	3·3	22·5
24/1/33.....	3·9	3·9	4·2	3·8	3·4	3·3	22·5
31/1/33.....	4·0	4·1	4·2	3·9	3·7	3·4	23·3
7/2/33.....	3·7	4·2	4·1	3·9	3·4	3·2	22·5
14/2/33.....	3·6	4·3	3·9	3·7	3·3	3·2	22·0
21/2/33.....	3·8	4·7	3·8	4·0	3·4	3·2	22·9
28/2/33.....	3·6	4·6	3·7	3·9	3·2	3·2	22·2
7/3/33.....	3·6	4·5	3·7	4·1	3·3	3·3	22·5
14/3/33.....	3·7	—	3·9	4·1	3·2	3·4	18·3
21/3/33.....	3·7	—	4·0	4·1	3·3	3·4	18·5

## EFFECT OF FEED ON SOLIDS-NOT-FAT CONTENT OF MILK.

Date.	GROUP III.						Total.
	No. of Cow.						
	4125.	3733.	3740.	3743.	4126.	4130.	
21/6/32.....	3.7	3.0	3.3	3.2	3.1	3.0	19.3
28/6/32.....	3.6	3.0	3.3	3.1	3.2	3.1	19.3
5/7/32.....	3.8	3.0	3.3	3.1	3.1	3.1	19.4
12/7/32.....	3.7	3.1	3.6	3.1	3.0	3.1	19.6
19/7/32.....	4.0	3.2	4.0	3.1	3.2	3.2	20.8
26/7/32.....	3.9	3.2	3.2	3.2	3.2	3.2	19.5
2/8/32.....	4.1	3.2	3.4	3.2	3.4	3.4	20.7
9/8/32.....	4.0	3.2	3.8	3.2	3.4	3.4	21.0
16/8/32.....	4.1	3.4	3.5	3.1	3.3	3.4	21.1
23/8/32.....	4.1	3.3	3.5	3.2	3.2	3.4	20.7
30/8/32.....	4.0	3.3	3.5	3.1	3.4	3.6	20.9
6/9/32.....	4.1	3.3	3.5	3.2	3.5	3.5	21.1
13/9/32.....	4.1	3.3	3.4	3.1	3.4	3.4	20.7
20/9/32.....	4.0	3.2	3.4	3.1	3.3	3.3	20.3
27/9/32.....	4.0	3.3	3.4	3.1	3.2	3.4	20.4
4/10/32.....	4.0	3.4	3.5	3.2	3.4	3.4	20.9
11/10/32.....	4.2	3.6	3.5	3.2	3.4	3.6	21.5
18/10/32.....	4.0	3.5	3.5	3.1	3.5	3.4	21.0
25/10/32.....	4.0	3.6	3.7	3.2	3.6	3.5	21.6
1/11/32.....	4.2	3.5	3.8	3.4	3.7	3.7	22.3
8/11/32.....	4.1	3.4	3.6	3.2	3.8	3.6	21.7
15/11/32.....	4.3	3.5	3.7	3.3	3.7	3.6	22.1
22/11/32.....	4.2	3.5	3.8	3.3	3.8	3.7	22.3
29/11/32.....	4.2	3.4	3.7	3.3	3.7	3.5	21.8
6/12/32.....	4.3	3.5	3.5	3.3	3.6	3.6	21.8
13/12/32.....	4.5	3.5	3.6	3.3	3.6	3.8	22.3
20/12/32.....	4.2	3.4	3.5	3.3	3.6	3.6	21.6
27/12/32.....	4.4	3.5	3.7	3.3	3.6	3.6	22.1
3/1/33.....	4.3	3.4	3.9	3.4	3.8	3.7	22.5
10/1/33.....	4.7	3.5	3.9	3.4	3.7	4.0	23.2
17/1/33.....	4.8	3.6	4.2	3.6	3.8	4.0	24.0
24/1/33.....	4.9	3.7	4.2	3.7	4.1	4.1	24.7
31/1/33.....	5.2	3.6	4.5	3.7	3.9	4.2	25.1
7/2/33.....	5.2	3.5	4.3	3.6	3.7	4.0	24.3
14/2/33.....	5.2	3.4	4.4	3.6	3.7	4.0	24.3
21/2/33.....	5.6	3.3	4.2	3.5	3.7	4.0	24.3
28/2/33.....	5.8	3.3	4.3	3.6	3.8	4.1	24.9
7/3/33.....	6.0	3.4	4.5	3.6	3.7	4.1	25.3
14/3/33.....	6.2	3.4	4.7	3.6	4.0	4.4	26.3
21/3/33.....	6.5	3.3	4.8	3.8	4.1	4.5	27.0

