

UNIVERSITY OF MISSOURI      COLLEGE OF AGRICULTURE  
AGRICULTURAL EXPERIMENT STATION  
RESEARCH BULLETIN 54

# Studies In Animal Nutrition

## II. Changes in Proportions of Carcass and Offal on Different Planes of Nutrition

(Publication authorized September 1, 1922.)



COLUMBIA, MISSOURI  
SEPTEMBER, 1922

UNIVERSITY OF MISSOURI  
COLLEGE OF AGRICULTURE  
**Agricultural Experiment Station**

**BOARD OF CONTROL**

THE CURATORS OF THE UNIVERSITY OF MISSOURI

**EXECUTIVE BOARD OF THE UNIVERSITY**

E. LANSING RAY  
St. Louis

P. E. BURTON  
Joplin

H. J. BLANTON  
Paris

**ADVISORY COUNCIL**

THE MISSOURI STATE BOARD OF AGRICULTURE

**OFFICERS OF THE STATION**

J. C. JONES, PH. D., LL. D., PRESIDENT OF THE UNIVERSITY  
F. B. MUMFORD, M. S., DIRECTOR

**STATION STAFF**  
SEPTEMBER, 1922

**AGRICULTURAL CHEMISTRY**

C. R. MOULTON, Ph. D.  
L. D. HAIGH, Ph. D.  
W. S. RITCHIE, Ph. D.  
E. E. VANATTA, M. S.  
A. R. HALL, B. S. in Agr.  
E. G. SIEVEKING, B. S. in Agr.

**AGRICULTURAL ENGINEERING**

J. C. WOOLEY, B. S.  
MACK M. JONES, B. S.

**ANIMAL HUSBANDRY**

E. A. TROWBRIDGE, B. S. in Agr.  
L. A. WEAVER, B. S. in Agr.  
A. G. HOGAN, Ph. D.  
F. B. MUMFORD, M. S.  
D. W. CHITTENDEN, B. S. in Agr.  
A. T. EDINGER, B. S. in Agr.  
H. D. FOX, B. S. in Agr.

**BOTANY**

W. J. ROBBINS, Ph. D.

**DAIRY HUSBANDRY**

A. C. RAGSDALE, B. S. in Agr.  
WM. H. E. REID, A. M.  
SAMUEL BRODY, M. A.  
C. W. TURNER, B. S. in Agr.  
D. H. NELSON, B. S. in Agr.  
W. P. HAYS

**ENTOMOLOGY**

LEONARD HASEMAN, Ph. D.  
K. C. SULLIVAN, A. M.  
O. C. MCBRIDE, B. S. in Agr.

**FIELD CROPS**

W. C. ETHERIDGE, Ph. D.  
C. A. HELM, A. M.  
L. J. STADLER, Ph. D.  
O. W. LETSON, B. S. in Agr.  
Miss REGINA SCHULTE\*

**RURAL LIFE**

O. R. JOHNSON, A. M.  
S. D. GROMER, A. M.  
E. L. MORGAN, A. M.  
BEN H. FRAME, B. S. in Agr.  
OWEN HOWELLS, B. S. in Agr.

**HORTICULTURE**

T. J. TALBERT, A. M.  
H. D. HOOKER, JR., Ph. D.  
J. T. ROSA, JR., Ph. D.  
H. G. SWARTWOUT, B. S. in Agr.  
J. T. QUINN, B. S. in Agr.

**POULTRY HUSBANDRY**

H. L. KEMPSTER, B. S.  
EARL W. HENDERSON, B. S.

**SOILS**

M. F. MILLER, M. S. A.  
H. H. KRUSEKOPF, A. M.  
W. A. ALBRECHT, Ph. D.  
F. L. DULEY, A. M.  
WM. DEYOUNG, B. S. in Agr.  
H. V. JORDAN, B. S. in Agr.  
RICHARD BRADFELD, Ph. D.

**VETERINARY SCIENCE**

J. W. CONNAWAY, D. V. S., M. D.  
L. S. BACKUS, D. V. M.  
O. S. CRISLER, D. V. M.  
A. J. DURANT, A. M.  
H. G. NEWMAN, A. M.

**OTHER OFFICERS**

R. B. PRICE, M. S., Treasurer  
LESLIE COWAN, B. S., Secretary  
S. B. SHIRKEY, A. M., Asst. to Director  
A. A. JEFFREY, A. B., Agricultural Editor  
J. F. BARHAM, Photographer  
Miss JANE FRODSHAM, Librarian.  
E. E. BROWN, Business Manager.

\*In service of U. S. Department of Agriculture.

# STUDIES IN ANIMAL NUTRITION

## II. Changes in Proportions of Carcass and Offal on Different Planes of Nutrition.

C. ROBERT MOULTON, P. F. TROWBRIDGE,\* L. D. HAIGH

The changes experienced by beef cattle in form and weight when on different planes of nutrition were presented and discussed in a previous bulletin†. Representative animals from each of the groups were killed at intervals from birth to four years old. The data collected in the slaughter house will be presented in this bulletin.

### RATION

For a general discussion of the treatment of the animals the previous bulletin must be consulted. The ration included milk for several months after birth and timothy hay and grain were soon introduced. At weaning time the ration consisted of alfalfa hay and a grain mixture in the ratio of one to two. The grain consisted of six parts corn chop, three parts whole oats, and one part of old process linseed meal.

### PLANE OF NUTRITION

The animals were early divided into three groups. Group I was fed all it would eat of the ration. Group II was fed for maximum growth without permitting the laying on of much fat. Group III was fed for scanty or retarded growth. The Group II steers gained about a pound a day for the first two years while the Group III cattle gained but 0.69 pounds per day.

### SLAUGHTERING

In the conduct of this experiment great care was exercised that all of the operations with the different animals should be carried out under similar conditions. Although the slaughtering and subsequent operations were necessarily carried out at different times,

\*Resigned September, 1918.

†C. Robert Moulton, P. F. Trowbridge, L. D. Haigh, Studies in Animal Nutrition, I. Changes in Form and Weight on Different Planes of Nutrition. Mo. Agr. Expt. Station, Research Bulletin 43.

in order to make the results strictly comparable the slaughtering and cutting were done by the same experts each time\*.

Each animal was slaughtered on the day following the closing of its feeding period. In the morning the steer was fed and weighed as usual but no water was given. If slaughter occurred late in the morning or in the afternoon the animal was weighed again immediately before slaughtering. The animal was led from the feeding shed to the slaughter house followed by men with a shovel and long handled dipper to catch any feces or urine that might be voided.

The animal was stunned with a knocking hammer, shackled by the hind legs and hoisted to swing clear of the floor. An oil cloth, funnel shaped bag had been fastened to the muzzle before hoisting so that any vomit voided could be caught and weighed. The suspended animal was stuck in the throat near the brisket so that both the jugular vein and carotid artery were severed. Complete bleeding was assured by pumping the fore legs up and down. The blood was caught in a tared pan and weighed. The volume of this main weighed portion was determined. A tared pan was kept under the animal to catch any blood that might drip while skinning out the head.

While the blood was flowing freely the samples for analysis were taken and poured in suitable quantity into tared, covered containers and crucibles. The blood was still warm and no clotting had yet occurred.

While the carcass was hanging the head was skinned out. The gullet was firmly tied with a skewer thrust through below the tie and the head was then severed permitting the dripping blood to collect in a tared container. The head was immediately placed in a large can provided with a cover and the weight obtained. The tongue with larynx and bones was removed, separated into tongue marketable, tongue base, bones, larynx, and piece of gullet. The parts were weighed and set aside in closed containers. Horns were sawed off and weighed. The skull and entire head was split accurately in half and the brain was removed and weighed. The lean meat and fat were removed from the right half as were the teeth. If any vomit was found it was weighed and discarded. Both halves of the head were weighed. The total lean and fat were obtained

\*Swift & Company of Kansas City furnished an expert butcher to do the slaughtering. Mr. Samuel Godfrey, foreman of the beef cutting department, did the cutting.

by doubling the right-side weights and the total bone by subtracting the sum of the lean and fat from the sum of the two halves of the head minus the teeth.

As soon as the suspended carcass with the head removed had practically stopped bleeding it was lowered to the floor with the anterior end lying up the slope of the smooth cement floor. A man with a rubber window wiper and sharp edged dust pan kept all oozing blood wiped up and transferred to weighed containers.

In skinning out the feet the dew claws were removed, weighed and saved and care was taken to remove the hide exactly at the hoof line. From the right feet the hoofs were separated and the remainder of the material was considered as skeleton. The usual packing house order of procedure was followed in skinning the carcass and removing the internal organs. The caul fat was removed while the carcass was on its back. The bladder was tied before removing and weighed with its contents and again empty. The rectum was tied as soon as it was cut loose. The tail was removed and split in two and the lean and fat meat separated and weighed.

The contents of the abdominal and thoracic cavities was caught in a large tub, or tubs, and weighed. The separation and weighing of the organs was pushed as rapidly as possible to reduce to a minimum the loss of water by evaporation. A double tie was made at the end of the small intestine near the abomasum before severing one from the other. The fat was carefully cut or scraped from all four stomachs and weighed. The intestines were also carefully freed from fat, and this was generally accomplished without any portion becoming smeared with the contents. The stomachs were emptied of the contents and were cleaned by washing with water after which they were wiped dry with cloths. The contents of the intestines were removed by stripping through the fingers taking a section at a time. The stripped sections were split open and the inside was wiped lightly to remove all contents. Occasionally it was necessary to wash and wipe a smeared portion. The various organs were separated, weighed and put into closed containers.

The hide was removed and the carcass was split into halves. Then the spinal cord was removed. The diaphragm was removed back to the striated muscle and composited with the internal organs.

The carcass was allowed to chill for 48 hours and the right

side was separated into the two quarters and then into the standard wholesale cuts. (Figure 1). Each cut was separated into lean meat, fatty tissue and bone. The tendons were weighed with the bone. In the separation of the lean and fat, care was taken that the fatty tissue should contain no lean meat. Necessarily the lean meat contained small pieces of fat which could not be separated. The meat was cut from the bones as completely as could be done with a boning knife. All samples were kept in closed tin containers.

The further treatment of the separated parts is of interest only in connection with the chemical analysis and the description will be deferred to a later publication.

### THE SLAUGHTER HOUSE DATA

The detailed slaughter house data obtained are given in the Appendix in Tables 1 to 5 for the offal parts and Tables 6 to 10 for the carcass parts. Few of the weights need explanation. The warm empty weight was obtained by subtracting the contents of the stomachs, intestines, and urinary bladder and any excrement voided before death from the live weight at slaughtering. The heart and neck sweetbreads are the thymus gland. The stomach and intestinal fats are those which adhered to the respective organs. The intestinal fat is largely included in the mesentery. The caul fat is that laid on in the part of the peritoneum stretching like an apron over the stomachs and intestines. The different divisions are mutually exclusive excepting where specified otherwise.

TABLE I.—PERCENT EMPTY WEIGHT TO  
LIVE WEIGHT.

Age	Group		
	I	II	III
At birth .....	98.41	98.41	98.41
3 months .....	88.02	89.27	83.89
5½ months .....	84.32	85.29	86.63
8½ months .....	83.16	82.28	83.19
11 months .....	88.30	87.61	87.10
18 months .....	88.77	....	90.37
21-26 months .....	90.44	88.69	87.05
34 months .....	90.39	91.63	....
38 months stunted ..	92.30	....	....
40 months .....	93.26	89.19	88.95
45 months .....	90.40	87.68	89.01
47-48 months .....	92.24	90.12	89.09

**Empty Weight.**—Table I gives the proportion of empty weight in the live animal from birth to four years for each group of cattle. The figures in this table as well as in Tables II to XVIII inclusive

are taken from Tables 11 to 15 in the Appendix. The figures presented for the animal at birth are for the average of Hereford calves reported in Research Bulletin 38 of this Station. The complement of the percent of empty weight is of course the percent of fill.

The animal at birth has the largest percent of empty weight. This is due to the lack of food and food residues in the alimentary canal. The figure decreases during the early months showing a large proportion of fill and is least at 8½ months. It then gradually increases with some irregularity and becomes at about 3 years and thereafter a higher proportion than at any time since birth.

The amount of the ration affects the percent of the empty weight. The lighter rations show generally a smaller percent of empty weight and consequently indicate more relative fill. Since the weight of the ration is smaller and the weight of fill is smaller this can only be due to a greater difference in weight of animal resulting in a decreased percent of empty weight. At 8½ months there is practically no difference between the three groups.

**Carcass.**—Tables II and III show the percent of carcass in the live and empty animals respectively. The percent of carcass to live weight decreases to about 8½ months and then increases to reach at 3 to 4 years a higher value than at any previous time. For the first six months there is little difference between the groups but thereafter the better fed animals have the greater percent of carcass.

The effect of varying proportions of fill is shown in the figures discussed in the above paragraph. On the empty weight basis there is a continuous increase in percent of carcass from birth to

TABLE II.—PERCENT CARCASS TO LIVE WEIGHT.

Age	Group		
	I	II	III
At birth .....	59.30	59.30	59.30
3 months .....	54.19	57.32	53.63
5½ months .....	53.71	53.00	54.39
8½ months .....	54.17	50.46	51.09
11 months .....	57.52	53.85	55.23
18 months .....	60.46	....	56.02
21-26 months .....	58.24	57.71	54.27
34 months .....	61.49	60.49	....
38 months stunted ..	65.69	....	....
40 months .....	70.42	61.18	58.08
45 months .....	65.32	60.28	60.34
47-48 months .....	68.95	61.80	59.63

TABLE III.—PERCENT CARCASS TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	60.39	60.39	60.39
3 months .....	61.56	64.21	63.92
5½ months .....	63.70	62.14	62.78
8½ months .....	65.14	61.33	61.41
11 months .....	65.14	61.47	63.41
18 months .....	68.11	....	61.98
21-26 months .....	64.39	65.07	62.34
34 months .....	68.03	66.02	....
38 months stunted ..	71.17	....	....
40 months .....	75.52	68.59	65.29
45 months .....	72.25	68.76	67.80
47-48 months .....	74.75	68.58	66.63

3 or 4 years of age. The relation between the groups is the same as when the live weight formed the basis.

**Carcass and Offal Fat.**—In Tables IV and V are shown the percents of carcass plus offal fat to live and empty weights. The offal fat is the hand separable fat on the internal organs. It is small in amount in the young animals, being entirely negligible in the calf at birth. In the very fat four year old steer it amounts to nearly five percent of the animal. The effect of adding this fat to the carcass weight is merely to increase the spread of the figures with increasing age and fatness. The general relations pointed out in the section above hold here.

TABLE IV.—PERCENT CARCASS AND OFFAL FAT TO LIVE WEIGHT.

Age	Group		
	I	II	III
At birth .....	59.30	59.30	59.30
3 months .....	55.45	58.06	54.17
5½ months .....	57.01	54.53	54.23
8½ months .....	56.05	52.23	51.85
11 months .....	61.16	56.17	56.69
18 months .....	65.04	....	57.40
21-26 months .....	63.01	59.79	55.89
34 months .....	65.51	62.96	....
38 months stunted ..	71.34	....	....
40 months .....	76.18	63.58	59.46
45 months .....	71.62	62.53	62.60
47-48 months .....	73.33	64.98	62.19

TABLE V.—PERCENT CARCASS AND OFFAL FAT TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	60.39	60.39	60.39
3 months .....	62.99	65.03	64.57
5½ months .....	67.61	63.94	63.76
8½ months .....	67.40	63.48	62.33
11 months .....	69.26	64.12	65.08
18 months .....	73.27	....	63.49
21-26 months .....	69.67	67.41	64.21
34 months .....	72.47	68.71	....
38 months stunted ..	77.30	....	....
40 months .....	81.69	71.29	66.84
45 months .....	79.22	71.32	70.33
47-48 months .....	79.49	72.11	69.80

TABLE VI.—PERCENT OFFAL FAT TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	none	none	none
3 months .....	1.43	0.83	0.65
5½ months .....	3.91	1.80	0.98
8½ months .....	2.26	2.16	0.92
11 months .....	4.12	2.65	1.68
18 months .....	5.16	....	1.51
21-26 months .....	5.28	2.34	1.87
34 months .....	4.45	2.70	....
38 months stunted ..	6.13	....	....
40 months .....	6.17	2.70	1.55
46 months .....	6.97	2.56	2.54
47-48 months .....	4.74	3.53	3.17

Table VI gives the percent of offal fat to the empty animal. There is a rather consistent increase in percent of offal fat with increasing age and fatness. A striking exception is shown by the four year old Group I steer. This is due to a great decrease in the



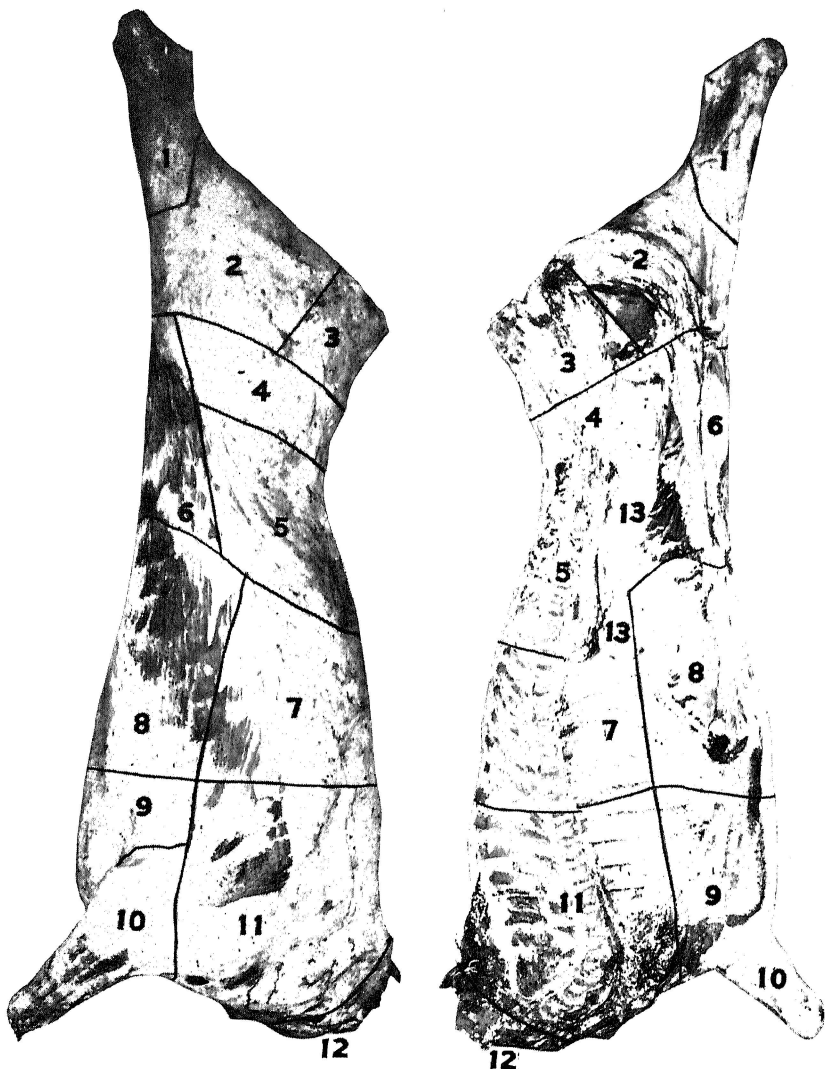


Fig. 1.—Wholesale divisions of the beef carcass.

weight of offal fat, this animal having but 38.5 kilograms while the next younger animals had 53.6 and 48.3 kilograms respectively. The low figure should be taken with reservations as to its general applicability.

**Hide and Hair.**—The percent of hide and hair referred to empty weight is given in Table VII. There are some variations due to individuality but in general the percent decreases from birth to four years. The percent also decreases with increasing plane of nutrition. Put in different language the percent of hide and hair decreases with increasing age and fatness of the animal.

**Blood.**—In Table VIII are presented the figures for the percent of blood referred to empty weight. The maximum is at three months. At birth it is less and as age increases beyond three months it becomes less. In the poorer fed groups the percent of blood becomes fairly constant, however, while in the full fed group it continues to decrease with age. In the early stages the full fed animals have as much or more than the others but as the age increases the Group I steers have a materially smaller percent of blood.

TABLE VII.—PERCENT HIDE AND HAIR TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	12.13	12.13	12.13
3 months .....	10.51	9.48	9.26
5½ months .....	8.16	10.60	9.27
8½ months .....	8.53	8.62	9.04
11 months .....	8.81	9.72	9.44
18 months .....	7.40	....	8.69
21-26 months .....	8.65	9.80	10.47
34 months .....	7.43	8.23	....
38 months stunted ..	7.15	....	....
40 months .....	5.88	8.35	9.34
45 months .....	5.87	8.90	9.61
47-48 months .....	6.15	8.36	8.81

TABLE VIII.—PERCENT BLOOD TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	4.93	4.93	4.93
3 months .....	6.24	5.35	6.37
5½ months .....	5.18	5.25	5.35
8½ months .....	5.08	5.85	5.19
11 months .....	4.33	4.54	5.06
18 months .....	4.09	....	4.93
21-26 months .....	4.41	4.53	5.13
34 months .....	4.16	4.85	....
38 months stunted ..	3.61	....	....
40 months .....	3.48	4.43	5.28
45 months .....	3.33	4.44	4.67
47-48 months .....	3.52	4.90	5.22

For a somewhat different presentation of these and other figures bearing on the relation of blood, surface, and nitrogen to the animal the reader is referred to two earlier publications from this Station<sup>1</sup>

**Heart.**—The percent of the heart referred to the empty weight

<sup>1</sup>P. F. Trowbridge, C. R. Moulton, L. D. Haigh, The Maintenance Requirement of Cattle, Research Bulletin 18, Missouri Agr. Expt. Station (1915).

C. R. Moulton, Units of Reference for Basal Metabolism and Their Interrelations, Jour. Biol. Chem. XXIV. 299-320 (1916).

is given in Table IX. The figures are not notable but are very small and decrease with increasing age and fatness. There is, however, very little difference between Groups II and III.

**Lungs.**—The proportion of lungs and trachea to the empty weight (Table X) increases during the first few months of life and then falls rather steadily with advancing age. The well fed group has materially less lungs than the other groups especially at the older ages.

**Central Nervous System.**—The percent of brain and spinal cord is given in Table XI. There is a rather steady and uniform decrease with increasing age and fatness. From slightly less than 0.9 percent at birth it decreases to 0.09 percent at maturity for the fattest animal.

**Stomachs.**—In contrast to the foregoing organs and parts the stomachs (Table XII) show an increasing proportion from birth to 8½ months for Groups I and II and from birth to two years for

TABLE IX.—PERCENT HEART TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	0.55	0.55	0.55
3 months .....	0.53	0.43	0.44
5½ months .....	0.54	0.57	0.50
8½ months .....	0.45	0.46	0.56
11 months .....	0.38	0.54	0.49
18 months .....	0.45	....	0.53
21-26 months .....	0.34	0.44	0.44
34 months .....	0.40	0.49	....
38 months stunted .	0.32	....	....
40 months .....	0.41	0.39	0.49
45 months .....	0.30	0.44	0.42
47-48 months .....	0.27	0.40	0.36

TABLE X.—PERCENT LUNGS TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	1.01	1.01	1.01
3 months .....	1.30	1.16	1.32
5½ months .....	1.14	1.10	1.26
8½ months .....	1.09	1.21	1.23
11 months .....	0.87	1.12	1.09
18 months .....	0.84	....	1.00
21-26 months .....	0.76	1.00	0.62
34 months .....	0.54	0.90	....
38 months stunted .	0.67	....	....
40 months .....	0.55	0.89	1.07
45 months .....	0.63	0.83	0.84
47-48 months .....	0.47	0.79	0.92

TABLE XI.—PERCENT BRAIN AND CORD TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	0.86	0.86	0.86
3 months .....	0.41	0.51	0.50
5½ months .....	0.32	0.47	0.61
8½ months .....	0.27	0.37	0.58
11 months .....	0.20	0.29	0.37
18 months .....	0.14	....	0.30
21-26 months .....	0.15	0.24	0.27
34 months .....	0.11	0.18	....
38 months stunted .	0.11	....	....
40 months .....	0.09	0.15	0.24
45 months .....	0.10	0.18	0.19
47-48 months .....	0.09	0.14	0.20

TABLE XII.—PERCENT STOMACHS TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	0.99	0.99	0.99
3 months .....	2.01	1.55	1.88
5½ months .....	2.51	1.95	2.19
8½ months .....	3.03	3.17	2.83
11 months .....	2.73	2.85	2.83
18 months .....	2.37	....	2.78
21-26 months .....	2.69	2.77	3.33
34 months .....	1.96	2.30	....
38 months stunted .	1.90	....	....
40 months .....	1.32	2.57	2.51
45 months .....	1.74	2.44	2.52
47-48 months .....	1.74	2.25	2.70

Group III. The proportion then becomes less and continues to fall for the full fed group. In the early months the full fed group has the greater percent of stomachs but in later years the smaller percent of stomachs.

These figures show a retarded development of the stomachs for the group receiving the lightest ration. All groups show a decrease in percent with advancing maturity.

**Intestines.**—The intestines (Table XIII), however, show a much less marked increase in percent with the early months and a much less marked retarding of development with Group III. After the first few months the percent of intestines decreases with increasing age and fatness.

The above evidence may be affected by the thickness or diam-

TABLE XIII.—PERCENT INTESTINES TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	2.60	2.60	2.60
3 months .....	2.75	2.66	3.44
5½ months .....	2.37	2.80	2.93
8½ months .....	2.61	2.99	2.91
11 months .....	1.79	2.15	2.37
18 months .....	1.29	....	1.92
21-26 months .....	2.00	1.55	2.24
34 months .....	1.02	1.34	....
38 months stunted .	0.83	....	....
40 months .....	0.64	0.97	1.24
45 months .....	0.76	0.93	0.99
47-48 months .....	0.60	1.08	1.11

TABLE XIV.—CM. OF INTESTINES PER KO. OF EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	45.24	45.24	45.24
3 months .....	34.83	37.17	34.61
5½ months .....	22.03	31.41	39.03
8½ months .....	20.78	27.87	34.43
11 months .....	15.17	25.19	23.83
18 months .....	11.69	....	19.21
21-26 months .....	10.88	13.80	....
34 months .....	6.99	9.46	....
38 months stunted .	6.05	....	....
40 months .....	6.28	10.37	11.35
45 months .....	7.18	10.16	10.62
47-48 months .....	5.95	11.23	10.62

eter of the intestines. The relative length is given in Table XIV. It is seen that at birth the beef animal has much the greatest length of intestines per unit of empty weight and that this proportion decreases continuously with advancing age. After three months the proportion decreases with increased plane of nutrition and consequent size and fatness of the animal.

At birth there are 45 centimeters per kilogram of empty weight while the oldest fattest steer shows less than six.

**Liver.**—The liver is a most important chemical laboratory of the body. Its proportion should be affected by the amount of the ration perhaps more than by the size of the animal. The figures given in Table XV show a rather steady decrease from birth to four years in Group II and Group III. Group I, however, shows an increase up to 8½ months and then a decrease with increasing age.

From birth up to about two years old the Group I cattle show relatively more liver than do the other groups. Thereafter this group shows less but not more than one-third less than the Group III animals. The highest figure is 1.84 percent and the lowest 0.73 percent.

TABLE XV.—PERCENT LIVER TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	1.76	1.76	1.76
3 months .....	1.79	1.49	1.75
5½ months .....	1.84	1.19	1.28
8½ months .....	1.66	1.65	1.50
11 months .....	1.39	1.25	1.16
18 months .....	1.24	....	1.15
21-26 months .....	1.00	0.97	1.08
34 months .....	0.89	0.90	....
38 months stunted .	0.84	....	....
40 months .....	0.73	0.83	0.94
45 months .....	0.77	0.84	0.99
47-48 months .....	0.76	0.89	1.14

TABLE XVI.—PERCENT KIDNEYS TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	0.32	0.32	0.32
3 months .....	0.34	0.68	0.62
5½ months .....	0.38	0.32	0.41
8½ months .....	0.26	0.31	0.35
11 months .....	0.22	0.31	0.26
18 months .....	0.19	....	0.26
21-26 months .....	0.18	0.21	0.25
34 months .....	0.16	0.18	....
38 months stunted .	0.16	....	....
40 months .....	0.16	0.22	0.24
45 months .....	0.13	0.19	0.20
47-48 months .....	0.13	0.22	0.25

**Kidneys.**—The kidneys (Table XVI) show for Group I cattle much the same changes as are shown by the liver. There is an increase from birth to 5½ months and then a steady decrease. Groups II and III show a very striking increase in proportion of kidneys at three months where the figure is double that shown at birth. Thereafter there is a decrease to two years of age when the figures become about constant.

