Intended for secondary vocational agriculture teachers, this curriculum guide contains a course outline and a resource manual for a seven-unit food processing course on meats. Within the course outline, units are divided into separate lessons. Materials provided for each lesson include preparation for instruction (student objectives, review of teaching materials, materials required), presentation of lesson (content outline, suggested student activities), and lesson examination. The resource guide contains annotations of resources suitable for use with each of the seven units in the meats course. For each unit, the resources are divided into these five categories: texts, pamphlets, slides, filmstrips, and charts. Each annotation contains these types of information: title, summary of contents (including number of pages), and source (publisher or developer, address, and telephone number). The seven units cover meat identification, buying meat, nutrition, meat cookery, meat processing, meat grading and evaluation, and animal slaughter. (YLB)
STATE OF LOUISIANA
DEPARTMENT OF EDUCATION

FOOD PROCESSING CURRICULUM MATERIAL
AND RESOURCE GUIDE

Issued by
Office of Vocational Education
Elaine Webb, Ed.D.
Assistant Superintendent
Thomas G. Clausen, Ph.D.
State Superintendent

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)"
FOREWORD

This curriculum guide is a result of extensive work on the part of numerous agricultural educators. The materials included here were developed for the express purpose of aiding secondary vocational agriculture teachers. The hope is that by having practical and usable teaching materials in their hands, teachers will be able to make improvements in their instructional program as well as have increased time available to spend on other phases of the total vocational education program.

Thomas G. Clausen, Ph.D.
State Superintendent
Department of Education
ACKNOWLEDGEMENTS

This publication represents the cooperative efforts of personnel in the Agricultural Education-Business Department at Louisiana Tech University. Special recognition goes to Dr. Larry D. Allen and Dr. A. Byron Johnson, who served as project directors in the development of this guide. Special commendation also goes to members of the writing team, who worked diligently to make this publication a reality.

Other highly significant contributions include Dr. Glenn Clark, Professor of Animal Science, who served as consultant for content and fact in the document; Mrs. Irene Walker for the proofing and typing of the document; Mrs. Melinda Mitchell, Mrs. Tammye Turpin, and Mrs. Polly Briggs for the illustrations included in the guide for the preparation of transparencies. Recognition is also due to Robert Simmons, State Supervisor of Vocational Agriculture; Russell Sullivan and Gus Miller, Vocational Agriculture Supervisors; and Joyce McIntire, Supervisor, Vocational Agriculture, Agribusiness and Food Preservation, who supported the project both directly and indirectly by willingly participating in work sessions whenever called upon to do so.

Elaine Webb, Ed.D.
Assistant Superintendent
Department of Education
MEMBERS OF THE FOOD PROCESSING CURRICULUM MATERIAL
AND RESOURCE GUIDE WRITING TEAM

Steven L. Bartlett
Vocational Agriculture Teacher
Calvin High School
General Delivery
Calvin, LA 71410

Leroy Harry
Vocational Agriculture Teacher
Benton High School
Box 719
Benton, LA 71006

John W. Allbritton
Vocational Agriculture Teacher
Jena High School
Box 89
Jena, LA 71342

R. Bruce Frazier
Vocational Agriculture Teacher
Caldwell Parish High School
102 School Loop
Columbia, LA 71418

Stanley E. Dupree
Vocational Agriculture Teacher
Caldwell Parish High School
102 School Loop
Columbia, LA 71418

A. Lee Barron
Vocational Agriculture Teacher
Spearsville High School
Box 18
Spearsville, LA 71277

Leonard R. Rhymes
Vocational Agriculture Teacher
Epps High School
Box 277
Epps, LA 71237
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreword</td>
<td>i</td>
</tr>
<tr>
<td>Acknowledgements</td>
<td>ii</td>
</tr>
<tr>
<td>Members of the Writing Team</td>
<td>iii</td>
</tr>
<tr>
<td><strong>UNIT I - MEAT IDENTIFICATION</strong></td>
<td></td>
</tr>
<tr>
<td>Lesson I: Identification of Meat by Coloration, Size, and Fatty Tissue</td>
<td>1</td>
</tr>
<tr>
<td>Lesson II: Identification of Retail Cuts by Bone Structure</td>
<td>4</td>
</tr>
<tr>
<td><strong>UNIT II - BUYING MEAT</strong></td>
<td></td>
</tr>
<tr>
<td>Lesson I: Selecting Cuts and Determining Amounts to Buy</td>
<td>17</td>
</tr>
<tr>
<td>Lesson II: Proper Storage of Processed Meat</td>
<td>23</td>
</tr>
<tr>
<td>Lesson III: Cost of Meat</td>
<td>27</td>
</tr>
<tr>
<td><strong>UNIT III - NUTRITION</strong></td>
<td></td>
</tr>
<tr>
<td>Lesson I: Functions and Sources of Proteins in Meat</td>
<td>37</td>
</tr>
<tr>
<td>Lesson II: Functions and Sources of Vitamins in Meat</td>
<td>41</td>
</tr>
<tr>
<td>Lesson III: Functions and Sources of Minerals and Fats in Meat</td>
<td>49</td>
</tr>
<tr>
<td><strong>UNIT IV - MEAT COOKERY</strong></td>
<td></td>
</tr>
<tr>
<td>Lesson I: General Principles of Meat Cookery</td>
<td>60</td>
</tr>
<tr>
<td>Lesson II: Cooking Methods for the Tender Cuts of Meat</td>
<td>67</td>
</tr>
<tr>
<td>Lesson III: Cooking Methods for the Less Tender Cuts of Meat</td>
<td>72</td>
</tr>
</tbody>
</table>
UNIT V - MEAT PROCESSING

Lesson I: Cutting Wholesale and Retail Beef Cuts ........................................ 81
Lesson II: Cutting Wholesale and Retail Pork Cuts ........................................ 89
Lesson III: Cutting Chicken ............................................................................. 95
Lesson IV: Curing and Smoking of Meat .......................................................... 98

UNIT VI - MEAT GRADING AND EVALUATION

Lesson I: Beef Grading and Evaluation .............................................................. 119
Lesson II: Pork Grading and Evaluation ............................................................ 126
Lesson III: Lamb Grading and Evaluation ......................................................... 131

UNIT VII - ANIMAL SLAUGHTER

Lesson I: Slaughter Procedure for Beef Cattle ................................................ 135
Lesson II: Slaughter Procedure for Pork ........................................................... 141
Lesson III: Slaughter Procedure for Lamb ........................................................ 146

MEAT RESOURCE GUIDE

I. MEAT IDENTIFICATION

A. Texts .............................................................................................................. 150
B. Pamphlets .................................................................................................... 152
C. Slides .......................................................................................................... 158
D. Filmstrips ..................................................................................................... 163
E. Charts .......................................................................................................... 166

II. PURCHASING OF MEAT

A. Texts .............................................................................................................. 173
B. Pamphlets .................................................................................................... 176
C. Filmstrips ..................................................................................................... 185
D. Charts .......................................................................................................... 187
III. NUTRITION OF MEATS

A. Texts ................................................. 188
B. Pamphlets ........................................... 190
C. Filmstrips ........................................... 198
D. Charts ............................................... 199

IV. MEAT COOKING AND PREPARATION

A. Texts ............................................... 201
B. Pamphlets ......................................... 204
C. Filmstrips ......................................... 218
D. Charts ............................................... 219

V. MEAT CUTTING AND MERCHANDISING

A. Text .................................................. 224
B. Pamphlets ......................................... 226
C. Filmstrips ......................................... 232

VI. MEAT EVALUATION

A. Texts ................................................ 233
B. Slides .............................................. 234
C. Filmstrips ......................................... 236
LESSON 1: Identification of Meat by Coloration, Size, and Fatty Tissue

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Upon completion of this lesson, students will be able to differentiate between beef, veal, pork, and lamb by color, size, and fatty tissue.

2. **Specific:**
   a. Define the color differences in beef, veal, lamb, and pork.
   b. Explain the differences in size of beef, veal, lamb, and pork.
   c. Describe the differences in fatty tissue in beef, veal, lamb, and pork.

B. Review of Teaching Materials


II. Presentation of Lesson

A. Content Outline

1. **Color Variations in Meats**
   a. Mature beef has a color range from bright cherry red to dark red.
   b. A vealer is identified as an immature bovine animal, usually not more than three months of age. The color of veal is usually a pinkish brown.
c. Pork meat has a greater range, being a grayish pink to a gray red in color.

d. The color of lamb is considered to be a light pink.

2. Size Variations in Meats

a. Cuts from the same area in beef, veal, pork, and lamb generally have a similar name and a similar structure.

b. The size of the cut can be used to identify the source of the meat. When comparing the rib cut from beef, veal, lamb, and hogs, the beef steak will be larger in size than the veal, lamb, and pork rib chop. The veal chop will be second in size, the pork chop will be third in size, and the lamb chop smallest in size. Similar comparisons can be made of other cuts.

3. Variations in Fatty Tissue in Meats

a. Beef fat may be yellowish in color because of consumption of green grasses and legumes. Grain fed beef is white, flaky, and hard.

b. Veal has a white colored fatty covering that is soft and pliable to the touch.

c. Lamb has a white colored fatty covering that is rather brittle. Usually the covering will not exceed 1/4 inch in depth.

d. Pork fat is also white and smooth to the touch. Soft fat that is greasy is considered to be from pork of poor quality.
1. Give the meat color of the following:
   a. Beef
   b. Veal
   c. Lamb
   d. Pork

2. List in order, by size: lamb chop, pork chop, veal chop and rib steak.

3. Describe the fatty tissue, by texture and color, for the following:
   a. Beef
   b. Veal
   c. Lamb
   d. Pork
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT I: Meat Identification

LESSON 2: Identification of Retail Cuts by Bone Structure

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Identify by bone structure the seven basic retail cuts of meat.

2. **Specific:**
   a. Explain in writing the basic similarities of bone structure in beef, veal, pork, and lamb.
   b. Identify from a diagram bones associated with seven basic retail cuts.
   c. List 14 cuts of meat that derive their name from bone structure.
   d. List and describe the seven basic retail cuts.

B. Review of Teaching Materials


C. Materials Required

1. Slide projector
2. Screen
3. Overhead projector
4. Transparencies and slides

II. Presentation of Lesson
A. Content Outline

1. Bone Structure Similarity in Beef, Veal and Lamb
   a. Bone structure in the four kinds of meat is almost identical. The only basic difference in the bone structure is bone size, with beef having the largest bone and lamb having the smallest bone.
   b. Note the similarity in bone structure and placement (on TM1) of beef, veal, pork, and lamb. With very few exceptions, bones found in beef, veal, pork, and lamb carry the same name.
   c. Since bone structure and name are relatively constant in beef, veal, pork, and lamb, their names are used in the name of many meat cuts.
   d. Bones indicate the location of retail cuts and a clue to a cut's tenderness in beef, veal, pork, and lamb.

2. Seven Bone Groups Identified with Basic Retail Cuts
   a. There are seven bones associated with the basic retail cuts. The seven bones are as follows: arm bone, blade bone (shoulder blade), back bone and rib bone, back bone or T-bone, hip bone (pin bone, flat bone, and wedge bone), leg or round bone, and breast and rib bone.
   b. The bones are easily identified by their shapes and names. (See TM2 and TM3.) One can see that the arm bone and leg or round bone have a similar shape. The two bones can be easily identified, since the round bone is larger and more nearly round than the arm bone.
c. The blade bone and flat bone are easily separated since the blade bone (shoulder blade) is narrower and often shaped as a seven, while the flat bone (hip bone) is three to four times wider than the blade bone. (See TM2 and TM3.)

d. The back bone and rib bone are easily separated from the back bone (T-bone) since the protrusion from the back bone is near the middle, giving it a "T" shape. The protrusion of the back bone and rib bone is located at one end. (See TM2 and TM3.)

e. The location and bone shape can be better visualized when seen from a skeletal structure. (See TM4.)

f. From TM4 one can visualize the three shapes found in the shoulder blade and the three bone shapes found in the hip bone section. It can also be seen why the back bone is so called and where the back bone and rib bone, and breast and rib bone receive their names.

3. Cuts of Meat That Receive Their Names from the Seven Basic Bone Structures

*Slides may be used as a visual aid in identification of cuts.

a. Cuts Associated with the Arm Bone

(1) Beef and Veal—Arm steak, arm pot roast

Pork—Arm steak, arm roast, fresh picnic shoulder roast

Lamb—Arm chops

(2) All the cuts mentioned are easily identified by the known arm bone. The arm steak and arm pot roast are very similar, except for thickness, with the roast being thicker. In lamb there are no steaks; the arm bone cuts are called chops.
b. Cuts Associated with the Shoulder Blade

(1) Beef and Veal—blade steak, blade chuck roast, blade pot roast, 7-bone steak

Pork—Blade steak and Boston butt roast

Lamb—Blade chops and square shoulder roast

(2) All the cuts mentioned have the identifiable blade bone. Often these cuts will have a rib portion at their base.

c. Cuts Associated with the Back Bone and Rib Bone

(1) Beef—Rib steak and rib roast

Veal—Rib chop and rib roast

Pork—Rib chop and rib roast

Lamb—Rib chop and rib roast

(2) The rib cut in veal is called a chop rather than a steak. The common structure of the back bone and rib bone is seen in all mentioned cuts.

d. Cuts Associated with the Back Bone

(1) Beef—T-bone steak, porterhouse steak, and loin roast

Veal—Loin chops and loin roast

Pork—Loin chops and loin roast

Lamb—Loin chops and loin roast

(2) All cuts have the back bone with the protrusions near the center, giving the common "T" shape.

e. Cuts Associated with the Hip Bone

(1) Beef—Pin bone sirloin steak, flat bone sirloin steak, wedge bone sirloin steak, and sirloin roast
Veal—Pin bone sirloin steak, flat bone sirloin steak, wedge bone sirloin steak and sirloin roast

Pork—Sirloin chops and sirloin roast

Lamb—Sirloin chops and sirloin roast

(2) All the cuts have the common pin bone, flat bone or wedge bone to aid in identification.

f. Cuts Associated with the Leg or Round Bone

(1) Beef—Round steak, pot roast

Veal—Round steak, round roast, rump roast

Pork—Fresh ham butt portion, fresh ham shank portion

Lamb—Leg chop, center leg, sirloin half of leg, shank half of leg, French-style leg

(2) The known round bone is found in these cuts. A portion of the wedge bone may be seen in the cuts that are from the butt portion or sirloin area.

g. Cuts Associated with the Breast and Rib Bone

(1) Beef—Fresh brisket and short ribs

Veal—Breast and riblets

Pork—Spare ribs

Lamb—Breast spare ribs, riblets

(2) All cuts show the rib bone or breast bone and rib bone.

B. Suggested Student Activities

1. On their next trip to the supermarket, have the students write down the cuts of meat that are identified by the seven basic bone structures.

2. Take a field trip to a local processing plant and observe the cutting of the various cuts.
LESSON 2 EXAMINATION

1. List and explain three basic similarities in the bone structures of beef, veal, pork, and lamb.
   a. 
   b. 
   c. 

2. Identify the bone structures on the attached diagram.
   *Note: Use the TM2 and TM3 diagram with the names omitted.

3. List 14 cuts for which names are derived from bone structures. Identify as to beef, pork, veal, or lamb.

   Name  Animal
   A. 
   B. 
   C. 
   D. 
   E. 

List and describe seven retail cuts; indicate bone structure and shape.

<table>
<thead>
<tr>
<th>Name</th>
<th>Bone Structure</th>
<th>Bone Shape</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Neck
2. Back Bone (Loin)
3. Pin Bone
4. Tail
5. Hi, Bone
6. Leg Bone
7. Rib
8. Breast
9. Shoulder Blade
10. Arm Bone
Arm Bone

Blade Bone
(near neck)

Blade Bone
(center cuts)

Blade Bone
(near rib)

Back Bone and Rib Bone

Back Bone (T-Shape) T-Bone
Pin Bone (near short loin)
Flat Bone (center cuts)
Wedge Bone (near round)

Leg or Round Bone

Breast and Rib Bones
1. Arm Bone
2. Shoulder Blade
3. Rib Section
4. Short Loin
5. Pin Bone
6. Flat Bone
7. Wedge Bone
8. Leg or Round Bone
9. Breast Bone
LESSON 1: Selecting Cuts and Determining Amounts to Buy

I. Preparation for Instruction

A. Student Objectives

1. **Terminal**: The ability to select high quality cuts of meat and estimate the amounts of meat needed.

2. **Specific**:
   a. Explain the role of meat in providing a balanced diet.
   b. List the forms in which meat is available to consumers.
   c. Estimate the amount of meat required to serve a given number of people.
   d. Identify the information from labels of retail packaged meat.
   e. List and explain the quality factors associated with meat.

B. Review of Teaching Materials

1. *Teaching about Meat Identification and Buying*, National Live Stock and Meat Board


II. Presentation of Lesson

A. Content Outline

1. Meat as a Part of Family Meals
   a. A balanced diet is one that includes the kinds and amounts of food which will provide the needed quantities of essential nutrients and energy.
   b. Composition of Meat
      (1) Muscle tissue
      (2) Connective tissue
      (3) Fat
      (4) Bone

2. Available Forms of Meats

   Retail meat may be purchased in a variety of processed forms:
   (1) Fresh
   (2) Cured
   (3) Cured and smoked
   (4) Frozen
   (5) Freeze-dried
3. **Amounts of Meat to Buy**

   a. Factors determining amount of meat to buy include the following:

   (1) Appetites of family members (children—adults; male—female)

   (2) Amount of lean meat in the cut

   (3) Time available for preparation

   (4) Planning more than one meal from a single cut of meat

   (5) Storage facilities available

   (6) Kinds of food to be served with the meat

   Example: 12-ounce steak and baked potato per person versus one pound ground meat casserole with vegetables, serving four people.

   b. Servings/pound of meat bought

   (1) Boneless cuts = 1/4-1/3 lb./serving

   (2) Bone-in cuts = 1/3-1/2 lb./serving

   (3) Very bony = 3/4-1 lb./serving

   (See TM1, "Servings/Pound to Expect from Specific Cuts")

4. **Determining Meat Quality**

   Signs of good quality meat

   (1) Federal Inspection Stamp - assures inspection by Federal Government Inspector.

   (2) U.S.D.A. Inspection Stamp - assures that all ingredients were wholesome at the time of inspection.
(3) Appearance

(a) Conformation—general form, shape, or outline of the cut

(b) Quality—affects characteristics associated with palatability (tenderness, juiciness, flavor)

1) Maturity—Increased maturity sometimes means decreased tenderness.

2) Marbling—increases juiciness and flavor

3) Color—distinct for beef, lamb, pork, veal

4) Texture—firm texture, more tender

5) Firmness—if firm, indicates freshness

(c) Cutability—amount of usable meat in the cut

5. Factors Considered by Packers in Bringing Meat to Consumers

a. Goal of Packers—provide consumers with wholesome meat products at economical prices

b. Meat Inspection Stamp (TM2)

(1) All meat shipped out of state must be federally inspected.