APPENDIX.—TABLE VI.

*Weekly Solids not Fat (%) Tests of Individual Cow's Milk.*

Date.	GROUP I.						Total.
	No. of Cow.						
	3730.	3731.	3738.	3741.	4124.	4134.	
21/6/32.....	9.2	8.58	8.68	8.35	8.96	8.9	52.67
28/6/32.....	9.08	8.6	8.7	8.65	9.05	8.75	52.83
5/7/32.....	9.05	8.65	8.65	8.58	8.98	8.9	52.81
12/7/32.....	9.08	8.68	8.78	8.55	9.0	8.98	53.07
19/7/32.....	9.26	8.62	8.7	8.76	9.2	8.96	53.5
26/7/32.....	9.12	8.65	8.84	8.84	9.08	8.9	53.43
2/8/32.....	9.28	8.8	8.74	8.83	8.83	9.02	53.5
9/8/32.....	9.15	8.78	8.8	8.76	9.08	8.85	53.42
16/8/32.....	9.23	8.55	8.76	8.77	9.05	9.0	53.36
23/8/32.....	9.1	8.53	8.76	8.73	9.13	8.92	53.17
30/8/32.....	9.03	8.68	8.78	8.62	9.05	8.93	53.09
6/9/32.....	9.15	8.73	8.86	8.78	9.2	9.06	53.78
13/9/32.....	8.98	8.72	8.8	8.6	9.28	9.12	53.5
20/9/32.....	9.16	8.63	8.8	8.98	9.13	9.07	53.77
27/9/32.....	9.21	8.88	8.93	8.74	9.33	9.32	54.41
4/10/32.....	9.23	8.78	8.84	8.64	9.3	8.97	53.76
11/10/32.....	9.14	8.9	8.94	8.66	9.35	8.98	53.97
18/10/32.....	9.35	8.9	8.95	8.56	9.33	8.97	54.06
25/10/32.....	9.2	9.02	8.81	8.75	9.27	9.15	54.20
1/11/32.....	9.33	9.0	8.9	8.78	9.28	9.03	54.32
8/11/32.....	9.13	9.03	8.88	8.6	9.3	9.08	54.02
15/11/32.....	9.12	9.02	8.98	8.67	9.1	9.1	53.99
22/11/32.....	9.18	9.0	8.88	8.77	9.22	9.26	54.31
29/11/32.....	9.31	9.06	8.9	8.77	9.22	9.0	54.26
6/12/32.....	9.28	9.13	8.9	8.7	9.18	9.2	54.39
13/12/32.....	9.2	9.12	8.8	8.61	9.2	9.2	54.13
20/12/32.....	9.38	9.08	8.82	8.6	9.23	9.15	54.26
27/12/32.....	9.25	9.06	9.04	—	9.5	9.23	46.08
3/1/33.....	9.26	9.05	9.15	—	9.5	9.1	46.06
10/1/33.....	9.5	9.13	9.15	8.7	9.6	9.28	55.36
17/1/33.....	9.49	9.17	9.2	8.77	9.68	9.4	55.71
27/1/33.....	9.53	9.17	9.27	8.8	10.0	9.4	56.17
31/1/33.....	9.47	9.27	9.2	8.68	10.13	9.5	56.25
7/2/33.....	9.46	9.22	9.2	8.77	10.0	9.64	56.29
14/2/33.....	9.25	9.4	9.37	8.8	10.1	9.77	56.69
21/2/33.....	9.63	9.4	9.3	8.84	10.03	9.75	56.95
28/2/33.....	9.55	9.42	9.37	8.7	9.92	9.65	56.61
7/3/33.....	9.5	9.53	9.2	8.87	10.02	9.58	56.7
14/3/33.....	9.75	9.77	9.4	9.05	10.12	9.62	57.71
21/3/33.....	9.8	10.12	9.77	9.4	10.36	9.42	58.87