The percent of kidneys is smaller the higher the plane of nutrition and the bigger and fatter the animal. This is especially true after the age of one year.

**Spleen.**—The percent of spleen to empty weight is given in Table XVII. It increases at first with increasing age and then remains quite constant for Groups II and III. For Group I it decreases from three months until 38 to 40 months when it becomes constant.

During the early months the Group I cattle show as much, or more, spleen as do the other groups. Thereafter the proportion decreases with increased plane of nutrition.

**Pancreas.**—The figures for the pancreas are presented in Table XVIII. In discussing these it must be remembered that this organ becomes embedded in fat as the animal grows fatter and even appears to have large areas of fat scattered through it. The person

making the separation has increasing difficulty in separating the organ from the fat or, in fact, in telling whether he has obtained the organ at all.

TABLE XVII.—PERCENT SPLEEN TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	0.19	0.19	0.19
3 months .....	0.31	0.26	0.24
5½ months .....	0.28	0.29	0.25
8½ months .....	0.23	0.24	0.22
11 months .....	0.21	0.21	0.24
18 months .....	0.19	....	0.25
21-26 months .....	0.28	0.25	0.21
34 months .....	0.22	0.27	....
38 months stunted .	0.17	....	....
40 months .....	0.16	0.19	0.24
45 months .....	0.14	0.21	0.33
47-48 months .....	0.15	0.25	0.26

TABLE XVIII.—PERCENT PANCREAS TO EMPTY WEIGHT.

Age	Group		
	I	II	III
At birth .....	0.08	0.08	0.08
3 months .....	0.10	0.10	0.15
5½ months .....	0.13	0.10	0.10
8½ months .....	0.12	0.17	0.17
11 months .....	0.12	0.13	0.13
18 months .....	0.13	....	0.16
21-26 months .....	0.06	0.09	0.06
34 months .....	0.06	0.06	....
38 months stunted .	0.13	....	....
40 months .....	0.11	0.12	0.14
45 months .....	0.11	0.13	0.14
47-48 months .....	0.10	0.15	0.15

With these reservations in mind it may be said that the proportion of pancreas increases with increasing age until 8½ months is reached. The percent then becomes somewhat less or at least no greater. There is but little difference between the groups. The smaller proportion shown after 40 months may or may not be fact owing to the difficulties stated.

**Main Divisions of Animal.**—Figure 2 shows the growth of certain tissues and parts of the animals of all three groups from birth to four years. A general idea of the weight and proportion of the skeleton, lean flesh, fatty tissue, organs, hide, and remainder can be obtained from a study of the figure.

Figures 3 to 5 show the percent of the various parts enumerated above referred to the empty animal.

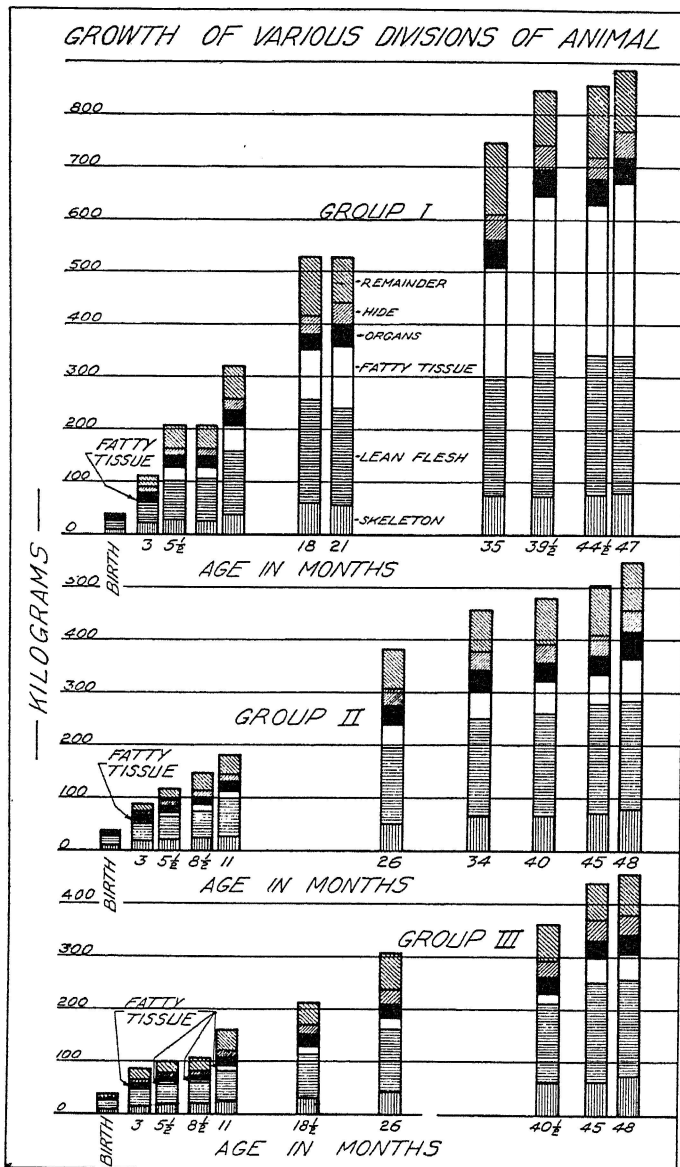


Fig. 2.—Growth of various divisions of the animal.

In Group I (Figure 3) the skeleton decreases from 28 percent at birth to 10 percent at four years. The lean flesh is more constant, increasing from 39 percent at birth to 44.5 percent at 8½ months while the mature steer has but 32 percent. The fatty tissue

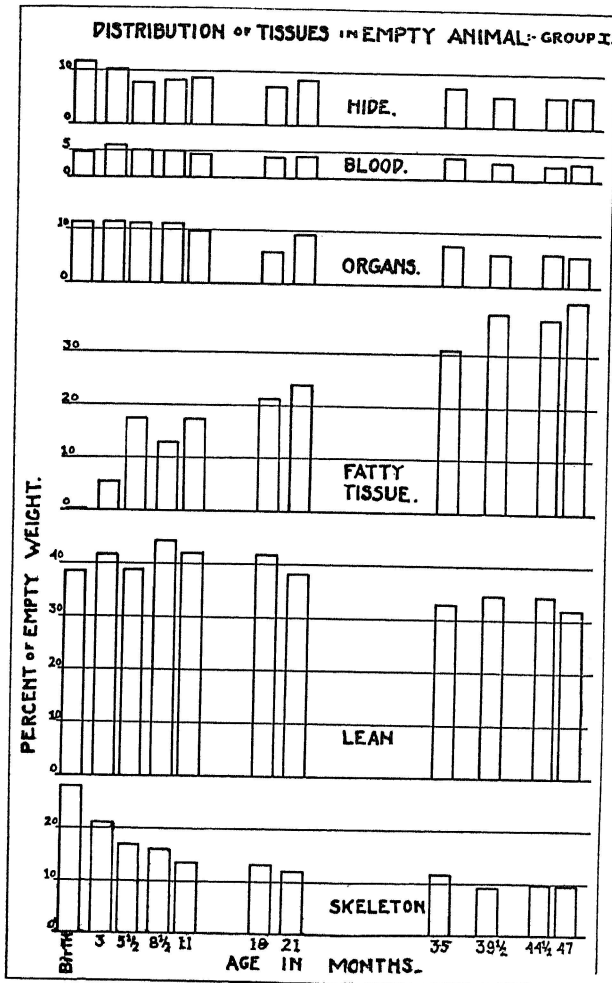


Fig. 3.—Distribution of tissues in empty animal—Group I.

increases very markedly from an amount so small as to be inseparable from the lean at birth to 40 percent at four years. The organs of the animal are about 11 percent from birth to 8½ months. They then decrease to about 6 percent at four years. The blood and the hide have been discussed above.



In Group II (Figure 4) less change with advancing age is shown. This is largely due to a smaller amount of fatty tissue being formed. The skeleton decreases from about 28 percent at birth to 16 percent at four years. The lean flesh is about 39 percent at birth and increases to 46 percent at 45 months. The four year old

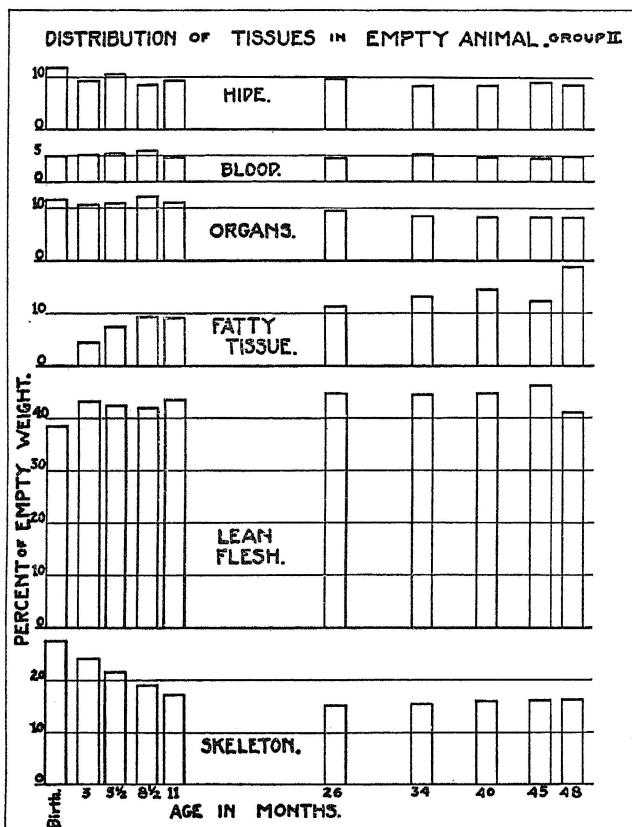


Fig. 4.—Distribution of tissues in empty animal—Group II.

steer shows but 41 percent, probably an abnormal figure due to an increase in percent of fatty tissue. The fatty tissue increases from practically nothing to 19 percent at four years. The organs are about 11 percent at birth and 8.5 percent at four years.

Group III (Figure 5) shows still less change. The skeleton decreases from about 28 percent at birth to 18 percent at four years. The lean flesh increases from 39 percent at birth to 45 to 48 percent at the end. The fatty tissue is small in amount running from practically nothing at birth to only a little over 11 percent at four years. The organs decrease from 11 percent at birth to 9 percent at four years.

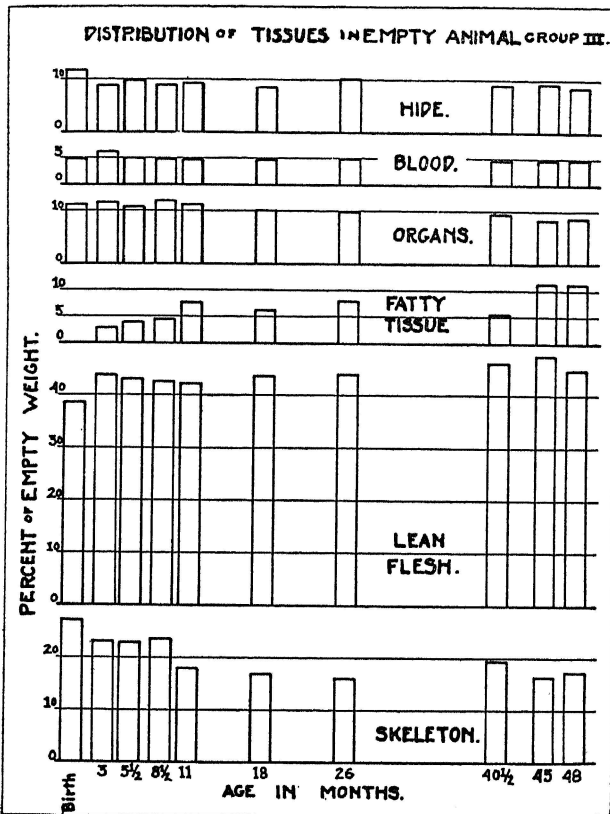


Fig. 5.—Distribution of tissues in empty animal—Group III.

**Loss on Cooling and Cutting.**—The weights and percents of the main divisions of the empty animal and the calculated loss on cooling and cutting are given in the appendix in Tables 16 to 20. The losses vary from practically nothing to over 6 percent in the case of one animal. Five animals show about 5 percent. The other

25 animals show less than 3 percent loss. This loss is largely moisture lost from the animal during slaughter, cooling, and cutting. While the differences between the groups are not large, in general the greater percent losses are from the thin animals. The covering of fat on the Group I steers protects the carcass and even the offal from as great a moisture loss.

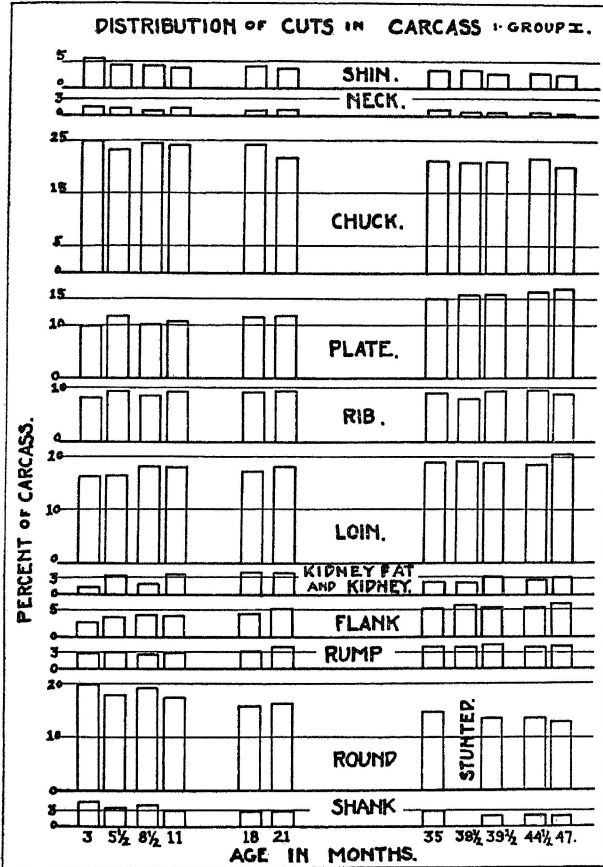


Fig. 6.—Distribution of cuts in carcass—Group I.

**DISTRIBUTION OF WHOLESALE CUTS**

Tables 21 to 25 in the appendix give the detailed figures for the distribution of the wholesale cuts in the carcass. Figures 6 to 8 show these figures graphically.

In Group I (Figure 6) the shank (hind shank) decreases from about 5 percent at three months to 2 percent at four years. The

round decreases from 20 percent to 13 percent. The rump increases from 3 to a little over 4 percent. The flank increases from 3 to 6 percent. The kidney fat increases from about 1 percent at three months to 4 percent in the baby beef (18 to 21 months) and then decreases again to 2 to 3 percent. The loin increases from 16.5 percent to 21 percent at four years. The rib cut does not vary

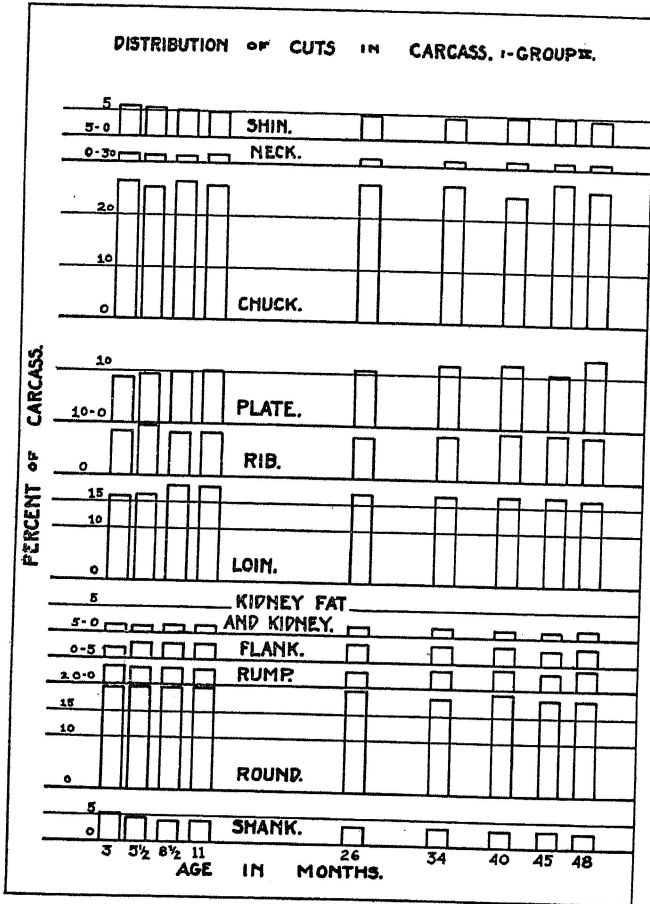


Fig. 7.—Distribution of cuts in carcass—Group II.

much being 8 percent at three months, and 9 to 10 percent at four years. The plate increases from 10 percent to 17 percent. The chuck decreases from 25 percent to 20 percent. The neck decreases from about 2 percent to 1 percent and the shin (fore shank) decreases from 6 percent to 3 percent.

The Group II cattle show much less marked changes in distribution of the cuts from three months to four years. The shank decreases from 5 to 3 percent, the round from 20 to 18 percent, the shin from 6 to 4 percent, and the neck from nearly 2 to 1 percent. The flank increases from 2 to 4 percent, the loin increases from 16 to 18 percent at 8½ months and then decreases again to less than 17 percent, and the plate increases from less than 9 percent to nearly 14 percent. The rump, kidney and kidney fat, rib, and chuck remain fairly constant.

In Group III (Figure 8) there is less change with age. The shank, kidney and kidney fat, and shin decrease with age. The loin and plate show fair increases while the rump and flank show slight increases. The round, rib, chuck, and neck show individual variations but on the whole are constant.

The fatter animal, then, increases its proportion of loin, the most expensive cut, of rump, a less expensive cut, and of flank and plate very cheap cuts. The rib cut, a rather expensive cut, increases but slightly. On the average for all three groups it is constant. The round, a valuable cut, decreases with increasing fatness as do the chuck and the neck. The shin and shank decrease in all cases with increasing age irrespective of fattening. Summing up the changes with respect to the effect of fattening on the three expensive cuts—loin, rib, and round—it is seen that the first increases with fattening, the second remains fairly constant, and the third decreases.

### LEAN, FAT, AND BONE IN THE CARCASS

Figure 9 (Tables 26 to 30 in the appendix) shows the proportions of skeleton, lean flesh and fatty tissue in the entire carcasses of the steers from three months to four years for all three groups.

In the Group I steers the skeleton decreases from about 25 percent to 10 percent, and the lean flesh decreases from 67 percent to 42 percent. The fatty tissue of the carcass, on the other hand, increases from 6 percent to nearly 48 percent.

In Group II the changes are not so marked since relatively less fattening occurs. The skeleton decreases from nearly 28 percent to a little over 18 percent and the lean flesh decreases from 66 percent at three months and 68 percent at 11 and 26 months to 58 percent at four years. The fatty tissue increases from 5 percent to 22 percent.

The changes are still less marked in Group III. The skeleton decreases from 27 percent to a little over 20 percent while the lean flesh increases from 67 percent at three months to about 70 percent

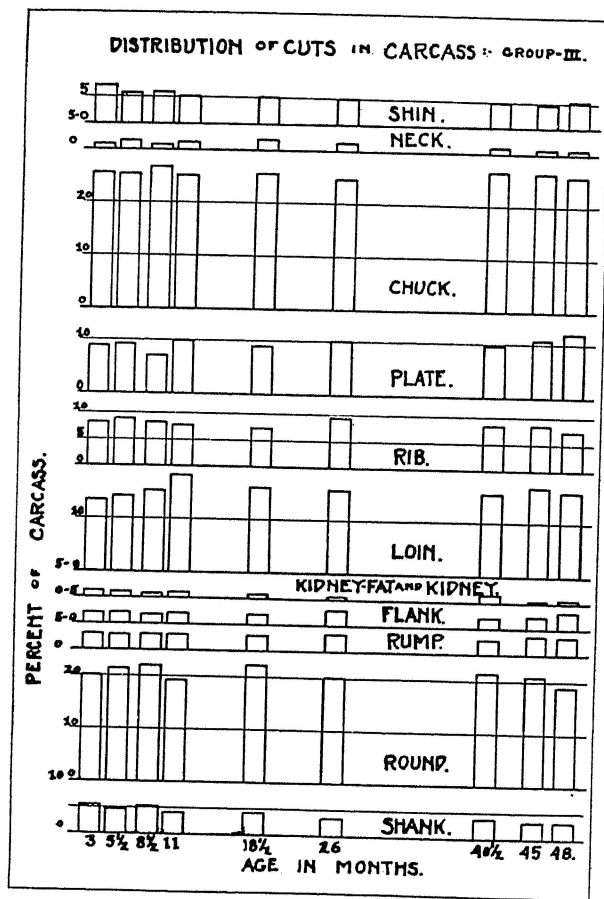


Fig. 8.—Distribution of cuts in carcass—Group III.

from 18½ months on to 45 months. The four-year-old steer shows a decrease to a little over 66 percent. The fatty tissue increases from a little over 3 percent to over 12 percent.

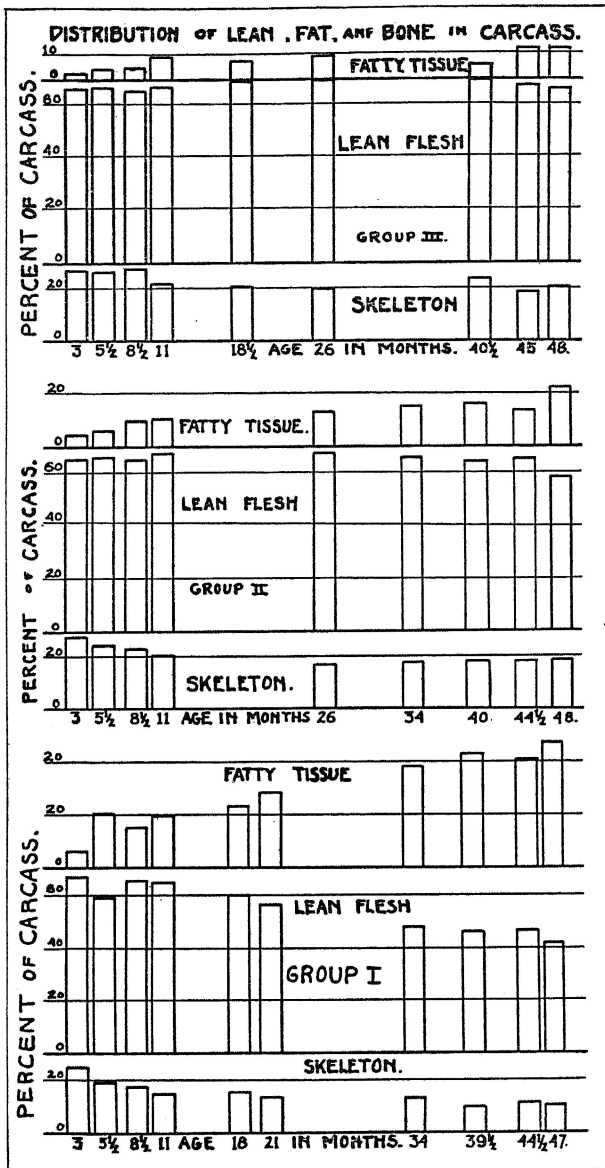


Fig. 9.—Distribution of lean, fat, and bone in carcass.

## DISTRIBUTION OF THE TOTAL LEAN FLESH

Figures 10 to 12 (Tables 31 to 35 in the Appendix) show the distribution of the total lean flesh of the animal among the whole-sale cuts.

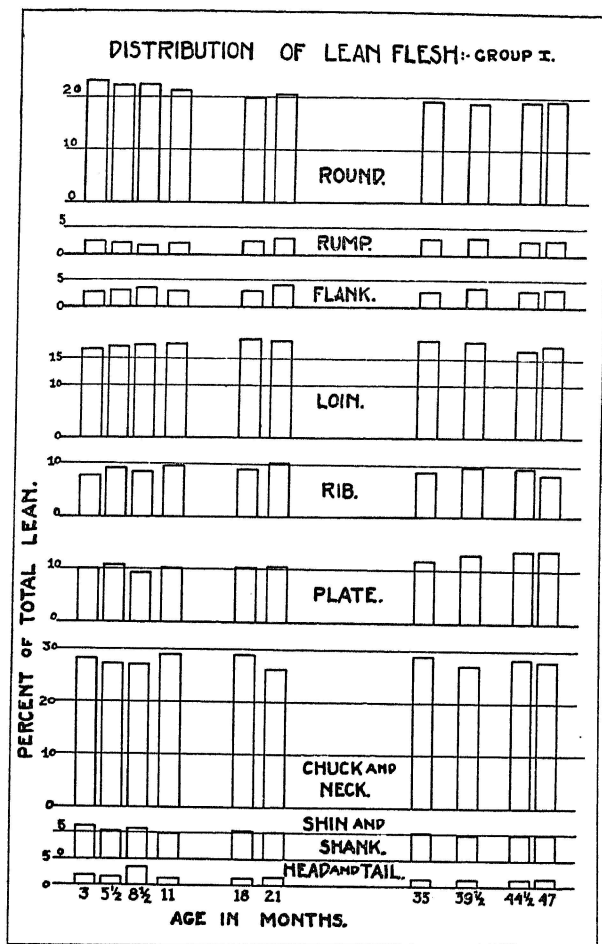


Fig. 10.—Distribution of lean in cuts of carcass—Group I.

In Group I the head and tail contain about 2 to 3 percent of the total lean. The shin and shank together have 5 to 6 percent. The chuck and neck combined have 26 to 29 percent. The plate has 10 to 14 percent, the rib 8 to 10 percent, the loin 17 to 19 percent, the flank 3 to 4 percent, the rump 2 to 3 percent, and the round 23 to 19.5 percent. The shin and shank, the head and tail,



and the round contain a smaller part of the total lean with advancing age and fatness of this group. The chuck and neck, rib, loin, flank, and rump show but little effect of age and fatness. The plate, on the other hand, shows an appreciable relative increase with advancing age and fatness.

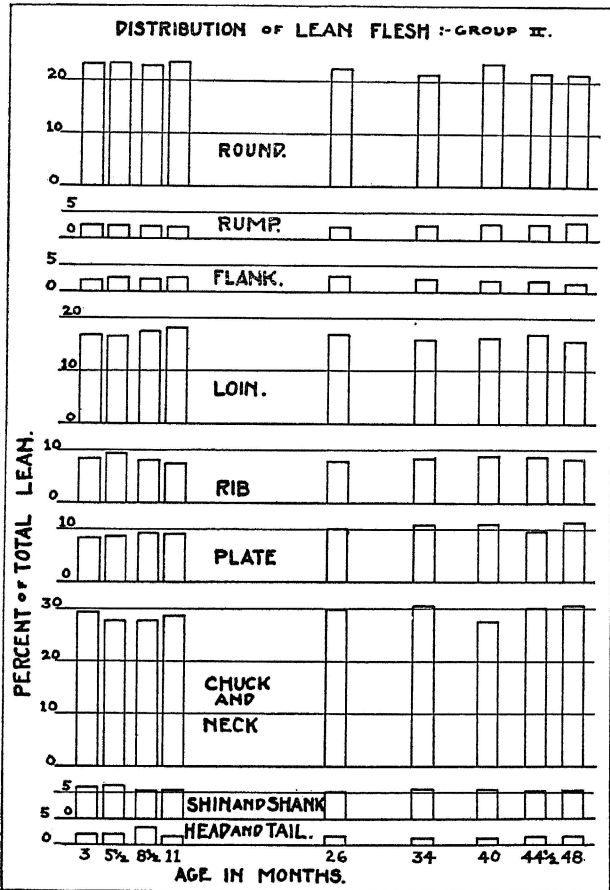


Fig. 11.—Distribution of lean in cuts of carcass—Group II.

In Group II (Figure 11) the head and tail, shin and shank, rib, flank, and rump have about the same percent of the total lean as shown by Group I. The chuck and neck and the round contain relatively more in the Group II steers, while the plate and loin contain relatively less. The differences are, however, not very great in any case being generally within 2 percent. The plate shows

an increase with increasing age while the round shows a decrease. The other cuts show little effect of age.