(2) Tells location of packer by establishment number

c. U.S.D.A. Inspection Stamp

(1) Refers to wholesomeness of the meat

   (a) Only from healthy animals

   (b) Processed under sanitary conditions

   (c) 80% of all meat in U.S. is federally inspected.
(d) 17%—state or city inspected
(e) 3%—no inspection
d. Uniform Meat Identification Program (TM3)
   (1) Kind of meat—beef, veal, pork, lamb
   (2) Wholesale name—primal cut
   (3) Retail name—individual cut
   (4) Net weight
   (5) Cost/pound
   (6) Cost of package
e. Ground meat labels (TM3)
   (1) Ground beef—ground from only skeletal meat
   (2) Lean-to-fat ratio—percent lean meat
   (3) Net weight
   (4) Price/pound
   (5) Price of that package

B. Suggested Student Activities

1. Provide two cuts of meat and have students identify the higher quality cut and explain why.

2. Have students make a meat order for their individual families for specific cuts of meat. List factors of their family that aid in making the order.

Example:

Bacon - 3 meals - ____ lbs. needed
Pork chops - 1 meal - ____ lbs. needed
Boneless rump roast - 2 meals - ____ lbs. needed

Family:

Number of adults - _____
Number of brothers - _____ Ages ___ ___ ___
Number of sisters - _____ Ages ___ ___ ___
1. Explain the meaning of a "balanced diet."

2. List seven forms of retail meat available to consumers.
   A. 
   B. 
   C. 
   D. 
   E. 
   F. 
   G. 

3. List six factors to consider when determining how much meat to purchase.
   A. 
   B. 
   C. 
   D. 
   E. 
   F. 

4. List three appearance factors that are keys to meat quality.
   A. 
   B. 
   C. 

5. Explain cutability of meat.

   A. 
   B. 
   C. 
   D. 
   E.
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT II: Buying Meat

LESSON 2: Proper Storage of Processed Meat

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Upon completion of this lesson, the student should be able to identify proper methods of care and storage of meat.

2. **Specific:**
   a. List shopping methods to prolong wholesomeness of meat products.
   b. Explain the characteristics that improve the quality of frozen meats.
   c. Be able to wrap cuts of meat to be frozen.
   d. List the acceptable storage times of frozen meats.

B. Review of Teaching Materials

1. *Care, Storage, and Freezing of Meat, National Live Stock and Meat Board*

2. *Be a Smarter Shopper, National Live Stock and Meat Board*

3. *Care of Meat and Poultry Products, National Live Stock and Meat Board*

C. Materials Required

1. Overhead projector
2. Screen
3. Transparencies
II. Presentation of Lesson

A. Content Outline

Care of Purchased Meat

a. Meat may be safe to eat when purchased, but requires proper handling, sanitation, cooking, and storage to assure wholesomeness.

b. Meat is perishable and proper care is essential to maintaining its keeping qualities.

c. Shopping Tips

(1) Shop at clean, well-kept stores.

(2) When making several shopping stops, be sure to make perishable food purchases the last stop.

(3) Select refrigerated and frozen foods last at the grocery store.

(4) Be sure frozen foods are hard frozen.

(5) Be sure refrigerated foods are cold.

(6) Don't buy torn or damaged packages.

(7) Refrigerate or freeze perishable items as soon as you get home.

d. Storage in a Refrigerator

(1) Do not wash before storing in a refrigerator. Washing tends to dry surface of the meat.

(2) Store in original retail wrapper only one to two days.

(3) Keep in refrigerator no longer than one week.

e. Freezing Meat

(1) Prepare meats before freezing.

(a) Trim excess fat.

(b) Remove bones when practical.
(2) Freeze meat while it is fresh and in top quality.

(3) Freeze quickly and then stack packages tightly to conserve freezer space.

(4) Keep at 0°F. or below.

(5) Organize foods according to dates frozen (use oldest first).

(6) Do not store longer than recommended time (TM4).

f. Wrapping Meat for Storage

(1) Select proper wrapping material (seal air out; moisture in).

(2) Wrap meat tightly to force air out (TM-5).

(3) Label all packages properly.

   (a) Name of cut

   (b) Date frozen

   (c) Weight or approximate number of servings

B. Suggested Student Activities

1. Using the proper wrapping materials, have students wrap pieces of wood as they would cuts of meat of similar size.

2. Have students properly label different cuts of meat when given needed information.
LESSON 2 EXAMINATION

1. List four steps that must be properly performed to assure meat is as wholesome when served as it was when bought.
   A.
   B.
   C.
   D.

2. Explain how following proper shopping methods can aid in the lasting qualities of frozen or refrigerated meats.

3. Why should meat be stored no longer than one week in a refrigerator?

4. Explain what steps should be taken before freezing meat.

5. List the information that should be used when labeling packages of frozen meat.

6. Give the recommended storage lengths of the following meats in a freezer and refrigerator (use TM4).

<table>
<thead>
<tr>
<th>Cut</th>
<th>Refrigerator</th>
<th>Freezer</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Fresh beef</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Fresh pork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Ground beef</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Ground pork</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Leftover cooked meat</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT II: Buying Meat

LESSON 3: Cost of Meat

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Upon completion of this lesson, the student should be more aware of the actual cost and factors affecting the price of meat in the family food budget.

2. **Specific:**
   a. Identify some of the factors that influence the price of meat.
   b. Compare the cost of wholesale cuts to retail cuts of beef.

B. Review of Teaching Materials

1. *Be a Smarter Shopper*, National Live Stock and Meat Board

2. *Guides to Meat Buying*, National Live Stock and Meat Board

C. Materials Required

1. Screen
2. Transparencies
3. Overhead Projector
4. Charts

II. Presentation of Lesson

A. Content Outline

1. **New Look at Meat Costs**
   a. The U.S. Department of Agriculture reveals that food costs in relation to income have been going down steadily during the past several decades.
b. Meat is an important foundation of nutritionally adequate meals.

c. Meat accounts for about one-fourth of the family food dollar.

d. Tender cuts are found on the part of the animal where muscles have received the least amount of use.

e. Less tender cuts are formed in areas where muscles receive more exercise.

f. Ground meat made tender by grinding can be prepared in the same manner as the most tender steaks.

g. Any cut of meat purchased can be made flavorful and tender by proper cooking.

2. Prices Paid for Meat

a. Price is not a good guide to quality, tenderness, or nutritive value.

b. Factors influencing meat prices
   (1) Popularity of a cut
   (2) Season of the year
   (3) Amount of handling or processing required
   (4) Kind of retail store

c. Things to consider when buying large amounts (one-half or one-fourth carcass) of meat
   (1) Average price per pound
   (2) More desirable cuts to less desirable cuts
   (3) Trimming waste
   (4) Cost of cutting and wrapping
   (5) Storage costs and availability
B. Suggested Student Activities

Have students survey local retail meat stores to get information for the following chart.

a. Assign groups of students to prepare a chart together.

b. Assign different stores to different groups.
1. Compares the cost of buying one-half carcass of beef through a local processing plant to that of buying the same number of pounds of individual cuts at a retail store.

2. Wholesale price should be adjusted to the specific price for the dates of this study.

3. Retail prices were obtained by surveying local grocery stores.

4. Cost of cutting and wrapping must be added to the price of one-half carcass.

5. Wholesale cost of $1.09/pound.

6. Cost of cutting, wrapping, freezing = 14 cents/pound.

7. Different size carcasses will yield different amounts of retail cuts.

<table>
<thead>
<tr>
<th>117 Lb. 1/2 Carcass</th>
<th>Individual Cuts</th>
<th>Retail Cost for Same Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.0 lbs.</td>
<td>Sirloin Steak</td>
<td>7.0 lbs. @ $2.99 = $20.92</td>
</tr>
<tr>
<td>6.8 lbs.</td>
<td>T-bone Steak</td>
<td>6.8 lbs. @ $3.67 + $24.96</td>
</tr>
<tr>
<td>10.6 lbs.</td>
<td>Round Steak</td>
<td>10.6 lbs. @ $2.84 = $30.10</td>
</tr>
<tr>
<td>4.0 lbs.</td>
<td>Tip Roast</td>
<td>4.0 lbs. @ $2.96 = $11.84</td>
</tr>
<tr>
<td>12.0 lbs.</td>
<td>Butt Roast</td>
<td>12.0 lbs. @ $2.78 = $33.28</td>
</tr>
<tr>
<td>17.3 lbs.</td>
<td>Ground Meat</td>
<td>17.3 lbs. @ $1.99 = $34.43</td>
</tr>
<tr>
<td>17.0 lbs.</td>
<td>Rib Steak</td>
<td>17.0 lbs. @ $4.86 = $82.62</td>
</tr>
<tr>
<td>10.0 lbs.</td>
<td>Shoulder Steak</td>
<td>10.0 lbs. @ $2.13 = $21.30</td>
</tr>
<tr>
<td>7.6 lbs.</td>
<td>B-B-Q Ribs</td>
<td>7.6 lbs. @ $1.79 = $13.60</td>
</tr>
<tr>
<td>10.2 lbs.</td>
<td>Stew Meat</td>
<td>10.2 lbs. @ $1.79 = $18.26</td>
</tr>
<tr>
<td>6.2 lbs.</td>
<td>Chuck Roast</td>
<td>6.2 lbs. @ $1.39 = $8.62</td>
</tr>
<tr>
<td>17.3 lbs.</td>
<td>Waste (Fat, Bone)</td>
<td>None</td>
</tr>
<tr>
<td>99.7 lbs. Edible Meat</td>
<td></td>
<td>Total Retail Cuts = $299.54</td>
</tr>
<tr>
<td>17.3 lbs. Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td>99.7 lbs. @ 14 cents/lb. cut, wrap, freeze $13.96</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

One-Half Carcass Cost

| 117 lbs. @ $1.09 = $127.53 |
| 99.7 lbs. @ .14 = $13.96   |
| Total $141.49              |

Savings of Wholesale One-Half = $158.05
LESSON 3 EXAMINATION

1. Fill in the following blanks:
   A. The U.S.D.A. says that food prices are __________ according to family income.
   B. ________________ is an important part of nutritionally adequate meals.
   C. ________________ accounts for about _______ of the family food dollar.
   D. ________________ is the key to making meat flavorful and tender.
   E. ________________ is not a good guide to quality, tenderness, or nutritive value.

2. Explain what determines if meat is naturally tender.

3. List four factors affecting meat prices.
   A.
   B.
   C.
   D.

4. List five factors to consider when buying large amounts of meat.
   A.
   B.
   C.
   D.
   E.
## Servings Per Pound to Expect from a Specific Cut of Meat

The servings per pound are only a guide to the average amount to buy to provide 2 1/2 to 3 1/2 ounces of cooked lean meat. The cooking method and cooking temperature, the degree of doneness, the difference in the size of bone in the bone-in cuts and amount of fat trim are some of the factors that vary and will affect the yield of cooked lean meat.

### BEEF

<table>
<thead>
<tr>
<th>Cuts</th>
<th>Servings Per Pound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steaks</td>
<td></td>
</tr>
<tr>
<td>Chuck (Arm or Blade)</td>
<td>2</td>
</tr>
<tr>
<td>Cubed</td>
<td>4</td>
</tr>
<tr>
<td>Flank</td>
<td>3</td>
</tr>
<tr>
<td>Porterhouse</td>
<td>2</td>
</tr>
<tr>
<td>Rib</td>
<td>2</td>
</tr>
<tr>
<td>Rib Eye (Delmonico)</td>
<td>3</td>
</tr>
<tr>
<td>Round</td>
<td>3</td>
</tr>
<tr>
<td>Sirloin</td>
<td>2 1/2</td>
</tr>
<tr>
<td>T-Bone</td>
<td>2</td>
</tr>
<tr>
<td>Tenderloin (Fillet Mignon)</td>
<td>3</td>
</tr>
<tr>
<td>Top Loin</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roasts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rib</td>
<td>2</td>
</tr>
<tr>
<td>Rib Eye (Delmonico)</td>
<td>3</td>
</tr>
<tr>
<td>Rump, Boneless</td>
<td>3</td>
</tr>
<tr>
<td>Tip</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pot-Roasts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chuck (Arm)</td>
<td>2</td>
</tr>
<tr>
<td>Chuck (Blade)</td>
<td>2</td>
</tr>
<tr>
<td>Chuck, Boneless</td>
<td>2 1/2</td>
</tr>
<tr>
<td>Cross Rib</td>
<td>2 1/2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Cuts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef for Stew</td>
<td>4</td>
</tr>
<tr>
<td>Brisket</td>
<td>3</td>
</tr>
<tr>
<td>Ground Beef</td>
<td>4</td>
</tr>
<tr>
<td>Short Ribs</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variety Meats</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Brains</td>
<td>5</td>
</tr>
<tr>
<td>Heart</td>
<td>5</td>
</tr>
<tr>
<td>Kidney</td>
<td>5</td>
</tr>
<tr>
<td>Liver</td>
<td>4</td>
</tr>
</tbody>
</table>

### PORK

<table>
<thead>
<tr>
<th>Cuts</th>
<th>Servings Per Pound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chops and Steaks</td>
<td></td>
</tr>
<tr>
<td>Blade Chops or Steaks</td>
<td>3</td>
</tr>
<tr>
<td>Boneless Chops</td>
<td>4</td>
</tr>
<tr>
<td>Loin Chops</td>
<td>4</td>
</tr>
<tr>
<td>Rib Chops</td>
<td>4</td>
</tr>
<tr>
<td>Smoked (Rib or Loin) Chops</td>
<td>4</td>
</tr>
<tr>
<td>Smoked Ham (Center Slice)</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roasts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg (Fresh Ham), Bone-in</td>
<td>3</td>
</tr>
<tr>
<td>Leg (Fresh Ham), Boneless</td>
<td>3 1/2</td>
</tr>
<tr>
<td>Smoked Ham, Bone-in</td>
<td>3 1/2</td>
</tr>
<tr>
<td>Smoked Ham, Boneless</td>
<td>5</td>
</tr>
<tr>
<td>Smoked Ham, Canned</td>
<td>5</td>
</tr>
<tr>
<td>Blade Shoulder (Rolled)</td>
<td></td>
</tr>
<tr>
<td>Boneless (Smoked or Fresh)</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Cuts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm Picnic Shoulder (Bone-in) Fresh or Smoked</td>
<td>2</td>
</tr>
<tr>
<td>Sirloin</td>
<td>2</td>
</tr>
<tr>
<td>Smoked Shoulder Roll</td>
<td>3</td>
</tr>
</tbody>
</table>

### LAMB

<table>
<thead>
<tr>
<th>Cuts</th>
<th>Servings Per Pound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chops and Steaks</td>
<td></td>
</tr>
<tr>
<td>Leg Center Slice</td>
<td>4</td>
</tr>
<tr>
<td>Loin Chops</td>
<td>3</td>
</tr>
<tr>
<td>Rib Chops</td>
<td>3</td>
</tr>
<tr>
<td>Shoulder Chops</td>
<td>3</td>
</tr>
<tr>
<td>Sirloin Chops</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Roasts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg, Bone-in</td>
<td>3</td>
</tr>
<tr>
<td>Leg, Boneless</td>
<td>4</td>
</tr>
<tr>
<td>Shoulder, Bone-in</td>
<td>2 1/2</td>
</tr>
<tr>
<td>Shoulder, Boneless</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other Cuts</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast</td>
<td>2</td>
</tr>
<tr>
<td>Riblets</td>
<td>2</td>
</tr>
<tr>
<td>Cubes, Lamb</td>
<td>4</td>
</tr>
<tr>
<td>Shanks</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variety Meats</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart</td>
<td>5</td>
</tr>
<tr>
<td>Kidney</td>
<td>5</td>
</tr>
</tbody>
</table>
INSPECTION STAMPS

The number on the stamp is assigned to only one slaughter plant.

MEAT PACKER INSPECTION STAMP

Examples of stamps for Choice quality grade and U.S. No. 1 yield grade beef carcasses.

U.S.D.A. INSPECTION STAMP
UNIFORM MEAT IDENTIFICATION PROGRAM

1. The kind of meat — BEEF, PORK, LAMB or VEAL. It's listed first on every label.

2. The primal (wholesale) cut — CHUCK, RIB, LOIN or ROUND — tells where the meat comes from on the animal.

3. The retail cut — BLADE ROAST, SPARERIBS, LOIN CHOPS, etc. — tells what part of the primal cut the meat comes from.

GROUND MEAT LABEL

WEIGHT
Lb. Net
0.00
PAY — or Lb.
0.00
BEEF CHUCK
BLADE ROAST

GROUND BEEF
NOT LESS THAN 75% LEAN
## STORAGE TIME CHART

Maximum Storage Time Recommendations for Fresh, Cooked and Processed Meat

<table>
<thead>
<tr>
<th>Meat</th>
<th>Refrigerator (38° to 40° F.)</th>
<th>Freezer (at 0° F. or lower)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef (fresh)</td>
<td>2 to 4 days</td>
<td>6 to 12 months</td>
</tr>
<tr>
<td>Veal (fresh)</td>
<td>2 to 4 days</td>
<td>6 to 9 months</td>
</tr>
<tr>
<td>Pork (fresh)</td>
<td>2 to 4 days</td>
<td>3 to 6 months</td>
</tr>
<tr>
<td>Lamb (fresh)</td>
<td>2 to 4 days</td>
<td>6 to 9 months</td>
</tr>
<tr>
<td>Ground beef, veal and lamb</td>
<td>1 to 2 days</td>
<td>3 to 4 months</td>
</tr>
<tr>
<td>Ground pork</td>
<td>1 to 2 days</td>
<td>1 to 3 months</td>
</tr>
<tr>
<td>Variety meats</td>
<td>1 to 2 days</td>
<td>3 to 4 months</td>
</tr>
<tr>
<td>Luncheon meats</td>
<td>1 week</td>
<td>not recommended</td>
</tr>
<tr>
<td>Sausage, fresh pork</td>
<td>1 week</td>
<td>60 days</td>
</tr>
<tr>
<td>Sausage, smoked</td>
<td>3 to 7 days</td>
<td></td>
</tr>
<tr>
<td>Sausage, dry and semi-dry (unsliced)</td>
<td>2 to 3 weeks</td>
<td></td>
</tr>
<tr>
<td>Frankfurters</td>
<td>4 to 5 days</td>
<td></td>
</tr>
<tr>
<td>Bacon</td>
<td>5 to 7 days</td>
<td></td>
</tr>
<tr>
<td>Smoked ham, whole</td>
<td>1 week</td>
<td>60 days</td>
</tr>
<tr>
<td>Ham slices</td>
<td>3 to 4 days</td>
<td></td>
</tr>
<tr>
<td>Beef, corned</td>
<td>1 week</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Leftover cooked meat</td>
<td>4 to 5 days</td>
<td>2 to 3 months</td>
</tr>
</tbody>
</table>

**Frozen Combination Foods**

| Meat pies (cooked)                  | --                           | 3 months                    |
| Swiss steak (cooked)                | --                           | 3 months                    |
| Stews (cooked)                      | --                           | 3 to 4 months               |
| Prepared meat dinners              | --                           | 2 to 6 months               |

\[35\]

\[45\]
Wrapping

Place the meat near the center of the sheet. Bring edges of the sheet together over the meat.