## EFFECT OF FEED ON SOLIDS-NOT-FAT CONTENT OF MILK.

Date.	GROUP II.						Total.
	No. of Cow.						
	3728.	3736.	3739.	4128.	4131.	4132.	
21/6/32.....	8.87	9.0	8.85	9.22	8.65	8.83	53.42
28/6/32.....	8.85	8.95	8.78	9.22	8.58	—	44.38
5/7/32.....	8.85	8.88	8.72	9.3	8.65	8.68	53.08
12/7/32.....	8.78	8.98	8.8	9.37	8.58	8.82	53.33
19/7/32.....	8.95	8.92	8.82	9.43	8.56	8.7	53.38
26/7/32.....	8.86	8.9	8.9	9.51	8.52	8.72	53.41
2/8/32.....	8.83	8.92	8.84	9.38	8.55	8.6	53.12
9/8/32.....	8.9	8.97	8.82	9.16	8.55	8.6	53.0
16/8/32.....	8.9	8.93	8.83	9.12	8.56	8.65	53.0
23/8/32.....	8.98	8.8	9.08	9.2	8.43	8.6	53.09
30/8/32.....	8.83	8.87	8.72	9.05	8.2	8.55	52.22
6/9/32.....	8.73	8.74	8.66	9.13	8.36	8.33	51.95
13/9/32.....	8.58	8.7	8.83	9.1	8.47	8.3	51.98
20/9/32.....	8.66	8.6	8.73	9.07	8.47	8.4	51.93
27/9/32.....	8.68	8.67	8.97	9.03	8.47	8.48	52.3
4/10/32.....	8.57	8.7	8.56	9.01	8.49	8.25	51.58
11/10/32.....	8.6	8.64	8.8	9.06	8.3	8.32	51.72
18/10/32.....	8.55	8.85	8.83	9.1	8.42	8.38	52.13
25/10/32.....	8.57	8.8	8.75	9.13	8.44	8.45	52.14
1/11/32.....	8.56	8.8	8.85	9.17	8.56	8.38	52.32
8/11/32.....	8.6	8.84	8.74	9.24	8.37	8.36	52.15
15/11/32.....	8.6	8.8	8.58	9.0	8.6	8.4	51.98
22/11/32.....	8.63	8.75	8.61	9.07	8.38	8.4	51.84
29/11/32.....	8.4	8.63	8.74	8.92	8.38	8.31	51.38
6/12/32.....	8.63	8.6	8.83	9.12	8.5	8.6	52.28
13/12/32.....	8.53	8.78	8.75	9.1	8.4	8.53	52.09
20/12/32.....	8.53	8.56	8.73	8.88	8.43	8.38	51.51
27/12/32.....	8.55	8.7	8.8	9.0	8.55	8.4	52.0
3/1/33.....	8.53	8.77	9.05	9.1	8.67	8.4	52.52
10/1/33.....	8.65	8.72	8.85	9.03	8.32	8.55	52.12
17/1/33.....	8.67	8.83	8.72	9.1	8.5	8.43	52.25
27/1/33.....	8.62	8.8	9.13	9.02	8.57	8.45	52.59
31/1/33.....	8.55	8.6	8.82	9.08	8.55	8.42	52.02
7/2/33.....	8.5	8.6	8.83	9.07	8.55	8.4	51.95
14/2/33.....	8.56	8.95	8.75	8.93	8.42	8.52	52.13
21/2/33.....	8.5	8.95	8.75	8.92	8.5	8.4	52.02
28/2/33.....	8.61	8.74	8.7	8.9	8.38	8.55	51.88
7/3/33.....	8.51	8.85	8.8	8.83	8.55	8.52	52.06
14/3/33.....	8.56	—	8.9	8.86	8.5	8.7	43.52
21/3/33.....	8.53	—	9.1	8.93	8.65	8.67	43.88