With the Group III animals (Figure 12) the head and tail, shin and flank, and rump have about the same proportion of total lean as shown by the other groups. The head and tail in

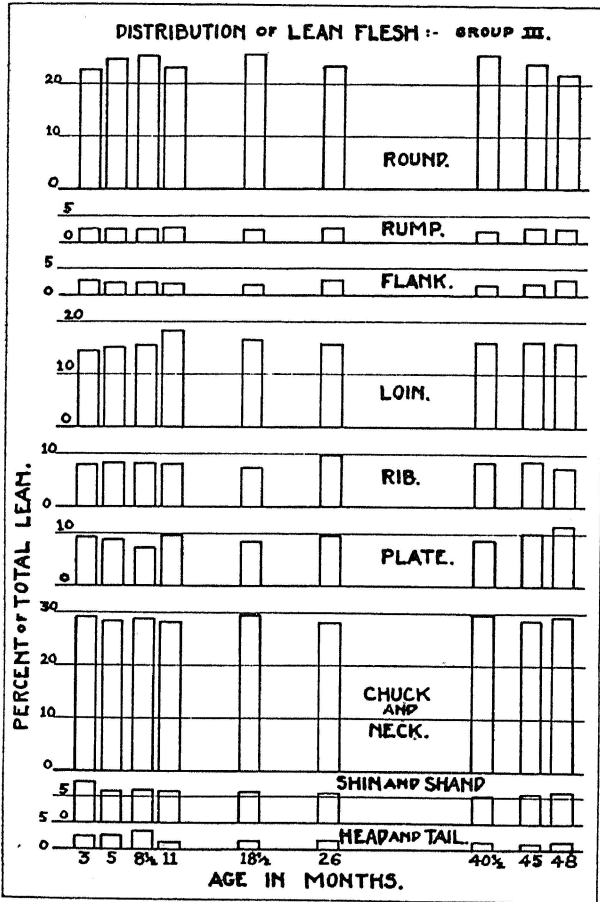


Fig. 12.—Distribution of lean in cuts of carcass—Group III.

some cases runs 1 percent higher and the shin and shank 2 percent higher. The plate, rib, loin, and round vary over wider limits while the chuck and neck keep within narrower limits. The round varies from 20 to 26 percent, the loin from 14.5 to 19 percent, the plate from 7 to 12 percent, and the rib from 7 to 10 percent. There seems to be no consistent effect of age excepting a reduction of the head and tail and the shin and shank.

### DISTRIBUTION OF TOTAL FAT FLESH

The distribution of the total fatty tissue exclusive of the offal fat is shown in Figures 13 to 15 (Tables 36 to 40 in the Appendix). There is much greater variation, and age and fatness affect the distribution of fatty tissue quite markedly.

In Group I (Figure 13) the head and tail contains 3 to 4 percent of the fatty tissue in the young animal and less than 0.5 percent in the four-year-old steer. The shin and shank start with about 6 percent and have less than 2 percent at four years. The chuck and neck have about 19 percent at three months and 13 to 15 percent at four years. The plate increases from 7.5 percent to 21 percent, and the rib increases from 2 to 10 percent. The kidney fat increases from 10 percent at three months to 16 percent in the baby beef (11 to 18 months) and drops again to 6 or 7 percent in the old animals. The loin increases its proportion from 20 percent to 25 percent. The flank decreases from 11 to 9 percent and the round decreases markedly from 17 to about 7 percent. The rump increases slightly from 3.5 to 5 or 6 percent. With increasing age and fatness, therefore, a greater part of the fatty tissue is found in the plate, rib, loin, and rump and a smaller part in the head and tail, shin and shank, chuck and neck, flank, and round. The kidney fat at first increases and then decreases.

In Group II (Figure 14) the head and tail have 5 to 6 percent of the total fat in the young animal and only 1 percent in the old animal. The shin and shank decrease from 8 to 2 percent. The chuck and neck starts at about 18 percent. It then rises to 21 percent at 11 months and falls to about 13 percent at 34 months. It then rises again to 21 percent at 44½ months and decreases to 15 percent at four years. The plate increases its proportion of fat from 9 to 20 percent with advancing age. The rib has none of the total fat at three months and 13 percent at four years. The kidney fat is 9 to 10 percent of the total from three months to 34 months with the exception of the 11-month-old steer which has but 5.5 percent. From 40 months on there is but 6 percent of the total here. The loin, like the chuck and neck, shows two maxima. It increases from 16 percent at three months to 26 percent at 8½ months. It then decreases to 21 percent. At 34 to 40 months it is 23 percent, only to decrease to less than 21 percent at four years. The flank in general shows a decrease in the proportion of total fat found here. The variations in the rump are not a function of

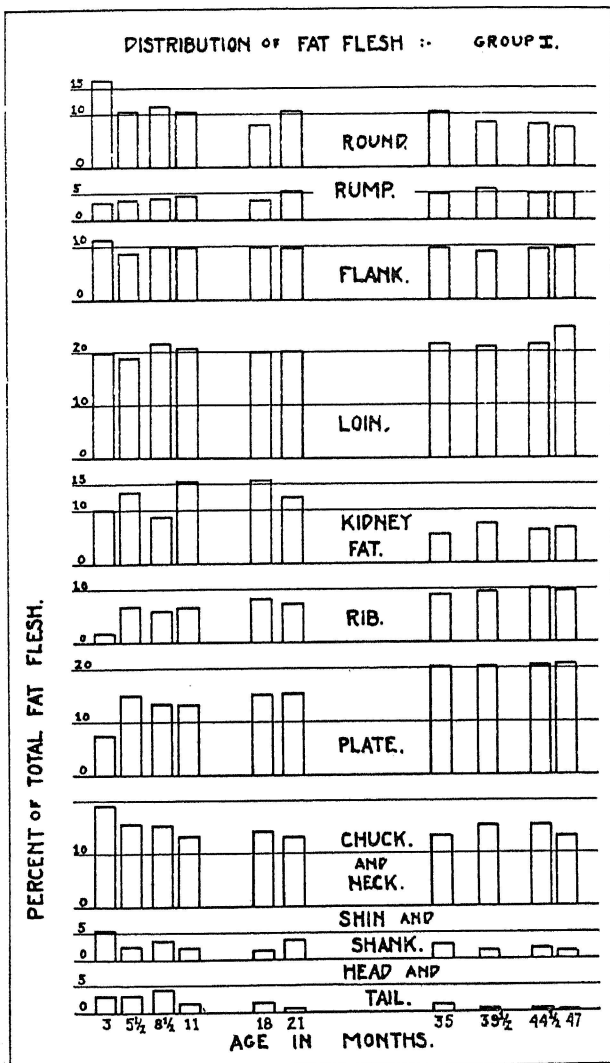


Fig. 13.—Distribution of fat in cuts of carcass—Group I.

age, while the round decreases from 19 percent to 10 percent at 40 months and then increases again to 13 percent. With increasing fatness, then, a greater part of the total fatty tissue is found in the plate and rib. This is true in general of the loin, although

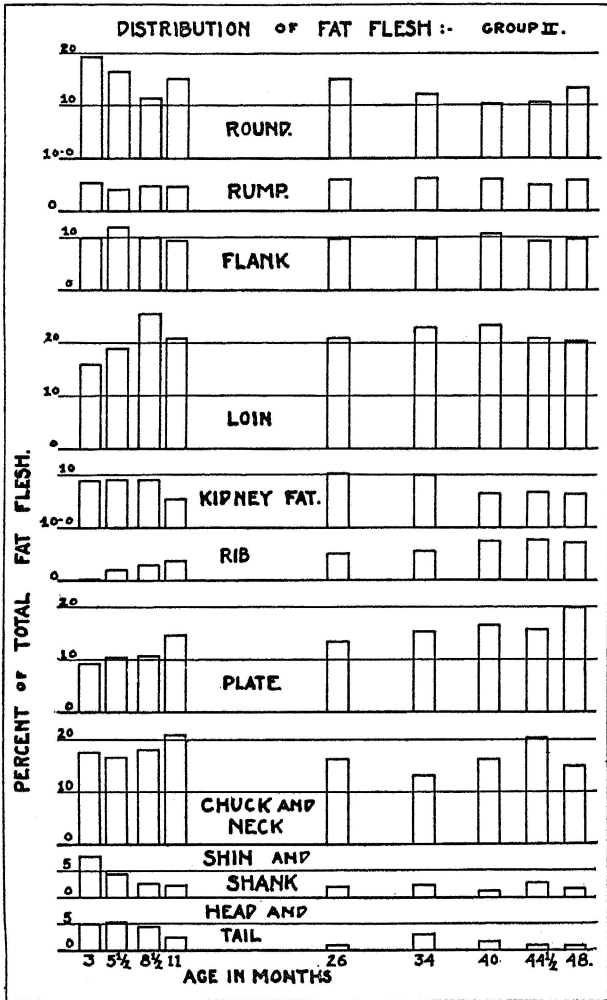


Fig. 14.—Distribution of fat in cuts of carcass—Group II.

there are cycles which have higher maxima at younger ages. The chuck and neck show cycles also but have less at the end. The rump and flank show little change with age, while the head and tail, shin and shank, and round decrease.

Group III (Figure 15) shows greater individual variations than do the other groups. Practically every wholesale cut shows irregu-

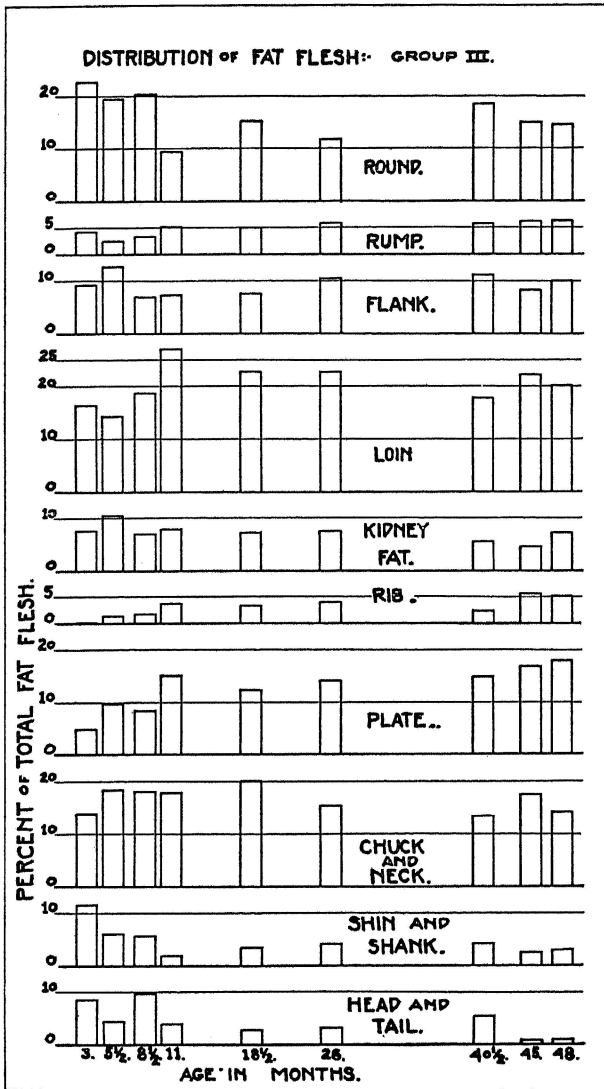


Fig. 15.—Distribution of fat in cuts of carcass—Group III.

lar changes. The head and tail and the shin and shank decrease rather uniformly while the plate and rib increase uniformly. The round has less at four years than at three months while the loin

has more, but there are many ups and downs in between. The changes in the other cuts do not consistently follow age.

**DISTRIBUTION OF TOTAL SKELETON**

Figures 16 to 18 (Tables 41 to 45 in the Appendix) show the changes in the distribution of the total skeleton for the three groups

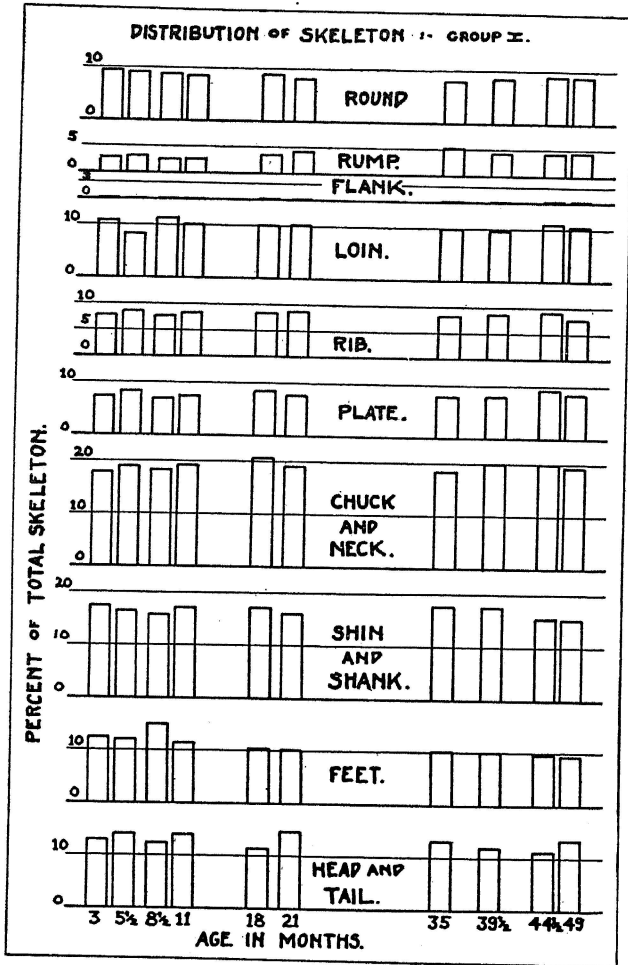


Fig. 16.—Distribution of bone in cuts of carcass—Group I.

with advancing age. The values are much more constant than for either the lean flesh or the fatty tissue.

In Group I (Figure 16) the head and tail have about 13 percent

of the total skeleton with variations from about 11.5 to 14.5. The feet bones increase from about 12.5 percent at three months to 15 percent at 8½ months and then decrease to 9.5 percent at four years. The shin and shank decrease rather uniformly from 17.5

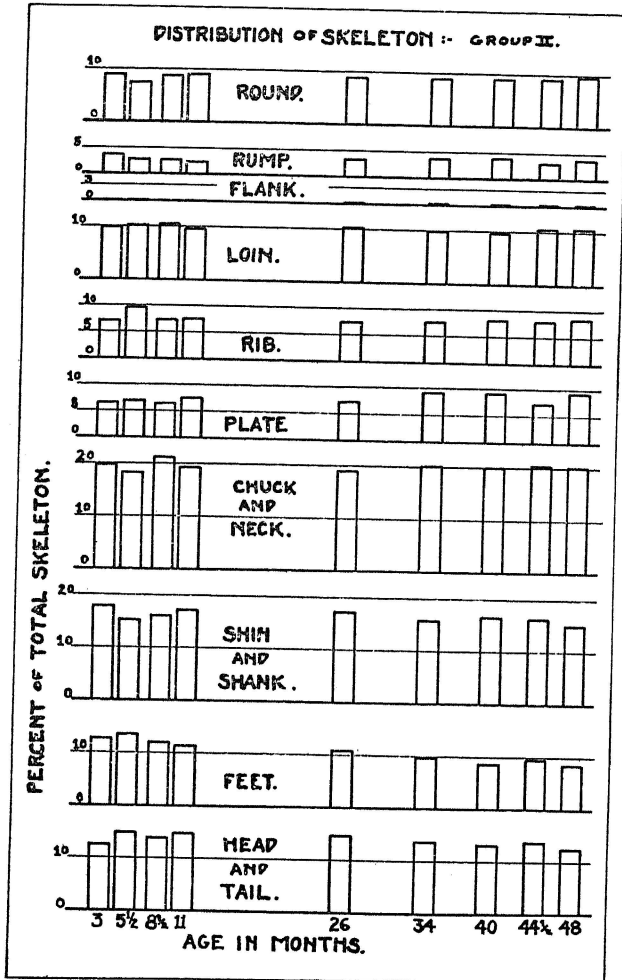


Fig. 17.—Distribution of bone in cuts of carcass—Group II.

to 15.5 percent. The chuck and neck bones increase from 18 to 21 percent at 18 months and then decrease to 19.5 percent. The plate bones vary from 7.5 to 9 percent increasing slightly with age. The rib varies around 8 percent and the loin around 11 percent. The flank has but a tip of rib bone in it and varies from a few hun-



dredths of a percent to about 0.2 percent increasing with age. The rump increases slightly from 3 to 5 percent, while the round decreases very slightly from 9.5 to 9 percent.

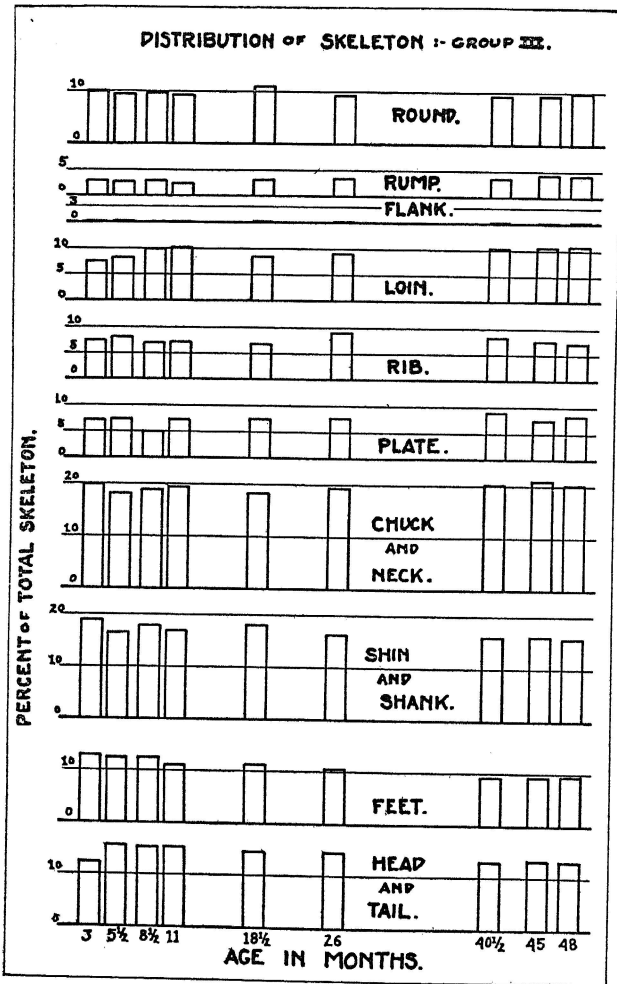


Fig. 18.—Distribution of bone in cuts of carcass—Group III.

Groups II and III (Figures 17 and 18) show somewhat greater variations but the range of the figures is much the same. The increase in the proportion of skeleton found in the feet at 8½ months is not seen. In other respects the figures are much as those for Group I.

## DISTRIBUTION OF LEAN, FAT, AND BONE IN THE WHOLESALE CUTS

**The Shin (Fore Shank).**—With the Group I animals (Figure 19) the lean forms about 50 percent of the shin, the fat 5 to 18 percent and the bone 48 to 34 percent. The percent of fat increases with age and fatness and the bone decreases, while the lean varies.

With the Group II animals the lean forms 44 to 53 percent of the cut, the fat 3 to 6 percent, and the bone 50 to 40 percent. The lean increases with age while the bone decreases. The fat changes but little with age.

With the thinnest animals—Group III—the lean is 46 to 57 percent of the cut, the fat 3 to 5 percent, and the bone 50 to 40 percent. There are more irregularities shown in this group, but in general the lean increases in percent with age while the bone decreases.

**The Neck.**—The neck of the Group I animals (Figure 20) contains from 66 to 40 percent lean, 12 to 33 percent fat, and 18 to 30 percent bone. The fat increases with increasing age and fatness while the lean decreases. The bone varies between the limits given without respect to age. The amount and composition of this cut will depend much upon the general conformation and fatness of the carcass. There will then be considerable differences between individuals.

In the Group II animals the neck is 50 to 67 percent lean, 4 to 14 percent fat, and 23 to 39 percent bone. The percent of lean, of fat, or of bone, does not seem to depend on age.

The Group III animals show even greater variations and no better correlation between age and composition.

**The Chuck.**—The chuck (Figure 21) of the Group I animals has 72 to 58 percent lean, 4 to 30 percent fat and 23 to 12 percent bone. The lean and bone decrease with age while the fat increases.

With the Group II animals the lean is 70 to 75 percent of the cut, the fat 3 to 12 percent and the bone 26 to 17 percent. The fat increases with age, the bone decreases, and the lean is about constant.

In the case of the Group III animals the lean runs 70 to 75 percent, the fat 2 to 8 percent and the bone 24 to 19 percent. The fat increases slightly with age, the bone decreases slightly while the lean is fairly constant.

**The Plate.**—The plate (Figure 22) becomes rather a fat cut

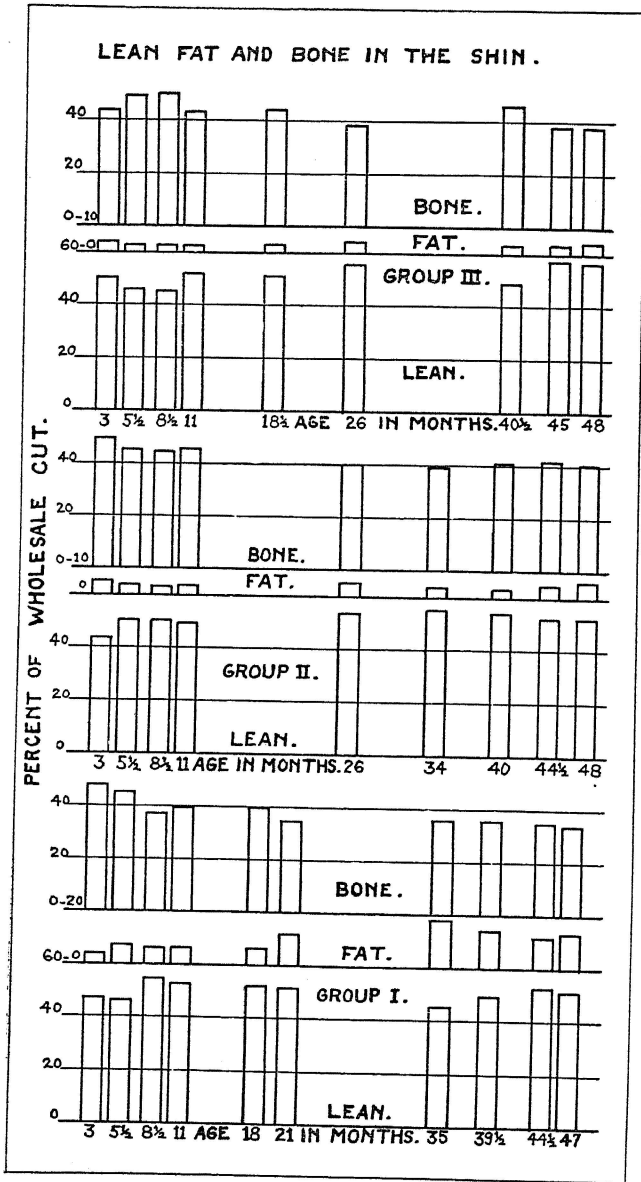


Fig. 19.—Distribution of lean, fat and bone in the shin.

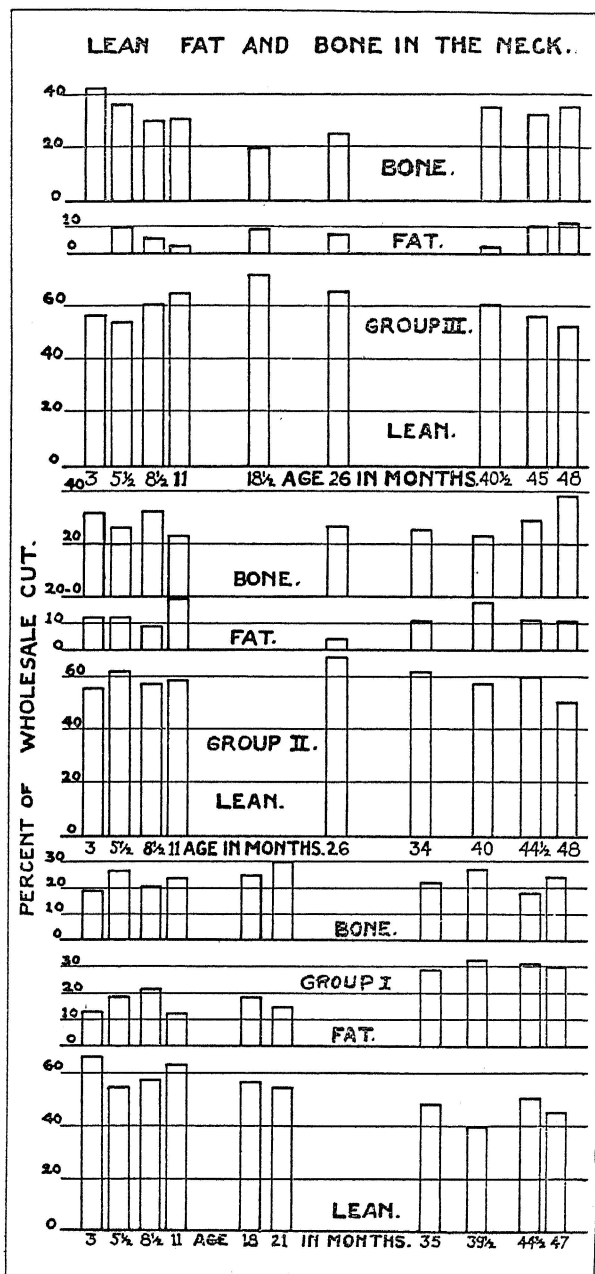


Fig. 20.—Distribution of lean, fat and bone in the neck.

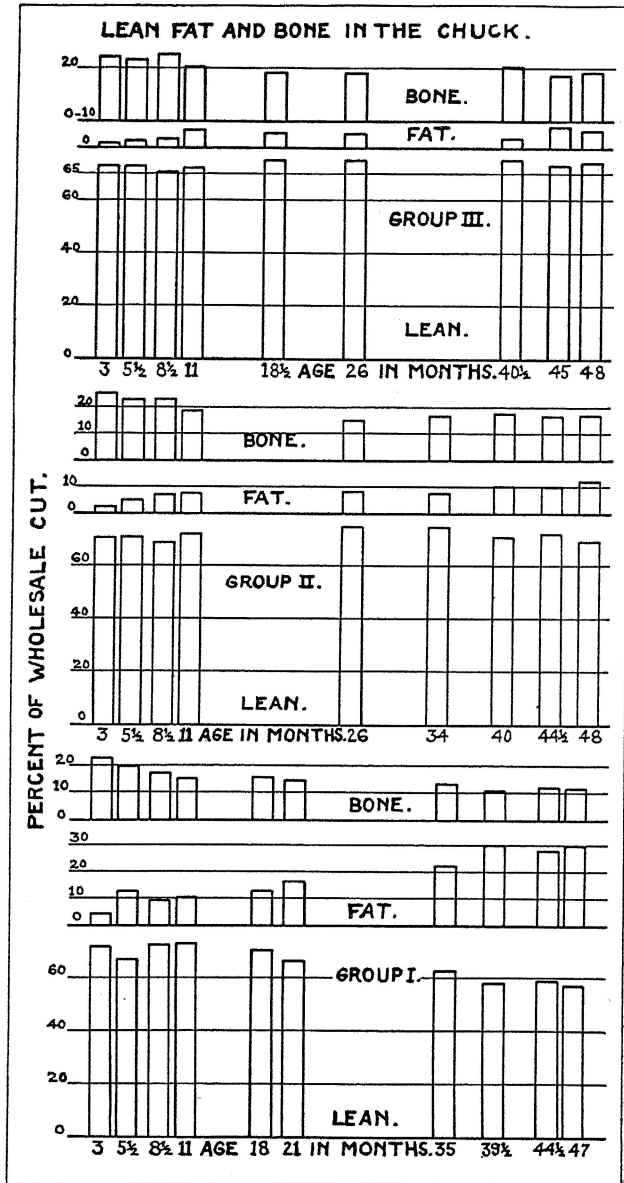


Fig. 21.—Distribution of lean, fat and bone in the chuck.