Fold the sheet over once; then fold again so that the second fold is tight against the meat.

Make top folds evenly. Smooth the ends close to the meat and form into triangles.

Fold the ends under the package away from the top fold. Seal with freezer tape and label.
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT III: Nutrition (Nutritive Value of Meat)

Lessons: 1—Functions and Sources of Proteins in Meat
2—Functions and Sources of Vitamins in Meat
3—Functions and Sources of Minerals and Fats in Meat

LESSON 1: Functions and Sources of Proteins in Meats

I. Preparation for Instruction

A. Student Objectives

1. Terminal: To determine functions and sources of proteins in meat.

2. Specific:
   a. Identify the importance and functions of protein to growth and life.
   b. Identify the essential amino acids and meats high in each.
   c. Identify the non-essential amino acids and meats high in each.

B. Review of Teaching Materials


C. Materials Needed

1. Charts
2. Overhead Projector

II. Presentation of Lesson

A. Content Outline

1. Importance of Proteins
   a. Protein is a necessary nutrient, essential to growth and life. Every living cell contains
protein, whether the cell is found in skin, muscle, blood, hair, heart, brains, nerves, or any other part of the body.

b. Proteins are made up of carbon, hydrogen, oxygen, nitrogen, and sulphur.

c. For effective utilization of plant protein, an animal protein should be included in the same meal.

d. All essential amino acids must be in the bloodstream at the same time for the body to take care of its job of tissue repair and growth.

2. **Functions of Proteins**

   a. Build and maintain body tissue
   
   b. Regulate the acid-base balance of the body
   
   c. Help in the formation of body hormones and enzymes
   
   d. Help build resistance to disease

3. **Amino Acids—Protein Building Blocks**

   a. Proteins containing all of the essential amino acids are described as having a high biological value and are called complete proteins.

   Animal foods with high quality protein are meat, poultry, fish, eggs, milk, and cheese.

   b. Essential amino acids are those that must be taken into the body preformed, for our body cannot produce them.

   (1) Identify nine essential amino acids and meats high in each (TM1, TM2).

   (2) Identify two essential amino acids for infants and meats high in each (TM1, TM2).

   (3) Identify seven nonessential amino acids and meats high in each (TM1, TM2).
B. Suggested Student Activities

Have students select foods for each meal containing most of the essential amino acids.
1. Give the importance of proteins to a living body.

2. T or F The human body can manufacture all proteins from the food eaten.

3. Proteins are made up of the elements:
   a. Carbon
   b. Hydrogen and oxygen
   c. Nitrogen and sulphur
   d. All of these

4. List the functions of proteins.
   a.
   b.
   c.
   d.

5. T or F For efficient utilization of plant protein, an animal protein should be present in the same meal.

6. T or F All essential amino acids must be in the bloodstream at the same time.

7. List nine essential amino acids and two sources of each.

8. List two essential amino acids necessary for infants and two sources of each.

9. List seven nonessential amino acids and two sources of each.
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT III: Nutrition (Nutritive Value of Meat)

LESSON 2: Functions and Sources of Vitamins in Meats

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** The student will be able to determine functions and sources of vitamins in meats.

2. **Specific:**
   a. Identify the vitamins available in meat that are essential in the diet of humans.
   b. Identify meats high in each vitamin.

B. Review of Teaching Materials


C. Materials Required

Charts

II. Presentation of Lesson

A. Content Outline

1. **Vitamin A**
   a. Essential for proper growth and for the general maintenance and repair of body tissues.

   b. Fat-soluble vitamin important for:

   (1) Soft, smooth skin

   (2) Healthy mucous membranes of mouth, nose, and other body cavities

   (3) Formation of sound teeth

   (4) Helping maintain normal vision
c. Deficiency symptoms of Vitamin A:
   (1) Retarded growth
   (2) Night blindness
   (3) Dry eyelids and reddened eyes
   (4) Weakened respiratory system
   (5) Increased susceptibility to infections
   (6) Defective tooth formation

d. Meat sources of Vitamin A:
   (1) Liver
   (2) Meats are low in Vitamin A.

2. Vitamin B
   a. Essential B Vitamins:
      (1) Thiamin
         (a) Essential in carbohydrate metabolism to help convert this nutrient into energy for the body
         (b) Thiamin is water soluble and fairly stable to heat.
         (c) Associated with a healthy nervous system
         (d) Promotes good appetite
         (e) Aids in digestion and assimilation of food
         (f) Thiamin deficiency symptoms
            1) Constipation
            2) Poor muscle tone
            3) Fatigue
            4) Loss of appetite
            5) Depression
            6) Irritability
(g) Meat sources (Milligrams/3-1/2 ounces)

1) Pork is best source (1.03 milligrams)
2) Liver (.33 milligrams)
3) Lamb (.22 milligrams)
4) Beef (.10 milligrams)

(2) Riboflavin

(a) Combines with protein in the body to form a number of important oxidative enzymes. These enzymes are a vital link in the chain of oxidations involving carbohydrates, fatty acids, and amino acids.

(b) Water soluble and destroyed by long exposure to light. Stable to heat.

(c) Helps maintain healthy skin.

(d) Helps maintain good vision and healthy, clear eyes.

(e) Riboflavin deficiency symptoms

1) Reddened eyes which burn, itch and are over-sensitive to light
2) Cataract-like symptoms
3) Dimness of vision
4) Premature aging
5) Skin abnormalities
6) Inflamed tongue

(f) Meat sources (milligrams/3-1/2 ounces)

1) Liver is best (4.46 milligrams)
2) Beef (.39 milligrams)
3) Lamb (.32 milligrams)
4) Pork (.29 milligrams)

(3) Niacin

(a) Has a vital function in intra-cellular enzyme systems.
(b) Functions in body

1) Helps build and maintain healthy skin and tongue
2) Helps promote a healthy nervous system

(c) Niacin deficiency symptoms

1) Rough, inflamed skin
2) Mental depression
3) Nervousness
4) Pellagra

(d) Amino acid tryptophan is a precursor of niacin.

(e) Stable, resistant to heat, light, air, acids, and alkalies

(f) Meat sources (milligrams/3-1/2 ounces)

1) Liver (20.1 milligrams)
2) Lamb (7.6 milligrams)
3) Beef (4.5 milligrams)
4) Pork (4.4 milligrams)

(4) Pyridoxine (B6)

(a) Function

Helps prevent and cure anemia, dermatitis, and nerve disorders

(b) Adult requirements: 2 milligrams per day

(c) Meat sources

1) Pork
2) Beef
3) Lamb
4) Variety cuts

(5) Pantothenic Acid

(a) Function

Vital in many metabolic processes in the body
(b) Adult requirements: five to ten milligrams daily.

(c) Meat sources

1) Liver
2) Beef
3) Pork tongue

6) Folacin (Folic Acid)

(a) Function

1) Necessary for the formation of blood cells
2) Helps cure macrocytic anemia
3) Functions with certain amino acids and with ascorbic acid

(b) Adult requirements

.4 milligrams per day

(c) Meat sources

Liver

7) Vitamin B₁₂

(a) Function

1) Helps prevent and treat pernicious anemia
2) May be related to growth

(b) Adult requirements

Three micrograms daily

(c) Meat Sources

1) Liver
2) Most meats

3. Vitamin C

a. Functions

1) Helps maintain firm healthy gums
2) Builds and maintains bones, tissues, and blood
(3) Helps make the cement that holds body cells together

(4) Helps the body resist infection

(5) Helps the body heal faster following wounds or fractures

(6) Helps body make firm blood vessel walls

b. Deficiency symptoms
   (1) Weakened bones which may be deformed
   (2) Tendency to bleed or bruise easily
   (3) Swollen, painful joints

c. Meat sources
   (1) Liver
   (2) Meats are low in Vitamin C.

4. **Vitamin D**
   a. Vitamin D is a fat-soluble vitamin.
   b. Function
      Aids in the metabolism of calcium and phosphorus for building bones and teeth
   c. Deficiency symptoms
      Rickets
   d. Meat source
      Liver

B. **Suggested Student Activities**
   Have the students list the meat they eat during the week and vitamins furnished by the meat.
LESSON 2 EXAMINATION

1. Give the major functions of the following vitamins:

A. Vitamin A
   1.
   2.
   3.
   4.
   5.

B. Thiamin
   1.
   2.
   3.
   4.

C. Riboflavin
   1.
   2.
   3.

D. Niacin
   1.
   2.
   3.

E. Pyridoxine (B_6)
   1.

F. Pantothenic Acid
   1.
G. Folacín
1. 
2. 

H. Vitamin B₁₂
1. 
2. 

I. Vitamin C
1. 
2. 
3. 
4. 
5. 
6. 

J. Vitamin D
1. 
2. List cuts of meat that contribute the following vitamins:
   a. Vitamin A
      1. 
   b. B vitamins most likely to be deficient in one’s diet.
      1. 
      2. 
   3. Meats are low in Vitamin _______ and _______.
   4. Some vitamin D is in the __________________.
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT III: Nutrition (Nutritive Value of Meat)

LESSON 3: Functions and Sources of Minerals and Fats in Meats

I. Preparation for Instruction

A. Student Objectives

1. **Terminal**: Enable the student to determine the need for minerals and fats in the human body and availability of each in meats.

2. **Specific**:
   a. Identify the minerals needed in the human diet and functions of each.
   b. Identify meats high in each mineral.
   c. Identify the need for fats in human diets.

B. Review of Teaching Materials


C. Materials Required

Charts

II. Presentation of Lesson

Content Outline

1. **Minerals**

   a. Calcium (IM3)

      (1) Most abundant mineral in the body

      (2) Functions

         (a) Responsible for formation of bones and teeth

         (b) Essential for the functioning of the nervous system
(c) Essential for the working of muscles

(d) Essential for proper clotting of blood

(e) Essential for the action of certain enzymes

(f) Essential for the control of the passage of fluids through cell walls

(g) Helps regulate the action of the heart muscle

(3) Body needs

(a) Children aged 1 to 11 years: 800 milligrams daily

(b) Males aged 11-19 years: 1,200 milligrams daily
   Males aged 19-51+ years: 800 milligrams daily

(c) Females aged 19 to 51+ years: 800 milligrams daily

(4) Meats do not supply calcium.

b. Phosphorus

(1) Functions

(a) Helps in proper formation of bones and teeth

(b) Essential for the working of muscles

(c) Essential for proper functioning of the nervous system

(d) Important in the metabolism of carbohydrates, proteins, and fats

(e) Helps blood and other body tissues maintain normal acid-base relationships
(2) Variety and other meats are among the best sources of phosphorus.

c. Iron

(1) Functions

Iron assists certain amino acids to build and maintain the red pigment of blood—hemoglobin—which carries oxygen throughout the body.

(2) Deficiency symptoms—anemia

(a) Paleness
(b) Listlessness
(c) Shortness of breath
(d) Lowered resistance to infection
(e) Fatigue

(3) Meat sources of iron

(a) Liver
(b) Red meat of beef, pork, lamb

d. Sodium and potassium

(1) Function

(a) Help with proper functioning of the nervous system and muscles
(b) Assist in control of body fluids

(2) Meat sources (TM3)

e. Magnesium

(1) Function

(a) Closely related to calcium and phosphorus

(2) Meat sources (TM3)
f. Copper

Function

(a) Useful in the formation of hemoglobin

(b) Believed to be involved in the oxidation of one amino acid and ascorbic acid

g. Trace minerals - Cobalt, manganese, zinc, and aluminum are also found in meats.

2. Fats

a. About 1/3 of the calories (see TM2) in this country come from fats. Some investigators recommend consuming less fat, with more energy needs being met by proteins and carbohydrates.

b. Fats are needed as a source of energy and supply fat-soluble vitamins A, D, E, and K.

c. Fats in the body protect vital organs and body tissues.

d. Fats help protect the body from loss of heat.

3. Digestibility of Meats

a. Meat from beef, veal, pork, and lamb is almost completely digested.

(1) Proteins from meat are at least 97% digested.

(2) Meat fat is at least 96% digested.

b. Fats tend to slow down the passage of food through the stomach, consequently slowing the rate of digestion. This prevents a feeling of hunger shortly after a meal.

c. So easily digested is meat that infants may have it introduced as early as six weeks (strained and added to formula).

d. The caloric and fat content of cooked meats is given in the following master (TM4).
LESSON 3 EXAMINATION

1. List five functions of phosphorus.
   a. 
   b. 
   c. 
   d. 
   e. 

2. Give the meats that provide phosphorus.
   a. 
   b. 

3. Give the major function of iron.

4. List two meats that provide iron.
   a. 
   b. 

5. Give the major function of sodium and phosphorus.

6. List two meats that are sources of sodium and phosphorus.
   a. 
   b. 

7. Give the major function of magnesium.

8. List two meats that are important sources of magnesium.
   a. 
   b. 

9. Give the major function of copper.
10. Name a cut of meat that is a major source of copper.

11. List four trace elements found in meat.
   a.
   b.
   c.
   d.

12. Fats are needed as a source of ________________________.

13. Fats provide vitamins _____, _____, _____, and _____.

14. Fats in the body protect ________________________.

15. Fats help protect the body from loss of ________________.

16. Proteins from meat are __________ percent digested.

17. Meat fat is at least __________ percent digested.

18. Fats tend to slow down the passage of food through the __________.
Amino-acid Composition in Fresh Meats
(Schweigert and Payne, 1956)
(as % crude protein)

<table>
<thead>
<tr>
<th>Amino acid</th>
<th>Category</th>
<th>Beef</th>
<th>Pork</th>
<th>Lamb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isoleucine</td>
<td>Essential</td>
<td>5.1</td>
<td>4.9</td>
<td>4.8</td>
</tr>
<tr>
<td>Leucine</td>
<td>Essential</td>
<td>8.4</td>
<td>7.5</td>
<td>7.4</td>
</tr>
<tr>
<td>Lysine</td>
<td>Essential</td>
<td>8.4</td>
<td>7.8</td>
<td>7.6</td>
</tr>
<tr>
<td>Methionine</td>
<td>Essential</td>
<td>2.3</td>
<td>2.5</td>
<td>2.3</td>
</tr>
<tr>
<td>Cystine</td>
<td>Essential</td>
<td>1.4</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>Essential</td>
<td>4.0</td>
<td>4.1</td>
<td>3.9</td>
</tr>
<tr>
<td>Threonine</td>
<td>Essential</td>
<td>4.0</td>
<td>5.1</td>
<td>4.9</td>
</tr>
<tr>
<td>Tryptophan</td>
<td>Essential</td>
<td>1.1</td>
<td>1.4</td>
<td>1.3</td>
</tr>
<tr>
<td>Valine</td>
<td>Essential</td>
<td>5.7</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>Arginine</td>
<td>Essential for infants</td>
<td>6.6</td>
<td>6.4</td>
<td>6.9</td>
</tr>
<tr>
<td>Histidine</td>
<td>Essential for infants</td>
<td>2.9</td>
<td>3.2</td>
<td>2.7</td>
</tr>
<tr>
<td>Alanine</td>
<td>Non-essential</td>
<td>6.4</td>
<td>6.3</td>
<td>6.3</td>
</tr>
<tr>
<td>Aspartic acid</td>
<td>Non-essential</td>
<td>8.8</td>
<td>8.9</td>
<td>8.5</td>
</tr>
<tr>
<td>Glutamic acid</td>
<td>Non-essential</td>
<td>14.4</td>
<td>14.5</td>
<td>14.4</td>
</tr>
<tr>
<td>Glycine</td>
<td>Non-essential</td>
<td>7.1</td>
<td>6.1</td>
<td>6.7</td>
</tr>
<tr>
<td>Proline</td>
<td>Non-essential</td>
<td>5.4</td>
<td>4.6</td>
<td>4.8</td>
</tr>
<tr>
<td>Serine</td>
<td>Non-essential</td>
<td>3.8</td>
<td>4.0</td>
<td>3.9</td>
</tr>
<tr>
<td>Tyrosine</td>
<td>Non-essential</td>
<td>3.2</td>
<td>3.0</td>
<td>3.2</td>
</tr>
</tbody>
</table>
Amino Acid Content of Some Common Foods* (100 grams edible portion)

<table>
<thead>
<tr>
<th>FOOD</th>
<th>Protein Content (%)</th>
<th>Tryptophan (gm)</th>
<th>Threonine (gm)</th>
<th>Isoleucine (gm)</th>
<th>Leucine (gm)</th>
<th>Lysine (gm)</th>
<th>Phenylalanine (gm)</th>
<th>Tyrosine (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef cuts, medium fat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chuck</td>
<td>18.6</td>
<td>.217</td>
<td>.821</td>
<td>.973</td>
<td>1.524</td>
<td>1.625</td>
<td>.765</td>
<td>.631</td>
</tr>
<tr>
<td>Flank</td>
<td>19.9</td>
<td>.232</td>
<td>.879</td>
<td>1.041</td>
<td>1.630</td>
<td>1.738</td>
<td>.818</td>
<td>.675</td>
</tr>
<tr>
<td>Hamburger</td>
<td>16.0</td>
<td>.187</td>
<td>.707</td>
<td>.837</td>
<td>1.311</td>
<td>1.398</td>
<td>.658</td>
<td>.543</td>
</tr>
<tr>
<td>Round</td>
<td>19.5</td>
<td>.228</td>
<td>.861</td>
<td>1.020</td>
<td>1.597</td>
<td>1.704</td>
<td>.802</td>
<td>.661</td>
</tr>
<tr>
<td>Sirloin</td>
<td>17.3</td>
<td>.202</td>
<td>.764</td>
<td>.905</td>
<td>1.417</td>
<td>1.511</td>
<td>.711</td>
<td>.587</td>
</tr>
<tr>
<td>Lamb cuts, medium fat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rib</td>
<td>14.9</td>
<td>.193</td>
<td>.682</td>
<td>.772</td>
<td>1.154</td>
<td>1.206</td>
<td>.606</td>
<td>.517</td>
</tr>
<tr>
<td>Shoulder</td>
<td>15.6</td>
<td>.202</td>
<td>.714</td>
<td>.809</td>
<td>1.208</td>
<td>1.263</td>
<td>.634</td>
<td>.542</td>
</tr>
<tr>
<td>Pork cuts, medium fat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bacon, medium fat</td>
<td>9.1</td>
<td>.095</td>
<td>.306</td>
<td>.299</td>
<td>.728</td>
<td>.587</td>
<td>.434</td>
<td>.234</td>
</tr>
<tr>
<td>Ham, cured</td>
<td>16.9</td>
<td>.162</td>
<td>.692</td>
<td>.841</td>
<td>1.306</td>
<td>1.420</td>
<td>.646</td>
<td>.452</td>
</tr>
<tr>
<td>Loin</td>
<td>16.4</td>
<td>.213</td>
<td>.761</td>
<td>.842</td>
<td>1.227</td>
<td>1.346</td>
<td>.646</td>
<td>.585</td>
</tr>
<tr>
<td>Veal, shoulder, medium fat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frankfurters</td>
<td>14.2</td>
<td>.120</td>
<td>.582</td>
<td>.668</td>
<td>1.018</td>
<td>1.143</td>
<td>.518</td>
<td>.461</td>
</tr>
<tr>
<td>Kidney, beef</td>
<td>15.0</td>
<td>.221</td>
<td>.665</td>
<td>.730</td>
<td>1.391</td>
<td>1.067</td>
<td>.706</td>
<td>.557</td>
</tr>
<tr>
<td>Liver, beef or pork</td>
<td>19.7</td>
<td>.296</td>
<td>.936</td>
<td>1.031</td>
<td>1.819</td>
<td>1.473</td>
<td>.993</td>
<td>.738</td>
</tr>
</tbody>
</table>