Date.	GROUP III.						Total.
	No. of Cow.						
	4125.	3733.	3740.	3743.	4126.	4130.	
21/6/32.....	8.75	8.48	8.9	8.43	8.9	9.07	52.53
28/6/32.....	8.7	8.6	8.8	8.55	8.88	8.96	52.49
5/7/32.....	8.73	8.65	8.9	8.52	8.73	9.07	52.6
12/7/32.....	8.88	8.6	8.73	8.63	8.93	9.13	52.9
19/7/32.....	8.94	8.75	8.56	8.41	8.92	9.22	52.8
26/7/32.....	8.98	8.72	8.65	8.4	8.82	9.02	52.59
2/8/32.....	8.68	8.53	8.82	8.5	8.85	9.1	52.4
9/8/32.....	8.7	8.73	8.7	8.7	8.8	9.05	52.68
16/8/32.....	8.76	8.68	9.02	8.39	8.8	9.07	52.72
23/8/32.....	8.7	8.7	9.02	8.48	8.88	9.02	52.8
30/8/32.....	8.78	8.55	8.72	8.38	8.77	9.11	52.31
6/9/32.....	8.46	8.6	8.59	8.28	8.39	8.84	51.16
13/9/32.....	8.63	8.62	8.5	8.36	8.82	8.8	51.73
20/9/32.....	8.61	8.5	8.7	8.38	8.78	8.85	51.82
27/9/32.....	8.79	8.7	8.9	8.53	8.88	8.94	52.74
4/10/32.....	8.67	8.52	8.7	8.5	8.8	8.85	52.04
11/10/32.....	8.77	8.74	8.77	8.45	8.85	9.04	52.62
18/10/32.....	8.74	8.61	8.8	8.44	9.0	8.9	52.49
25/10/32.....	8.95	8.75	8.65	8.43	8.63	8.86	52.27
1/11/32.....	8.85	8.85	8.66	8.45	8.86	9.03	52.7
8/11/32.....	8.74	8.83	8.45	8.43	8.88	8.88	52.21
15/11/32.....	8.82	8.54	8.91	8.68	8.88	9.16	52.99
22/11/32.....	8.78	8.57	8.65	8.62	8.7	9.0	52.32
29/11/32.....	8.67	8.67	8.63	8.5	8.57	8.93	51.97
6/12/32.....	8.95	8.71	8.73	8.58	8.71	9.21	52.89
13/12/32.....	8.8	8.61	8.8	8.51	8.68	9.02	52.42
20/12/32.....	8.85	8.8	8.52	8.43	8.61	8.97	52.18
27/12/32.....	9.12	8.84	8.7	8.52	8.74	9.02	52.94
3/1/33.....	9.03	8.8	8.9	8.63	8.75	9.03	53.14
10/1/33.....	9.23	8.72	8.58	8.57	8.56	8.94	52.6
17/1/33.....	9.35	8.86	8.63	8.6	8.55	8.94	52.93
27/1/33.....	9.37	8.95	8.73	8.6	8.78	8.95	53.38
31/1/33.....	9.52	8.84	8.8	8.7	8.48	8.98	53.32
7/2/33.....	9.57	8.82	8.75	8.6	8.48	8.96	53.18
14/2/33.....	9.8	8.72	8.7	8.64	8.48	9.0	53.34
21/2/33.....	9.9	8.8	8.88	8.6	8.38	8.9	53.46
28/2/33.....	9.97	8.77	8.77	8.58	8.3	8.83	53.22
7/3/33.....	10.47	8.8	8.98	8.53	8.35	8.9	54.03
14/3/33.....	10.76	8.72	9.07	8.4	8.34	8.77	54.06
21/3/33.....	11.21	8.6	9.25	8.65	8.28	9.14	55.13