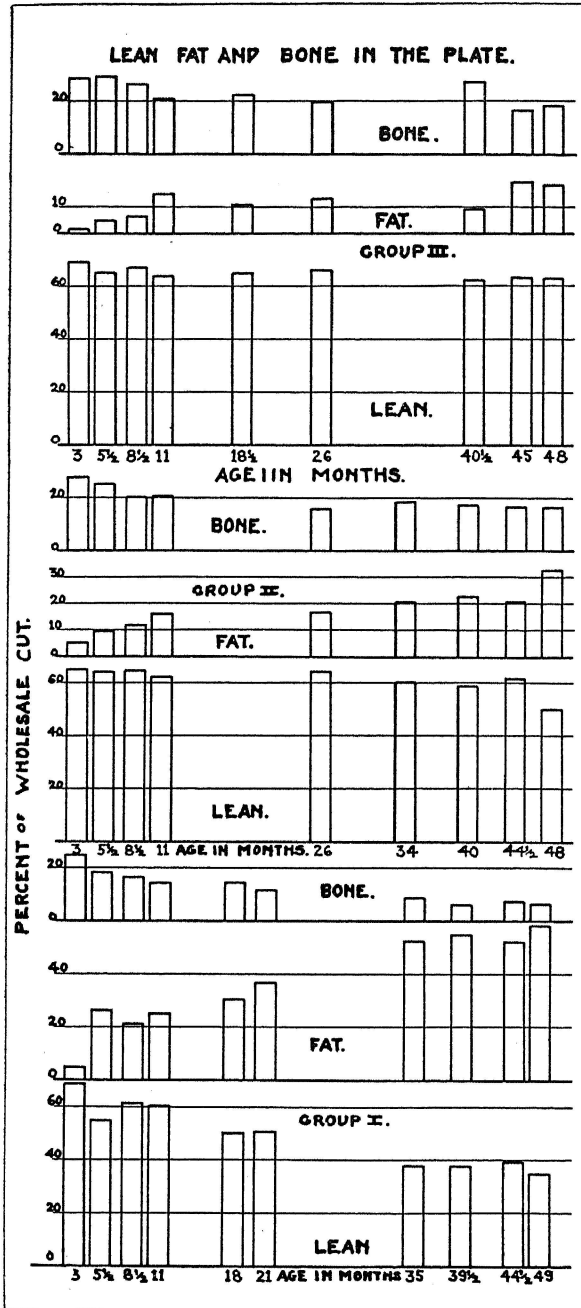


Fig. 22.—Distribution of lean, fat and bone in the plate.

with the Group I animals. The lean is 6.9 to 35 percent of the cut, the fat 5 to 58 percent, and the bone 25 to 7 percent.

The Group II animals show less extensive changes. The lean runs 65 to 60 percent except in the case of the oldest animal where, on account of a large increase in fat, it drops to 50 percent. The fat runs from about 6 to 35 percent and the bone 28 to 17 percent. The lean decreases slightly with age. The bone decreases with age while the fat increases.

With the Group III steers the lean runs 69 to 63 percent, the fat 2 to 19 percent, and the bone 29 to 17 percent. There is a very slight decrease in percent lean with increasing age. The fat increases while the bone decreases with increasing age.

**The Rib.**—Figure 23 shows the composition of the rib. With the Group I steers the lean runs from 66 to 37 percent, the fat from 2 to 51 percent, and the bone from 33 to 11 percent. The lean and bone decrease while the fat greatly increases with increasing age.

With the Group II animals the changes are less extreme. The lean runs from 68 to 58 percent, the fat from nothing to 19 percent, and the bone from about 32 to 22 percent. The lean and bone decrease with increasing age while the fat increases.

The Group III animals show a fairly constant percent of lean, 65 to 70 percent. The fat runs from nothing to 9 percent and the bone from 33 to 21 and 25 percent. The fat increases slightly with age while the bone decreases.

**The Loin.**—The loin is another cut that becomes very fat with increasing age. The Group I steers (Figure 24) have from 69 to 37 percent lean, 8 to 57 percent fat and 23 to 7 percent bone. The lean and bone decrease while the fat increases with age.

With the Group II animals the lean decreases from 70 percent to 57 and the bone from 23 to about 14 percent. The fat on the other hand increases from 5 to 25 percent.

The Group III steers show similar changes. The lean decreases from 74 to 67 percent and the fat increases from 4 to 18 percent. The bone increases from 20 to 25 percent and then drops to 15 to 17 percent. The steer 40½ months old seems to be abnormal in composition.

**The Flank.**—The flank becomes the fattest cut of them all (Figure 25). The Group I animals have in this cut from 69 to 24 percent lean and from 27 to 75 percent fat. The amount of bone is insignificant being generally below one percent. With the Group

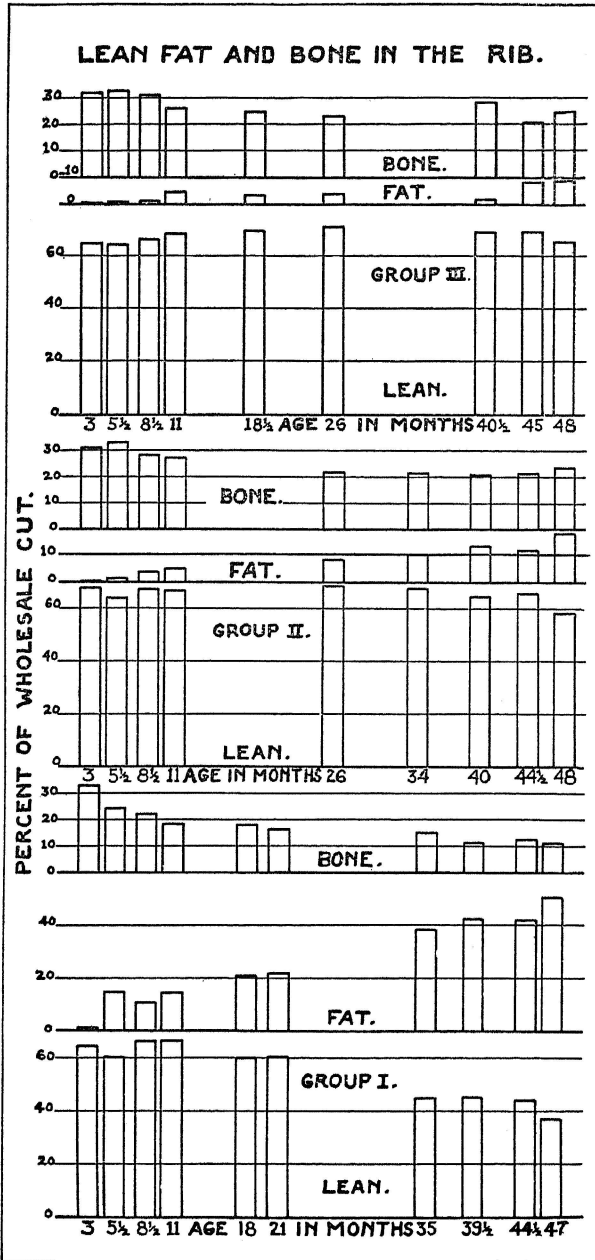


Fig. 23.—Distribution of lean, fat and bone in the rib.



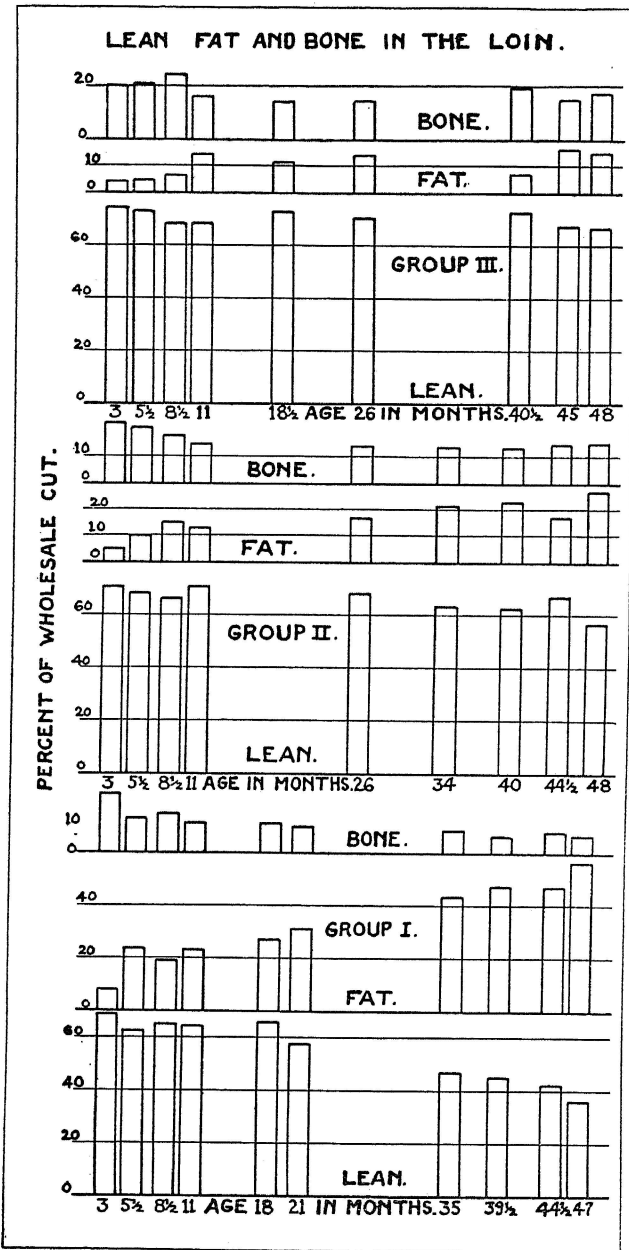


Fig. 24.—Distribution of lean, fat and bone in the loin.

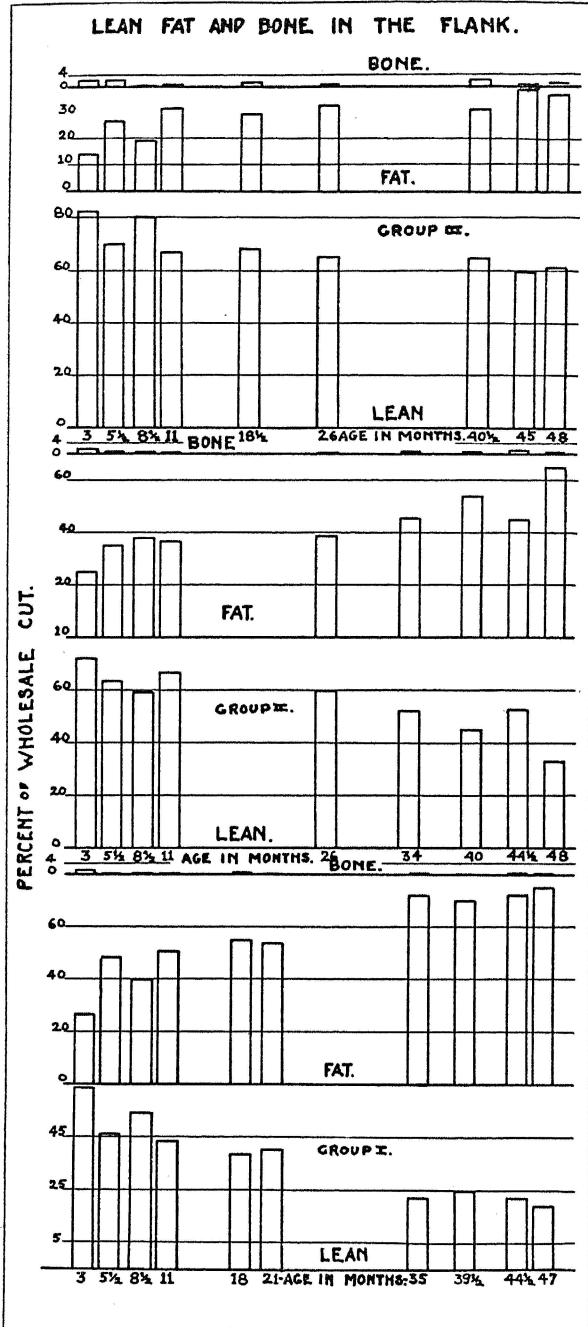


Fig. 25.—Distribution of lean, fat and bone in the flank.

II steers the lean decreases from 72 percent to 33 percent while the fat increases from 25 to 65 percent. With the Group III steers the lean decreases from about 83 to 60 percent, while the fat increases from 14 to 38 percent. In all groups then the fat increases with age while the lean decreases.

**The Rump.**—The changes in the composition of the rump are shown in Figure 26. With the Group I animals the lean decreases from 59 to about 30 percent while the fat increases from 8 to 56 percent. The bone decreases from 33 to 14 percent.

With the Group II animals with one striking exception the lean decreases with age running from 50 to 56 percent down to 44 percent. The fat increases from 8 to 32 percent, while the bone decreases from 41 to 23 percent.

In the case of the Group III steers the lean decreases from about 58 percent to 49 percent, and the fat increases from 5 to 21 percent. The bone increases at first from 36 to 39 percent and then decreases to 28 percent.

**The Round.**—The round shows rather small relative changes (Figure 27). The Group I steers have from 78 to 63 percent lean, from 5 to 28 percent fat, and from 16 to 9 percent bone. The Group II animals have about 80 percent lean in all cases but the oldest. The fat runs from 5 to 16 percent and the bone from 17 to about 12 percent. In Group III the lean runs between 77 and 81 percent, the fat increases from 4 to 9 percent and the bone decreases from 18 to about 12 percent.

**The Shank.**—The shank also shows small relative changes in make up. Figure 28 gives the distribution. The Group I steers have about 30 percent lean with a few animals running higher. The fat increases from 2 to 16 percent, but the next to the oldest shows 22.5 percent. The bone decreases from 66 to about 50 percent.

With the Group II steers the lean is fairly constant after 11 months at about 36 percent. At 3 months it is 29 percent. The fat is small and increases irregularly with age. The bone decreases from 69 percent to a value running around 60 percent from 11 months on.

The Group III animals show much the same thing as the Group II steers.

This is a very bony cut and after 8½ months it is not much affected by age.

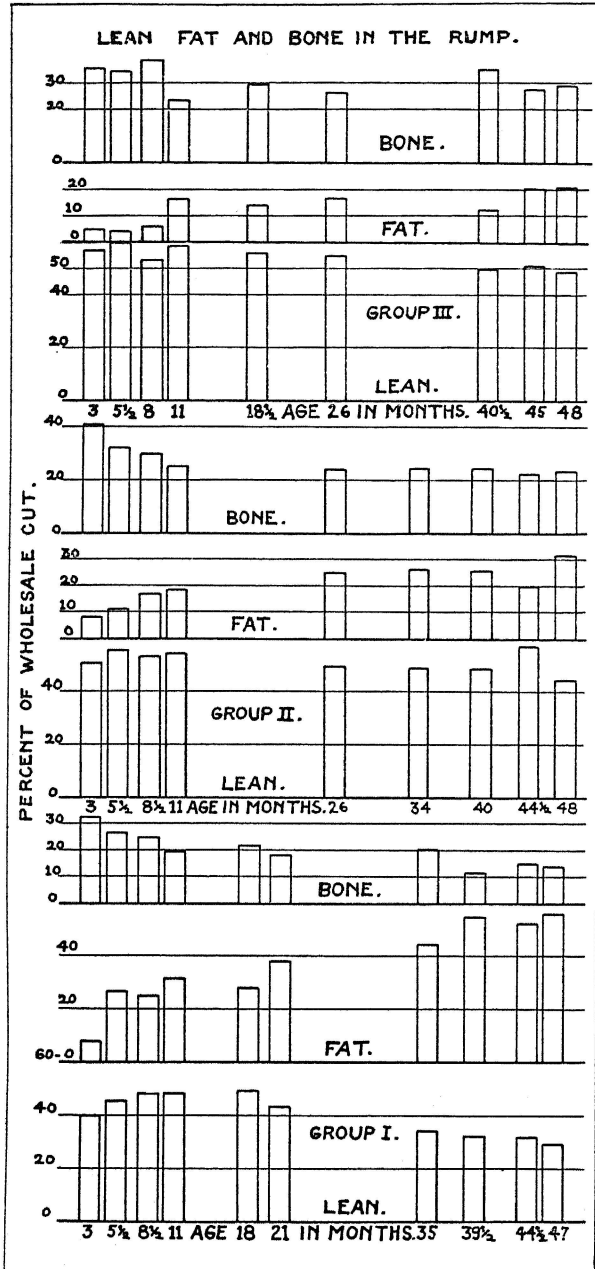


Fig. 26.—Distribution of lean, fat and bone in the rump.

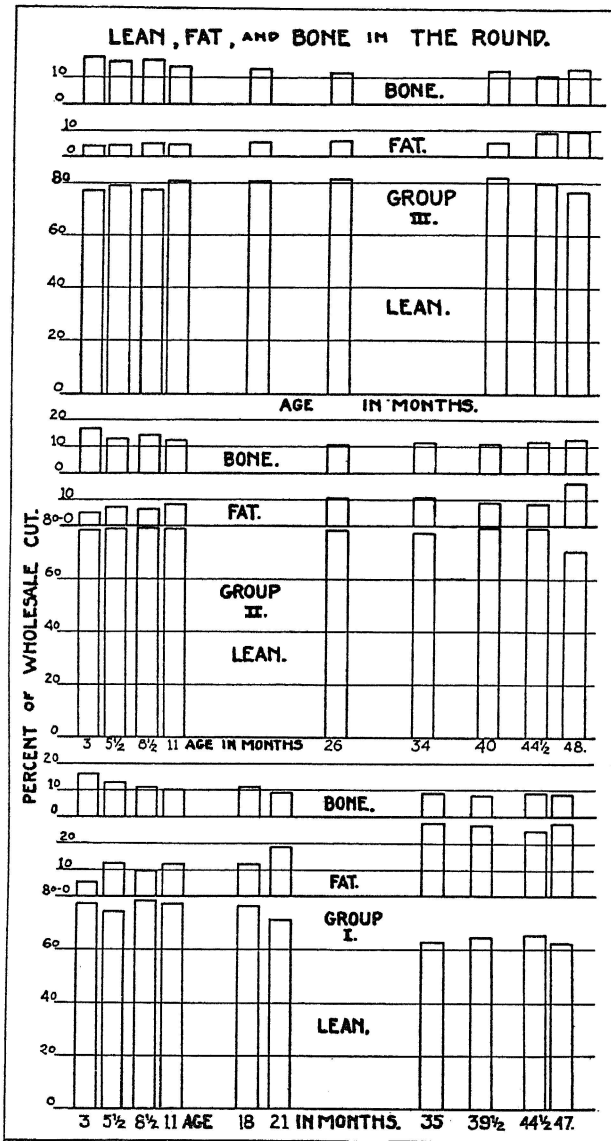


Fig. 27.—Distribution of lean, fat and bone in the round.

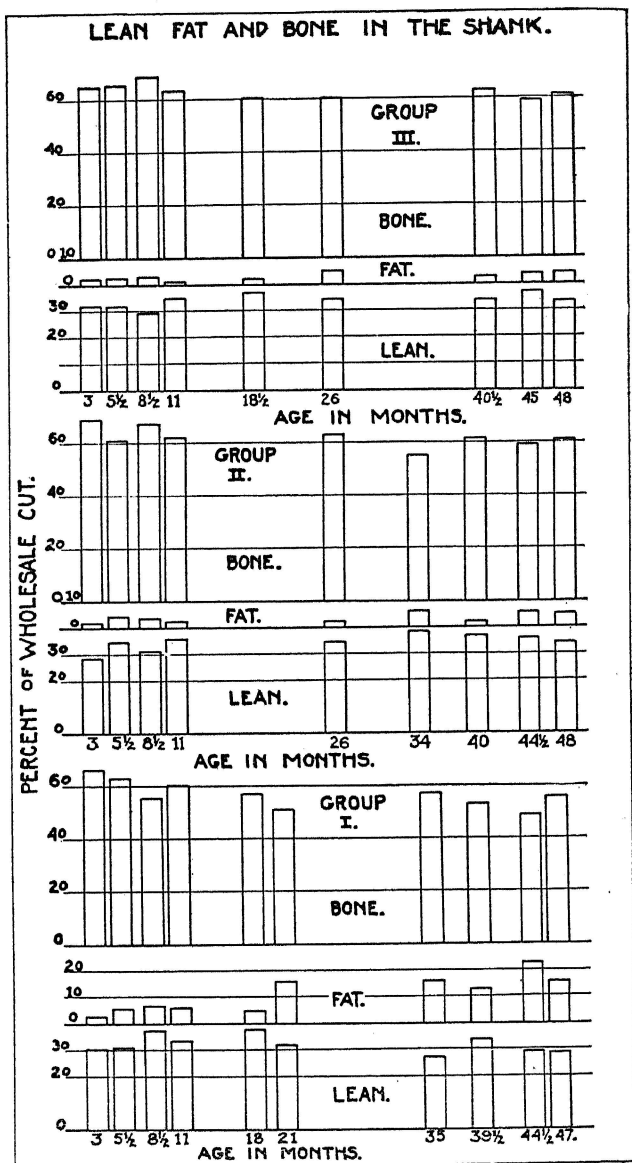


Fig. 28.—Distribution of lean, fat and bone in the shank.

## SUMMARY

Hereford-Shorthorn beef steers were fed on three planes of nutrition: Group I, full fed from birth; Group II, fed for maximum growth without fattening giving gains of one pound per day for the first two years; Group III, fed for scanty or retarded growth gaining about .69 pounds per day for the first two years. The slaughter house data for 31 animals are presented.

With these animals the ratio of empty weight to live weight is greatest at birth, least at 8½ months, and intermediate at 4 years. A lower plane of nutrition gives a lower ratio.

The ratio of carcass to live weight decreases to 8½ months then increases to a maximum at 3 to 4 years. The better fed animals have the greater percent. On the empty weight basis the carcass continuously increases to 3 to 4 years.

The proportions of hide and hair, heart, brain and spinal cord, and intestinal length to empty weight decrease with increasing age and fatness. The blood, lungs, stomachs, intestines (weight), liver, kidneys, spleen, and pancreas increase relatively during the early months and then decrease. The maxima occur generally at 8½ months. The stomachs and liver show marked retardation on the low planes of nutrition.

The proportions of skeleton and of total organs are greatest at birth and the total fleshy parts at 4 years.

In the carcass the proportions of loin, rump, flank, and plate increase with increasing age and fatness of the steers. The rib changes but little while the round, chuck and neck, and shin and shank decrease.

The distribution of the total lean flesh is but little affected by age and fatness excepting that there is a slight reduction in the proportion found in the shin, shank, head and tail and in some cases in the round. The plate shows a larger part of the total as the animal grows and fattens.

The proportion of the total fat flesh found in the plate, rib, loin, and in some cases in the rump increases with increasing fatness.

Age and fatness influence the distribution of the total skeleton but slightly. The feet bones tend to increase relatively up to 8½ months (Group I) and then decrease. The chuck and neck

bones show a similar phenomenon with the maximum at 18 months. The rump shows a slight increase.

The composition of the wholesale cuts of meat is affected by increasing age and fatness. In general the percent of fatty tissue increases and the percent of bone decreases. The percent of lean flesh may increase, remain constant, or decrease, but on the average it decreases. The increases in percent of fat are greatest in the plate, loin, and flank. The rib and rump show rather large increases.



## APPENDIX

TABLE 1.—SLAUGHTER HOUSE WEIGHTS OF OFFAL PARTS (IN GRAMS).

Steer.....	556	554	555	557	552	548
Age.....	3 Months	3 Months	3 Months	5 Months 17 Days	5 Months 7 Days	5 Months 9 Days
Group.....	1	2	3	1	2	3
Live weight.....	111,489	87,456	84,725	204,984	116,491	99,255
Blood.....	6,124	4,197	4,529	8,952	5,219	4,603
Heart, pericardium, arteries.....	993	591	554	2,342	1,056	753
Heart, marketable.....	521	335	315	928	561	427
Heart, lean.....	432	319	295	760	561	385
Lungs and trachea.....	1,272	907	937	1,972	1,096	1,084
Brain.....	275	273	252	351	332	374
Spinal cord.....	123	122	101	200	134	152
Tongue, including bones and larynx.....	884	660	432	908	673	571
Tongue, marketable.....	466	358	247	650	464	428
Tongue bones, including larynx.....	106	142	53	131	96	88
Gullet.....	209	146	193	189	355	204
Stomachs.....	1,975	1,208	1,338	4,341	1,938	1,885
Rumen.....	999	616	745	2,614	1,100	975
Reticulum.....	260	147	147	358	188	203
Omasum.....	391	161	176	724	374	363
Abomasum.....	325	284	270	645	276	344
Intestines, small.....	1,944	1,474	1,651	2,863	1,781	1,660
Intestines, large.....	750	603	792	1,233	1,003	861
Intestines, small; length, cm.....	2,878	2,452	2,080	3,139	2,630	2,806
Intestines, large; length, cm.....	540	450	380	667	491	550
Neck sweetbread.....	173	193	129	359	143	109
Heart sweetbread.....	155	143	30	264	122	59
Spleen.....	300	202	167	485	284	215
Pancreas.....	96	76	106	225	101	85
Liver.....	1,760	1,166	1,240	3,003	1,181	1,104
Gall bladder and gall.....	25	23	8	148	55	34
Gall.....				87	40	
Kidneys.....	338	530	439	649	316	353
Urinary bladder.....	46	58	63	76	41	53
Penis.....	110	116	59	155	94	79
Diaphragm.....	166	70	51	199	92	98
Caul fat.....	417	170	107	1,981	363	
Stomach fat.....	146	73	20	1,486	469	275
Intestinal fat.....	839	401	335	3,290	952	570
Hide and hair.....	10,314	7,400	6,580	14,100	10,532	8,328
Dewclaws.....	32	28	24	64	66	36
Teeth.....	218	225	190	261	278	264
Horns.....		9		46	36	40
Hoofs.....	358	301	274	585	448	359
Right fore foot and hoof.....	761	666	610	1,035	828	728
Left fore foot and hoof.....	760	653	630	1,007	807	728
Right hind foot and hoof.....	719	651	596	1,005	882	740
Left hind foot and hoof.....	707	734	595	1,096	792	659
Fore quarter, right.....	15,436	13,096	12,075	28,483	16,023	13,944
Hind quarter, right.....	14,849	12,358	10,596	27,438	15,135	12,764
Left half.....	30,129	24,675	22,764	54,150	30,580	27,275

TABLE 2.—SLAUGHTER HOUSE WEIGHTS OF OFFAL PARTS (IN GRAMS).

Steer.....	547	550	558	541	538	540
	8 Months 5 Days	8 Months 14 Days	8 Months 12 Days	10 Months 22 Days	10 Months 26 Days	11 Months 2 Days
Group.....	1	2	3	1	2	3
Live weight.....	206,175	147,202	108,191	323,836	180,930	158,131
Blood.....	8,711	7,080	4,666	12,470	7,219	6,967
Heart, pericardium, arteries.....	1,624	1,163	971	2,046	1,670	1,436
Heart, marketable.....	771	556	506	1,087	873	673
Heart, lean.....	666	481	425	940	698	572
Lungs and trachea.....	1,868	1,460	1,111	2,387	1,825	1,501
Brain.....	346	319	373	383	343	361
Spinal cord.....	113	124	147	185	144	151
Tongue, including bones and larynx.....	800	834	650	2,336	1,513	1,547
Tongue, marketable.....	586	523	464	1,209	779	811
Tongue bones, including larynx.....	161	139	111	309	221	170
Gullet.....	384	209	331	538	400	324
Stomachs.....	5,190	3,833	2,550	7,876	4,521	3,894
Rumen.....	3,127	1,914	1,329	4,050	2,209	1,966
Reticulum.....	373	366	253	866	751	470
Omasum.....	1,072	1,015	579	1,885	1,013	878
Abomasum.....	618	538	389	1,075	548	480
Intestines, small.....	2,649	2,303	1,599	3,922	2,327	1,954
Intestines, large.....	1,826	1,321	1,018	1,322	1,319	1,305
Intestines, small; length, cm.....	2,900	2,755	2,568	3,343	3,393	2,510
Intestines, large; length, cm.....	663	620	531	716	610	772
Neck sweetbread.....	372	189	73	306	252	194
Heart sweetbread.....	319	147	59	344	229	214
Spleen.....	391	291	193	596	331	331
Pancreas.....	200	200	153	300	208	180
Liver.....	2,851	1,992	1,352	3,832	1,978	1,593
Gall bladder and gall.....	138	117	28	275	153	83
Gall.....	103	86	7	202	122	58
Kidneys.....	450	379	318	645	487	363
Urinary bladder.....	83	60	48	153	123	134
Penis.....	181	112	149	226	146	131
Diaphragm.....	198	170	116	176	131	136
Caul fat.....	1,118	532	150	4,212	939	578
Stomach fat.....	851	781	243	1,803	799	469
Intestinal fat.....	1,910	1,297	431	4,322	1,714	1,260
Hide and hair.....	14,618	10,440	8,138	26,576	15,342	12,994
Dewclaws.....	86	53	38	99	65	49
Teeth.....	310	228	274	304	240	278
Horns.....	77	112	31	468	250	304
Hoofs.....	574	384	374	770	570	432
Right fore foot and hoof.....	1,177	820	764	1,270	931	803
Left fore foot and hoof.....	999	780	719	1,303	935	813
Right hind foot and hoof.....	1,185	778	771	1,368	937	805
Left hind foot and hoof.....	1,054	765	719	1,340	935	819
Fore quarter, right.....	27,711	19,194	14,089	46,507	25,401	21,605
Hind quarter, right.....	28,561	18,582	13,021	47,873	24,824	20,820
Left half.....	55,406	36,500	27,259	95,368	46,859	44,904

TABLE 3.—SLAUGHTER HOUSE WEIGHTS OF OFFAL PARTS (IN GRAMS).