BEST COPY AVAILABLE
### Amino Acid Content of Some Common Foods* (100 grams edible portion) Continued

<table>
<thead>
<tr>
<th>FOOD</th>
<th>Valine (gm)</th>
<th>Methionine (gm)</th>
<th>Cystine (gm)</th>
<th>Total (gm)</th>
<th>Arginine (gm)</th>
<th>Histidine (gm)</th>
<th>Alanine (gm)</th>
<th>Aspartic Acid (gm)</th>
<th>Glutamic Acid (gm)</th>
<th>Glycine (gm)</th>
<th>Proline (gm)</th>
<th>Sphingine (gm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MEAT and MEAT PRODUCTS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beef cuts, medium fat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chuck</td>
<td>1.033</td>
<td>.461</td>
<td>.235</td>
<td>.696</td>
<td>1.199</td>
<td>.446</td>
<td>1.074</td>
<td>1.725</td>
<td>2.815</td>
<td>1.552</td>
<td>.917</td>
<td>.730</td>
</tr>
<tr>
<td>Flank</td>
<td>1.105</td>
<td>.494</td>
<td>.252</td>
<td>.746</td>
<td>1.283</td>
<td>.491</td>
<td>1.149</td>
<td>1.566</td>
<td>2.012</td>
<td>1.232</td>
<td>.961</td>
<td>.824</td>
</tr>
<tr>
<td>Hamburger</td>
<td>.888</td>
<td>.397</td>
<td>.202</td>
<td>.599</td>
<td>1.032</td>
<td>.556</td>
<td>.924</td>
<td>1.492</td>
<td>2.422</td>
<td>.991</td>
<td>.780</td>
<td>.671</td>
</tr>
<tr>
<td>Round</td>
<td>1.083</td>
<td>.484</td>
<td>.246</td>
<td>.730</td>
<td>1.257</td>
<td>.677</td>
<td>1.126</td>
<td>1.819</td>
<td>2.957</td>
<td>1.207</td>
<td>.961</td>
<td>.817</td>
</tr>
<tr>
<td>Lamb cuts, medium fat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rib</td>
<td>.734</td>
<td>.358</td>
<td>.195</td>
<td>.553</td>
<td>.970</td>
<td>.415</td>
<td>.832</td>
<td>1.373</td>
<td>2.260</td>
<td>.870</td>
<td>.689</td>
<td>.594</td>
</tr>
<tr>
<td>Shoulder</td>
<td>.769</td>
<td>.374</td>
<td>.205</td>
<td>.579</td>
<td>1.016</td>
<td>.434</td>
<td>.871</td>
<td>1.438</td>
<td>2.346</td>
<td>.911</td>
<td>.721</td>
<td>.624</td>
</tr>
<tr>
<td>Park cuts, medium fat</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boston, medium fat</td>
<td>.434</td>
<td>.141</td>
<td>.106</td>
<td>.247</td>
<td>.632</td>
<td>.246</td>
<td>—</td>
<td>.858</td>
<td>1.022</td>
<td>.858</td>
<td>.432</td>
<td>.352</td>
</tr>
<tr>
<td>Ham, cured</td>
<td>.879</td>
<td>.411</td>
<td>.273</td>
<td>.684</td>
<td>1.068</td>
<td>.544</td>
<td>—</td>
<td>1.517</td>
<td>2.290</td>
<td>1.114</td>
<td>.545</td>
<td>.495</td>
</tr>
<tr>
<td>Loin</td>
<td>.833</td>
<td>.469</td>
<td>.192</td>
<td>.601</td>
<td>1.005</td>
<td>.567</td>
<td>.761</td>
<td>1.553</td>
<td>2.509</td>
<td>.813</td>
<td>.724</td>
<td>.646</td>
</tr>
<tr>
<td>Veal, shoulder, medium fat</td>
<td>1.003</td>
<td>.444</td>
<td>.220</td>
<td>.674</td>
<td>1.263</td>
<td>.624</td>
<td>1.152</td>
<td>1.912</td>
<td>3.026</td>
<td>.928</td>
<td>.782</td>
<td>.634</td>
</tr>
<tr>
<td>Frankfurters</td>
<td>.713</td>
<td>.300</td>
<td>.177</td>
<td>.477</td>
<td>.986</td>
<td>.382</td>
<td>—</td>
<td>1.338</td>
<td>1.940</td>
<td>1.191</td>
<td>.809</td>
<td>.702</td>
</tr>
<tr>
<td>Kidney, beef or pork</td>
<td>.876</td>
<td>.307</td>
<td>.182</td>
<td>.489</td>
<td>.924</td>
<td>.377</td>
<td>.912</td>
<td>1.533</td>
<td>1.858</td>
<td>.898</td>
<td>.775</td>
<td>.647</td>
</tr>
<tr>
<td>Liver, beef or pork</td>
<td>1.239</td>
<td>.463</td>
<td>.243</td>
<td>.706</td>
<td>1.201</td>
<td>.523</td>
<td>1.261</td>
<td>2.030</td>
<td>2.479</td>
<td>1.198</td>
<td>1.012</td>
<td>1.031</td>
</tr>
</tbody>
</table>
**MINERAL CONTENT OF COOKED MEAT**

(100 grams, lean plus fat with separable fat removed except where indicated)

<table>
<thead>
<tr>
<th>Cut</th>
<th>Position</th>
<th>Calcium (mg)</th>
<th>Phosphorus (mg)</th>
<th>Sodium (mg)</th>
<th>Potassium (mg)</th>
<th>Magnesium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEEF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steak</td>
<td>Round, bone</td>
<td>12.7</td>
<td>218</td>
<td>44.4</td>
<td>404</td>
<td>24.8</td>
</tr>
<tr>
<td></td>
<td>Round, top</td>
<td>8.4</td>
<td>235</td>
<td>41.6</td>
<td>436</td>
<td>36.2</td>
</tr>
<tr>
<td></td>
<td>Sirloin</td>
<td>14.8</td>
<td>238</td>
<td>45.9</td>
<td>436</td>
<td>31.0</td>
</tr>
<tr>
<td></td>
<td>Rib</td>
<td>16.7</td>
<td>181</td>
<td>29.6</td>
<td>290</td>
<td>19.8</td>
</tr>
<tr>
<td></td>
<td>Round, rib</td>
<td>7.5</td>
<td>164</td>
<td>52.1</td>
<td>413</td>
<td>18.6</td>
</tr>
<tr>
<td></td>
<td>Pot-roast, ham</td>
<td>8.3</td>
<td>197</td>
<td>54.1</td>
<td>386</td>
<td>38.4</td>
</tr>
<tr>
<td>Other cuts</td>
<td>Brisket, thick and</td>
<td>15.3</td>
<td>273</td>
<td>34.9</td>
<td>260</td>
<td>15.9</td>
</tr>
<tr>
<td></td>
<td>Ground beef</td>
<td>7.3</td>
<td>220</td>
<td>47.5</td>
<td>450</td>
<td>21.3</td>
</tr>
<tr>
<td></td>
<td>Ground beef, extra lean</td>
<td>16.1</td>
<td>271</td>
<td>47.5</td>
<td>558</td>
<td>26.2</td>
</tr>
<tr>
<td></td>
<td>Stern meat, round</td>
<td>12.4</td>
<td>200</td>
<td>60.3</td>
<td>499</td>
<td>28.8</td>
</tr>
<tr>
<td>VEAL</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chop, loin</td>
<td></td>
<td>8.5</td>
<td>261</td>
<td>46.5</td>
<td>473</td>
<td>21.4</td>
</tr>
<tr>
<td>Steak, cold</td>
<td></td>
<td>12.1</td>
<td>218</td>
<td>61.6</td>
<td>406</td>
<td>25.2</td>
</tr>
<tr>
<td>Roast</td>
<td>Round</td>
<td>9.1</td>
<td>247</td>
<td>74.5</td>
<td>309</td>
<td>20.6</td>
</tr>
<tr>
<td></td>
<td>Sirloin</td>
<td>9.1</td>
<td>251</td>
<td>64.9</td>
<td>500</td>
<td>31.5</td>
</tr>
<tr>
<td>PORK</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chop, loin</td>
<td></td>
<td>12.1</td>
<td>263</td>
<td>39.8</td>
<td>368</td>
<td>23.3</td>
</tr>
<tr>
<td>Steak, leg (fresh lean)</td>
<td></td>
<td>7.3</td>
<td>269</td>
<td>71.8</td>
<td>510</td>
<td>28.0</td>
</tr>
<tr>
<td>Roast</td>
<td>Neck, cured (smoked)</td>
<td>7.7</td>
<td>166</td>
<td>94.3</td>
<td>296</td>
<td>19.5</td>
</tr>
<tr>
<td></td>
<td>Shank and</td>
<td>5.4</td>
<td>262</td>
<td>55.4</td>
<td>109</td>
<td>29.8</td>
</tr>
<tr>
<td>Other cuts</td>
<td>Bacon, Canadian style</td>
<td>18.8</td>
<td>218</td>
<td>555</td>
<td>432</td>
<td>33.7</td>
</tr>
<tr>
<td></td>
<td>Bacon, regular sliced</td>
<td>15.4</td>
<td>231</td>
<td>1,077</td>
<td>241</td>
<td>24.9</td>
</tr>
<tr>
<td></td>
<td>Bacon, thick sliced</td>
<td>9.6</td>
<td>220</td>
<td>650</td>
<td>222</td>
<td>27.7</td>
</tr>
<tr>
<td></td>
<td>Sausage, link</td>
<td>18.8</td>
<td>182</td>
<td>950</td>
<td>522</td>
<td>17.0</td>
</tr>
<tr>
<td>LAMB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chop, loin</td>
<td></td>
<td>8.2</td>
<td>214</td>
<td>82.9</td>
<td>465</td>
<td>24.1</td>
</tr>
<tr>
<td>Roast, leg</td>
<td></td>
<td>8.2</td>
<td>213</td>
<td>84.9</td>
<td>512</td>
<td>23.5</td>
</tr>
</tbody>
</table>

*Source portions, separable fat not removed

#All lean

*Byron and Odell, The Nutritional Value of Cooked Meat.

**MINERAL CONTENT OF 100 GRAMS OF CURED AND PROCESSED MEATS**

<table>
<thead>
<tr>
<th>Meat</th>
<th>Calcium (mg)</th>
<th>Phosphorus (mg)</th>
<th>Iron (mg)</th>
<th>Sodium (mg)</th>
<th>Potassium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacon</td>
<td>132</td>
<td>360</td>
<td>89</td>
<td>240</td>
<td>120</td>
</tr>
<tr>
<td>Salami</td>
<td>140</td>
<td>200</td>
<td>100</td>
<td>100</td>
<td>50</td>
</tr>
<tr>
<td>Ham</td>
<td>130</td>
<td>250</td>
<td>100</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>Liver sausage</td>
<td>140</td>
<td>220</td>
<td>100</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>Pork sausage</td>
<td>120</td>
<td>210</td>
<td>100</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>Sausage</td>
<td>110</td>
<td>190</td>
<td>100</td>
<td>120</td>
<td>60</td>
</tr>
<tr>
<td>Sausage</td>
<td>110</td>
<td>190</td>
<td>100</td>
<td>120</td>
<td>60</td>
</tr>
</tbody>
</table>

*Schweigert and Payne, A Summary of the Nutritional Value of Meat.

**MINERAL CONTENT OF 100 GRAMS OF FRESH VARIETY MEATS**

<table>
<thead>
<tr>
<th>Meat</th>
<th>Calcium (mg)</th>
<th>Phosphorus (mg)</th>
<th>Iron (mg)</th>
<th>Sodium (mg)</th>
<th>Potassium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEEF</td>
<td>10</td>
<td>212</td>
<td>3.4</td>
<td>125</td>
<td>310</td>
</tr>
<tr>
<td>Heart</td>
<td>5</td>
<td>195</td>
<td>4.0</td>
<td>65</td>
<td>103</td>
</tr>
<tr>
<td>Kidney</td>
<td>11</td>
<td>219</td>
<td>7.4</td>
<td>176</td>
<td>255</td>
</tr>
<tr>
<td>Liver</td>
<td>8</td>
<td>252</td>
<td>6.5</td>
<td>136</td>
<td>281</td>
</tr>
<tr>
<td>Lung</td>
<td>8</td>
<td>256</td>
<td>8.6</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Pancreas</td>
<td>3</td>
<td>202</td>
<td>2.9</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Spleen</td>
<td>4</td>
<td>272</td>
<td>10.6</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Thymus</td>
<td>14</td>
<td>392</td>
<td>2.1</td>
<td>90</td>
<td>360</td>
</tr>
<tr>
<td>Tongue</td>
<td>8</td>
<td>162</td>
<td>2.1</td>
<td>72</td>
<td>197</td>
</tr>
<tr>
<td>Tripe</td>
<td>127</td>
<td>66</td>
<td>1.6</td>
<td>72</td>
<td>9</td>
</tr>
<tr>
<td>VEAL</td>
<td>10</td>
<td>312</td>
<td>2.4</td>
<td>125</td>
<td>219</td>
</tr>
<tr>
<td>Heart</td>
<td>3</td>
<td>160</td>
<td>3.0</td>
<td>94</td>
<td>200</td>
</tr>
<tr>
<td>Kidney</td>
<td>8</td>
<td>332</td>
<td>8.3</td>
<td>73</td>
<td>201</td>
</tr>
<tr>
<td>Liver</td>
<td>8</td>
<td>332</td>
<td>8.3</td>
<td>73</td>
<td>201</td>
</tr>
<tr>
<td>Lung</td>
<td>8</td>
<td>332</td>
<td>8.3</td>
<td>73</td>
<td>201</td>
</tr>
<tr>
<td>Pancreas</td>
<td>8</td>
<td>332</td>
<td>8.3</td>
<td>73</td>
<td>201</td>
</tr>
<tr>
<td>Spleen</td>
<td>8</td>
<td>332</td>
<td>8.3</td>
<td>73</td>
<td>201</td>
</tr>
<tr>
<td>Thymus (sweetbreads)</td>
<td>8</td>
<td>332</td>
<td>8.3</td>
<td>73</td>
<td>201</td>
</tr>
<tr>
<td>Tongue</td>
<td>8</td>
<td>332</td>
<td>8.3</td>
<td>73</td>
<td>201</td>
</tr>
<tr>
<td>Tripe</td>
<td>8</td>
<td>332</td>
<td>8.3</td>
<td>73</td>
<td>201</td>
</tr>
<tr>
<td>FORK</td>
<td>10</td>
<td>312</td>
<td>2.4</td>
<td>125</td>
<td>219</td>
</tr>
<tr>
<td>Chitterlings</td>
<td>3</td>
<td>160</td>
<td>3.0</td>
<td>94</td>
<td>200</td>
</tr>
<tr>
<td>Heart</td>
<td>11</td>
<td>218</td>
<td>6.7</td>
<td>115</td>
<td>170</td>
</tr>
<tr>
<td>Kidney</td>
<td>11</td>
<td>218</td>
<td>6.7</td>
<td>115</td>
<td>170</td>
</tr>
<tr>
<td>Liver</td>
<td>10</td>
<td>356</td>
<td>19.2</td>
<td>73</td>
<td>361</td>
</tr>
<tr>
<td>Lung</td>
<td>10</td>
<td>356</td>
<td>19.2</td>
<td>73</td>
<td>361</td>
</tr>
<tr>
<td>Pancreas</td>
<td>11</td>
<td>282</td>
<td>1.0</td>
<td>44</td>
<td>217</td>
</tr>
<tr>
<td>Spleen</td>
<td>11</td>
<td>282</td>
<td>1.0</td>
<td>44</td>
<td>217</td>
</tr>
<tr>
<td>Tongue</td>
<td>11</td>
<td>282</td>
<td>1.0</td>
<td>44</td>
<td>217</td>
</tr>
<tr>
<td>Tripe</td>
<td>11</td>
<td>282</td>
<td>1.0</td>
<td>44</td>
<td>217</td>
</tr>
<tr>
<td>LAMB</td>
<td>10</td>
<td>212</td>
<td>2.4</td>
<td>125</td>
<td>219</td>
</tr>
<tr>
<td>Heart</td>
<td>11</td>
<td>249</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Kidney</td>
<td>13</td>
<td>218</td>
<td>7.6</td>
<td>300</td>
<td>220</td>
</tr>
<tr>
<td>Liver</td>
<td>10</td>
<td>249</td>
<td>10.9</td>
<td>52</td>
<td>200</td>
</tr>
<tr>
<td>Lung</td>
<td>10</td>
<td>249</td>
<td>10.9</td>
<td>52</td>
<td>200</td>
</tr>
<tr>
<td>Pancreas</td>
<td>10</td>
<td>249</td>
<td>10.9</td>
<td>52</td>
<td>200</td>
</tr>
<tr>
<td>Spleen</td>
<td>10</td>
<td>249</td>
<td>10.9</td>
<td>52</td>
<td>200</td>
</tr>
<tr>
<td>Tongue</td>
<td>10</td>
<td>249</td>
<td>10.9</td>
<td>52</td>
<td>200</td>
</tr>
<tr>
<td>Tripe</td>
<td>10</td>
<td>249</td>
<td>10.9</td>
<td>52</td>
<td>200</td>
</tr>
</tbody>
</table>

*Schweigert and Payne, A Summary of the Nutritional Value of Meat.

**BEST COPY AVAILABLE**
## Calorie and Fat Content of 100 Grams of Fresh and Cooked Variety Meats*

<table>
<thead>
<tr>
<th>Meat</th>
<th>Energy (Calories)</th>
<th>Fat (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fresh</td>
<td>Cooked</td>
</tr>
<tr>
<td></td>
<td>Protein From</td>
<td>From</td>
</tr>
<tr>
<td></td>
<td>Fat</td>
<td>Total</td>
</tr>
<tr>
<td>BEEF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain</td>
<td>44</td>
<td>78</td>
</tr>
<tr>
<td>Heart</td>
<td>72</td>
<td>53</td>
</tr>
<tr>
<td>Kidney</td>
<td>73</td>
<td>27</td>
</tr>
<tr>
<td>Liver</td>
<td>68</td>
<td>32</td>
</tr>
<tr>
<td>Lung</td>
<td>21</td>
<td>30</td>
</tr>
<tr>
<td>Pancreas</td>
<td>22</td>
<td>123</td>
</tr>
<tr>
<td>Spleen</td>
<td>77</td>
<td>102</td>
</tr>
<tr>
<td>Thymus</td>
<td>56</td>
<td>43</td>
</tr>
<tr>
<td>Tongue</td>
<td>60</td>
<td>129</td>
</tr>
<tr>
<td>Tripe</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>VEAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain</td>
<td>47</td>
<td>46</td>
</tr>
<tr>
<td>Heart</td>
<td>72</td>
<td>36</td>
</tr>
<tr>
<td>Kidney</td>
<td>65</td>
<td>39</td>
</tr>
<tr>
<td>Liver</td>
<td>61</td>
<td>59</td>
</tr>
<tr>
<td>Lung</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Pancreas</td>
<td>70</td>
<td>123</td>
</tr>
<tr>
<td>Spleen</td>
<td>79</td>
<td>70</td>
</tr>
<tr>
<td>Thymus (sweetbread)</td>
<td>71</td>
<td>17</td>
</tr>
<tr>
<td>Tongue</td>
<td>77</td>
<td>76</td>
</tr>
<tr>
<td>Tripe</td>
<td>54</td>
<td>94</td>
</tr>
<tr>
<td>PORK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain</td>
<td>49</td>
<td>76</td>
</tr>
<tr>
<td>Chitterlings</td>
<td>42</td>
<td>103</td>
</tr>
<tr>
<td>Heart</td>
<td>72</td>
<td>42</td>
</tr>
<tr>
<td>Kidney</td>
<td>71</td>
<td>29</td>
</tr>
<tr>
<td>Liver</td>
<td>69</td>
<td>40</td>
</tr>
<tr>
<td>Lung</td>
<td>42</td>
<td>21</td>
</tr>
<tr>
<td>Pancreas (sweetbread)</td>
<td>68</td>
<td>98</td>
</tr>
<tr>
<td>Spleen</td>
<td>77</td>
<td>73</td>
</tr>
<tr>
<td>Tongue</td>
<td>71</td>
<td>51</td>
</tr>
<tr>
<td>Tripe</td>
<td>54</td>
<td>94</td>
</tr>
<tr>
<td>LAMBS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brain</td>
<td>47</td>
<td>71</td>
</tr>
<tr>
<td>Heart</td>
<td>74</td>
<td>51</td>
</tr>
<tr>
<td>Kidney</td>
<td>67</td>
<td>79</td>
</tr>
<tr>
<td>Liver</td>
<td>91</td>
<td>67</td>
</tr>
<tr>
<td>Lung</td>
<td>74</td>
<td>54</td>
</tr>
<tr>
<td>Pancreas</td>
<td>63</td>
<td>94</td>
</tr>
<tr>
<td>Spleen</td>
<td>77</td>
<td>73</td>
</tr>
<tr>
<td>Tongue</td>
<td>63</td>
<td>60</td>
</tr>
<tr>
<td>Tripe</td>
<td>62</td>
<td>60</td>
</tr>
</tbody>
</table>

*Estimations and analysis, "Nutritional Content of Variety Meats," Food Technology.

**Similar and e.g., Nutritional Quality of Variety Meats.

1 All separable fat removed before cooking.

---

**BEST COPY AVAILABLE**
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT IV: Meat Cookery

Lessons: 1—General Principles of Meat Cookery
2—Cooking Methods for the Tender Cuts of Meat
3—Cooking Methods for the Less Tender Cuts of Meat

Lesson 1: General Principles of Meat Cookery

I. Preparation for Instruction

A. Student Objectives

1. Terminal: Identify the combination of factors which work together to make meat palatable.

2. Specific:
   a. Know the specific meaning of the term "palatability" as it has reference to meat.
   b. List several qualities of cooked meat that affect palatability.
   c. Explain in writing the importance of temperature control in meat cookery.
   d. Identify the factors that must be considered when determining total cooking time of meat.

B. Review of Teaching Material


C. Materials Required

1. Chalk
2. Chalk Board
II. Presentation of Lesson

A. Content Outline

1. Palatability and Meat Cookery
   a. Meat and meat products will be consumed in adequate and increasing quantities only if they appeal to and are accepted by the consumer on the basis of "palatability." Meat palatability is dependent upon such qualities as color, odor, flavor, juiciness, tenderness, and texture.

   b. Palatability of cooked meat cannot be determined by sophisticated physical or chemical tests, but any dependable evaluation of the eating qualities of meat requires the all-important opinion of the consumer's palate.

   c. Palatability is defined as being agreeable and pleasing in taste and appearance. The ultimate goal of everyone who cooks meat is to make it palatable.

2. Qualities of Cooked Meat that Affect Palatability
   a. The attractive appearance and tastiness of cooked meat is dependent primarily on the following qualities:

      (1) color
      (2) flavor
      (3) juiciness
      (4) tenderness

   b. Generally, personal preference plays a very important role in the desirous color of cooked meat. Color of cooked meat depends largely on the following:

      (1) nature of animal
      (2) age of animal
      (3) length of cooking time
(4) intensity of heat during cooking
(5) method of cooking
c. Proper flavor of cooked meat is dependent upon an individual's preference, even though the meat industry has established consistent flavors for aged and unaged beef, veal, fresh and cured pork, lamb, etc. The nature and intensity of meat flavors depend in part on the following:
(1) method of cooking
(2) length of cooking time
(3) temperature of cooking
d. Juiciness of cooked meat is very closely associated with the tenderness of meat. The more tender the meat, the more quickly the juices are released by chewing and the more juicy the meat appears. The most important factor influencing juiciness of cooked meat is the cooking procedure. Juiciness is associated with the degree of marbling.
e. The most important palatability factor of cooked meat is tenderness. Many factors affect the tenderness of meat. These factors include the following:
(1) genetics
(2) feeding practices
(3) length of storage after slaughter
(4) temperature of storage
(5) methods of cutting
(6) methods of cooking
(7) addition of tenderizing agents
Additionally, tenderness varies from muscle bundle to muscle bundle; therefore, the cut of meat is largely responsible for tenderness.
3. **The Importance of Correct Temperature**

   a. Heat during the cooking process decreases the size and the weight of the cut of meat. This process is called "shrinkage." This results in the loss of water, fat, vitamins, and other substances. These cooking losses are important because they affect the appearance and the palatability of the meat.

   b. Factors which affect cooking losses are as follows:

      (1) Temperature. The higher the cooking temperature, the greater the shrinkage. Research has shown that low to moderate cooking temperature saves meat.

      (2) Degree of doneness. The higher the internal temperature of the meat, the greater the shrinkage. Pork must be cooked well done, but pork roasts become dry and shrink severely when overcooked.

   c. When meat is cooked at proper temperature and to the correct degree of doneness, it is juicy, flavorful, easier to carve, and much more economical.

4. **Factors to Consider When Determining Total Cooking Time**

   a. There are four factors that must be considered in determining the cooking time of meat:

      (1) the cooking temperature

      (2) the size and shape of the cut

      (3) the amount of aging

      (4) the degree of doneness desired

   b. The total cooking time of meat is only an approximate guide to degree of doneness. Personal preference plays an important role.
B. Suggested Student Activities

1. For a few days, have the students note the "palatability" of meat eaten at home. Discuss findings in class.

2. Have students visit a local restaurant to discuss their plans for serving attractive and appetizing meat dishes.
LESSON 1 EXAMINATION

1. Define the term "palatability" as it refers to meat cookery.

2. Name four factors that determine the palatability of cooked meat.
   a. 
   b. 
   c. 
   d. 

3. Briefly explain "shrinkage" as it relates to meat cookery.

4. List two ways shrinkage in meat cookery can be controlled.
   a. 
   b. 

5. What is the advantage of cooking meat at the proper temperature and to the correct degree of doneness?

6. List seven factors that may affect the tenderness of meat.
   a. 
   b. 
   c. 
   d. 
   e. 
   f. 
   g.
7. List the four factors to consider when determining the proper cooking time of meat.

a.

b.

c.

d.
Lesson 2: Cooking Methods for the Tender Cuts of Meat

I. Preparation for Instruction

A. Student Objectives

1. **Terminal**: Explain the procedure for cooking meat with dry heat.

2. **Specific**:
   a. Identify the cuts of meat suitable for dry heat cookery.
   b. Explain in writing the use of dry heat in cooking.
   c. Explain in writing three methods of dry heat cookery.

B. Review of Teaching Material


2. *Yellow Pages--Answers to Predictable Questions Consumers Ask About Meat, compiled by Consumer Affair Committee of the American Meat Institute.*

C. Materials Required

1. Overhead projector
2. Screen
3. Transparencies

II. Presentation of Lesson

A. Content Outline

1. **Cuts of Meat Suitable for Dry Heat Cookery**
   a. The cuts suitable for dry heat cookery are easily identified when associated with the
respective wholesale cuts. Generally, the dry heat cuts are those retail cuts which have long skeletal muscles with a high degree of marbling and fat content with little or no connective tissue.

b. Cuts of Pork Suitable for Dry Heat Methods (TM1)

<table>
<thead>
<tr>
<th>Wholesale</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ham</td>
<td>Fresh ham rump</td>
</tr>
<tr>
<td></td>
<td>Fresh ham shank</td>
</tr>
<tr>
<td></td>
<td>Fresh ham boneless</td>
</tr>
<tr>
<td></td>
<td>Fresh ham center slice</td>
</tr>
<tr>
<td></td>
<td>Smoke ham rump</td>
</tr>
<tr>
<td></td>
<td>Smoke ham shank</td>
</tr>
<tr>
<td></td>
<td>Smoke ham center cut</td>
</tr>
<tr>
<td>Loin</td>
<td>Loin roasts</td>
</tr>
<tr>
<td></td>
<td>Loin chops</td>
</tr>
<tr>
<td></td>
<td>Tenderloin</td>
</tr>
<tr>
<td></td>
<td>Smoke loin chops</td>
</tr>
<tr>
<td>Side (belly)</td>
<td>Bacon</td>
</tr>
<tr>
<td></td>
<td>Spare ribs</td>
</tr>
</tbody>
</table>

c. Cuts of Beef Suitable for Dry Heat Method (TM2)

<table>
<thead>
<tr>
<th>Wholesale</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rump</td>
<td>Roasts</td>
</tr>
<tr>
<td>Sirloin</td>
<td>Sirloin steak</td>
</tr>
<tr>
<td>Shortloin</td>
<td>Porterhouse steak</td>
</tr>
<tr>
<td></td>
<td>T-Bone steak</td>
</tr>
<tr>
<td></td>
<td>Top loin steak</td>
</tr>
<tr>
<td></td>
<td>Tenderloin steak</td>
</tr>
<tr>
<td>Rib</td>
<td>Rib roast</td>
</tr>
<tr>
<td></td>
<td>Rib steak</td>
</tr>
<tr>
<td></td>
<td>Rib-eye roast</td>
</tr>
<tr>
<td></td>
<td>Rib-eye steak</td>
</tr>
<tr>
<td>Short Plate</td>
<td>Short ribs</td>
</tr>
</tbody>
</table>

d. Cuts of Lamb Suitable for Dry Heat Method (TM3)

<table>
<thead>
<tr>
<th>Wholesale</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg</td>
<td>Leg of lamb</td>
</tr>
<tr>
<td></td>
<td>Center slice</td>
</tr>
<tr>
<td></td>
<td>Sirloin chops</td>
</tr>
<tr>
<td>Loin</td>
<td>Loin roast</td>
</tr>
<tr>
<td></td>
<td>Loin chops</td>
</tr>
</tbody>
</table>
Rib (rack)               Rib roast
    Rib chops
Shoulder                    Square cut shoulder
    Arm chops
    Blade chops
e.  Cuts of Veal Suitable for Dry Heat Method (TM4)
(Veal has very little fat; therefore, dry heat cookery is not generally recommended. However, the following cuts may be cooked successfully using the dry heat method.)

<table>
<thead>
<tr>
<th>Wholesale</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg</td>
<td>Rump roast</td>
</tr>
<tr>
<td></td>
<td>Cutlets</td>
</tr>
<tr>
<td>Loin</td>
<td>Center cut roast</td>
</tr>
<tr>
<td>Rib</td>
<td>Chops</td>
</tr>
<tr>
<td></td>
<td>Rib roast</td>
</tr>
<tr>
<td></td>
<td>Rib chops</td>
</tr>
</tbody>
</table>

2. **Use of Dry Heat in Cooking**

   a. Dry heat cookery is a fundamental method of cooking meat by surrounding the cut by dry air in the oven, under the broiler, over charcoal, etc.

   b. Dry heat cookery is more adaptable to the tender cuts of meat. Meat with little to no connective tissue is generally suitable for dry heat cookery.

3. **Methods of Dry Heat Cookery**

   a. There are basically three methods of dry heat cookery:

      (1) roasting
      (2) broiling
      (3) pan-broiling

   b. Roasting—This method is accomplished by placing the cut on a rack in an open roasting pan with fat side up. No water is added. No lid is used to cover the roast. Roasting is done at slow temperature of 300° F. until a
desired degree of doneness. Fresh pork is roasted at an oven temperature of 325°F until well done.

c. Broiling—This method consists of a direct exposure of the meat to heat. Examples of broiling include outdoor charcoaling, and broiling from both sides as in vertical grills with heat on both sides.

d. Pan-broiling—This method is very suitable for steaks and chops one inch thick or less. The meat is placed in a heavy iron skillet or on a heavy griddle and is browned on both sides. After browning, the temperature is lowered and the cuts are turned occasionally until done. No fat is allowed to accumulate.

e. Pan-frying is similar to pan-broiling except that fat is added to the pan while cooking. Usually relatively thin pieces of tender meat may successfully be pan-fried.

B. Suggested Student Activities

1. Encourage students to use one or all methods of dry heat cookery at home. Report to class on results of home cookery.

2. Ask students to shop with their parents at supermarkets for cuts of meat suitable for dry heat cooking. Report to class.
LESSON 2 EXAMINATION

1. Name seven retail cuts of meat which are suitable for dry heat cookery from the following:

<table>
<thead>
<tr>
<th>Pork</th>
<th>Beef</th>
<th>Lamb</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>a.</td>
<td>a.</td>
</tr>
<tr>
<td>b.</td>
<td>b.</td>
<td>b.</td>
</tr>
<tr>
<td>c.</td>
<td>c.</td>
<td>c.</td>
</tr>
<tr>
<td>d.</td>
<td>d.</td>
<td>d.</td>
</tr>
<tr>
<td>e.</td>
<td>e.</td>
<td>e.</td>
</tr>
<tr>
<td>f.</td>
<td>f.</td>
<td>f.</td>
</tr>
<tr>
<td>g.</td>
<td>g.</td>
<td>g.</td>
</tr>
</tbody>
</table>

2. Why is dry heat cookery more adaptable to the tender cuts of meat?

3. List the three basic methods of dry heat cookery. Explain the basis of each method.

a. 

b. 

c.
Lesson 3: Cooking Methods for the Less Tender Cuts of Meat

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Explain the procedure for cooking meat with moist heat.

2. **Specific:**
   a. Identify the cuts of meat suitable for moist heat cookery.
   b. Explain in writing the moist heat method of cooking meat.
   c. Explain in writing the two basic methods of cooking with moist heat.

B. Review of Teaching Material


C. Materials Required

1. Overhead projector
2. Screen
3. Transparencies

II. Presentation of Lesson

A. Content Outline

1. **Cuts of Meat Suitable for Moist Heat Cookery**
   a. The cuts of meat suitable for moist heat cookery are generally the less tender cuts.
These are cuts with considerable amounts of connective tissue or cuts that have short curved muscle bundles. However, in consideration of personal preference, some of the more tender cuts are cooked in moist heat.

b. Cuts of pork recommended to be cooked in moist heat (IM1)
   (1) Clops
   (2) Blade steaks
   (3) Arm steak
   (4) Shoulder roast
   (5) Ham—shank portion
   (6) Salt side of pork
   (7) Pork hocks
   (8) Fresh pig's feet
   (9) Any other cut considered by the individual to be less tender

c. Cuts of beef recommended to be cooked in moist heat (IM2)
   (1) Round steak
   (2) Short ribs and plate meat
   (3) Heel of round
   (4) Flank
   (5) Brisket
   (6) Chuck pot roast
   (7) Shank
   (8) Chuck steak
   (9) Corned beef
   (10) Beef for stew
(11) Any other cut considered by the individual to be less tender

d. Cuts of lamb recommended to be cooked in moist heat (TM3)

(1) Breast
(2) Riblets
(3) Shoulder chops
(4) Shank
(5) Neck slices
(6) Lamb for stew
(7) Any other cut considered by the individual to be less tender

e. Cuts of veal recommended to be cooked in moist heat (TM4)

(1) Breast
(2) Riblets
(3) Cutlets
(4) Shoulder chops and cubes
(5) Shoulder roasts
(6) Heel of round
(7) Shank
(8) Veal for stew
(9) Any other cut considered by the individual to be less tender

2. **Using the Moist Heat Method of Cooking Meat**

a. Cuts of meat that are less tender must have moisture added for cooking. The steam or liquid of moist heat softens the meat's connective tissue and makes the product tender.
b. The moist heat methods of cooking are as follows:

(1) braising

(2) cooking in liquid

c. Using moist heat to cook meat results in the loss of some flavor and nutrients to the liquid. Therefore, meats should be browned on all sides to enhance flavor. Using drippings for gravy or sauce compensates for much of the loss of flavor and nutrients.

3. Methods of Meat Cookery Using Moist Heat

a. There are basically two methods of moist heat cookery. They are braising and cooking in liquid.

b. Braising simply involves the browning of meat cut on all sides in a heavy utensil, adding seasoning and a small amount of liquid, covering tightly, and cooking at low temperature until tender. Braising is done either on top of the range or in the oven.

c. Cooking in liquid method involves the browning of the cut in its own fat or juices, then adding hot liquid. The meat is allowed to cook at a simmering temperature until tender. Stews and soups call for the cooking in liquid method.

B. Suggested Student Activities

1. Solicit recipes from students using the moist heat method of cooking meat for soup, stew, or other dishes. Examine recipes and cuts of meat used; determine if more or less tender cuts are used.
LESSON 3 EXAMINATION

1. Name seven retail cuts of meat recommended to be cooked in moist heat from the following:

<table>
<thead>
<tr>
<th>Pork</th>
<th>Veal</th>
<th>Beef</th>
<th>Lamb</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>a.</td>
<td>a.</td>
<td>a.</td>
</tr>
<tr>
<td>b.</td>
<td>b.</td>
<td>b.</td>
<td>b.</td>
</tr>
<tr>
<td>c.</td>
<td>c.</td>
<td>c.</td>
<td>c.</td>
</tr>
<tr>
<td>d.</td>
<td>d.</td>
<td>d.</td>
<td>d.</td>
</tr>
<tr>
<td>e.</td>
<td>e.</td>
<td>e.</td>
<td>e.</td>
</tr>
<tr>
<td>f.</td>
<td>f.</td>
<td>f.</td>
<td>f.</td>
</tr>
<tr>
<td>g.</td>
<td>g.</td>
<td>g.</td>
<td>g.</td>
</tr>
</tbody>
</table>

2. List the two basic methods of cooking meat with moist heat. Explain each method.
   a.
   b.

3. How does cooking with moist heat make less tender cuts of meat more tender?
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT V: Meat Processing

Lessons: 1—Cutting Wholesale and Retail Beef Cuts
2—Cutting Wholesale and Retail Pork Cuts
3—Cutting Chickens
4—Curing and Smoking of Meat

Lesson 1: Cutting Wholesale and Retail Beef Cuts

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Describe and demonstrate how to divide a beef side into the wholesale and retail cuts.