Steer.....	505	503	532	531	504	523	525
Age.....	10 mo. 18 da.	11 mo. 11 da.	1 yr. 5 mo. 20 da.	1 yr. 6 mo. 12 da.	1 yr. 8 mo. 26 da.	2 yr. 2 mo. 6 da.	2 yr. 2 mo. 8 da.
Group.....	1	2	1	3	1	2	3
Live weight.....	313,317	270,566	517,093	212,466	526,164	380,880	305,112
Blood.....	13,810	13,058	18,752	9,457	21,005	15,287	13,614
Heart, pericardium, arteries.....	2,106	2,845	4,843	1,971	3,065	3,004	1,320
Heart, marketable.....	1,056	1,251	2,058	1,011	1,632	1,477	1,169
Heart, lean.....	938	1,063	1,685	791	1,428	1,188	1,005
Lungs and trachea.....	2,498	2,549	3,870	1,915	3,628	3,371	1,658
Brain.....	376	442	406	373	423	475	487
Spinal cord.....	161	224	237	200	301	322	244
Tongue, including bones and larynx.....	1,989	1,365	3,195	1,728	3,904	3,702	2,554
Tongue, marketable.....	1,115	789	1,543	894	1,587	1,678	1,276
Tongue bones, including larynx.....	190	204	340	207	367	404	252
Gullet.....	311	442	744	494	455	803	525
Stomachs.....	8,818	5,765	10,893	5,343	12,820	9,342	8,849
Rumen.....			5,943	2,740			
Reticulum.....			1,272	593			
Omasum.....			2,208	1,117			
Abomasum.....			1,470	893			
Intestines, small.....			3,792	2,346			
Intestines, large.....	4,852	4,736	2,132	1,342	9,526	5,226	5,960
Intestines, small; length, cm.....	4,460	4,039	4,889	2,926	4,125	3,797	
Intestines, large; length, cm.....		909	975	762	1,054	866	
Neck sweetbread.....	425	348	321	236	396	272	150
Heart sweetbread.....	337	399	120	236	532	341	145
Spleen.....	599	661	884	481	1,317	847	556
Pancreas.....	300	289	630	297	295	300	151
Liver.....	3,983	3,646	5,694	2,205	4,754	3,268	2,876
Gall bladder and gall.....	215	201	284	114	697	146	126
Gall.....			185	86			
Kidneys.....	718	655	868	506	877	703	684
Urinary bladder.....	80	108	308	223	254	254	193
Penis.....	251	288	302	240	310	196	157
Diaphragm.....	204	917	626	270	1,819	362	343
Caul fat.....			8,735	686		2,156	1,132
Stomach fat.....	6,344	3,771	4,940	586	12,272	2,156	1,180
Intestinal fat.....	6,437	3,614	10,022	1,627	12,833	3,603	2,649
Hide and hair.....	23,026	23,120	33,988	16,693	41,144	33,097	27,813
Dewclaws.....	142	112	158	90	198	115	88
Teeth.....	268	253	494	426	338	766	690
Horns.....	342	285	228		1,272	1,167	1,298
Hoofs.....	722	661	1,248	700	1,062	948	852
Right fore foot and hoof.....	1,218	1,456	1,937	1,095	1,767	1,609	1,380
Left fore foot and hoof.....	1,218	1,469	1,968	1,096	1,815	1,664	1,380
Right hind foot and hoof.....	1,251	1,350	1,932	1,136	1,736	1,649	1,320
Left hind foot and hoof.....	1,251	1,383	1,878	1,137	1,805	1,608	1,289
Fore quarter, right.....	45,336	37,450	79,605	29,683	76,580	56,114	43,204
Hind quarter, right.....	43,630	36,954	76,799	29,429	81,101	53,785	39,581
Left half.....	87,885	71,832	156,225	59,900	148,728		

TABLE 4.—SLAUGHTER HOUSE WEIGHTS OF OFFAL PARTS (IN GRAMS).

Steer.....	515	507	529	527	526	524
Age.....	2 yr. 9 mo. 19 days	2 yr. 9 mo. 16 days	3 yr. 2 mo. 21 days	3 yr. 3 mo. 15 days	3 yr. 4 mo.	3 yr. 4 mo. 13 days
Group.....	1	2	1	1	2	3
Live weight.....	743,361	457,155	690,704	842,841	479,846	362,260
Blood.....	27,856	20,316	23,028	27,382	18,957	17,019
Heart, pericardium, arteries.....	5,787	4,278	5,713	8,891	3,998	2,953
Heart, marketable.....	2,664	2,061	2,045	3,246	1,673	1,585
Heart, lean.....	1,890	1,556	1,419	2,370	1,246	1,369
Lungs and trachea.....	3,653	3,768	4,272	4,326	3,797	3,455
Brain.....	483	482	443	407	469	508
Spinal cord.....	245	262	261	294	191	250
Tongue, including bones and larynx.....	4,229	3,697	4,021	5,734	3,626	3,602
Tongue, marketable.....	2,309	1,791	1,603	1,904	1,769	1,666
Tongue bones, including larynx.....	484	467	441	420	438	435
Gullet.....	627	709	829	1,090	777	1,340
Stomachs.....	13,171	9,620	12,101	10,347	10,985	8,096
Rumen.....			6,007	5,790	6,091	4,602
Reticulum.....			1,069	889	896	775
Omasum.....			3,179	2,361	2,460	1,457
Abomasum.....			1,846	1,307	1,538	1,262
Intestines, small.....	6,823	5,625	2,985	2,539	2,257	1,964
Intestines, large.....			2,304	2,508	1,877	2,032
Intestines, small; length, cm.....	4,694	3,962	3,818	3,861	3,515	2,911
Intestines, large; length, cm.....			1,036	1,072	925	747
Neck sweetbread.....	484	325	514	464	269	267
Heart sweetbread.....	447	318	552	573	170	274
Spleen.....	1,482	1,132	1,049	1,226	831	757
Pancreas.....	424	231	824	849	498	435
Liver.....	5,982	3,788	5,374	5,720	3,531	3,019
Gall bladder and gall.....	382	130	280	149	231	296
Gall.....			190	10	143	229
Kidneys.....	1,065	752	1,006	1,244	922	766
Urinary bladder.....	347	282	257	295	312	361
Penis.....	225	239	436	300	250	365
Diaphragm.....	1,107	1,036	645	1,276	807	532
Caul fat.....	9,263	3,859	13,993	14,263	2,763	1,068
Stomach fat.....	6,965	3,097	10,951	9,669	2,815	1,244
Intestinal fat.....	13,649	4,351	14,112	24,585	5,973	2,695
Hide and hair.....	49,943	34,473	45,567	46,240	35,732	30,092
Dewclaws.....	201	152	241	240	227	194
Teeth.....	786	712		872	782	806
Horns.....	1,804	1,600	2,200	1,266	1,427	1,227
Hoofs.....	1,692	1,338		1,934	1,648	1,300
Right fore foot and hoof.....	2,346	1,936	2,213	2,293	2,031	1,864
Left fore foot and hoof.....	2,312	1,938	2,230	2,321	1,984	1,867
Right hind foot and hoof.....	2,473	1,884	2,331	2,265	1,862	1,791
Left hind foot and hoof.....	2,607	1,900	2,362	2,306	1,863	1,815
Fore quarter, right.....	115,806	72,574	111,434	147,674	75,917	54,798
Hind quarter, right.....	112,738	65,693	112,704	141,372	70,858	50,394
Left half.....			229,567	304,508		

TABLE 5.—SLAUGHTER HOUSE WEIGHTS OF OFFAL PARTS (IN GRAMS).

Steer.....	513	502	509	501	512	500
	3 yr. 8 mo. 15 days	3 yr. 8 mo. 19 days	3 yr. 8 mo. 22 days	3 yr. 11 mo.	3 yr. 11 mo. 21 days	3 yr. 11 mo. 26 days
Group.....	1	2	3	1	2	3
Live weight.....	854,650	506,878	439,814	883,480	548,050	457,786
Blood.....	25,680	19,728	18,291	28,710	24,176	21,269
Heart, per cardiac, arteries.....	7,427	4,451	3,645	6,177	5,158	3,414
Heart, marketable.....	2,311	1,946	1,660	2,214	1,955	1,467
Heart, lean.....	2,003	1,680	1,444	1,882	1,555	1,284
Lungs and trachea.....	4,658	3,696	3,283	3,838	3,881	3,747
Brain.....	413	465	389	459	466	422
Spinal cord.....	335	335	350	298	200	410
Tongue, including bones and larynx.....	4,171	4,107	3,317	5,294	4,215	3,541
Tongue, marketable.....	1,942	2,198	1,555	2,153	1,766	1,619
Tongue bones, including larynx.....	455	499	425	500	526	439
Gullet.....	1,152	1,098	1,081	1,051	973	909
Stomachs.....	13,446	10,832	9,851	14,185	11,089	10,995
Rumen.....	7,704	7,216	5,274	8,769	5,867	6,446
Reticulum.....	1,431	.....	1,064	933	1,068	1,045
Omasum.....	2,951	2,218	2,337	2,976	2,643	2,419
Abomasum.....	1,360	1,398	1,176	1,507	1,511	1,085
Intestines, small.....	3,543	2,324	2,186	2,796	3,067	2,645
Intestines, large.....	2,327	1,829	1,703	2,079	2,255	1,890
Intestines, small; length, cm.....	4,480	3,545	3,255	3,848	4,431	3,388
Intestines, large; length, cm.....	1,054	970	901	1,001	1,067	945
Neck sweetbread.....	581	338	267	335	235	250
Heart sweetbread.....	753	164	363	449	276	288
Spleen.....	1,114	921	1,304	1,178	1,255	1,054
Pancreas.....	873	581	562	836	736	625
Liver.....	5,920	3,716	3,875	6,161	4,416	4,634
Gall bladder and gall.....	127	334	225	266	300	300
Gall.....	37	241	110	176	212	241
Kidneys.....	1,015	838	774	1,037	1,074	1,019
Urinary bladder.....	227	283	253	275	366	331
Penis.....	330	305	274	339	302	271
Diaphragm.....	811	561	661	779	672	692
Caul fat.....	24,621	2,738	2,937	14,888	5,545	3,930
Stomach fat.....	7,860	3,256	2,240	7,432	3,658	2,968
Intestinal fat.....	21,290	5,383	4,745	16,503	8,251	6,042
Hide and hair.....	45,286	39,556	37,614	50,090	41,268	35,938
Dewclaws.....	308	218	196	331	234	247
Teeth.....	874	1,033	838	778	710	852
Horns.....	2,144	1,949	.....	3,354	1,810	.....
Hoofs.....	1,872	1,792	1,394	2,192	1,490	1,848
Right fore foot and hoof.....	2,452	2,272	1,941	2,466	2,210	2,226
Left fore foot and hoof.....	2,426	2,277	1,904	2,467	2,184	2,141
Right hind foot and hoof.....	2,283	2,115	1,828	2,502	2,043	2,117
Left hind foot and hoof.....	2,432	2,115	1,875	2,569	2,008	2,126
Fore quarter, right.....	146,424	80,313	70,406	152,353	90,208	71,295
Hind quarter, right.....	132,093	73,106	63,182	151,476	79,228	64,330
Left half.....	278,645	152,147	131,803	305,356	169,239	136,107

TABLE 6.—SLAUGHTER HOUSE WEIGHTS OF CARCASS PARTS (IN GRAMS).

Steer.....	556	554	555	557	552	548
Age.....	3 months	3 months	3 months	5 mo. 17 da.	5 mo. 7 da.	5 mo. 9 da
Group.....	1	2	3	1	2	3
Head, total.....	3,338	2,895	2,833	5,614	4,059	4,033
Lean, total.....	702	667	765	1,048	795	996
Fat, total.....	132	141	143	728	308	118
Bone, total.....	2,504	2,087	1,925	3,838	2,956	2,901
Shin, right.....	1,765	1,468	1,637	2,465	1,700	1,592
Lean, right.....	840	645	829	1,159	864	735
Fat, right.....	81	81	71	194	70	51
Bone, right.....	851	732	727	1,123	775	792
Neck, right.....	517	414	502	769	428	527
Lean, right.....	344	231	287	423	266	287
Fat, right.....	71	51	.....	149	54	55
Bone, right.....	100	133	215	206	114	191
Chuck, right.....	7,600	6,744	5,863	13,088	7,851	6,866
Lean, right.....	5,465	4,795	4,298	8,783	5,613	5,033
Fat, right.....	323	188	116	1,718	409	193
Bone, right.....	1,767	1,733	1,448	2,613	1,840	1,624
Plate, right.....	3,048	2,245	2,107	6,739	2,940	2,525
Lean right.....	2,096	1,475	1,461	3,710	1,887	1,655
Fat, right.....	156	125	42	1,769	288	131
Bone, right.....	773	628	605	1,241	750	741
Rib right.....	2,485	2,144	1,915	5,276	3,120	2,412
Lean, right.....	1,611	1,457	1,256	3,186	1,995	1,570
Fat, right.....	39	.....	.....	808	57	20
Bone, right.....	823	677	628	1,286	1,042	807
Loin, right.....	5,029	4,088	3,102	9,367	5,147	3,864
Lean, right.....	3,469	2,906	2,309	5,857	3,517	2,834
Fat, right.....	410	214	137	2,236	521	192
Bone, right.....	1,134	934	632	1,239	1,096	826
Kidney, Fat, right.....	210	120	65	1,614	250	142
Flank, right.....	868	533	549	2,169	935	630
Lean, right.....	599	384	453	1,117	597	445
Fat, right.....	236	134	78	1,051	330	170
Bone, right.....	16	11	13	8	8	16
Rump, right.....	926	891	703	1,779	987	811
Lean, right.....	548	453	401	814	551	485
Fat, right.....	74	73	37	477	112	36
Bone, right.....	304	366	253	480	320	285
Round, right.....	6,106	5,064	4,600	10,090	6,230	5,811
Lean, right.....	4,736	3,959	3,563	7,480	4,915	4,604
Fat, right.....	343	260	188	1,266	454	260
Bone, right.....	987	851	826	1,343	813	949
Shank, right.....	1,478	1,395	1,309	2,064	1,429	1,305
Lean, right.....	447	400	417	628	495	415
Fat, right.....	36	26	27	117	59	30
Bone, right.....	978	959	852	1,305	871	856
Tail, total.....	172	200	122	332	237	147
Lean, total.....	80	75	48	106	106	53
Fat, total.....	.....	.....	.....	33	.....	.....
Bone, total.....	92	125	74	193	131	94

TABLE 7.—SLAUGHTER HOUSE WEIGHTS OF CARCASS PARTS (IN GRAMS).

Steer.....	547	550	558	541	538	540
Age.....	8 mo. 5 da.	8 mo. 14 da.	8 mo. 12 da.	10 mo. 22 da.	10 mo. 26 da.	11 mo. 2 da.
Group.....	1	2	3	1	2	3
Head, total.....	6,461	5,108	4,764	6,939	5,178	4,747
Lean, total.....	2,532	1,704	1,388	1,388	1,118	890
Fat, total.....	808	384	312	460	280	344
Bone, total.....	3,121	3,020	3,064	5,091	3,780	3,513
Shin, right.....	2,487	1,951	1,705	3,712	2,400	2,228
Lean, right.....	1,378	991	778	1,927	1,197	1,167
Fat, right.....	169	65	51	318	96	69
Bone, right.....	928	876	864	1,473	1,104	976
Neck, right.....	525	451	343	1,500	856	689
Lean right.....	303	259	209	976	503	452
Fat, right.....	115	40	20	183	164	20
Bone, right.....	109	147	103	338	200	213
Chuck, right.....	13,902	9,962	7,557	22,782	13,036	10,763
Lean, right.....	10,100	6,880	5,343	16,871	9,442	7,771
Fat, right.....	1,800	728	269	2,210	1,033	746
Bone, right.....	2,451	2,331	1,925	3,310	2,506	2,235
Plate, right.....	5,804	3,745	2,055	10,165	5,120	4,374
Lean right.....	3,574	2,424	1,386	6,285	3,197	2,798
Fat, right.....	1,240	448	136	2,463	829	646
Bone, right.....	969	762	542	1,415	1,062	923
Rib, right.....	4,932	3,085	2,380	8,630	3,886	3,418
Lean, right.....	3,280	2,084	1,593	5,794	2,598	2,361
Fat, right.....	551	120	28	1,217	213	162
Bone, right.....	1,086	870	758	1,581	1,077	912
Loin, right.....	10,373	6,840	4,359	17,833	8,957	7,803
Lean, right.....	6,788	4,536	2,981	11,708	6,366	5,350
Fat, right.....	1,986	1,067	300	4,044	1,180	1,154
Bone, right.....	1,566	1,232	1,069	1,958	1,348	1,275
Kidney, Fat, right.....	815	378	113	3,028	311	341
Flank, right.....	2,317	1,101	575	3,725	1,434	973
Lean, right.....	1,372	656	462	1,670	961	657
Fat, right.....	927	420	112	2,037	531	311
Bone, right.....	10	8	4	17	10	8
Rump, right.....	1,531	1,180	866	2,765	1,436	1,300
Lean, right.....	740	631	463	1,378	780	764
Fat, right.....	388	200	52	849	268	218
Bone, right.....	380	350	339	528	366	311
Round, right.....	10,871	7,391	6,223	17,065	10,294	8,305
Lean, right.....	8,546	5,860	4,382	13,500	8,162	6,728
Fat, right.....	1,075	472	322	1,927	851	405
Bone, right.....	1,244	1,050	1,047	1,625	1,278	1,175
Shank, right.....	2,285	1,502	1,537	3,042	2,106	1,810
Lean, right.....	856	435	432	981	754	629
Fat, right.....	148	56	42	189	48	16
Bone, right.....	1,267	1,011	1,053	1,872	1,304	1,152
Tail, total.....	292	186	98	381	229	217
Lean, total.....	138	88	18	160	82	36
Fat, total.....	9	4	.....	54	16	4
Bone, total.....	144	94	80	206	135	138

TABLE 8.—SLAUGHTER HOUSE WEIGHTS OF CARCASS PARTS (IN GRAMS).

Steer.....	505	503	532	531	504	523	525
Age.....	10 mo. 18 da.	11 mo. 11 da.	1 yr. 5 mo. 20 da.	1 yr. 6 mo. 12 da.	1 yr. 8 mo. 26 da.	2 yr. 2 mo. 6 da.	2 yr. 2 mo. 8 da.
Group.....	1	2	1	3	1	2	3
Head, total.....	6,977	8,321	10,510	6,251	11,035	9,848	8,536
Lean, total.....	1,494	1,728	2,486	1,310	2,656	2,500	2,073
Fat, total.....	814	886	1,406	280	648	306	508
Bone, total.....	4,669	5,707	6,514	4,487	7,675	6,832	5,758
Shin, right.....	3,703	3,330	6,742	3,107	6,123	4,941	4,328
Lean, right.....	2,017	1,604	3,544	1,602	3,176	2,671	2,421
Fat, right.....	205	147	468	112	751	263	199
Bone, right.....	1,479	1,568	2,703	1,393	2,164	1,995	1,681
Neck, right.....	1,044	1,159	1,476	1,292	1,536	1,391	1,552
Lean, right.....	641	548	839	930	844	943	1,025
Fat, right.....	135	181	277	118	233	58	117
Bone, right.....	264	430	370	257	454	378	398
Chuck, right.....	21,987	18,821	38,288	15,303	34,645	28,898	20,626
Lean, right.....	15,877	14,040	27,000	11,524	23,092	21,723	15,605
Fat, right.....	2,519	1,198	4,986	879	5,735	2,436	1,165
Bone, right.....	3,497	3,384	6,137	2,792	5,134	4,515	3,827
Plate, right.....	9,943	7,580	18,479	5,483	18,905	11,995	8,556
Lean right.....	5,861	4,398	10,017	3,585	9,617	7,704	5,651
Fat, right.....	2,586	1,475	5,657	609	6,963	2,028	1,174
Bone, right.....	1,478	1,676	2,689	1,248	2,249	1,914	1,695
Rib, right.....	8,607	6,625	14,483	4,483	15,286	8,753	8,134
Lean, right.....	5,650	4,466	8,678	3,137	9,253	6,016	5,833
Fat, right.....	1,320	420	3,097	169	3,385	761	332
Bone, right.....	1,596	1,691	2,611	1,140	2,546	1,922	1,944
Loin, right.....	15,622	13,475	27,366	9,641	29,121	18,844	13,241
Lean, right.....	9,843	8,603	18,068	7,039	16,838	12,917	9,355
Fat, right.....	3,779	2,873	7,477	1,132	9,170	3,188	1,879
Bone, right.....	1,937	1,917	3,123	1,417	2,925	2,661	1,964
Kidney, Fat, right.....	2,877	1,063	5,867	363	5,700	1,555	629
Flank, right.....	3,665	2,330	6,692	1,253	8,280	3,795	2,598
Lean, right.....	1,912	1,480	2,934	861	3,778	2,279	1,704
Fat, right.....	1,738	792	3,710	372	4,467	1,481	852
Bone, right.....	20	42	50	25	37	27	32
Rump, right.....	2,786	2,146	5,190	1,783	6,631	3,627	2,876
Lean, right.....	1,300	1,012	2,570	1,001	2,884	1,799	1,589
Fat, right.....	914	591	1,459	252	2,539	910	488
Bone, right.....	553	525	1,141	530	1,214	885	771
Round, right.....	15,380	14,600	25,006	13,349	25,995	21,613	16,843
Lean, right.....	11,592	11,499	19,032	10,748	18,619	16,950	13,762
Fat, right.....	2,071	1,109	3,032	745	4,909	2,278	981
Bone, right.....	1,698	1,928	2,812	1,820	2,404	2,315	2,023
Shank, right.....	2,885	3,043	4,682	2,656	4,817	3,874	3,024
Lean, right.....	1,019	991	1,773	971	1,541	1,324	1,026
Fat, right.....	162	171	219	55	772	84	152
Bone, right.....	1,693	1,874	2,675	1,606	2,469	2,436	1,826
Tail, total.....	520	385	675	280	691	630	468
Lean, total.....	214	150	318	120	222	256	178
Fat, total.....	58	24	50	12	64	38	24
Bone, total.....	240	190	266	148	316	316	224



TABLE 9.—SLAUGHTER HOUSE WEIGHTS OF CARCASS PARTS (IN GRAMS).

Steer.....	515	507	529	527	526	524
	2 yr. 9 mo. 19 da.	2 yr. 9 mo. 16 da.	3 yr. 2 mo. 21 da.	3 yr. 3 mo. 15 da.	3 yr. 4 mo.	3 yr. 4 mo. 13 da.
Group.....	1	2	1	1	2	3
Head, total.....	14,869	11,874	13,249	12,838	11,643	10,915
Lean, total.....	2,990	2,370	.....	3,362	2,426	2,382
Fat, total.....	2,484	1,352	.....	1,246	822	740
Bone, total.....	9,395	8,152	.....	8,032	8,395	7,593
Shin, right.....	8,370	6,313	8,275	8,824	6,789	5,333
Lean, right.....	3,822	3,519	.....	4,371	3,704	2,631
Fat, right.....	1,538	258	.....	1,281	248	189
Bone, right.....	3,009	2,510	.....	3,170	2,820	2,475
Neck, right.....	2,288	1,611	1,587	1,832	1,812	1,473
Lean, right.....	1,110	993	.....	729	1,047	902
Fat, right.....	667	179	.....	603	333	38
Bone, right.....	508	417	.....	508	425	526
Chuck, right.....	49,301	36,460	47,355	62,001	35,906	28,236
Lean, right.....	31,074	27,311	.....	36,160	25,478	21,342
Fat, right.....	11,216	2,777	.....	18,728	3,756	911
Bone, right.....	6,756	6,184	.....	6,927	6,496	5,922
Plate, right.....	34,875	16,603	35,901	46,616	18,103	10,486
Lean right.....	13,189	10,064	.....	17,706	10,740	6,548
Fat, right.....	18,346	3,390	.....	25,650	4,110	1,023
Bone, right.....	3,124	3,066	.....	3,019	3,217	2,895
Rib, right.....	21,008	11,635	18,316	28,401	13,371	9,216
Lean, right.....	9,508	7,894	8,995	12,930	8,632	6,403
Fat, right.....	8,142	1,216	6,691	12,139	1,860	169
Bone, right.....	3,232	2,525	2,576	3,273	2,845	2,655
Loin, right.....	43,844	23,374	43,272	55,188	25,010	16,656
Lean right.....	20,810	14,862	.....	25,070	15,720	12,100
Fat, right.....	19,162	5,094	.....	26,362	5,817	1,222
Bone, right.....	3,892	3,253	.....	3,570	3,422	3,293
Kidney, Fat, right.....	4,961	2,188	5,112	9,482	1,612	383
Flank, right.....	12,112	4,697	13,514	16,167	4,933	2,407
Lean, right.....	3,281	2,459	.....	4,823	2,241	1,563
Fat, right.....	8,753	2,152	.....	11,310	2,671	760
Bone, right.....	60	73	.....	22	77	68
Rump, right.....	10,005	5,140	9,344	13,721	5,748	3,232
Lean, right.....	3,443	2,521	.....	4,450	2,804	1,616
Fat, right.....	4,462	1,347	.....	7,560	1,493	399
Bone, right.....	2,037	1,268	.....	1,630	1,419	1,212
Round, right.....	34,172	25,274	40,959	39,746	28,102	23,013
Lean, right.....	21,471	19,651	.....	25,698	22,307	18,857
Fat, right.....	9,529	2,689	.....	10,733	2,508	1,263
Bone, right.....	3,172	2,932	.....	3,223	3,176	2,939
Shank, right.....	6,922	4,865	*	6,434	4,865	4,202
Lean, right.....	1,873	1,864	.....	2,190	1,772	1,422
Fat, right.....	1,105	289	.....	837	98	95
Bone, right.....	3,941	2,665	.....	3,398	2,986	2,656
Tail, total.....	882	730	857	778	700	553
Lean, total.....	312	292	.....	362	328	218
Fat, total.....	132	24	.....	48	40	24
Bone, total.....	354	354	.....	370	332	290

\*Weighed with round.

TABLE 10.—SLAUGHTER HOUSE WEIGHTS OF CARCASS PARTS (IN GRAMS).