2. **Specific:**
   a. Identify wholesale beef cuts.
   b. Identify retail beef cuts.
   c. Break beef carcass into wholesale cuts.
   d. Break beef carcass into retail cuts.

B. Review of Teaching Materials

3. Meatcutter, Instructional Materials Services, Division of Extension, University of Texas.

C. Materials Required

1. Meat processing center
2. Overhead projector
3. Transparencies
4. Beef carcasses
5. Meat cutting saws
6. Meat cutting hand tools; knives, saws, sharpening tools, etc.
7. Hard hats, aprons, etc.

II. Presentation of Lesson

A. Content Outline

1. Identify Wholesale Beef Cuts

   a. Recognize the bone structure of beef side carcasses and the wholesale cuts.
   b. Recognize the muscle structure of beef side carcasses and the wholesale cuts.

2. Cut Beef Side Carcasses into Wholesale Meat Cuts
   (See TM8.)

   a. Cut beef side into hindquarter and forequarter (TM1 and TM5).
      (1) Count twelve ribs and leave one rib on the hindquarter.
      (2) Separate quarters with knife and hand meat saw.

   b. Separate the chuck from the rib, brisket, and shank (TM2).
      (1) Count five ribs for determining initial cuts from neck.
      (2) Separate the chuck from the brisket and shank.

   c. Separate shank and brisket by finding the indentation on the arm bone and removing the parts (TM2).

   d. Locate and make a cut for removing the short plate from the rib and flank (TM2).

   e. Cut the flank from the sirloin tip to the thirteenth rib (TM2).
f. Separate the round and sirloin.

   (1) Find the area for cutting the angle.
   (2) Score with a knife.
   (3) Saw the bone with a meat saw

g. Remove the rump from the round

   (1) Mark and cut the muscle.
   (2) Saw the bone with a meat saw and remove the rump.

3. Identify Retail Cuts of Beef (TM3, TM4, TM8)

   a. Recognize the bone structure of the wholesale and retail cuts.
   b. Recognize muscle structure of the wholesale and retail cuts.

4. Cut Retail Cuts from Wholesale Cuts

   a. Cut retail cuts from the chuck.
      
      (1) Inside chuck roll
      (2) Chuck tender
      (3) Blade pot roast and steaks
      (4) Boneless shoulder pot roast and steaks
      (5) Petite steak
      (6) Arm pot roast and steak
      (7) English (Boston) cut
      (8) Parts for ground beef

   b. Cut retail cuts from the shank.
      
      (1) Shank cross cut
      (2) Beef stew
      (3) Parts for ground beef
c. Cut retail cuts from the brisket.
   (1) Fresh brisket
   (2) Corned brisket
   (3) Parts for ground beef

d. Cut retail cuts from the rib.
   (1) Standing rib roast
   (2) Rib steak
   (3) Rib steak (boneless)
   (4) Lelmonico (rib eye) roasts and steaks
   (5) Parts for ground beef

e. Cut retail cuts from the short plate.
   (1) Short ribs
   (2) Short steak fillets
   (3) Rolled plate
   (4) Plate beef
   (5) Parts for ground beef

f. Cut retail cuts from the short loin.
   (1) Club steaks
   (2) T-bone steaks
   (3) Porterhouse steaks
   (4) Top loin steaks
   (5) Filet mignon
   (6) Tenderloin steaks
   (7) Parts for ground beef

g. Cut retail cuts from the flank.
   (1) Flank steak
(2) Flank steak fillets
(3) Rolled flank
(4) Flank meat
(5) Parts for ground beef

h. Cut retail cuts from the sirloin.
(1) Pin bone sirloin steak
(2) Flat bone sirloin steak
(3) Wedge bone sirloin steak
(4) Boneless sirloin steak
(5) Tip steak
(6) Cube steak
(7) Sirloin tips

i. Cut retail cuts from the rump.
(1) Tip steaks
(2) Sirloin tip
(3) Cube steak
(4) Rolled rump
(5) Standing rump

j. Cut retail cuts from the round.
(1) Heel of round
(2) Top of round steak
(3) Bottom round steak
(4) Round steak
(5) Eye of round
(6) Parts for ground beef
B. Suggested Student Activities

1. Have each student cut one of the wholesale cuts from a side of beef.

2. Have each student cut one of the wholesale cuts into retail cuts.

3. Have students evaluate one another on tool selection and cutting accuracy.
LESSON EXAMINATION

CUTTING BEEF

1. Show where the primal cuts of a forequarter are made by drawing the proper lines in the illustration below; write in the names of the cuts.

2. Show where the primal cuts of a hindquarter are made by drawing the proper lines in the illustration below; write in the names of the cuts.
4. Identify the retail cuts of beef shown in the illustration. Write the names of the cuts in the corresponding blanks provided.

a. __________________________

b. __________________________

c. __________________________

d. __________________________

e. __________________________

f. __________________________

g. __________________________

h. __________________________

i. __________________________

j. __________________________

k. __________________________

l. __________________________

m. __________________________

n. __________________________

o. __________________________

p. __________________________
Lesson 2: Cutting Wholesale and Retail Pork Cuts

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Describe and demonstrate the steps used in breaking a pork carcass into wholesale and retail cuts.

2. **Specific:**
   a. Orally identify wholesale cuts.
   b. Orally identify retail cuts.
   c. Break pork carcass into wholesale cuts.
   d. Break wholesale pork cuts into retail cuts.

B. Review of Teaching Materials


C. Materials Required

1. Overhead projector
2. Transparencies
3. Pork carcasses
4. Meat cutting saws
5. Meat cutting hand tools: butcher knives, boning knives, hand meat saw, sharpening stone, sharpening steel
6. Hard hats, aprons
II. Presentation of Lesson

A. Content Outline

1. **Recognize the bone structure of a pork side carcass and the wholesale cuts.**

2. **Recognize the muscle structure of a pork side carcass and the wholesale cuts.**

3. **Cut a pork side carcass into wholesale meat cuts** (see TM9).
   a. Locate correct forefoot bone and cut off forefoot from picnic.
   b. Cut pork heads.
      (1) Locate and remove to jowl.
      (2) Remove eyes.
      (3) Locate and remove ear canal.
      (4) Remove snout.
   c. Cut pork shoulder, leaving three ribs.
   d. Separate the picnic from the shoulder.
   e. Separate the ham from the loin.
      (1) Remove the kidney.
      (2) Remove the leaf lard.
      (3) Pull loose the curing vein.
      (4) Cut the ham from the loin.
   f. Cut the pork belly.
      (1) Separate the belly from the loin.
      (2) Cut and lift the ribs out.
   g. Cut the hind foot from the ham.

4. **Identify pork retail meat cuts.**
   a. Recognize the bone structure of the wholesale and retail meat cuts.
b. Recognize the muscle structure of the wholesale and retail cuts.

5. Cut pork retail cuts from various wholesale cuts (see TM10).

a. Cut the retail cuts from the Boston butt.
   (1) Boston butt
   (2) Blade steak
   (3) Rolled Boston butt
   (4) Shoulder butt
   (5) Pieces of meat for sausage
   (6) Lard

b. Cut retail cuts from the picnic.
   (1) Fresh picnic
   (2) Rolled fresh picnic
   (3) Arm roasts and steaks
   (4) Fresh hock

c. Cut retail cuts from the belly.
   (1) Bacon
   (2) Spareribs

d. Cut retail cuts from the loin.
   (1) Blade loin roasts and steaks
   (2) Country style back bone
   (3) Back rib
   (4) Center loin roasts and chops
   (5) Rib chops
   (6) Butterfly chops
(7) Rolled loin roasts
(8) Sirloin roasts and chops
(9) Tenderloin
(10) Canadian style bacon

e. Cut retail cuts from the leg.

(1) Sirloin tip roast
(2) Boneless rump of fresh pork
(3) Whole ham
(4) Boneless ham

B. Suggested Student Activities

Using the Food Preservation Laboratory

a. Have student observe the cutting of a pork carcass into wholesale cuts.

b. Have students orally identify wholesale cuts.

c. Have students observe the cutting of wholesale pork cuts into retail cuts.

d. Have students orally identify retail cuts.

e. Divide class into groups of three or four and have students in each group take turns selecting appropriate tools and cutting one wholesale cut into retail cuts.
LESSON EXAMINATION

CUTTING PORK

1. From the illustration below, identify the wholesale cuts of pork by writing in the appropriate name in the corresponding blank.

   a. ___________________  
   b. ___________________  
   c. ___________________  
   d. ___________________  
   e. ___________________  
   f. ___________________  
   g. ___________________  
   h. ___________________  
   i. ___________________  
   j. ___________________  
   k. ___________________  

   ![Illustration of pork cuts]

   a. [Diagram label]
   b. [Diagram label]
   c. [Diagram label]
   d. [Diagram label]
   e. [Diagram label]
   f. [Diagram label]
   g. [Diagram label]
   h. [Diagram label]
   i. [Diagram label]
   j. [Diagram label]
   k. [Diagram label]
2. Identify the retail cuts of pork shown in the illustration. Write the names of the cuts in the corresponding blanks provided.

a. ______________________  i. ______________________

b. ______________________  j. ______________________

c. ______________________  k. ______________________

d. ______________________  l. ______________________

e. ______________________  m. ______________________

f. ______________________  n. ______________________

g. ______________________  o. ______________________

h. ______________________  p. ______________________
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT V: Meat Processing

LESSON 3: Cutting Chickens

I. Preparation for Instruction

A. Student Objectives:

1. **Terminal:** Describe and demonstrate the steps used in cutting chickens into parts.

2. **Specific:**
   a. Identify the parts of a chicken.
   b. Cut the chicken in several parts.
   c. Cut the chicken into halves.
   d. Cut the chicken into quarters.

B. Review of Teaching Material

1. Meatcutter, Instructional Materials Services, Division of Extension, The University of Texas.


C. Materials Required

1. Sharp boning knife
2. Several whole chickens
3. Aprons
4. Overhead projector
5. Transparency

II. Presentation of Lesson

A. Content Outline

1. **Describe the classes of chickens**
   a. Fryer or broiler
2. **Identify the Several Parts of Chicken**

Recognize the bone structure of the chicken (see TM11).

3. **Cut Chicken into Parts** (see TM12).

1. Leg
2. Drumstick
3. Thigh
4. Wings
5. Breast
6. Wishbone
7. Back
8. Back strips and neck
9. Neck

4. **Cut Chicken into Halves** (see TM13).

5. **Cut Chicken into Quarters** (see TM14).

B. **Suggested Student Activities**

1. Divide class into groups of three or four. Have each group cut a fryer into parts, each student participating.

2. Have each student cut a fryer in halves.

3. Have each student cut a fryer in quarters.
LESSON 3 EXAMINATION
Cutting Chicken

1. Describe six classes of chicken.

2. How may a chicken be cut up? Give four ways.

3. Identify the several parts of a chicken.
Lesson 4: Curing and Smoking of Meat

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Understand how and why meats are cured and smoked.

2. **Specific:**
   a. Define in writing the meaning of the word "cure".
   b. Identify in writing the three basic curing ingredients and list two functions of each.
   c. List in writing the methods of curing and an advantage and disadvantage of each.
   d. List in writing the benefits of smoking meat products.
   e. List in writing the three types of casings.

B. Review of Teaching Materials


II. Presentation of Lesson

Content Outline

1. Curing is the addition of salt, sugar, and saltpeter to meats for the purpose of preservation, flavor enhancement, or color development. The functions of the three basic ingredients are as follows:

   a. Salt -
      (1) Contributes characteristic flavor to the product
(2) Acts as a preservative, inhibiting the growth of microorganisms

(3) Moves through meat by way of osmosis, enhancing the transport of nitrates, nitrites, and sugar into the muscle

b. Sugar

(1) Contributes characteristic flavor to the product

(2) Counteracts the harshness of salt

(3) Provides a source of energy for the bacteria which convert nitrate to nitrite during long cures

c. Saltpeter

(1) Contributes characteristic flavor to the product

(2) Prevents warmed-over flavor in reheated products

(3) Retards the development of rancidity during storage

(4) Prevents the growth of Clostridium botulinum in canned products

(5) Contributes the characteristic cured-pink color to the product

2. There are several methods for applying cure to meats. They are as follows:

a. Dry curing--involves rubbing the external surface of the meat with the curing mixture. Penetration of curing ingredients is by osmosis. This method requires long periods of storage. Additional cure is applied during storage in a process called "overhauling."

(1) Advantages

(a) Results in unsurpassed flavor and texture of specialty products (country cured hams)
(b) No special equipment is necessary.

(c) A drier final product is obtained; thus the need for preservation is reduced.

(d) Surface bacteria are controlled, because concentrated salt kills all bacteria except those that are halophilic (salt-tolerant).

(2) Disadvantages

(a) Complete cure penetration requires from 35-45 days for hams and 8-14 days for bacon.

(b) Souring around the bones may occur because of lack of rapid enough salt penetration to the interior of the cut.

(c) Rancidity may occur as a result of oxidation of the fat during storage.

(d) High levels of shrinkage occur.

(e) The ultimate saltiness of products cured in this manner is intolerable to the general consuming public.

b. Curing with liquid—Water is used as a medium for dissolving the curing ingredients and facilitating contact between cure ingredients and meat.

Cover pickle curing involves putting the fresh product into the pickle or into the solution containing the curing ingredients. Penetration of the curing ingredients is by osmosis.

(1) Advantages

(a) Water dissolves all soluble ingredients, resulting in a more uniform distribution of ingredients.

(b) Water added to the product adds weight.
(2) Disadvantages

(a) Curing with cover solution without pumping some of the solution into the product can result in the bone's souring before the cure reaches the deeper portions of the muscle.

(b) Unless salt concentration is higher than for dry cure, the time required for curing is increased.

(c) A sweet pickle, or with sugar included, provides an excellent growing medium for yeasts and may become "ropy" and impart an off flavor to the product.

c. Injection curing— injection of pickle or sweet pickle into the product, by one of the following methods:

(1) Stitch or spray pumping—injecting the solution by spraying via a needle, under pressure, into the muscle. The needle, or series of needles, is hollow with a series of holes along the needle body. Stitch pumping is used for bacon, hams, pastrami, picnic shoulders, corned beef, and others.

(2) Artery pumping—allows for the best possible distribution of cure by using the vascular system for distribution. The needle is forced into an artery and curing solution is pumped in under approximately 40 psi of pressure.

(3) Machine injection—used in large commercial operations for injection of pickle into pork bellies.

d. Combination Curing

(1) Injection curing with dry cover is used to obtain a final product very similar to a dry cure. This method allows for faster curing, less dehydration, and less danger of spoilage.
(2) Injection curing with a cover pickle allows for faster curing by covering the product with brine (cure dissolved in water) after injection.

3. Appropriate amounts of ingredients and reasonable curing times for each curing method are given below.

a. Dry Curing (DC)

(1) Dry salt cure—The dry salt cure is a process that is very old in origin. It involves the rubbing and packing of meat in salt for considerable periods of time. The only use of this method today is in the production of salt pork where fat backs, heavy jowls, and occasionally heavy sow bellies are rubbed or packed with dry salt. Salt pork finds favor in the South where it is used as a seasoning meat. The usual packing or rubbing mixture is 10 ounces of saltpeter to each 100 pounds of salt. Use 10 pounds of cure for each 100 pounds of pork as it is layered. Allow to cure for 2 to 8 weeks.

(2) Dry sugar cure—The dry sugar cure has proven to be very effective. Its chief advantages are as follows: (1) the rate of cure is more rapid than the immersion cure, because the curing ingredients are applied directly to the meat surface in their full concentration; (2) the curing can be conducted safely at higher and wider temperature variations than is possible in immersion curing; (3) the time schedule is not exacting; (4) there is less spoilage in the hands of the novice or under unfavorable curing conditions. A workable curing mixture can consist of 8 pounds of curing or table salt, 3 pounds of cane sugar, 3 ounces of saltpeter, and 1/2 ounce or sodium or potassium nitrite. If nitrite is not available, use 4 ounces of saltpeter.

Use 1 ounce of cure for each pound of pork. The process will require three separate rubbings for ham at a 3-5 day
interval—two rubbings for picnics, one rubbing for bacon.

The length of curing period is seven days per inch of thickness. If a ham is six inches thick, 42 days will be required to cure the ham. A two-inch bacon will take 14 days.

4. Smoking of Meat Products

a. Originally, smoking, like curing, was used to preserve meat by drying. Today, smoke is usually applied for flavor instead of preservation. Hardwoods are used, since the burning of softwoods results in sooty deposits on the smoked product. The benefits of smoking are as follows:

(1) flavor and odor enhancement
(2) color development on the outside of the product
(3) color stabilization of muscle
(4) preservation of the product

b. In addition to using smoke created by burning wood, liquid smoke compounds are being widely used.

5. Casings are used as a container for sausages during cooking and smoking. There are three kinds:

a. Natural casings come from the digestive systems of animals. These casings are edible and allow greater smoke penetration and conform to the size of the sausage during cooking.

b. Artificial or cellulose casings are made from cotton linter. These casings are inedible, easy to handle, resistant to breakage and permeable to smoke when moistened.

c. Reconstituted collagen casings are often used on dry sausage. The permeability, shrinkage capabilities, edibility (in smaller casings) and a wide variety of sizes and forms make
casing versatile. Collagen casings are fragile and have poor resistance to abuse.

6. **Principles and Procedures in the Manufacture of Fresh Pork Sausage**

   a. Country style—This style of sausage usually contains from 10 to 20 percent beef ground with fresh pork. The grinding is done with a coarse plate (3/16 inch) and does not contain sage in the seasoning mix. Country style sausage is very well adapted for smoking.

   b. Breakfast style—This is an all pork sausage that is finely ground and seasoned with salt, pepper and sage. It is stuffed into medium or large casings. It can be smoked or pan fried. Sausage shall not exceed 50 percent fat in content.

   c. Seasoning pork sausage—Seasoning of sausage is a matter of personal preference. Some like it mild; others very spicy or hot. A very popular mix includes the following: 25 to 30 ounces of table salt, 6 ounces of black pepper and 2 ounces of sage per 100 pounds of ground pork. Excellent seasoning mixes can be purchased from a number of wholesalers.
LESSON 4 EXAMINATION

1. Define the term "cure" as associated with meat.

2. List three basic curing ingredients and two functions of each.

3. List the methods of curing and an advantage and disadvantage of each.

4. List the benefits of smoking meat products.

5. Name three types of casings.
Skeletal Structure of the Forequarter
Primal Cuts of the Forequarter
Skeletal Structure of the Hindquarter
Primal Cuts of the Hindquarter

Round

Short Loin

Flank

Loin
Ground Lee
Flank Steak:
Ground Beef
or Round Steaks
Goya Ike
liStritrei Rump Roast
Strisia Steaks
Tame
Pottathouse Steaks
Itib et Deknonieo Steaks
dab Sneaks

Retail Cuts of the Hindquarter
RETAIL CUTS OF BEEF AND WHERE THEY COME FROM

<table>
<thead>
<tr>
<th>Cut</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chuck</td>
<td>(Lob)</td>
</tr>
<tr>
<td>Rib (1 rib)</td>
<td></td>
</tr>
<tr>
<td>Shank</td>
<td></td>
</tr>
<tr>
<td>Bowel</td>
<td></td>
</tr>
<tr>
<td>Short Plate</td>
<td></td>
</tr>
<tr>
<td>Round</td>
<td></td>
</tr>
<tr>
<td>Standing Rib Hind</td>
<td></td>
</tr>
<tr>
<td>Rib Steak</td>
<td></td>
</tr>
<tr>
<td>T-Bone Steak</td>
<td></td>
</tr>
<tr>
<td>Perforated Steak</td>
<td></td>
</tr>
<tr>
<td>Top Loin Steak</td>
<td></td>
</tr>
<tr>
<td>Round Steak</td>
<td></td>
</tr>
<tr>
<td>Standing Spleen</td>
<td></td>
</tr>
<tr>
<td>Round Steak</td>
<td></td>
</tr>
<tr>
<td>Top Round Steak</td>
<td></td>
</tr>
<tr>
<td>Eye of Round</td>
<td></td>
</tr>
<tr>
<td>Heel of Round</td>
<td></td>
</tr>
<tr>
<td>Shank Cross Cuts</td>
<td></td>
</tr>
<tr>
<td>Fresh Brisket</td>
<td></td>
</tr>
<tr>
<td>Skirt Steak Fillets</td>
<td></td>
</tr>
<tr>
<td>Ground Beef</td>
<td></td>
</tr>
<tr>
<td>Flank Steak</td>
<td></td>
</tr>
<tr>
<td>Flank Steak Fillets</td>
<td></td>
</tr>
<tr>
<td>Cube Steak</td>
<td></td>
</tr>
</tbody>
</table>

Wholesale and Retail Cuts of Beef
SKELETON OF CHICKEN INDICATING POINTS TO SEVER PARTS

- Head
- Wing
- Neck
- Front Half of Back
- Back Half of Back
- Breast
- Thigh
- Drumstick
COMMONLY CUT CHICKEN PARTS

Breast With Ribs

Wishbone (Pollybone)

Breast, External View

Breast, Internal View

Leg

Leg With Pelvic Meat

Drumstick

Thigh

Wing
Chicken halves are prepared by making a full-length back and breast split of the carcass so as to produce approximately equal right and left sides.
CHICKEN QUARTERED

The quarters are prepared by splitting the halves crosswise at almost right angles.
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT VI: Meat Grading and Evaluation

Lessons: 1 - Beef Grading and Evaluation
          2 - Pork Grading and Evaluation
          3 - Lamb Grading and Evaluation

Lesson 1: Beef Grading and Evaluation

I. Preparation for Instruction

A. Student Objectives

1. Terminal: Determine the quality and yield grades of beef.

2. Specific:
   a. List the eight quality grades of beef.
   b. Explain in writing the relationships between maturity, marbling, color, and texture to the final quality grade.
   c. Explain in writing "cutability," what cutability is and how it is derived as a yield grade.

B. Review of Teaching Materials


C. Materials Required

1. Overhead projector
2. Screen
3. Transparencies
II. Presentation of Lesson

Content Outline

1. Definitions
   a. Cutability—ratio of retail cut weight (trimmed, boned or partially boned) to carcass weight. It is related to carcass fatness and muscling. It is the proportion of the carcass that is salable as trimmed retail cuts.
   b. Quality—those desired characteristics of lean, fat, and bones associated with palatability, acceptability, and marketability.
   c. Trimmable fat—that fat which exceeds the maximum level which could be sold on a retail cut.
   d. Marbling—intramuscular fat.
   e. Texture—the coarseness or fineness of the grain of the lean as observed in the rib and loin eye.
   f. Feathering—fine streaks of fat intermingled with the lean between the ribs.
   g. Feather or chine bone—split spinous processes which extend from the vertebrae or backbone toward the dorsal side of the back.
   h. Buttons—soft cartilage tips on the outside of the feather or chine bones which ossify as an animal matures.
   i. Aitch bone—the split pelvic bone of a carcass.
   j. Seam fat—deposits of fat between the muscles or intermuscular fat.

2. a. U.S.D.A. inspected beef carcasses are rolled (stamped) with two separate kinds of grades. One indicates a quality or palatability grade and the other a yield or cutability grade.
b. The quality grades of beef and grade criteria are as follows:

1. Prime* 
2. Choice  ) Under 42 months
3. Good   
4. Standard
5. Commercial—Young cows over 3 years old
6. Utility—Bulls and stags over 3 years old
7. Cutter  ) Old bulls and cows
8. Canner   

These refer to those beef characteristics of (1) appearance and consumer appeal, and (2) the palatability characteristics of tenderness, flavor, and juiciness.

* except cows

c. Yield grades are designed to identify carcasses for differences in cutability or yield of boneless, closely trimmed retail cuts from the round loin, rib, and chuck. Yield grades are expressed as a numeral, 1 through 5, with 1 having the highest degree of cutability and 5 the least.

3. **Factors involved in establishing the quality grade of beef:** Maturity, marbling, color of lean, texture or firmness of lean, and compensation

a. Maturity—Since the age of the animal at slaughter is closely associated with the eating qualities of beef, it is important to estimate the maturity of the carcass or cuts.

Referring to TML, beef carcass grade standards provide five maturity groups. Group A indicates the carcasses from very young animals. Group A is characterized by soft, porous "chine bones" which terminate in soft, white cartilages. The sacral vertebrae show distinct separation, and cartilage is present on the split "aitch bone." The lean
is fine and smooth in texture and light red in color. Carcasses with evidences of advanced maturity (E maturity group) have hard, white chine bones with the outlines of the cartilages on the ends of the thoracic vertebrae being barely visible. The rib bones are wide and flat, and the rib-eye muscle is dark red and coarse in texture.

Note that maturity groups A and B are narrow and that marbling is used to determine the top four grades of beef. Signs of advanced maturity should be studied closely, as old beef automatically falls into one of the bottom 3 grades.

The approximate relationship between maturity and age is as follows:

<table>
<thead>
<tr>
<th>Maturity Group</th>
<th>Approximate Chronological Age (in months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>9 - 30</td>
</tr>
<tr>
<td>B</td>
<td>30 - 42</td>
</tr>
<tr>
<td>C</td>
<td>42 - 72</td>
</tr>
<tr>
<td>D</td>
<td>72 - 96</td>
</tr>
<tr>
<td>E</td>
<td>more than 96</td>
</tr>
</tbody>
</table>

The chart seen on TM2 describes the appearance of the vertebrae on the five maturity designations.

In steer, heifer, and cow beef, the color and texture of lean flesh also undergo progressive changes with maturity. In progressively more mature carcasses, the texture of the lean will become increasingly coarse and the color of the lean will become darker red. In determining the maturity of a carcass in which skeletal and muscular indicators differ, slightly more weight is placed on skeletal factors. In no case can the overall maturity of the carcass be considered more than one full maturity group different from that indicated by its bones and cartilage.
Beef muscle of each maturity group appears as follows:

<table>
<thead>
<tr>
<th>Maturity Group</th>
<th>Muscle Color</th>
<th>Muscle Texture</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Light cherry red</td>
<td>Fine</td>
</tr>
<tr>
<td>B</td>
<td>Slightly dark red</td>
<td>Fine</td>
</tr>
<tr>
<td>C</td>
<td>Slightly dark red</td>
<td>Moderate</td>
</tr>
<tr>
<td>D</td>
<td>Moderately dark red</td>
<td>Slightly coarse</td>
</tr>
<tr>
<td>E</td>
<td>Dark red</td>
<td>Coarse</td>
</tr>
</tbody>
</table>

b. Marbling is the primary determining factor of the U.S.D.A. quality grade. There are ten degrees of marbling.

- Abundant
- Moderately Abundant
- Slightly Abundant
- Moderate
- Slightly Abundant
- Practically devoid
- Devoid

Minimum marbling requirements are presented in TM3.

Illustrations of the lower limits of certain degrees of marbling are illustrated on TM4.

Regardless of the extent to which a carcass may exceed the minimum of a grade, a carcass must meet the minimum firmness requirements for its maturity to qualify for a grade. Requirements of firmness are illustrated below and on TM5.

4. **Yield Grading of Beef Carcasses**

a. The U.S.D.A. has developed a system of measurements for estimating the yield of boneless, closely trimmed retail cuts from the round, loin, rib, and chuck. Carcass weight, fat thickness over the rib eye, rib eye area at the twelfth rib, and estimated percent of internal (kidney, pelvic, heart) fat are used in a formula to predict this end point which is termed "cutability." Under
the cutting and trimming methods used in developing these yield grades, each corresponds to a range of 2.3% of chilled carcass weight. The following table lists each grade and the expected cutability.

<table>
<thead>
<tr>
<th>YG</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>YG 1</td>
<td>52.35% or more</td>
</tr>
<tr>
<td>YG 2</td>
<td>52.3 - 50.0%</td>
</tr>
<tr>
<td>YG 3</td>
<td>50.0 - 47.7%</td>
</tr>
<tr>
<td>YG 4</td>
<td>47.7 - 45.4%</td>
</tr>
<tr>
<td>YG 5</td>
<td>45.4% or less</td>
</tr>
</tbody>
</table>

b. The amount of external fat on a carcass is evaluated over the rib-eye muscle at a point three-fourths of the length of the rib eye from its chine bone end. This measurement may be adjusted up or down to allow for unusual amounts of fat on other parts of the carcass. An adjustment of one- or two-tenths of an inch is not uncommon. Each one-tenth inch change in adjusted fat thickness over the rib eye changes the yield grade by 25% of a yield grade.

c. The amount of kidney, pelvic and heart (KPH) fat considered includes the kidney knob, lumbar and pelvic fat in the loin and round, and the heart fat in the chuck and brisket area. This is a subjective evaluation and is expressed as percent of carcass weight. A change of 1% of these fats changes the yield grade by 20% of a yield grade.

d. The area of the rib eye is determined where this muscle is exposed by ribbing. This area may be estimated subjectively or measured. A change of 1 square inch in the area of the rib eye changes the yield grade by 30% of a yield grade.

e. Hot carcass weight (or chilled weight x 102%) is used in determining the yield grade. As carcass weight increases, the percentage of retail cuts decreases. A change of 100 pounds changes the yield grade by 40% of a yield grade.

f. Cutability grade formula—refer to TM6.
LESSON 1 EXAMINATION

1. Define:
   a. Cutability
   b. Marbling

2. List the quality grades of beef and the criteria associated with each grade.

3. Why is the consideration of maturity so important in the grading of beef?

4. What four factors are determined and used in a formula to determine a yield grade?

5. Calculate the yield for a carcass that grades prime, weighs 500 lbs., has 4.5% internal fat, rib eye area of 9 square inches and fat thickness of 1 inch.

   \[
   YG = 2.50 + 2.50T + 0.20 Pt. + .0038 W - .32 A
   \]

   \[
   T = \text{Fat thickness of twelfth rib} \\
   Pt. = \text{Percent kidney, pelvic and heart fat} \\
   A = \text{Rib eye area} \\
   W = \text{Hot carcass weight}
   \]
LESSON 2: Pork Grading and Evaluation

I. Pork Grading and Evaluation

A. Student Objectives

1. **Terminal**: Assign a U.S. market grade for pork carcasses.

2. **Specific**:
   a. Describe how to make determination of sex by carcass evaluation.
   b. Set forth the minimum acceptability standards of lean.
   c. Show by written example how to take measurements and apply them to the pork grading nomograph.

B. Review of Teaching Materials


C. Materials Required

1. Overhead projector
2. Screen
3. Transparencies

II. Presentation of Lesson

A. Content Outline

1. **Definitions**
   a. Backfat—deposit of fat over the back of a carcass
b. Backfat thickness—average of 3 measurements of backfat in pork carcasses taken opposite the first rib, last rib, and last lumbar vertebrae.

c. Carcass length—length as measured from the anterior edge of the first rib to the anterior edge of the aitch bone (TML).

2. Because of the relationships between sex and/or sex condition in pork and the acceptability of prepared meats to the consumer, separate standards have been developed for (1) barrow and gilt carcasses and (2) sow carcasses. There are no official standards for grades of stag and boar carcasses. The determination of sex condition is based on the following:

a. Barrow carcasses are identified by a small pizzle eye and the typical pocket in the split edge of the belly where the preputial sheath was removed.

b. Gilt carcasses are recognized by the smooth split edge of the belly, the absence of the pizzle eye and the lack of development of mammary tissue.

c. Sow carcasses differ from gilts in that mammary tissue has developed in connection with advanced pregnancy or lactation.

d. Stag carcasses have the pocket in the split edge of the belly typical of males, and the pizzle eye is larger and more prominent than in barrows. The stag will often have rather heavy shoulders, thick skin over the shoulders, large bones and joints, and a dark red colored lean.

e. Boar carcasses have the same distinguishing characteristics as stag carcasses, but to a more pronounced degree.

3. Pork muscles vary widely in color, firmness, structure, and marbling.

a. Color—Uniform grayish pink color is desired.

b. Firmness—Soft is inferior to very firm.
c. Structure—Open or loose structure is inferior to a tight or closed structure.

d. Marbling—Muscles devoid of marbling are inferior to those with abundant amounts.

4. Federal grades for pork carcasses are intended to relate market desirability and, in effect, to segment all carcasses of the same relative value into one of five grades. Carcass measurements and subjective scores are combined and used to classify carcasses according to their cutability and quality indicating characteristics. Any carcass may then be segmented into one of the five grades. Four grades (U. S. No. 1, U. S. No. 2, U. S. No. 3, and U. S. No. 4) are provided for carcasses which have indications of acceptable lean quality and belly thickness. These grades are based entirely on the expected carcass yields of the four lean cuts (ham, loin, picnic shoulder, Boston butt). Carcasses with indications of less than acceptable palatability; those with thin, soft bellies; and those which are soft and/or oily, are all graded U. S. Utility.

5. The factors involved in estimating cutability and quality are as follows:
   a. Cutability—carcass length or weight, average backfat thickness, muscling score
   b. Carcass quality—firmness of fat and lean, color of the lean, feathering in the rib cage, belly thickness

6. The quality of lean is best evaluated by observing the loin eye muscle at the tenth rib. If this muscle is not exposed, firmness of the fat and lean, amount of feathering between the ribs, and the color of the lean are observed.

7. The four U. S. grades are provided for carcasses which have indications of acceptable lean quality and belly thickness. These grades are based entirely on expected yields of the four lean cuts, and no consideration is given to quality superior to that described as minimum for the grades.
8. Carcasses vary in their yields because of variations in the degrees of fatness and muscling.

a. In some carcasses, the actual average backfat is not representative of their degree of fatness. If the backfat average taken at the first rib, last rib, and last lumbar vertebrae does not seem representative, adjustments are made. These adjustments, while not uncommon, should seldom exceed .2 inch.

b. The degree of muscling, as noted in TM8, is specified for each of the four grades. For purposes of these standards, six degrees of muscling are recognized: very thick, thick, moderately thick, slightly thin, thin, and very thin. The degrees which are typical for carcasses at the minimum of U.S. 1 through 5 are respectively: very thick, thick, moderately thick, slightly thin, thin and thin.

c. In each grade, a superior development of muscling is permitted to compensate for a greater average backfat at the rate of .1 inch greater backfat thickness for a full degree of superior muscling. Except for U.S. No. 1, the reverse kind of compensation is also permitted at the same rate. In no case, may the combined effect of variations from normal fat distribution and muscling alter the final grade more than one full grade as indicated by actual average backfat thickness and carcass length or weight.

B. Assigning the Numerical Grade

1. Measure carcass length from anterior first rib to anterior aitch bone.

2. Measure backfat thickness with a ruler at the first rib, last rib and last lumbar vertebrae and calculate the average.

3. Evaluate the degree of muscling and assign a U.S.D.A. muscling score.

4. Use the pork grading nomograph TM9 and plot the grade. Adjust if necessary.
LESSON 2 EXAMINATION

1. Discuss how a person can identify a gilt carcass from a barrow carcass.

2. The grades of pork are based entirely on ________________.

3. How is the average backfat thickness of a carcass determined?

4. Define carcass length.

5. How is a U.S.D.A. muscling score arrived at?
LEsson 3: Lamb Grading and Evaluation

I. Preparation for Instruction

A. Student Objectives

1. **Terminal**: Assign a U.S.D.A. grade to lamb carcasses.

2. **Specific**:
   a. Use the cutability formula to determine yield grades in written problems.
   b. Discuss how to determine lamb from mutton carcasses.

B. Review of Teaching Materials


C. Materials Required

1. Overhead projector

2. Screen

3. Transparencies

II. Presentation of Lesson

A. Content Outline

1. Objective measures of lamb quality are usually based on evaluation of flavor, tenderness, and juiciness of the cooked product and in the order specified.

2. Federal grades classify lamb carcasses into one of five quality grades and one of five cutability grades. The quality grades are: prime, choice,
good, utility, and cull. Yield grades and the expected yield of boneless, closely trimmed retail cuts are as follows:

<table>
<thead>
<tr>
<th>Yield Grade</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>47.3% or more</td>
</tr>
<tr>
<td>2</td>
<td>45.5 - 47.3%</td>
</tr>
<tr>
<td>3</td>
<td>43.7 - 45.5%</td>
</tr>
<tr>
<td>4</td>
<td>41.9 - 43.7%</td>
</tr>
<tr>
<td>5</td>
<td>41.9% or less</td>
</tr>
</tbody>
</table>

3. Quality grades are based on two primary criteria: (1) factors involved with palatability and (2) conformation, which estimates the percent of the carcass consisting of the more valuable cuts and the ratio of meat to bone in the carcass. Quality factors involved are:

<table>
<thead>
<tr>
<th>Cutability</th>
<th>Carcass Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leg Conformation Score</td>
<td>Conformation</td>
</tr>
<tr>
<td>Thickness of External Fat</td>
<td>Maturity</td>
</tr>
<tr>
<td>Percent of Internal Fat</td>
<td>Firmness of Flank</td>
</tr>
<tr>
<td></td>
<td>Feathering in the Ribcage</td>
</tr>
<tr>
<td></td>
<td>Fat Streaking in the Flank</td>
</tr>
</tbody>
</table>

Fat streaking in the flank is assumed to be a useful predictor of marbling in the muscle.