Steer.....	513	502	509	501	512	500
	3 yr. 8 mo. 15 da.	3 yr. 8 mo. 19 da.	3 yr. 8 mo. 22 da.	3 yr. 11 mo.	3 yr. 11 mo. 21 da.	3 yr. 11 mo. 26 da.
Group.....	1	2	3	1	2	3
Head, total.....	13,287	12,902	10,642	14,702	13,233	11,824
Lean, total.....	3,690	3,386	2,556	4,004	3,266	2,930
Fat, total.....	1,294	438	264	606	706	380
Bone, total.....	7,365	9,078	7,822	9,922	9,139	8,514
Shin, right.....	8,748	7,032	6,523	9,018	7,437	7,355
Lean, right.....	4,639	3,719	3,769	4,670	3,928	4,199
Fat, right.....	1,039	355	238	1,223	461	316
Bone, right.....	3,060	2,970	2,523	3,085	3,037	2,805
Neck, right.....	1,944	1,585	1,635	1,841	1,600	1,660
Lean, right.....	987	944	925	833	800	874
Fat, right.....	616	188	171	558	175	198
Bone, right.....	357	462	537	447	620	589
Chuck, right.....	61,419	41,503	35,550	61,734	43,567	35,199
Lean, right.....	36,491	29,098	26,143	35,518	30,271	26,178
Fat, right.....	17,376	4,242	2,849	18,586	5,510	2,209
Bone, right.....	7,406	7,084	6,304	7,442	7,648	6,636
Plate, right.....	46,181	16,244	14,923	51,977	23,006	16,798
Lean right.....	18,269	10,056	9,499	18,093	11,581	10,651
Fat, right.....	24,127	3,412	2,896	30,290	7,474	3,052
Bone, right.....	3,623	2,713	2,512	3,487	3,827	3,094
Rib, right.....	27,830	13,321	11,725	27,783	14,527	10,321
Lean right.....	12,372	9,128	8,180	10,417	8,454	6,801
Fat, right.....	11,804	1,669	989	14,161	2,699	902
Bone, right.....	3,548	2,960	2,493	3,194	3,469	2,596
Loin, right.....	52,503	26,154	22,766	63,056	28,051	22,159
Lean, right.....	22,255	17,552	15,418	22,998	16,031	14,846
Fat, right.....	24,964	4,572	3,785	35,679	7,654	3,415
Bone, right.....	4,268	3,933	3,436	4,307	4,374	3,886
Kidney, Fat, right.....	7,245	1,458	788	9,772	2,370	1,216
Flank, right.....	15,560	4,390	3,558	18,768	5,502	4,586
Lean, right.....	4,237	2,331	2,117	4,544	1,847	2,805
Fat, right.....	11,254	1,998	1,383	14,146	3,571	1,697
Bone, right.....	96	82	50	47	67	81
Rump, right.....	11,288	5,243	5,142	13,018	6,870	5,041
Lean, right.....	3,609	2,998	2,631	3,816	3,054	2,471
Fat, right.....	5,932	1,052	1,054	7,297	2,188	1,058
Bone, right.....	1,732	1,181	1,430	1,841	1,632	1,494
Round, right.....	38,655	28,023	25,862	39,970	30,725	26,073
Lean, right.....	25,391	22,213	20,188	25,065	21,704	19,949
Fat, right.....	9,554	2,310	2,553	11,142	4,970	2,468
Bone, right.....	3,522	3,352	3,010	3,632	3,913	3,559
Shank, right.....	6,245	5,077	4,639	6,381	5,071	4,657
Lean, right.....	1,813	1,815	1,708	1,837	1,717	1,548
Fat, right.....	1,408	293	176	980	247	185
Bone, right.....	3,029	2,989	2,749	3,564	3,078	2,875
Tail, total.....	675	893	774	854	875	842
Lean, total.....	304	384	324	496	366	406
Fat, total.....	102	42	68	118	74	68
Bone, total.....	297	441	386	304	416	386

TABLE 11.—DISTRIBUTION OF CARCASS AND OFFAL PARTS.

Steer.....	556	554	555	557	552	548
Age.....	3 mo.	3 mo.	3 mo.	5 mo. 17 da.	5 mo. 7 da.	5 mo. 9 da.
Group.....	1	2	3	1	2	3
Live weight.....	111,489	87,456	84,725	204,934	116,491	99,255
Warm empty weight.....	98,133	78,071	71,078	172,797	99,349	85,988
Percent empty weight to live weight.....	88.020	89.269	83.893	84.318	85.285	86.633
Percent carcass to live weight.....	54.188	57.319	53.626	53.710	52.998	54.388
Percent carcass to empty weight.....	61.563	64.210	63.923	63.700	62.143	62.780
Percent carcass + offal fat to live weight.....	55.446	58.055	54.172	57.008	54.530	54.232
Percent carcass + offal fat to empty weight.....	62.992	65.034	64.573	67.610	63.933	63.762
Percent offal fat to empty weight.....	1.429	0.825	0.650	3.910	1.796	0.983
Percent hide and hair to empty weight.....	10.510	9.479	9.257	8.160	10.601	9.720
Percent blood to empty weight.....	6.241	5.353	6.372	5.181	5.253	5.353
Percent heart market to empty weight.....	0.531	0.429	0.443	0.537	0.565	0.497
Percent lungs and trachea to empty weight.....	1.295	1.162	1.318	1.141	1.103	1.261
Percent brain and spinal cord to empty weight.....	0.406	0.506	0.497	0.319	0.469	0.612
Percent stomach to empty weight.....	2.013	1.547	1.882	2.512	1.951	2.192
Percent intestines to empty weight.....	2.745	2.660	3.437	2.370	2.802	2.932
Cm. intestines per kilo empty weight.....	34.83	37.17	34.61	22.03	31.41	30.03
Percent of liver to empty weight.....	1.793	1.494	1.745	1.838	1.189	1.284
Percent gall bladder and gall to empty weight.....	0.025	0.029	0.011	0.086	0.055	0.040
Percent of kidneys to empty weight.....	0.344	0.679	0.618	0.376	0.318	0.411
Percent spleen to empty weight.....	0.306	0.259	0.235	0.281	0.286	0.250
Percent pancreas to empty weight.....	0.098	0.097	0.149	0.130	0.102	0.099

TABLE 12.—DISTRIBUTION OF CARCASS AND OFFAL PARTS.

Steer.....	547	550	558	541	538	540
Age.....	8 mo. 5 da.	8 mo. 14 da.	8 mo. 12 da.	10 mo. 22 da.	10 mo. 26 da.	11 mo. 2 da.
Group.....	1	2	3	1	2	3
Live weight.....	206,175	147,202	108,191	323,836	180,930	158,131
Warm empty weight.....	171,448	121,112	89,999	288,297	158,911	137,726
Percent empty weight to live weight.....	83.157	82.277	83.185	89.025	87.830	87.096
Percent carcass to live weight.....	54.167	50.459	51.085	58.594	53.658	55.226
Percent carcass to empty weight.....	65.138	61.328	61.411	65.817	61.093	63.408
Percent carcass + offal fat to live weight.....	56.048	52.232	51.851	61.786	55.566	56.685
Percent carcass + offal fat to empty weight.....	67.401	63.483	62.332	69.403	63.266	65.083
Percent offal fat to empty weight.....	2.262	2.155	0.921	3.586	2.172	1.675
Percent hide and hair to empty weight.....	8.526	8.620	9.042	9.219	9.654	9.435
Percent blood to empty weight.....	5.081	5.846	5.185	4.325	4.543	5.059
Percent heart market to empty weight.....	0.450	0.459	0.562	0.377	0.549	0.489
Percent lungs and trachea to empty weight.....	1.090	1.205	1.234	0.828	1.148	1.090
Percent brain and spinal cord to empty weight.....	0.268	0.366	0.578	0.197	0.306	0.372
Percent stomach to empty weight.....	3.027	3.165	2.833	2.732	2.845	2.827
Percent intestines to empty weight.....	2.610	2.992	2.908	1.819	2.294	2.366
Cm. intestines per kilo empty weight.....	20.78	27.87	34.43	14.08	25.19	23.83
Percent of liver to empty weight.....	1.663	1.645	1.502	1.329	1.245	1.157
Percent gall bladder and gall to empty weight.....	0.080	0.097	0.031	0.095	0.096	0.060
Percent of kidneys to empty weight.....	0.262	0.313	0.353	0.223	0.306	0.264
Percent spleen to empty weight.....	0.228	0.240	0.214	0.207	0.208	0.240
Percent pancreas to empty weight.....	0.117	0.165	0.170	0.135	0.131	0.131

TABLE 13.—DISTRIBUTION OF CARCASS AND OFFAL PARTS.

Steer.....	505	503	532	531	504	523	525
Age.....	10 mo. 18 da.	11 mo. 11 da.	1 yr. 5 mo. 20 da.	1 yr. 6 mo. 12 da.	1 yr. 8 mo. 26 da.	2 yr. 2 mo. 6 da.	2 yr. 2 mo. 8 da.
Group.....	1	2	1	3	1	2	3
Live weight.....	313,317	270,566	517,093	212,466	526,164	380,880	305,112
Warm empty weight.....	274,357	236,429	459,025	192,005	475,854	337,803	265,587
Percent empty weight to live weight.....	87.565	87.383	88.770	90.370	90.438	88.690	87.046
Percent carcass to live weight.....	56.445	54.048	60.459	56.015	58.235	57.708	54.265
Percent carcass to empty weight.....	64.460	61.852	68.107	61.984	64.301	65.067	62.341
Percent carcass + offal fat to live weight.....	60.524	56.778	65.042	57.379	63.006	59.786	55.891
Percent carcass + offal fat to empty weight.....	69.119	64.976	73.270	63.494	69.667	67.410	64.209
Percent offal fat to empty weight.....	4.659	3.124	5.162	1.510	5.276	2.343	1.868
Percent hide and hair to empty weight.....	8.393	9.779	7.404	8.694	8.646	9.798	10.472
Percent blood to empty weight.....	5.034	5.523	4.085	4.925	4.414	4.525	5.126
Percent heart market to empty weight.....	0.385	0.529	0.448	0.527	0.343	0.437	0.440
Percent lungs and trachea to empty weight.....	0.910	1.078	0.843	0.997	0.762	0.998	0.624
Percent brain and spinal cord to empty weight.....	0.196	0.282	0.140	0.298	0.152	0.236	0.268
Percent stomach to empty weight.....	3.214	2.439	2.373	2.783	2.694	2.766	3.332
Percent intestines to empty weight.....	1.768	2.003	1.291	1.921	2.002	1.547	2.244
Cm. intestines per kilo empty weight.....	16.26	20.93	11.69	19.21	10.88	13.80	.....
Percent of liver to empty weight.....	1.452	1.542	1.240	1.148	0.999	0.967	1.083
Percent gall bladder and gall to empty weight.....	0.078	0.085	0.062	0.059	0.146	0.043	0.047
Percent of kidneys to empty weight.....	0.262	0.277	0.189	0.264	0.184	0.208	0.250
Percent spleen to empty weight.....	0.218	0.280	0.193	0.251	0.277	0.251	0.209
Percent pancreas to empty weight.....	0.109	0.122	0.131	0.155	0.062	0.089	0.057

TABLE 14.—DISTRIBUTION OF CARCASS AND OFFAL PARTS.

Steer.....	515	507	529	527	526	524
Age.....	2 yr. 9 mo. 19 da.	2 yr. 9 mo. 16 da.	3 yr. 2 mo. 21 da.	3 yr. 3 mo. 15 da.	3 yr. 4 mo.	3 yr. 4 mo. 13 da.
Group.....	1	2	1	1	2	3
Live weight.....	743,361	457,155	690,704	842,841	479,846	362,260
Warm empty weight.....	671,917	418,896	637,507	786,005	427,995	322,234
Percent empty weight to live weight.....	90.389	91.631	92.298	93.257	89.194	88.951
Percent carcass to live weight.....	61.489	60.490	65.687	70.423	61.176	58.075
Percent carcass to empty weight.....	68.028	66.015	71.169	75.515	68.587	65.289
Percent carcass + offal fat to live weight.....	65.509	62.964	71.342	76.179	63.583	59.458
Percent carcass + offal fat to empty weight.....	72.474	68.714	77.295	81.688	71.286	66.843
Percent offal fat to empty weight.....	4.447	2.699	6.126	6.173	2.699	1.554
Percent hide and hair to empty weight.....	7.433	8.229	7.148	5.883	8.349	9.339
Percent blood to empty weight.....	4.161	4.850	3.612	3.484	4.429	5.282
Percent heart market to empty weight.....	0.396	0.492	0.321	0.413	0.391	0.492
Percent lungs and trachea to empty weight.....	0.544	0.900	0.670	0.550	0.887	1.072
Percent brain and spinal cord to empty weight.....	0.108	0.178	0.110	0.089	0.154	0.235
Percent stomach to empty weight.....	1.960	2.297	1.898	1.316	2.567	2.512
Percent intestines to empty weight.....	1.015	1.343	0.830	0.642	0.966	1.240
Cm. intestines per kilo empty weight.....	6.99	9.46	6.05	6.28	10.37	11.35
Percent of liver to empty weight.....	0.890	0.904	0.843	0.728	0.825	0.937
Percent gall bladder and gall to empty weight.....	0.057	0.031	0.044	0.019	0.054	0.092
Percent of kidneys to empty weight.....	0.159	0.180	0.158	0.158	0.215	0.238
Percent spleen to empty weight.....	0.221	0.270	0.165	0.156	0.194	0.235
Percent pancreas to empty weight.....	0.063	0.055	0.129	0.108	0.116	0.135

TABLE 15.—DISTRIBUTION OF CARCASS AND OFFAL PARTS.

Steer.....	513	502	509	501	512	500
Age.....	3 yr. 8 mo. 15 da.	3 yr. 8 mo. 19 da.	3 yr. 8 mo. 22 da.	3 yr. 11 mo.	3 yr. 11 mo. 21 da.	3 yr. 11 mo. 26 da.
Group.....	1	2	3	1	2	3
Live weight.....	853,007	506,878	430,814	883,480	548,050	457,786
Warm empty weight.....	771,142	444,424	391,461	814,914	493,877	407,833
Percent empty weight to live weight.....	90.403	87.679	89.006	92.239	90.115	89.038
Percent carcass to live weight.....	65.317	60.284	60.342	68.953	61.796	59.358
Percent carcass to empty weight.....	72.252	68.756	67.795	74.755	68.575	66.628
Percent carcass + offal fat to live weight.....	71.621	62.528	62.598	73.325	64.981	62.185
Percent carcass + offal fat to empty weight.....	79.224	71.315	70.330	79.494	72.109	69.801
Percent offal fat to empty weight.....	6.973	2.560	2.535	4.740	3.534	3.173
Percent hide and hair to empty weight.....	5.873	8.901	9.609	6.147	8.356	8.812
Percent blood to empty weight.....	3.330	4.439	4.672	3.523	4.895	5.215
Percent heart market to empty weight.....	0.300	0.438	0.424	0.272	0.396	0.360
Percent lungs and trachea to empty weight.....	0.630	0.832	0.839	0.471	0.786	0.919
Percent brain and spinal cord to empty weight.....	0.097	0.180	0.189	0.093	0.135	0.204
Percent stomach to empty weight.....	1.744	2.438	2.516	1.741	2.245	2.696
Percent intestines to empty weight.....	0.761	0.934	0.994	0.598	1.078	1.112
Cm. intestines per kilo empty weight.....	7.18	10.16	10.62	5.95	11.23	10.62
Percent of liver to empty weight.....	0.768	0.836	0.990	0.756	0.894	1.136
Percent gall bladder and gall to empty weight.....	0.016	0.075	0.057	0.033	0.061	0.074
Percent of kidneys to empty weight.....	0.132	0.189	0.198	0.127	0.217	0.250
Percent spleen to empty weight.....	0.144	0.207	0.333	0.145	0.254	0.258
Percent pancreas to empty weight.....	0.113	0.131	0.144	0.103	0.149	0.153

TABLE 16.—MAIN DIVISIONS OF EMPTY ANIMAL AND LOSS ON COOLING.

Steer.....	556	554	555	557	552	548
Age.....	3 mo.	3 mo.	3 mo.	5 mo. 17 da.	5 mo. 7 da.	5 mo. 9 da.
Group.....	1	2	3	1	2	3

## Weights of parts in grams

Warm empty weight.....	98,133	78,071	71,078	172,797	99,349	85,988
Carcass.....	60,414	50,129	45,435	110,071	61,738	53,983
Offal fat.....	1,402	644	462	6,757	1,784	845
Hide and hair.....	10,314	7,400	6,580	14,100	10,532	8,358
Head, tail, feet, etc.....	6,813	6,203	5,653	10,591	8,081	7,463
Blood.....	6,124	4,197	4,529	8,952	5,219	4,603
Organs.....	11,488	8,419	8,489	19,831	10,701	9,645
Loss on cooling.....	1,422	300	23	724	716	1,658

## Percent of parts to warm empty weight

Carcass.....	61.563	64.210	63.923	63.700	62.143	62.780
Offal fat.....	1.429	0.825	0.650	3.910	1.796	0.983
Hide and hair.....	10.510	9.479	9.257	8.160	10.601	9.720
Head, tail, feet, etc.....	6.943	7.945	7.953	6.129	8.134	8.679
Blood.....	6.241	5.353	6.372	5.181	5.253	5.353
Organs.....	11.707	10.784	11.943	11.476	10.771	11.217
Loss on cooling.....	1.449	0.384	0.032	0.419	0.721	1.928

TABLES 17, 18, 19.—MAIN DIVISIONS OF EMPTY ANIMAL AND LOSS ON COOLING.

Steer.....	547		558		541		538		540			
	8 mo.		8 mo.		10 mo.		10 mo.		11 mo			
	5 da.		14 da.		12 da.		22 da.		26 da.			
Group.....	1		2		3		1		2		3	
Weights of parts in grams												
Warm empty weight.....	171,448		121,112		89,999		288,297		158,911		137,726	
Carcass.....	111,678		74,276		55,269		189,748		97,084		87,329	
Offal fat.....	3,879		2,610		829		10,337		3,452		2,307	
Hide and hair.....	14,618		10,440		8,138		26,576		15,342		12,994	
Head, tail, feet, etc.....	11,802		8,969		8,289		13,781		9,921		9,005	
Blood.....	8,711		7,080		4,666		12,470		7,219		6,967	
Organs.....	19,822		15,084		11,128		28,319		17,879		15,662	
Loss on cooling.....	72		1,377		929		8,054		4,648		5,941	
Percent of parts to warm empty weight												
Carcass.....	65.138		61.328		61.411		65.817		61.093		63.408	
Offal fat.....	2.262		2.155		0.921		3.586		2.172		1.675	
Hide and hair.....	8.526		8.620		9.042		9.219		9.654		9.435	
Head, tail, feet, etc.....	6.884		7.406		9.210		4.780		6.243		6.538	
Blood.....	5.081		5.846		5.185		4.325		4.543		5.059	
Organs.....	11.562		12.455		12.365		9.823		11.251		11.372	
Loss on cooling.....	0.042		1.137		1.032		2.794		2.925		4.314	
Steer.....	505		503		531		504		523		525	
Age.....	10 mo.		11 mo.		1 yr. 5 mo.		1 yr. 6 mo.		1 yr. 8 mo.		2 yr. 2 mo.	
	18 da.		11 da.		20 da.		12 da.		26 da.		6 da.	
Group.....	1		2		1		3		1		2	
Weights of parts in grams												
Warm empty weight.....	274,357		236,429		459,025		192,005		475,854		337,803	
Carcass.....	176,851		146,236		312,629		119,011		306,409		219,798	
Offal fat.....	12,781		7,385		23,697		2,899		25,105		7,915	
Hide and hair.....	23,026		23,120		33,988		16,693		41,144		33,097	
Head, tail, feet, etc.....	13,377		15,218		20,120		11,718		21,024		23,460	
Blood.....	13,810		13,058		18,752		9,457		21,005		15,287	
Organs.....	28,033		25,676		39,809		20,313		45,006		32,570	
Loss on cooling.....	5,398		3,164		10,030		12,701		7,208		5,676	
Percent of parts to warm empty weight												
Carcass.....	64.460		61.852		68.107		61.984		64.391		65.067	
Offal fat.....	4.659		3.124		5.162		1.510		5.276		2.343	
Hide and hair.....	8.393		9.779		7.404		8.694		8.646		9.798	
Head, tail, feet, etc.....	4.876		6.437		4.383		6.103		4.418		6.945	
Blood.....	5.034		5.523		4.085		4.925		4.414		4.525	
Organs.....	10.218		10.860		8.673		10.579		9.458		9.642	
Loss on cooling.....	1.968		1.338		2.185		6.615		1.515		1.680	
Steer.....	515		507		529		527		526		524	
Age.....	2 yr. 9 mo.		2 yr. 9 mo.		3 yr. 2 mo.		3 yr. 3 mo.		3 yr. 4 mo.		3 yr. 4 mo.	
	19 da.		16 da.		21 da.		15 da.		15 da.		13 da.	
Group.....	1		2		1		1		2		3	
Weights of parts in grams												
Warm empty weight.....	671,917		418,896		637,507		786,005		427,995		322,234	
Carcass.....	457,088		276,534		453,705		593,554		293,550		210,384	
Offal fat.....	29,877		11,307		39,056		48,517		11,551		5,007	
Hide and hair.....	49,943		34,473		45,567		46,240		35,732		30,092	
Head, tail, feet, etc.....	28,764		23,193		26,124		25,599		22,957		21,467	
Blood.....	27,856		20,316		23,028		27,382		18,957		17,019	
Organs.....	51,173		36,207		43,425		47,812		35,360		30,837	
Loss on cooling.....	27,216		16,866		12,031		12,363		9,888		7,428	
Percent of parts to warm empty weight												
Carcass.....	68.028		66.015		71.169		75.515		68.587		65.289	
Offal fat.....	4.447		2.699		6.126		6.173		2.699		1.554	
Hide and hair.....	7.433		8.229		7.148		5.883		8.349		9.339	
Head, tail, feet, etc.....	4.281		5.537		4.098		3.257		5.364		6.662	
Blood.....	4.161		4.850		3.612		3.484		4.429		5.282	
Organs.....	7.616		8.643		6.812		6.083		8.262		9.570	
Loss on cooling.....	4.051		4.026		1.887		1.573		2.310		2.305	

TABLE 20.—MAIN DIVISIONS OF EMPTY ANIMAL AND LOSS ON COOLING.

Steer.....	513	502	509	501	512	500
Age.....	3 yr. 8 mo. 15 da.	3 yr. 8 mo. 19 da.	3 yr. 8 mo. 22 da.	3 yr.11 mo.	3 yr.11 mo. 21 da.	3 yr.11 mo. 26 da.
Group.....	1	2	3	1	2	3
<b>Weights of parts in grams</b>						
Warm empty weight.....	771,142	444,424	391,461	814,914	493,877	407,833
Carcass.....	557,162	305,566	265,391	609,185	338,675	271,732
Offal fat.....	53,771	11,377	9,922	38,625	17,454	12,940
Hide and hair.....	45,286	39,556	37,614	50,090	41,268	35,938
Head, tail, feet, etc.....	27,336	26,278	20,423	30,523	25,833	22,814
Blood.....	25,680	19,728	18,291	28,710	24,176	21,269
Organs.....	48,968	36,679	33,938	47,332	40,410	36,998
Loss on cooling.....	13,067	3,968	4,097	11,976	5,864	6,624
<b>Percent of parts to warm empty weight</b>						
Carcass.....	72.252	68.756	67.795	74.755	68.575	66.628
Offal fat.....	6.973	2.560	2.535	4.740	3.534	3.173
Hide and hair.....	5.873	8.901	9.609	6.147	8.356	8.812
Head, tail, feet, etc.....	3.545	5.913	5.217	3.746	5.231	5.594
Blood.....	3.330	4.439	4.672	3.523	4.895	5.215
Organs.....	6.350	8.253	8.670	5.808	8.182	9.072
Loss on cooling.....	1.694	0.893	1.047	1.470	1.187	1.624

TABLE 21.—PROPORTION OF CUTS TO EMPTY WEIGHT AND TO CARCASS.

Steer.....	556	554	555	557	552	548
Age.....	3 mo.	3 mo.	3 mo.	5 mo. 17 da.	5 mo. 7 da.	5 mo. 9 da.
Group.....	1	2	3	1	2	3
Warm empty weight.....	98,133	78,071	71,078	172,797	99,349	85,988
Weight of carcass.....	60,570	50,908	45,342	111,842	62,316	53,416
Percent forequarters to empty weight.....	31.459	33.549	33.977	32.987	32.256	32.432
Percent forequarters to carcass.....	50.969	51.450	53.262	50.934	51.425	52.209
Percent hindquarters to empty weight.....	30.263	31.658	29.815	31.757	30.468	29.688
Percent hindquarters to carcass.....	49.031	48.550	46.738	49.065	48.575	47.791
Percent shins to empty weight.....	3.597	3.761	4.606	2.853	3.422	3.703
Percent shins to carcass.....	5.828	5.767	7.221	4.408	5.456	5.961
Percent of neck to empty weight.....	1.054	1.061	1.413	0.890	0.862	1.226
Percent of neck to carcass.....	1.707	1.626	1.214	1.375	1.374	1.973
Percent chucks to empty weight.....	15.489	17.277	16.497	15.148	15.805	15.970
Percent chucks to carcass.....	25.095	26.489	25.861	23.404	25.197	25.708
Percent of plates to empty weight.....	6.212	5.751	5.929	7.800	5.919	5.873
Percent of plates to carcass.....	10.064	8.820	9.294	12.051	9.436	9.454
Percent ribs to empty weight.....	5.065	5.492	5.388	6.107	6.281	5.610
Percent ribs to carcass.....	8.205	8.423	8.447	9.435	10.013	9.031
Percent of loin to empty weight.....	10.249	10.473	8.728	10.842	10.361	8.987
Percent loin to carcass.....	16.606	16.060	13.683	16.750	16.519	14.468
Percent kidney fat + kidney to empty weight.....	0.772	0.986	0.801	2.244	0.821	0.741
Percent kidney fat + kidney to carcass.....	1.251	1.512	1.255	3.466	1.309	1.193
Percent flanks to empty weight.....	1.769	1.365	1.432	2.510	1.882	1.465
Percent flanks to carcass.....	2.866	2.094	2.245	3.879	3.001	2.359
Percent rumps to empty weight.....	1.887	2.283	1.978	2.059	1.987	1.886
Percent rumps to carcass.....	3.058	3.500	3.101	3.181	3.168	3.037
Percent rounds to empty weight.....	12.444	12.973	12.944	11.678	12.542	13.516
Percent rounds to carcass.....	20.162	19.893	20.290	18.043	19.995	21.758
Percent shanks to empty weight.....	3.012	3.374	3.683	2.390	2.877	3.035
Percent shanks to carcass.....	4.880	5.480	5.774	3.691	4.586	4.886
Percent head to empty weight.....	3.402	3.708	3.986	3.249	4.086	4.690
Percent tail to empty weight.....	0.175	0.256	0.172	0.192	0.239	0.171

TABLE 22.—PROPORTION OF CUTS TO EMPTY WEIGHT AND TO CARCASS.

Steer.....	547	550	558	541	538	540
Age.....	8 mo. 5 da.	8 mo. 14 da.	8 mo. 12 da.	10 mo. 22 da.	10 mo. 26 da.	11 mo. 2 da.
Group.....	1	2	3	1	2	3
Warm empty weight.....	171,448	121,112	89,999	288,297	158,911	137,726
Weight of carcass.....	112,544	75,552	56,200	188,760	100,450	84,850
Percent forequarters to empty weight.....	32.326	31.696	31.309	32.263	31.989	31.374
Percent forequarters to carcass.....	49.245	50.810	50.300	49.276	50.574	50.925
Percent hindquarters to empty weight.....	33.317	30.686	30.963	33.211	31.243	30.234
Percent hindquarters to carcass.....	50.755	49.190	49.700	50.724	49.426	49.075
Percent shins to empty weight.....	2.901	3.222	3.789	2.575	3.021	3.235
Percent shins to carcass.....	4.420	5.165	6.087	3.933	4.778	5.252
Percent of neck to empty weight.....	0.612	0.745	0.762	1.041	1.077	1.001
Percent of neck to carcass.....	.933	1.194	1.225	1.589	1.704	1.624
Percent chucks to empty weight.....	16.217	16.451	16.794	15.805	16.407	15.630
Percent chucks to carcass.....	24.705	26.371	26.980	24.139	25.955	25.369
Percent of plates to empty weight.....	6.771	6.184	4.567	7.052	6.444	6.352
Percent of plates to carcass.....	10.314	9.914	7.337	10.770	10.194	10.310
Percent ribs to empty weight.....	5.753	5.094	5.289	5.987	4.891	4.964
Percent ribs to carcass.....	8.766	8.167	8.497	9.144	7.737	8.057
Percent of loin to empty weight.....	12.100	11.295	9.687	12.371	11.273	11.331
Percent loin to carcass.....	18.434	18.107	15.562	18.895	17.334	18.392
Percent kidney fat + kidney to empty weight.....	1.213	0.937	0.604	2.324	0.698	0.759
Percent kidney fat + kidney to carcass.....	1.848	1.502	0.971	3.550	1.104	1.232
Percent flanks to empty weight.....	2.703	1.818	1.278	2.584	1.805	1.413
Percent flanks to carcass.....	4.118	2.915	2.053	3.947	2.855	2.293
Percent rumps to empty weight.....	1.786	1.949	1.924	1.918	1.807	1.888
Percent rumps to carcass.....	2.721	3.124	3.092	2.930	2.859	3.064
Percent rounds to empty weight.....	12.681	12.205	13.829	11.838	12.956	12.060
Percent rounds to carcass.....	19.319	19.565	22.217	18.081	20.490	19.576
Percent shanks to empty weight.....	2.666	2.480	3.416	2.110	2.651	2.628
Percent shanks to carcass.....	4.061	3.976	5.487	3.223	4.193	4.266
Percent head to empty weight.....	3.768	4.218	5.293	2.407	3.260	3.447
Percent tail to empty weight.....	0.170	0.154	0.109	0.132	0.144	0.158

TABLE 23.—PROPORTION OF CUTS TO EMPTY WEIGHT AND TO CARCASS.

Steer.....	505	503	532	531	504	523	525
Age.....	10 mo. 18 da.	11 mo. 11 da.	1 yr. 5 mo. 20 da.	1 yr. 6 mo. 12 da.	1 yr. 8 mo. 26 da.	2 yr. 2 mo. ‡ 6 da.	2 yr. 2 mo. 8 da.
Group.....	1	2	1	3	1	2	3
Warm empty weight.....	274,357	236,429	459,025	192,005	475,854	337,803	265,587
Weight of carcass.....	177,932	148,805	312,808	113,294	315,382	219,798	165,570
Percent forequarters to empty weight.....	35.049	31.680	34.684	30.919	32.187	33.223	32.535
Percent forequarters to carcass.....	50.959	50.334	50.897	50.215	48.566	51.060	52.108
Percent hindquarters to empty weight.....	31.805	31.260	33.462	30.654	34.087	31.844	29.806
Percent hindquarters to carcass.....	49.041	49.688	49.103	49.785	51.434	48.940	47.812
Percent shins to empty weight.....	2.699	2.817	2.938	3.226	2.574	2.925	3.250
Percent shins to carcass.....	4.162	4.476	4.311	5.358	3.833	4.496	5.228
Percent of neck to empty weight.....	0.761	0.980	0.643	1.346	0.846	0.824	1.169
Percent of neck to carcass.....	1.173	1.558	0.944	2.186	0.974	1.266	1.875
Percent chucks to empty weight.....	16.006	15.921	16.682	15.940	14.561	17.109	15.532
Percent chucks to carcass.....	24.680	25.296	24.480	25.888	21.972	26.295	24.915
Percent of plates to empty weight.....	7.248	6.412	8.051	5.711	7.946	7.102	6.443
Percent of plates to carcass.....	11.176	10.188	11.815	9.276	11.990	10.615	10.335
Percent ribs to empty weight.....	6.274	5.604	6.310	4.670	6.424	5.182	6.125
Percent ribs to carcass.....	9.674	8.904	9.260	7.584	9.694	8.965	9.825
Percent of loin to empty weight.....	11.388	11.399	11.924	10.042	12.239	17.156	9.971
Percent loin to carcass.....	17.560	18.111	17.497	16.310	18.468	17.147	15.994
Percent kidney fat + kidney to empty weight.....	2.380	1.176	2.745	0.642	2.580	1.129	0.734
Percent kidney fat + kidney to carcass.....	3.637	1.869	4.029	1.049	3.898	1.735	1.351
Percent flanks to empty weight.....	2.672	1.971	2.916	1.305	3.480	2.247	1.956
Percent flanks to carcass.....	4.120	3.132	4.279	2.120	5.251	3.453	3.138
Percent rumps to empty weight.....	2.031	1.815	2.261	1.857	2.787	2.147	2.166
Percent rumps to carcass.....	3.132	2.894	3.318	3.016	4.205	3.300	3.474
Percent rounds to empty weight.....	11.212	12.350	10.895	13.905	10.926	12.796	12.684
Percent rounds to carcass.....	17.288	19.623	15.988	22.583	16.480	19.666	20.345
Percent shanks to empty weight.....	2.103	2.574	2.040	2.707	2.025	2.294	2.277
Percent shanks to carcass.....	3.243	4.090	2.994	4.493	3.055	3.525	3.693
Percent head to empty weight.....	2.543	3.519	2.290	3.256	2.319	2.915	3.214
Percent tail to empty weight.....	0.190	0.163	0.146	0.146	0.145	0.186	0.176



TABLE 24.—PROPORTION OF CUTS TO EMPTY WEIGHT AND TO CARCASS.

Steer.....	515	507	529	527	526	524
Age.....	2 yr. 9 mo. 19 da.	2 yr. 9 mo. 16 da.	3 yr. 2 mo. 21 da.	3 yr. 3 mo. 15 da.	3 yr. 4 mo.	3 yr. 4 mo. 13 da.
Group.....	1	2	1	1	2	3
Warm empty weight.....	671,917	418,896	637,507	786,005	427,995	322,234
Wt. of carcass.....	457,088	276,534	448,276	578,092	293,550	210,384
Percent forequarters to empty weight.....	34.470	34.650	34.959	37.576	35.476	34.011
Percent forequarters to carcass.....	50.671	52.488	49.717	51.090	51.723	52.093
Percent hindquarters to empty weight.....	33.557	31.365	35.358	35.972	33.112	31.278
Percent hindquarters to carcass.....	49.329	47.512	50.283	48.910	48.277	47.907
Percent shins to empty weight.....	2.491	3.014	2.596	2.245	3.172	3.810
Percent shins to carcass.....	3.662	4.566	3.692	3.053	4.625	5.070
Percent of neck to empty weight.....	0.681	0.769	0.498	0.466	0.847	0.914
Percent of neck to carcass.....	1.001	1.165	0.708	0.634	1.235	1.400
Percent chucks to empty weight.....	14.675	17.408	14.856	15.776	16.779	17.525
Percent chucks to carcass.....	21.572	26.369	21.128	21.450	24.463	26.842
Percent of plates to empty weight.....	10.381	7.927	11.263	11.862	8.459	6.508
Percent of plates to carcass.....	15.260	12.008	16.017	16.128	12.384	9.968
Percent ribs to empty weight.....	6.253	5.555	5.746	7.227	6.248	5.720
Percent ribs to carcass.....	9.192	8.415	8.172	9.826	9.110	8.761
Percent loin to carcass.....	13.050	11.160	13.575	14.043	11.687	10.238
Percent loin to empty weight.....	19.184	16.905	19.306	19.093	17.040	15.834
Percent kidney fat + kidney to empty weight.....	1.635	1.224	1.762	2.571	0.969	1.762
Percent kidney fat + kidney to carcass.....	2.404	1.854	2.505	3.496	1.412	2.699
Percent flanks to empty weight.....	3.605	2.243	4.240	4.114	2.305	1.494
Percent flanks to carcass.....	5.300	3.397	6.029	5.593	3.361	2.288
Percent rumps to empty weight.....	2.978	2.454	2.931	3.491	2.686	2.006
Percent rumps to carcass.....	4.378	3.717	4.169	4.747	3.916	3.072
Percent rounds to empty weight.....	10.171	12.067	12.850	10.113	13.132	14.283
Percent rounds to carcass.....	14.952	18.279	18.274	13.751	19.146	21.877
Percent shanks to empty weight.....	2.060	2.323	.....	1.637	2.273	2.608
Percent shanks to carcass.....	3.029	3.519	.....	2.226	3.315	3.995
Percent head to empty weight.....	2.213	2.835	2.078	1.633	2.720	3.387
Percent tail to empty weight.....	0.131	0.174	0.134	0.099	0.164	0.172

TABLE 25.—PROPORTION OF CUTS TO EMPTY WEIGHT AND TO CARCASS.

Steer.....	513	502	509	501	512	500
Age.....	3 yr. 8 mo. 15 da.	3 yr. 8 mo. 19 da.	3 yr. 8 mo. 22 da.	3 yr. 11 mo.	3 yr. 11 mo. 21 da.	3 yr. 11 mo. 26 da.
Group.....	1	2	3	1	2	3
Warm empty weight.....	771,142	444,424	391,461	814,914	493,877	407,833
Weight of carcass.....	557,034	306,838	267,176	607,658	338,872	371,250
Percent forequarters to empty weight.....	37.976	36.143	35.971	37.391	36.581	34.963
Percent forequarters to carcass.....	52.573	52.349	52.704	50.144	53.240	52.568
Percent hindquarters to empty weight.....	34.259	32.899	32.280	37.176	32.084	31.547
Percent hindquarters to carcass.....	47.427	47.651	47.296	49.856	46.760	47.432
Percent shins to empty weight.....	2.269	3.165	3.333	2.213	3.012	3.607
Percent shins to carcass.....	3.141	4.584	4.883	2.968	4.389	5.423
Percent of neck to empty weight.....	0.504	0.713	0.835	0.452	0.648	0.814
Percent of neck to carcass.....	0.698	1.033	1.224	0.606	0.944	1.224
Percent chucks to empty weight.....	15.929	18.677	18.163	15.151	17.643	17.261
Percent chucks to carcass.....	22.052	27.052	26.612	20.319	25.713	25.953
Percent of plates to empty weight.....	11.977	7.310	7.624	12.756	9.316	8.238
Percent of plates to carcass.....	16.581	10.588	11.171	17.107	13.578	12.386
Percent ribs to empty weight.....	7.218	6.220	5.990	6.819	5.883	5.061
Percent ribs to carcass.....	9.992	9.009	8.777	9.144	8.574	7.610
Percent of loin to empty weight.....	13.617	11.770	11.631	15.476	11.360	10.867
Percent loin to carcass.....	18.851	17.047	17.042	20.754	16.556	16.338
Percent kidney fat + kidney to empty weight.....	2.011	0.845	0.600	2.526	1.177	0.846
Percent kidney fat + kidney to carcass.....	2.783	1.223	0.880	3.387	1.716	1.272
Percent flanks to empty weight.....	4.036	1.976	1.818	4.606	2.228	2.249
Percent flanks to carcass.....	5.587	2.861	2.663	6.177	3.247	3.381
Percent rumps to empty weight.....	2.928	2.359	2.627	3.195	2.782	2.472
Percent rumps to carcass.....	4.053	3.417	3.849	4.285	4.055	3.717
Percent rounds to empty weight.....	10.025	12.611	13.213	9.810	12.442	12.786
Percent rounds to carcass.....	13.879	18.266	19.360	13.139	18.134	19.224
Percent shanks to empty weight.....	1.620	2.285	2.370	1.566	2.054	2.284
Percent shanks to carcass.....	2.242	3.309	3.473	2.100	2.993	3.434
Percent head to empty weight.....	1.723	2.903	2.719	1.804	2.679	2.899
Percent tail to empty weight.....	0.087	0.201	0.198	0.105	0.177	0.206

TABLE 26.—DISTRIBUTION OF LEAN, FAT AND BONE.

Steer.....	556	554	555	557	552	548
Age.....	3 mo.	3 mo.	3 mo.	5 mo. 17 da.	5 mo. 7 da.	5 mo. 9 da.
Group.....	1	2	3	1	2	3
Proportion of lean, fat and bone in empty animal						
Percent skeleton.....	21.148	24.090	23.364	17.020	21.443	22.973
Percent lean flesh.....	41.874	43.747	44.125	39.045	42.579	43.234
Percent fatty tissue (excl. offal fat).....	4.168	3.440	2.334	13.634	5.552	3.114
Percent total fatty tissue.....	5.596	4.265	2.994	17.545	7.348	4.097
Percent offal and kidney fats to total fatty tissue.....	33.176	26.547	27.820	32.935	31.238	32.047
Proportion of lean, fat and bone in carcass						
Percent skeleton.....	25.527	27.595	27.343	19.392	24.485	26.535
Percent lean flesh.....	66.551	65.628	67.372	59.293	66.436	67.631
Percent fatty tissue.....	6.535	4.997	3.357	20.384	6.357	4.793
Percent kidney fat to fatty tissue in carcass..	10.611	9.434	8.541	14.159	9.601	11.094

TABLE 27.—DISTRIBUTION OF LEAN, FAT AND BONE.

Steer.....	547	550	558	541	538	540
Age.....	8 mo. 5 da.	8 mo. 14 da.	8 mo. 12 da.	10 mo. 22 da.	10 mo. 26 da.	11 mo. 2 da.
Group.....	1	2	3	1	2	3
Proportion of lean, fat and bone in empty animal						
Percent skeleton.....	16.096	19.271	23.734	13.301	17.502	18.126
Percent lean flesh.....	44.646	42.361	42.627	42.917	43.496	42.316
Percent fatty tissue (excl. offal fat).....	10.642	6.916	3.558	12.988	7.139	6.189
Percent total fatty tissue.....	12.905	9.071	4.479	16.574	9.311	7.864
Percent offal and kidney fats to total fatty tissue.....	24.899	30.639	26.172	34.309	27.534	27.597
Proportion of lean, fat and bone in carcass						
Percent skeleton.....	17.789	22.864	27.504	14.958	20.418	21.638
Percent lean flesh.....	65.040	65.634	65.973	64.728	67.616	67.595
Percent fatty tissue.....	15.485	10.573	5.159	19.565	10.999	9.636
Percent kidney fat to fatty tissue in carcass..	9.353	9.464	7.820	16.399	5.630	8.341

TABLE 28.—DISTRIBUTION OF LEAN, FAT AND BONE.

Steer.....	505	503	532	531	504	523
Age.....	10 mo. 18 da.	11 mo. 11 da.	1 yr. 5 mo. 20 da.	1 yr. 6 mo. 12 da.	1 yr. 8 mo. 26 da.	2 yr. 2 mo. 6 da.
Group.....	1	2	1	3	1	2
Proportion of lean, fat and bone in empty animal						
Percent skeleton.....	13.758	17.393	13.557	17.218	12.082	15.161
Percent lean flesh.....	41.235	41.941	41.765	43.867	38.281	44.821
Percent fatty tissue (excl. offal fat).....	13.662	8.861	16.111	5.158	18.905	9.008
Percent total fatty tissue.....	18.321	11.985	21.274	6.668	24.181	11.351
Percent offal and kidney fats to total fatty tissue.....	36.875	33.566	36.283	28.314	31.726	38.754
Proportion of lean, fat and bone in carcass						
Percent skeleton.....	15.978	20.207	15.544	20.686	13.696	17.332
Percent lean flesh.....	62.622	65.374	60.392	70.033	56.850	67.631
Percent fatty tissue.....	20.576	13.467	23.177	8.130	28.300	13.687
Percent kidney fat to fatty tissue in carcass..	15.716	10.609	16.185	7.553	12.773	10.338

TABLE 29.—DISTRIBUTION OF LEAN, FAT AND BONE.

Steer.....	525	515	507	527	526	524
Age.....	2 yr. 2 mo. 8 da.	2 yr. 9 mo. 19 da.	2 yr. 9 mo. 16 da.	3 yr. 3 mo. 15 da.	3 yr. 4 mo.	3 yr. 4 mo. 13 da.
Group.....	3	1	2	1	2	3
<b>Proportion of lean, fat and bone in empty animal</b>						
Percent skeleton.....	16.230	11.555	15.532	9.382	16.138	19.740
Percent lean flesh.....	44.504	33.109	44.151	34.603	44.777	46.354
Percent fatty tissue (excl. offal fat).....	6.201	26.547	10.631	31.891	11.653	4.242
Percent total fatty tissue.....	8.069	30.994	13.331	38.063	14.352	5.795
Percent offal and kidney fats to total fatty tissue.....	29.021	19.111	26.085	22.555	24.054	30.913
<b>Proportion of lean, fat and bone in carcass</b>						
Percent skeleton.....	19.522	13.009	18.004	9.943	18.316	23.425
Percent lean flesh.....	69.778	47.947	65.918	46.403	64.347	69.762
Percent fatty tissue.....	9.625	38.452	15.607	43.137	16.696	6.134
Percent kidney fat to fatty tissue in carcass..	7.894	5.645	10.139	7.605	6.578	5.936

TABLE 30.—DISTRIBUTION OF LEAN, FAT AND BONE.

Steer.....	513	502	509	501	512	500
Age.....	3 yr. 8 mo. 15 da.	3 yr. 8 mo. 19 da.	3 yr. 8 mo. 22 da.	3 yr. 11 mo.	3 yr. 11 mo. 21 da.	3 yr. 11 mo. 26 da.
Group.....	1	2	3	1	2	3
<b>Proportion of lean, fat and bone in empty animal</b>						
Percent skeleton.....	9.991	16.302	16.570	9.891	16.285	17.509
Percent lean flesh.....	34.251	46.190	47.013	31.915	40.983	45.112
Percent fatty tissue (excl. offal fat).....	30.090	9.806	8.710	35.389	15.271	8.307
Percent total fatty tissue.....	37.063	12.365	11.245	40.129	18.805	11.430
Percent offal and kidney fats to total fatty tissue.....	23.884	26.009	26.121	17.788	23.897	32.832
<b>Proportion of lean, fat and bone in carcass</b>						
Percent skeleton.....	11.001	18.072	18.747	10.218	18.688	20.361
Percent lean flesh.....	46.698	65.672	67.804	42.060	53.558	66.697
Percent fatty tissue.....	41.405	14.046	12.637	47.340	22.025	12.325
Percent kidney fat to fatty tissue in carcass..	6.283	6.766	4.668	6.794	6.351	7.274

TABLE 31.—DISTRIBUTION OF LEAN FLESH IN THE ANIMAL.

Steer.....	556	554	555	557	552	548
Age.....	3 mo.	3 mo.	3 mo.	5 mo. 17 da.	5 mo. 7 da.	5 mo. 9 da.
Group.....	1	2	3	1	2	3
Weight of lean in animal.....	20,546	17,077	15,681	33,734	21,151	18,588
Percent of total lean in head.....	1.708	1.956	2.442	1.553	1.882	2.679
Percent of total lean in shin.....	4.088	3.777	5.287	3.436	4.085	3.954
Percent of total lean in neck.....	1.674	1.353	1.830	1.254	1.258	1.544
Percent of total lean in chuck.....	26.599	28.079	27.409	26.036	26.538	27.077
Percent of total lean in plate.....	10.201	8.637	9.317	10.998	8.922	8.904
Percent of total lean in rib.....	7.841	8.532	8.010	9.444	9.432	8.446
Percent of total lean in loin.....	16.884	17.017	14.725	17.362	16.628	15.246
Percent of total lean in flank.....	2.915	2.249	2.889	3.311	2.823	2.394
Percent of total lean in rump.....	2.667	2.653	2.557	2.413	2.605	2.609
Percent of total lean in round.....	23.051	23.183	22.722	22.173	23.238	24.769
Percent of total lean in shank.....	2.176	2.342	2.659	1.862	2.340	2.233
Percent of total lean in tail.....	0.195	0.223	0.153	0.157	0.251	0.145

TABLE 32.—DISTRIBUTION OF LEAN FLESH IN THE ANIMAL.

Steer.....	547	550	558	541	538	540
Age.....	8 mo. 5 da.	8 mo. 14 da.	8 mo. 12 da.	10 mo. 22 da.	10 mo. 26 da.	11 mo. 2 da.
Group.....	1	2	3	1	2	3
Weight of lean in animal.....	38,272	25,652	19,182	61,864	34,560	29,140
Percent of total lean in head.....	3.308	3.321	3.618	1.122	1.617	1.527
Percent of total lean in shin.....	3.601	3.863	4.056	3.115	3.464	4.005
Percent of total lean in neck.....	0.792	1.010	1.090	1.578	1.455	1.551
Percent of total lean in chuck.....	26.390	26.820	27.854	27.271	27.321	26.668
Percent of total lean in plate.....	9.338	9.450	7.226	10.159	9.251	9.602
Percent of total lean in rib.....	8.570	8.124	8.305	9.366	7.517	8.102
Percent of total lean in loin.....	17.736	17.683	15.541	18.925	18.420	18.360
Percent of total lean in flank.....	3.585	2.587	2.409	2.699	2.781	2.255
Percent of total lean in rump.....	1.934	2.460	2.414	2.227	2.257	2.622
Percent of total lean in round.....	22.330	22.344	25.190	21.822	23.617	23.089
Percent of total lean in shank.....	2.237	1.696	2.252	1.586	2.182	2.159
Percent of total lean in tail.....	0.180	0.172	0.047	0.129	0.119	0.062

TABLE 33.—DISTRIBUTION OF LEAN FLESH IN THE ANIMAL.

Steer.....	505	503	532	531	504	523	525
Age.....	10 mo. 18 da.	11 mo. 11 da.	1 yr. 5 mo. 20 da.	1 yr. 6 mo. 12 da.	1 yr. 8 mo. 26 da.	2 yr. 2 mo. 6 da.	2 yr. 2 mo. 8 da.
Group.....	1	2	1	3	1	2	3
Weight of lean in animal.....	56,566	49,580	95,857	42,113	91,081	75,704	59,099
Percent of total lean in head.....	1.321	1.743	1.297	1.555	1.458	1.051	1.753
Percent of total lean in shin.....	3.566	3.235	3.697	3.804	3.487	3.523	4.097
Percent of total lean in neck.....	1.133	1.105	0.875	2.208	0.927	1.246	1.734
Percent of total lean in chuck.....	28.068	28.318	28.167	27.364	25.355	28.695	26.405
Percent of total lean in plate.....	10.361	8.871	10.450	8.513	10.559	10.178	9.562
Percent of total lean in rib.....	9.988	9.008	9.053	7.449	10.159	7.947	9.870
Percent of total lean in loin.....	17.401	17.352	18.849	16.715	18.487	17.063	15.829
Percent of total lean in flank.....	3.380	2.985	3.061	2.044	4.148	3.010	2.883
Percent of total lean in rump.....	2.298	2.941	2.681	2.377	3.166	2.376	2.689
Percent of total lean in round.....	20.493	23.193	19.855	25.522	20.442	22.390	23.286
Percent of total lean in shank.....	1.801	1.999	1.850	2.306	1.692	1.749	1.736
Percent of total lean in tail.....	0.189	0.151	0.166	0.143	0.122	0.169	0.151

TABLE 34.—DISTRIBUTION OF LEAN FLESH IN THE ANIMAL.

Steer.....	515	507	529	527	526	524
Age.....	2 yr. 9 mo. 19 da.	2 yr. 9 mo. 16 da.	3 yr. 2 mo. 21 da.	3 yr. 3 mo. 15 da.	3 yr. 4 mo.	3 yr. 4 mo. 13 da.
Group.....	1	2	1	1	2	3
Weight of lean in animal.....	111,232	92,474	.....	135,989	95,822	74,684
Percent of total lean in head.....	1.344	1.281	.....	1.236	1.266	1.595
Percent of total lean in shin.....	3.436	3.805	.....	3.214	3.866	3.523
Percent of total lean in neck.....	0.998	1.079	.....	0.536	1.093	1.208
Percent of total lean in chuck.....	27.936	29.534	.....	26.590	26.589	28.576
Percent of total lean in plate.....	11.857	10.883	.....	13.020	11.208	8.768
Percent of total lean in rib.....	8.548	8.536	.....	9.508	9.008	8.573
Percent of total lean in loin.....	18.709	16.072	.....	18.435	16.405	16.201
Percent of total lean in flank.....	2.950	2.659	.....	3.547	2.339	2.093
Percent of total lean in rump.....	3.095	2.726	.....	3.272	2.926	2.164
Percent of total lean in round.....	19.303	21.250	.....	18.897	23.280	25.249
Percent of total lean in shank.....	1.684	2.016	.....	1.610	1.849	1.904
Percent of total lean in tail.....	0.140	0.158	.....	0.133	0.171	0.146

TABLE 35.—DISTRIBUTION OF LEAN FLESH IN THE ANIMAL.

Steer.....	513	502	509	501	512	500
Age.....	3 yr. 8 mo. 15 da.	3 yr. 8 mo. 19 da.	3 yr. 8 mo. 22 da.	3 yr. 11 mo.	3 yr. 11 mo. 21 da.	3 yr. 11 mo. 26 da.
Group.....	1	2	3	1	2	3
Weight of lean in animal.....	132,060	102,639	92,018	130,041	101,203	91,990
Percent of total lean in head.....	1.397	1.649	1.389	1.540	1.613	1.593
Percent of total lean in shin.....	3.513	3.623	4.096	3.591	3.881	4.565
Percent of total lean in neck.....	0.747	0.920	1.005	0.641	0.790	0.950
Percent of total lean in chuck.....	27.632	29.227	28.411	27.313	29.911	28.457
Percent of total lean in plate.....	13.834	9.797	10.323	13.913	11.443	11.578
Percent of total lean in rib.....	9.368	8.893	8.890	8.011	8.354	7.393
Percent of total lean in loin.....	16.852	17.101	16.755	17.685	15.840	16.139
Percent of total lean in flank.....	3.208	2.271	2.301	3.494	1.825	3.049
Percent of total lean in rump.....	2.733	2.921	2.859	2.934	3.018	2.686
Percent of total lean in round.....	19.227	21.642	21.939	19.275	21.446	21.686
Percent of total lean in shank.....	1.373	1.768	1.856	1.413	1.697	1.683
Percent of total lean in tail.....	0.115	0.187	0.176	0.191	0.181	0.221

TABLE 36.—DISTRIBUTION OF FAT FLESH IN THE ANIMAL.

Steer.....	556	554	555	557	552	548
Age.....	3 mo.	3 mo.	3 mo.	5 mo. 17 da.	5 mo. 7 da.	5 mo. 9 da.
Group.....	1	2	3	1	2	3
Weight of fat in animal.....	2,045	1,343	883	11,780	2,758	1,339
Percent of total fat in head.....	3.227	5.287	8.643	3.090	5.584	4.406
Percent of total fat in shin.....	3.961	6.031	8.523	1.647	2.538	3.809
Percent of total fat in neck.....	3.472	3.797	.....	1.265	1.958	4.108
Percent of total fat in chuck.....	15.795	13.999	13.926	14.584	14.822	14.414
Percent of total fat in plate.....	7.628	9.308	5.042	15.017	10.442	9.783
Percent of total fat in rib.....	1.907	.....	.....	6.859	2.067	1.494
Percent of total fat in kidney fat.....	10.269	8.935	7.803	13.701	9.065	10.605
Percent of total fat in loin.....	20.049	15.934	16.447	18.981	18.891	14.339
Percent of total fat in flank.....	11.540	9.978	9.364	8.922	11.965	12.696
Percent of total fat in rump.....	3.619	5.436	4.442	4.049	4.061	2.689
Percent of total fat in round.....	16.773	19.360	22.569	10.747	16.461	19.417
Percent of total fat in shank.....	1.760	1.936	3.241	0.993	2.139	2.240
Percent of total fat in tail.....	.....	.....	.....	0.144	.....	.....

TABLE 37.—DISTRIBUTION OF FAT FLESH IN THE ANIMAL.

Steer.....	547	550	558	541	538	540
Age.....	8 mo. 5 da.	8 mo. 14 da.	8 mo. 12 da.	10 mo. 22 da.	10 mo. 26 da.	11 mo. 2 da.
Group.....	1	2	3	1	2	3
Weight of fat in animal.....	9,123	4,188	1,601	18,722	5,672	4,262
Percent of total fat in head.....	4.428	4.585	9.744	1.229	2.468	4.036
Percent of total fat in shin.....	1.852	1.552	3.186	1.699	1.693	1.619
Percent of total fat in neck.....	1.261	0.955	1.249	0.977	2.891	0.469
Percent of total fat in chuck.....	14.250	17.383	16.802	11.804	18.212	17.500
Percent of total fat in plate.....	13.592	10.697	8.495	13.155	14.616	15.157
Percent of total fat in rib.....	6.040	2.865	1.749	6.500	3.755	3.801
Percent of total fat in kidney fat.....	8.933	9.026	7.058	16.174	5.483	8.001
Percent of total fat in loin.....	21.769	25.478	18.738	21.600	20.804	27.076
Percent of total fat in flank.....	10.161	10.020	6.996	10.880	9.362	7.297
Percent of total fat in rump.....	4.253	4.776	3.248	4.535	4.725	5.115
Percent of total fat in round.....	11.783	11.270	20.112	10.293	15.004	9.503
Percent of total fat in shank.....	1.622	1.337	2.623	1.010	0.846	0.375
Percent of total fat in tail.....	0.055	0.048	.....	0.144	0.141	0.047

TABLE 38.—DISTRIBUTION OF FAT FLESH IN THE ANIMAL.

Steer.....	505	503	532	531	504	523	525
Age.....	10 mo. 18 da.	11 mo. 11 da.	1 yr. 5 mo. 20 da.	1 yr. 6 mo. 12 da.	1 yr. 8 mo. 26 da.	2 yr. 2 mo. 6 da.	2 yr. 2 mo. 8 da.
Group.....	1	2	1	3	1	2	3
Weight of fat in animal.....	18,742	10 475	36,977	4,952	44,980	15,214	8,234
Percent of total fat in head.....	2.172	4.229	1.901	2.827	0.720	1.006	3.085
Percent of total fat in shin.....	1.094	1.403	1.266	2.262	1.670	1.729	2.417
Percent of total fat in neck.....	0.720	1.728	0.749	2.383	0.518	0.381	1.421
Percent of total fat in chuck.....	13.440	11.437	13.484	17.750	12.750	16.012	14.149
Percent of total fat in plate.....	13.798	14.081	15.299	12.298	15.480	13.330	14.258
Percent of total fat in rib.....	7.043	4.010	8.375	3.413	7.526	5.002	4.032
Percent of total fat in kidney fat.....	15.351	10.148	15.867	7.330	12.672	10.221	7.639
Percent of total fat in loin.....	20.163	27.427	20.221	22.359	20.387	20.954	22.820
Percent of total fat in flank.....	9.273	7.561	10.033	7.512	9.931	9.734	10.347
Percent of total fat in rump.....	4.877	5.642	3.946	5.089	5.645	5.981	5.927
Percent of total fat in round.....	11.050	10.587	8.200	15.044	10.914	14.973	11.914
Percent of total fat in shank.....	0.864	1.632	0.592	1.111	1.716	0.552	1.846
Percent of total fat in tail.....	0.155	0.115	0.068	0.121	0.071	0.125	0.146

TABLE 39.—DISTRIBUTION OF FAT FLESH IN THE ANIMAL.

Steer.....	515	507	529	527	526	524
Age.....	2 yr. 9 mo. 19 da.	2 yr. 9 mo. 16 da.	3 yr. 2 mo. 21 da.	3 yr. 3 mo. 15 da.	3 yr. 4 mo.	3 yr. 4 mo. 13 da.
Group.....	1	2	1	1	2	3
Weight of fat in animal.....	89,188	22,267	.....	125,332	24,937	6,834
Percent of total fat in head.....	1.393	3.036	.....	0.497	1.648	5.414
Percent of total fat in shin.....	1.724	1.159	.....	1.022	0.995	2.766
Percent of total fat in neck.....	0.748	0.804	.....	0.481	1.335	0.556
Percent of total fat in chuck.....	12.576	12.471	.....	14.943	15.062	13.330
Percent of total fat in plate.....	20.570	15.224	.....	20.466	16.482	14.969
Percent of total fat in rib.....	9.129	5.461	.....	9.685	7.459	2.473
Percent of total fat in kidney fat.....	5.562	9.826	.....	7.566	6.464	5.604
Percent of total fat in loin.....	21.485	22.877	.....	21.034	23.327	17.881
Percent of total fat in flank.....	9.814	9.665	.....	9.024	10.711	11.121
Percent of total fat in rump.....	5.003	6.099	.....	6.032	5.987	5.838
Percent of total fat in round.....	10.684	12.076	.....	8.564	10.057	18.481
Percent of total fat in shank.....	1.239	1.298	.....	0.668	0.393	1.390
Percent of total fat in tail.....	0.074	0.054	.....	0.019	0.080	0.176

TABLE 40.—DISTRIBUTION OF FAT FLESH IN THE ANIMAL.

Steer.....	513	502	509	501	512	500
Age.....	3 yr. 8 mo. 15 da.	3 yr. 8 mo. 19 da.	3 yr. 8 mo. 22 da.	3 yr. 11 mo.	3 yr. 11 mo. 21 da.	3 yr. 11 mo. 26 da.
Group.....	1	2	3	1	2	3
Weight of fat in animal.....	116,017	21,789	17,048	144,196	37,709	16,940
Percent of total fat in head.....	0.558	1.005	0.774	0.210	0.936	1.122
Percent of total fat in shin.....	0.896	1.629	1.396	0.848	1.223	1.865
Percent of total fat in neck.....	0.531	0.863	1.003	0.387	0.464	1.169
Percent of total fat in chuck.....	14.977	19.469	16.712	12.890	14.612	13.040
Percent of total fat in plate.....	20.796	15.659	18.987	21.006	19.820	18.017
Percent of total fat in rib.....	10.174	7.660	5.801	9.821	7.157	5.325
Percent of total fat in kidney fat.....	6.245	6.691	4.622	6.777	6.285	7.173
Percent of total fat in loin.....	21.518	20.983	22.202	24.743	20.298	20.159
Percent of total fat in flank.....	9.700	9.170	8.112	9.810	9.470	10.018
Percent of total fat in rump.....	5.113	4.828	6.183	5.060	5.802	6.246
Percent of total fat in round.....	8.235	10.602	14.975	7.727	13.180	14.569
Percent of total fat in shank.....	1.214	1.345	1.032	0.680	0.655	1.092
Percent of total fat in tail.....	0.044	0.096	0.199	0.041	0.098	0.201

TABLE 41.—DISTRIBUTION OF SKELETON IN THE ANIMAL.

Steer.....	556	554	555	557	552	548
Age.....	3 mo.	3 mo.	3 mo.	5 mo. 17 da.	5 mo. 7 da.	5 mo. 9 da.
Group.....	1	2	3	1	2	3
Wt. of skeleton in animal.....	10,277	9,404	8,304	14,705	10,652	9,877
Percent of total skeleton in head.....	12.576	11.857	11.911	13.499	14.327	15.136
Percent of total skeleton in shin.....	8.201	7.784	8.755	7.637	7.276	8.019
Percent of total skeleton in neck.....	0.964	1.414	2.589	1.401	1.070	1.934
Percent of total skeleton in chuck.....	17.029	18.429	17.438	17.769	17.275	16.442
Percent of total skeleton in plate.....	7.450	6.678	7.286	8.439	7.041	7.502
Percent of total skeleton in rib.....	7.931	7.199	7.563	8.745	9.783	8.170
Percent of total skeleton in loin.....	10.029	9.932	7.611	8.426	10.290	8.363
Percent of total skeleton in flank.....	0.154	0.117	0.157	0.054	0.075	0.162
Percent of total skeleton in rump.....	2.930	3.892	3.047	3.264	3.004	2.885
Percent of total skeleton in round.....	9.512	9.050	9.948	9.133	7.633	9.608
Percent of total skeleton in shank.....	9.406	10.198	10.261	8.875	8.177	8.667
Percent of total skeleton in tail.....	0.443	0.670	0.446	0.660	0.620	0.476
Percent of total skeleton in feet.....	12.475	12.777	12.988	12.098	13.430	12.635

TABLE 42.—DISTRIBUTION OF SKELETON IN THE ANIMAL.

Steer.....	547	550	558	541	538	540
Age.....	8 mo. 5 da.	8 mo. 14 da.	8 mo. 12 da.	10 mo. 22 da.	10 mo. 26 da.	11 mo. 2 da.
Group.....	1	2	3	1	2	3
Weight of skeleton in animal.....	13,798	11,670	10,680	19,173	13,906	12,482
Percent of total skeleton in head.....	11.893	13.539	14.869	14.082	14.389	14.749
Percent of total skeleton in shin.....	6.726	7.506	8.090	7.683	7.939	7.819
Percent of total skeleton in neck.....	0.790	1.260	0.964	1.763	1.438	1.706
Percent of total skeleton in chuck.....	17.763	19.974	18.024	17.264	18.021	17.906
Percent of total skeleton in plate.....	7.023	6.520	5.075	7.380	7.637	7.395
Percent of total skeleton in rib.....	7.871	7.455	7.097	8.246	7.745	7.307
Percent of total skeleton in loin.....	11.349	10.557	10.009	10.212	9.694	10.215
Percent of total skeleton in flank.....	0.072	0.069	0.037	0.089	0.072	0.064
Percent of total skeleton in rump.....	2.754	2.999	3.174	2.754	2.632	2.492
Percent of total skeleton in round.....	9.016	8.997	9.803	8.475	9.190	9.414
Percent of total skeleton in shank.....	9.182	8.663	9.860	9.704	9.377	9.229
Percent of total skeleton in tail.....	0.522	0.403	0.375	0.537	0.489	0.553
Percent of total skeleton in feet.....	15.038	12.048	12.622	11.751	11.384	11.152

TABLE 43.—DISTRIBUTION OF SKELETON IN THE ANIMAL.

Steer.....	505	503	532	531	504	523	525
Age.....	10 mo. 18 da.	11 mo. 11 da.	1 yr. 5 mo. 20 da.	1 yr. 6 mo. 12 da.	1 yr. 8 mo. 26 da.	2 yr. 2 mo. 6 da.	2 yr. 2 mo. 8 da.
Group.....	1	2	1	3	1	2	3
Weight of skeleton in animal.....	18,873	20,561	31,116	16,539	23,747	25,608	21,552
Percent of total skeleton in head.....	12.876	14.377	11.014	14.198	13.988	14.128	13.943
Percent of total skeleton in shin.....	7.337	7.626	8.687	8.427	7.523	7.791	7.800
Percent of total skeleton in neck.....	1.399	2.091	1.189	1.555	1.579	1.476	1.847
Percent of total skeleton in chuck.....	18.529	16.458	19.723	16.891	17.859	17.631	17.757
Percent of total skeleton in plate.....	7.831	8.151	8.642	7.550	7.823	7.474	7.865
Percent of total skeleton in rib.....	8.457	8.224	8.391	6.897	8.857	7.505	9.020
Percent of total skeleton in loin.....	10.263	9.323	10.037	8.572	10.175	10.391	9.113
Percent of total skeleton in flank.....	0.106	0.204	0.161	0.151	0.129	0.105	0.148
Percent of total skeleton in rump.....	2.930	2.553	3.667	3.206	4.223	3.456	3.577
Percent of total skeleton in round.....	8.997	9.377	9.037	11.010	8.363	9.040	9.387
Percent of total skeleton in shank.....	8.970	9.114	8.597	9.716	8.589	9.513	8.473
Percent of total skeleton in tail.....	0.636	0.482	0.427	0.448	0.550	0.617	0.520
Percent of total skeleton in feet.....	11.169	12.037	10.429	11.379	10.338	10.872	10.551

TABLE 44.—DISTRIBUTION OF SKELETON IN THE ANIMAL.

Steer.....	515	507	529	527	526	524
Age.....	2 yr. 9 mo. 19 da.	2 yr. 9 mo. 16 da.	3 yr. 2 mo. 21 da.	3 yr. 3 mo. 15 da.	3 yr. 4 mo.	3 yr. 4 mo 13 da.
Group.....	1	2	1	1	2	3
Weight of skeleton in animal.....	38,821	32,531	.....	36,872	34,535	31,805
Percent of total skeleton in head.....	12,725	13,249	.....	11,491	12,790	12,621
Percent of total skeleton in shin.....	7,751	7,716	.....	8,597	8,166	7,782
Percent of total skeleton in neck.....	1,309	1,282	.....	1,378	1,231	1,654
Percent of total skeleton in chuck.....	17,403	19,010	.....	18,787	18,810	18,620
Percent of total skeleton in plate.....	8,047	9,425	.....	8,188	9,315	9,102
Percent of total skeleton in rib.....	8,325	7,762	.....	8,877	8,238	8,348
Percent of total skeleton in loin.....	10,026	10,000	.....	9,682	9,909	10,354
Percent of total skeleton in flank.....	0.155	0.224	.....	0.060	0.223	0.214
Percent of total skeleton in rump.....	5.247	3.898	.....	4.421	4.109	3.811
Percent of total skeleton in round.....	8.171	9.013	.....	8.741	9.196	9.241
Percent of total skeleton in shank.....	10.152	8.192	.....	9.216	8.646	8.351
Percent of total skeleton in tail.....	0.456	0.544	.....	0.502	0.481	0.456
Percent of total skeleton in feet.....	10.234	9.686	.....	10.092	8.887	9.448

TABLE 45.—DISTRIBUTION OF SKELETON IN THE ANIMAL.

Steer.....	513	502	509	501	512	500
Age.....	3 yr. 8 mo. 15 da.	3 yr. 8 mo. 19 da.	3 yr. 8 mo. 22 da.	3 yr. 11 mo.	3 yr. 11 mo. 21 da.	3 yr. 11 mo. 26 da.
Group.....	1	2	3	1	2	3
Weight of skeleton in animal.....	38,521	36,226	32,433	40,301	40,214	35,704
Percent of total skeleton in head.....	10,799	13,220	12,715	12,980	12,018	12,539
Percent of total skeleton in shin.....	7,944	8,199	7,779	7,655	7,552	7,856
Percent of total skeleton in neck.....	0,927	1,275	1,656	1,109	1,542	1,650
Percent of total skeleton in chuck.....	19,226	19,555	19,437	18,466	19,018	18,586
Percent of total skeleton in plate.....	9,405	7,489	7,745	8,652	9,517	8,666
Percent of total skeleton in rib.....	9,211	8,171	7,687	7,925	8,626	7,271
Percent of total skeleton in loin.....	11,080	10,857	10,594	10,687	10,877	10,834
Percent of total skeleton in flank.....	0.249	0.226	0.154	0.117	0.167	0.227
Percent of total skeleton in rump.....	4,496	3,260	4,409	4,568	4,058	4,134
Percent of total skeleton in round.....	9,143	9,253	9,281	9,012	9,730	9,988
Percent of total skeleton in shank.....	7,863	8,251	8,478	8,843	7,654	8,052
Percent of total skeleton in tail.....	0.887	0.610	0.595	0.877	0.517	0.541
Percent of total skeleton in feet.....	9.862	9.637	9.472	9.608	8.723	9.576



TABLE 46.—PROPORTION OF LEAN, FAT, AND BONE IN CUTS OF THE CARCASS.

Steer.....	556	554	555	557	552	548
Age.....	3 mo.	3 mo.	3 mo.	5 mo. 17 da.	5 mo. 7 da.	5 mo. 9 da.
Group.....	1	2	3	1	2	3
Percent of lean in shin.....	47.592	43.937	50.641	47.018	50.824	46.168
Percent of fat in shin.....	4.589	5.518	4.337	7.870	4.118	3.204
Percent of bone in shin.....	48.215	49.864	44.411	45.558	45.588	49.749
Percent of lean in neck.....	66.538	55.797	57.171	55.007	62.150	54.459
Percent of fat in neck.....	13.733	12.319	.....	19.376	12.617	10.436
Percent of bone in neck.....	19.342	32.126	42.829	26.788	26.636	36.243
Percent of lean in chuck.....	71.908	71.100	73.307	67.107	71.494	73.303
Percent of fat in chuck.....	4.250	2.788	1.979	13.127	5.210	2.811
Percent of bone in chuck.....	23.250	25.697	24.697	19.965	23.437	23.653
Percent of lean in plate.....	68.766	65.702	69.340	55.053	64.184	65.545
Percent of fat in plate.....	5.118	5.568	1.993	26.250	9.796	5.188
Percent of bone in plate.....	25.361	27.973	28.714	18.415	25.510	29.347
Percent of lean in rib.....	64.829	67.957	65.587	60.387	63.942	65.091
Percent of fat in rib.....	1.569	.....	.....	15.315	1.827	0.829
Percent of bone in rib.....	33.119	31.576	32.794	24.375	33.397	33.458
Percent of lean in loin.....	68.980	71.086	74.436	62.528	68.331	73.344
Percent of fat in loin.....	8.153	5.235	4.417	23.871	10.122	4.969
Percent of bone in loin.....	22.549	22.847	20.374	13.227	21.294	21.377
Percent of lean in flank.....	69.009	72.045	82.514	51.498	63.850	70.635
Percent of fat in flank.....	27.189	25.141	14.208	48.456	35.294	26.984
Percent of bone in flank.....	1.843	2.064	2.368	0.369	0.856	2.540
Percent of lean in rump.....	59.179	50.842	57.041	45.756	55.826	59.803
Percent of fat in rump.....	7.997	8.193	5.263	26.813	11.348	4.439
Percent of bone in rump.....	32.829	41.077	35.989	26.981	32.421	35.142
Percent of lean in round.....	77.563	78.179	77.457	74.133	78.892	79.229
Percent of fat in round.....	5.617	5.134	4.087	12.547	7.287	4.474
Percent of bone in round.....	16.164	16.805	17.957	13.310	13.050	16.331
Percent of lean in shank.....	30.244	28.674	31.856	30.426	34.640	31.801
Percent of fat in shank.....	2.436	1.804	2.063	5.669	4.129	2.209
Percent of bone in shank.....	66.035	68.746	65.088	63.227	60.952	65.594

TABLE 47.—PROPORTION OF LEAN, FAT, AND BONE IN CUTS OF THE CARCASS.

Steer.....	547	550	558	541	538	540
Age.....	8 mo. 5 da.	8 mo. 14 da.	8 mo. 12 da.	10 mo. 22 da.	10 mo. 26 da.	11 mo. 2 da.
Group.....	1	2	3	1	2	3
Percent of lean in shin.....	55.408	50.794	45.630	51.913	49.875	52.379
Percent of fat in shin.....	6.795	3.332	2.991	8.567	4.000	3.097
Percent of bone in shin.....	37.314	44.900	50.674	39.682	46.000	43.806
Percent of lean in neck.....	57.714	57.428	60.933	65.067	58.762	65.602
Percent of fat in neck.....	21.905	8.869	5.831	12.200	19.159	2.903
Percent of bone in neck.....	20.762	32.594	30.029	22.533	23.364	30.914
Percent of lean in chuck.....	72.651	69.062	70.703	74.054	72.430	72.201
Percent of fat in chuck.....	9.351	7.308	3.560	9.701	7.924	6.931
Percent of bone in chuck.....	17.631	23.399	25.473	14.529	19.224	20.766
Percent of lean in plate.....	61.578	64.726	67.445	61.830	62.441	63.969
Percent of fat in plate.....	21.365	11.963	6.618	24.230	16.191	14.769
Percent of bone in plate.....	16.695	20.347	26.375	13.920	20.742	21.102
Percent of lean in rib.....	66.504	67.553	66.933	67.138	66.855	69.075
Percent of fat in rib.....	11.172	3.890	1.176	14.102	5.481	4.740
Percent of bone in rib.....	22.019	28.201	31.849	18.320	27.715	26.632
Percent of lean in loin.....	65.439	66.316	68.387	65.654	71.073	68.563
Percent of fat in loin.....	19.146	15.599	6.852	22.677	13.174	14.789
Percent of bone in loin.....	15.097	18.012	24.524	10.980	15.050	16.340
Percent of lean in flank.....	59.215	59.582	80.348	44.832	67.015	67.523
Percent of fat in flank.....	40.009	38.147	19.478	54.685	37.029	31.963
Percent of bone in flank.....	0.432	0.727	0.696	0.456	0.697	0.822
Percent of lean in rump.....	48.334	53.475	53.464	49.837	54.318	58.769
Percent of fat in rump.....	25.343	16.949	6.005	30.705	18.663	16.769
Percent of bone in rump.....	24.820	29.661	39.145	19.096	25.487	23.923
Percent of lean in round.....	78.613	79.286	77.647	79.109	79.289	81.011
Percent of fat in round.....	9.889	6.386	5.174	11.292	8.267	4.877
Percent of bone in round.....	11.443	14.206	16.825	9.522	12.415	14.148
Percent of lean in shank.....	37.462	28.961	28.107	32.249	35.802	34.751
Percent of fat in shank.....	6.477	3.728	2.733	6.213	2.279	0.884
Percent of bone in shank.....	55.449	67.310	68.510	61.538	61.918	63.646

TABLE 48.—PROPORTION OF LEAN, FAT, AND BONE IN CUTS OF THE CARCASS.

Steer.....	505	503	532	531	504	523	525
Age.....	10 mo. 18 da.	11 mo. 11 da.	1 yr. 5 mo. 20 da.	1 yr. 6 mo. 12 da.	1 yr. 8 mo. 26 da.	2 yr. 2 mo. 6 da.	2 yr. 2 mo. 8 da.
Group.....	1	2	1	3	1	2	3
Percent of lean in shin.....	54.469	48.168	52.566	51.561	51.870	54.058	55.938
Percent of fat in shin.....	5.536	4.414	6.942	3.605	12.265	5.323	4.598
Percent of bone in shin.....	39.941	47.087	40.092	44.834	35.342	40.376	38.840
Percent of lean in neck.....	61.398	47.282	56.843	71.981	54.948	67.693	66.044
Percent of fat in neck.....	12.931	15.617	18.767	9.133	15.169	4.170	7.539
Percent of bone in neck.....	25.287	37.101	25.068	19.892	29.557	27.175	25.644
Percent of lean in chuck.....	72.310	74.598	70.518	75.805	66.653	75.017	75.577
Percent of fat in chuck.....	11.472	6.365	13.022	5.744	16.554	8.430	5.648
Percent of bone in chuck.....	15.927	17.980	16.029	18.245	14.819	15.624	18.554
Percent of lean in plate.....	58.946	58.021	54.207	65.884	50.870	64.227	66.047
Percent of fat in plate.....	26.008	19.459	30.613	11.107	36.832	16.907	13.721
Percent of bone in plate.....	14.865	22.111	14.552	22.761	11.896	15.957	19.811
Percent of lean in rib.....	65.644	67.411	59.919	69.075	60.532	68.731	71.711
Percent of fat in rib.....	15.336	6.340	21.384	3.770	22.144	8.694	4.082
Percent of bone in rib.....	18.543	25.525	18.028	25.429	16.656	21.958	23.900
Percent of lean in loin.....	63.007	63.844	66.024	73.011	57.821	68.547	70.652
Percent of fat in loin.....	24.190	21.321	27.322	11.742	31.489	16.918	14.191
Percent of bone in loin.....	12.399	14.266	11.412	14.698	10.044	14.121	14.833
Percent of lean in flank.....	52.169	63.519	43.843	68.715	45.628	60.053	65.589
Percent of fat in flank.....	47.422	33.991	55.439	29.689	53.949	39.025	32.794
Percent of bone in flank.....	0.546	1.803	0.747	1.995	0.447	0.711	1.232
Percent of lean in rump.....	46.662	47.158	49.518	56.141	43.493	49.600	55.250
Percent of fat in rump.....	32.807	27.540	28.112	14.133	38.290	25.090	16.968
Percent of bone in rump.....	19.849	24.464	21.985	29.725	18.308	24.400	26.808
Percent of lean in round.....	75.371	78.760	76.110	80.515	71.625	78.425	81.708
Percent of fat in round.....	13.466	7.596	12.125	5.581	18.884	10.540	5.824
Percent of bone in round.....	11.040	13.205	11.245	13.634	9.248	10.711	12.011
Percent of lean in shank.....	35.321	32.567	37.868	36.559	31.991	34.177	33.929
Percent of fat in shank.....	5.615	5.619	4.677	2.071	16.027	2.168	5.026
Percent of bone in shank.....	58.683	61.584	57.134	60.467	51.256	62.881	60.384

TABLE 49.—PROPORTION OF LEAN, FAT, AND BONE IN CUTS OF THE CARCASS.

Steer.....	515	507	529	527	526	524
Age.....	2 yr. 9 mo. 19 da.	2 yr. 9 mo. 16 da.	3 yr. 2 mo. 21 da.	3 yr. 3 mo. 15 da.	3 yr. 4 mo.	3 yr. 4 mo 13 da.
Group.....	1	2	1	1	2	3
Percent of lean in shin.....	45.663	55.742	.....	49.535	54.559	49.334
Percent of fat in shin.....	18.375	4.087	.....	14.517	3.653	3.544
Percent of bone in shin.....	35.950	39.759	.....	35.925	41.538	46.409
Percent of lean in neck.....	48.514	61.949	.....	39.792	57.781	61.236
Percent of fat in neck.....	29.152	11.111	.....	32.915	18.377	2.580
Percent of bone in neck.....	22.203	25.885	.....	27.729	23.455	35.709
Percent of lean in chuck.....	63.029	74.907	.....	58.273	70.957	75.584
Percent of fat in chuck.....	22.750	7.617	.....	30.206	10.461	3.510
Percent of bone in chuck.....	13.704	16.961	.....	11.172	18.092	20.973
Percent of lean in plate.....	37.818	60.616	.....	37.983	59.327	62.445
Percent of fat in plate.....	52.605	20.418	.....	55.024	22.703	9.756
Percent of bone in plate.....	8.958	18.467	.....	6.476	17.771	27.698
Percent of lean in rib.....	45.259	67.847	49.110	45.527	64.558	69.477
Percent of fat in rib.....	38.757	10.451	36.531	42.742	13.911	1.834
Percent of bone in rib.....	15.385	21.702	14.064	11.524	21.277	28.809
Percent of lean in loin.....	47.464	63.583	.....	45.427	62.855	72.646
Percent of fat in loin.....	43.705	21.793	.....	47.768	23.259	7.337
Percent of bone in loin.....	8.877	13.917	.....	6.469	13.683	19.771
Percent of lean in flank.....	27.089	52.353	.....	29.832	45.429	64.936
Percent of fat in flank.....	72.267	45.816	.....	69.957	54.146	31.575
Percent of bone in flank.....	0.495	1.554	.....	0.136	1.561	2.825
Percent of lean in rump.....	34.413	49.047	.....	32.432	48.762	50.000
Percent of fat in rump.....	44.598	26.206	.....	55.098	25.974	12.345
Percent of bone in rump.....	20.360	24.669	.....	11.880	24.687	37.500
Percent of lean in round.....	62.832	77.752	.....	64.656	79.379	81.941
Percent of fat in round.....	27.885	10.639	.....	27.004	8.925	5.488
Percent of bone in round.....	9.282	11.601	.....	8.109	11.302	12.771
Percent of lean in shank.....	27.059	38.314	.....	34.038	36.423	33.841
Percent of fat in shank.....	15.964	5.940	.....	13.009	2.014	2.261
Percent of bone in shank.....	56.934	54.779	.....	52.813	61.377	63.208

TABLE 50.—PROPORTION OF LEAN, FAT, AND BONE IN CUTS OF THE CARCASS.

Steer.....	513	502	509	501	512	500
Age.....	3 yr. 8 mo. 15 da.	3 yr. 8 mo. 19 da.	3 yr. 8 mo. 22 da.	3 yr. 11 mo.	3 yr. 11 mo. 21 da.	3 yr. 11 mo. 26 da.
Group.....	1	2	3	1	2	3
Percent of lean in shin.....	53.029	52.887	57.780	51.785	52.817	57.090
Percent of fat in shin.....	11.900	5.048	3.649	13.562	6.199	4.297
Percent of bone in shin.....	34.979	42.235	38.679	34.154	40.836	38.138
Percent of lean in neck.....	50.772	59.557	56.575	45.247	50.000	52.651
Percent of fat in neck.....	31.687	11.861	10.459	30.810	10.998	11.928
Percent of bone in neck.....	18.364	29.148	32.844	24.280	38.750	35.482
Percent of lean in chuck.....	59.413	72.279	73.539	57.534	69.481	74.371
Percent of fat in chuck.....	28.291	10.221	8.014	30.106	12.647	6.276
Percent of bone in chuck.....	12.058	17.069	17.735	12.055	17.555	18.853
Percent of lean in plate.....	39.560	61.906	63.653	34.810	50.339	63.406
Percent of fat in plate.....	52.244	21.005	19.406	58.276	32.487	18.169
Percent of bone in plate.....	7.845	16.702	16.833	6.709	16.635	18.419
Percent of lean in rib.....	44.456	66.044	69.765	37.494	58.195	65.894
Percent of fat in rib.....	42.415	12.076	8.435	50.970	18.579	8.739
Percent of bone in rib.....	12.749	21.417	21.262	11.496	23.880	25.153
Percent of lean in loin.....	42.388	67.110	67.724	36.472	57.149	66.998
Percent of fat in loin.....	47.548	17.481	16.626	56.583	27.286	15.411
Percent of bone in loin.....	8.129	15.038	15.093	6.830	15.593	17.537
Percent of lean in flank.....	27.230	53.098	59.500	24.211	33.570	61.164
Percent of fat in flank.....	72.326	45.513	38.870	75.373	64.904	37.004
Percent of bone in flank.....	0.617	1.868	1.405	0.250	1.218	1.766
Percent of lean in rump.....	31.972	57.181	51.167	29.313	44.454	49.018
Percent of fat in rump.....	52.551	20.065	20.498	56.053	31.849	20.988
Percent of bone in rump.....	15.344	22.525	27.810	14.142	23.755	29.037
Percent of lean in round.....	65.686	79.267	78.060	62.710	70.640	76.512
Percent of fat in round.....	24.716	8.243	9.872	27.876	16.176	9.466
Percent of bone in round.....	9.111	11.962	11.639	9.087	12.736	13.650
Percent of lean in shank.....	29.031	35.749	36.818	28.789	33.859	33.240
Percent of fat in shank.....	22.546	5.771	3.794	15.358	4.871	3.973
Percent of bone in shank.....	48.503	58.873	59.258	55.853	60.698	61.735