4. Maturity—In the dressing of sheep carcasses, the foot and pastern are removed at the ankle. There is a "round" or "spool joint" on the lower end of the cannon bone. A "break-joint" is located immediately above the "spool joint" at the region of bone growth. This cartilage will stop growing with age and until the animal is 12 to 14 months old, it is usually possible to remove the foot at the "break-joint." A carcass is required to have "break-joints" to be graded as lamb. Carcasses with "break-joints" can also be graded as yearling mutton if they have a sufficiently dark red color of flesh and other skeletal characteristics of yearlings. The "break-joint" of a lamb will show considerable redness in the joint, have narrow, round ribs, and considerable redness in the shank bones. The yearling will have whiter shank bones, broader and flatter ribs, and will be whiter and more brittle at the "break-joint."
B. Procedure for U.S.D.A. Grading of Lamb Carcasses

1. Ideal Conformation
   a. very wide body in relation to carcass length
   b. plumpness and fullness of muscling
   c. shortness of neck and shanks
   d. a high ratio of valuable to less valuable cuts

2. Ideal Maturity
   a. break-joints instead of spool joints
   b. bright pink lean color
   c. narrow ribs

3. Ideal Fat Deposition and Firmness
   a. numerous streaks of fat over the surface of the flank muscles
   b. extensive feathering between the ribs
   c. full and firm flank

C. Determining the Yield Grade

The formula for determining cutability is as follows:

\[ YG = 1.66 - (0.05 \times \text{leg conformation grade code}) + (0.25 \times \text{percent kidney and pelvic fat}) + (6.66 \times \text{adjusted 12th rib fat thickness}) \]

Leg conformation scores are coded as follows:

<table>
<thead>
<tr>
<th>Conformation</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>High Prime</td>
<td>15</td>
</tr>
<tr>
<td>Average Prime</td>
<td>14</td>
</tr>
<tr>
<td>Low Prime</td>
<td>13</td>
</tr>
<tr>
<td>High Choice</td>
<td>12</td>
</tr>
<tr>
<td>Average Choice</td>
<td>11</td>
</tr>
</tbody>
</table>
LESSON 3 EXAMINATION

1. Using the formula,

\[
YG = 1.66 - (.05 \times \text{leg conformation grade code}) \\
+ (.25 \times \text{percent kidney and pelvic fat}) \\
+ (6.66 \times \text{adjusted 12th rib fat thickness}),
\]

determine the yield grade for a lamb with a leg conformation of 11, percent kidney and pelvic fat of 12, and a .25 rib fat thickness.

2. Explain how to differentiate lamb from mutton.
Relationship Between Marbling, Maturity, and Carcass Quality Grade

<table>
<thead>
<tr>
<th>Degrees of Marbling</th>
<th>A***</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slightly Abundant</td>
<td>PRIME</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abundant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moderate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modest</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slight</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traces</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Practically Devoid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maturity**:

- **A**: Prime
- **B**: Commercial
- **C**: Utility
- **D**: Cutter

Assumes that firmness of lean is comparably developed with the degree of marbling and that the carcass is not a "dark cutter."

**Maturity increases from left to right (A through E)**

*** The A maturity portion of the Figure is the only portion applicable to bullock carcasses
The following chart describes the appearance of the vertebrae on carcasses of five maturity designations.

<table>
<thead>
<tr>
<th>Vertebrae</th>
<th>Minimum A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sacral</td>
<td>distinct separation</td>
<td>completely fused</td>
<td>completely fused</td>
<td>completely fused</td>
<td>completely fused</td>
</tr>
<tr>
<td>Lumbar</td>
<td>no ossification</td>
<td>nearly completely ossified</td>
<td>completely ossified</td>
<td>completely ossified</td>
<td>completely ossified</td>
</tr>
<tr>
<td>Thoracic</td>
<td>no ossification</td>
<td>show some ossification</td>
<td>are partially ossified</td>
<td>show considerable ossification (outline of buttons still plainly visible)</td>
<td>are ossified (outline of buttons is barely visible)</td>
</tr>
</tbody>
</table>
Maturity and Marbling as affects Quality Grade

<table>
<thead>
<tr>
<th>USDA Grade</th>
<th>A</th>
<th>A /B</th>
<th>B</th>
<th>C /D</th>
<th>D /E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime</td>
<td>Slightly Abundant°°</td>
<td>Slightly Abundant°°</td>
<td>Slightly Abundant°°</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Choice</td>
<td>Small°°</td>
<td>Small°°</td>
<td>Small°°</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Good</td>
<td>Slight°°</td>
<td>Slight°°</td>
<td>Slight°°</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Standard</td>
<td>Practically Devoid°°</td>
<td>Practically Devoid°°</td>
<td>Practically Devoid°°</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Commercial</td>
<td>--</td>
<td>--</td>
<td>Small°°</td>
<td>Modest°°</td>
<td>Moderate°°</td>
</tr>
<tr>
<td>Utility</td>
<td>Devoid</td>
<td>Devoid</td>
<td>Practically Devoid°°</td>
<td>Traces°°</td>
<td>Slight°°</td>
</tr>
<tr>
<td>Cutter</td>
<td>Devoid</td>
<td>Devoid</td>
<td>Devoid</td>
<td>Devoid</td>
<td>Practically Devoid°°</td>
</tr>
<tr>
<td>Canner</td>
<td>Devoid</td>
<td>Devoid</td>
<td>Devoid</td>
<td>Devoid</td>
<td>Devoid</td>
</tr>
</tbody>
</table>

149
Illustrations of the Lower Limits of Certain Degrees of Typical Marbling Referred to in The Official United States Standards for Grades of Carcass Beef

1—very abundant  
2—abundant  
3—moderately abundant  
4—slightly abundant  
5—moderate  
6—modest  
7—small  
8—slight  
9—traces

(Practically devoid not shown)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK DIVISION
### Minimum Firmness Requirements by Quality Grade

<table>
<thead>
<tr>
<th>U.S.D.A Grade</th>
<th>A&lt;sup&gt;00&lt;/sup&gt;</th>
<th>A&lt;sup&gt;100&lt;/sup&gt;/B&lt;sup&gt;00&lt;/sup&gt;</th>
<th>B&lt;sup&gt;100&lt;/sup&gt;/C&lt;sup&gt;00&lt;/sup&gt;</th>
<th>C&lt;sup&gt;100&lt;/sup&gt;/D&lt;sup&gt;00&lt;/sup&gt;</th>
<th>D&lt;sup&gt;100&lt;/sup&gt;/E&lt;sup&gt;00&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime</td>
<td>Moderately Firm</td>
<td>Moderately Firm</td>
<td>Firm</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Choice</td>
<td>Slightly Soft</td>
<td>Slightly Soft</td>
<td>Slightly Firm</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Good</td>
<td>Moderately Soft</td>
<td>Moderately Soft</td>
<td>Slightly Soft</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Standard</td>
<td>Soft</td>
<td>Soft</td>
<td>Moderately Soft</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Commercial</td>
<td>---</td>
<td>---</td>
<td>Slightly Firm</td>
<td>Moderately Firm</td>
<td>Firm</td>
</tr>
<tr>
<td>Utility</td>
<td>Soft and Slightly Watery</td>
<td>Soft</td>
<td>Moderately Soft</td>
<td>Slightly Soft</td>
<td>Slightly Firm</td>
</tr>
<tr>
<td>Cutter</td>
<td>Very Soft and Watery</td>
<td>---</td>
<td>Soft and Watery</td>
<td>---</td>
<td>Soft and Slightly Watery</td>
</tr>
</tbody>
</table>

*Determinaion of Quality Grade.* There are eight quality grades for beef carcasses. Quality grades are predicated upon the “expected palatability” of cooked beef from a carcass of a given U.S.D.A. grade.

151
CUTABILITY GRADE FORMULA

Yield = 2.50 + 2.50T + 0.20 P t.
.0038W − .32A
T = Fat thickness of rib eye
P = Percent internal fat
W = Carcass weight
A = Area of rib eye
Drop all decimals to the right of 1. that is 2.54 = 2
3.85 = 3

Example—carcass factors are:
1. Area of rib eye = 9.0 sq. in.
   Thickness of fat = 1.0 in.
   Carcass wt. = 500 lb.
   % Internal fat = 4.5

   Yield = 4.92 or 4

2. External fat = 0.3 in.
   Internal fat = 2.5%
   Carcass wt. = 500 lb.
   Rib eye area = 11.5 in.

   Yield = 1.97 or 1

Experience is the best teacher in learning cutability or yield grading
MEASURING LENGTH OF CARCASS

- Lumbar Lean
- Last Lumbar
- Last Rib
- Chine
- First Rib

Carcass Length

134g  TM7
Figure 20. U.S.D.A. Muscling Scores (Very Thin not shown).
Relationship Between Average Thickness of Backfat, Carcass Length or Weight, and Grade for Carcasses with Muscling Typical of Their Degree of Fatness.

1. An average of three measurements including the skin made opposite the first and last ribs and the last lumbar vertebra. It also reflects adjustment, as appropriate, to compensate for variations from normal fat distribution.

2. Carcass weight is based on a hot packer style carcass.

3. Carcass length is measured from the anterior point of the aitch bone to the anterior edge of the first rib.
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT VII: Animal Slaughter

Lessons: 1 - Slaughter Procedure for Beef Cattle
2 - Slaughter Procedure for Pork
3 - Slaughter Procedure for Lamb

Lesson 1: Slaughter Procedure for Beef Cattle

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Explain the proper procedure of beef cattle slaughter, from stunning to the chilling of the carcass after slaughter.

2. **Specific:**
   a. List the accepted methods of stunning and sticking the stunned animal.
   b. Explain the proper and accepted procedure for removal of the hide from the carcass.
   c. Explain the proper procedure and accepted method of eviscerating the beef carcass.
   d. Describe the proper procedure for caring for the beef carcass after slaughter.

B. Review of Teaching Material


C. Materials Required

1. Overhead projector
2. Projector screen
II. Presentation of Lesson

Content Outline

1. Accepted Methods of Stunning and Sticking

   a. The two most frequently used and commonly accepted methods of stunning the animal for sticking are as follows:

      (1) The use of a stunning gun, usually a compression powered gun or a blank bullet load powered gun.

      (2) The use of a small caliber gun with coated projectile. If uncoated lead projectile is used, the head of the animal must be rendered unfit for human consumption.

   b. The animal is stunned at one of two locations: (See TM1.)

      (1) behind the poll

      (2) on the forehead

      In each of the two locations, the brain or brain stem is jarred or injured, resulting in the stunning.

   c. Usually, the stunning operator positions himself above the animal so as to have ready access to the correct area to stun and to ensure safety to himself and others during the process.

   d. After the animal is stunned, it is preferable to hoist it by the rear legs. Chains, cables, ropes or any other practical devices can easily be attached directly above the pastern of the animal to hoist without injury to the carcass.

   e. An incision is made over the point of the brisket downward toward the jaw. A sharp knife is inserted in the incision in front of the brisket at a 45° angle, and with one smooth, deliberate cut in an upward and then downward motion, the carotid arteries and
jugular vein are severed. Avoid jabbing and excessive cutting during the sticking process so as to prevent bloody shoulders and neck.

f. If stunning and sticking are accomplished correctly, the majority of the animal's blood will be pumped from the body or will flow from the hind quarters forward by gravity to leave the carcass and enhance the quality of the carcass.

2. The Proper and Accepted Procedure for Removal of the Hide from Carcass

a. Generally, the hide is removed from the carcass in the following order:

(1) head
(2) shanks and legs
(3) midline and sides
(4) rump and back

b. Head—From the point on the brisket and neck where the incision was made during the sticking process, open the hide down to the lower lip. Skin out the sides of the face. Cuts should be made from the nostril to the poll around horns. After removing the hide from the head, grasp the jaw in one hand, bend the head back on its poll, and remove the head by cutting through the Adam's apple and atlas joint.

c. Shanks and legs—The animal is placed on the skinning rack with carcass balanced squarely on its back. Open the hide down the rear of each leg, continuing the cut to the midline. The midline cut is made from the sticking point on the brisket to the bung. Skin out the shanks and legs. Remove the shanks at the break joints located at the knee on front legs and at the hock on the hind legs.

d. Midline and sides—After the hide is opened from the brisket to the bung, skin each side down to the back, using long, smooth strokes with the skinning knife to avoid cutting into the side of the carcass and to avoid scoring and cutting the hide.
e. After the siding phase of the skinning process is completed, usually the brisket, sternum, and belly are opened before the carcass is raised for the rumping and back skinning process. Extreme care is taken not to allow any spillage of rumen contents or any other gastro-intestinal and/or urinary contents to contaminate the carcass. It is recommended that the esophagus be separated from the trachea and tied to prevent rumen spillage during the raising of the carcass. A weasand rod is used by some operators to separate the esophagus and trachea. This process is accomplished by inserting the rod into the esophagus, pushing contents backward while separating the trachea. The esophagus is then tied to prevent spillage.

f. Rump and back—The carcass is raised to a convenient height by using an appropriate device, generally called a beef tree, that is inserted in the hocks. Skin out the base of the tail, split the hide down the entire length of the tail, then cut the tail two joints from the body. Skin the area around the tail base, then over the rump. Care should be taken to leave the area of the rump and round smooth during the skinning process. Before the carcass is raised completely off the skinning cradle, cut around the bung, tie it appropriately to prevent spillage, then drop it inside the carcass. Some operators place and tie over the bung a plastic bag which is big enough to cover the bung completely. This prevents any contamination of the inside carcass with manure, etc., from the bung.

To complete the skinning process, the carcass is raised off the skinning cradle and the part of the hide attached to the outside round and back is either pulled or pounded off. Minimal skinning with a knife is needed if the hide was dropped sufficiently during the siding process.

3. The Proper and Accepted Method of Eviscerating the Beef Carcass

a. Extreme care should be taken during the eviscerating process to prevent contamination
of the carcass by urine and fecal material. The rectum should be tied, the pizzle in male animals must be removed in a manner to preclude urine contamination, and the neck of the bladder tied or secured to prevent contamination.

b. The eviscerating process is accomplished by loosening the bung and bladder from the back bone. The intestines and paunch are easily loosened by cutting areas of attachment. Allow the intestines and paunch to drop into the gut cart, leaving the liver, heart, and lungs attached. Remove the gall bladder from the liver.

c. The organs which lie in the thoracic cavity are removed. These organs, which consist of the heart, lungs, gullet, and windpipe, are saved or processed if consumer desires; otherwise, they are discarded with the paunch and intestines.

The diaphragm muscle that separates the abdominal cavity from the thoracic cavity is left intact as much as possible. This muscle is good edible meat most frequently used for ground beef.

4. The Proper Procedure for Caring for the Beef Carcass after Slaughter

a. It is imperative that the carcass is chilled thoroughly during the first few hours after slaughter. Improper chilling could possibly result in spoilage of deep joints of the hip and shoulder.

b. The recommended cooler temperature for chilling room is 33° F. for warm carcasses. Care should always be taken to adjust cooler temperature according to the total cooler space and number of warm carcasses being chilled in the cooler at a given time. Warm carcasses will greatly raise cooler temperatures, resulting in an insufficient temperature for proper carcass chill.

c. After carcasses are thoroughly chilled, storage cooler temperature should be maintained at 33°-38° F.
LESSON 1 EXAMINATION

1. What are the most frequently used methods to stun beef cattle?

2. List the steps in the sticking procedure for beef cattle.

3. Explain the proper procedure for removing the hide from beef cattle.

4. Explain the accepted procedure for eviscerating the beef carcass.

5. How are beef carcasses properly handled after slaughter?
INSTRUCTIONAL AREA: Food Science

INSTRUCTIONAL UNIT VII: Animal Slaughter

Lesson 2: Slaughter Procedure for Pork

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Upon completion of this lesson, the student will be able to list, describe and/or explain the proper procedure of pork slaughter, from stunning to the chilling of the carcass after slaughter.

2. **Specific:**
   a. List the accepted methods of stunning and sticking the stunned animal.
   b. Explain the proper and accepted procedures for removal of the skin or hair from the carcass.
   c. Explain the proper procedure and accepted method of eviscerating the pork carcass.
   d. Describe the proper procedure for caring for the pork carcass after slaughter.

B. Review of Teaching Material


C. Materials Required

1. Overhead Projector
2. Projector Screen

II. Presentation of Lesson

Content Outline

1. **Accepted Methods of Stunning and Sticking**
   a. The Federal Humane Slaughter Act permits any of three methods of immobilizing livestock in the slaughter process. They are as follows:
(1) Electrical
(2) Chemical
(3) Mechanical

The act also specifies that the method used must cause complete unconsciousness without a great deal of excitement, stress or discomfort.

b. Most large packers rely upon chemical or electrical stunning methods for swine. The chemical procedure involves the use of an atmosphere composed of 70% carbon dioxide for approximately 45 seconds. The electrical stunning involves a hydraulically operated squeeze chute to hold the animal while electrical tongs or a probe is placed on the skull and 90 volts with up to 5.0 amps are delivered for 2 to 10 seconds.

c. After the animal is stunned, it is preferable to hoist by the rear legs. A six-inch sticking knife is inserted midway from the brisket to the throatlatch. Give the knife an upward thrust, dip the tip of the knife until it contacts the backbone. Bleeding of the swine is by severance of the carotid arteries and jugular veins or by cutting the anterior vena cava. It normally requires nine minutes to complete the bleeding process with a weight loss of about 3 percent. It should be noted that if the stunning to sticking interval exceeds 25 seconds, capillaries begin to rupture in some hogs, creating blood splash (ecthymosis) in muscle tissues. (See TM2.)

2. The Proper and Accepted Procedure for Removal of the Hair or Skin.

a. Generally, hair can be removed by:

(1) Scalding
(2) Scraping
(3) Shaving
(4) Singeing

(5) Skinning

All large pork packers and most small packers scald and dehair swine. The hand skinning process is used primarily in small plants with equipment that is too small to accomplish hair removal on large hogs and on farm slaughter.

b. Normally, scalding water temperature is 140°-142° F. The hog is dropped in scalding water until hair slips easily. This usually is accomplished in approximately 4 to 5 minutes. If excessive temperatures are maintained too long, large chunks of skin and fat are removed in the dehairing process. The hog is then scraped using bell scrapers or shaved with a sharp knife to remove remaining hair.

3. The Proper and Accepted Method of Eviscerating the Swine Carcase

a. Extreme care should be taken during the eviscerating process, to prevent contamination of the carcass by urine or fecal material.

b. The evisceration process entails the removal of the contents of the abdominal cavity and the thoracic cavity. An incision is made from the crotch to breast, with care taken to avoid cutting the intestines. Another cut is made in the exact center between the hams, following the center of the thin white membrane which extends from the skin through the flesh between the ham to the pelvic bone. The abdominal cavity is opened and the breast bone split. The stomach, intestines, liver, and spleen are removed. The skirting around the diaphragm membrane is cut and the heart, esophagus, lungs, and trachea are removed.
4. **The Proper Procedure for Caring for the Pork Carcass after Slaughter**

a. The carcass is usually split through the center of the vertebral column with a saw or cleaver. The head is removed at the atlas joint and the leaf fat and kidneys are removed.

b. The carcass is washed thoroughly with cold water; blood clots and loosened glands are removed. The carcass is weighed, tagged, and placed in a cooler at a temperature of 28° to 34° F.

c. Pork should be processed in 12 to 24 hours, since pork is likely to deteriorate excessively during sustained storage.
LESSON 2 EXAMINATION

1. What are the most frequently used methods to stun hogs?
   a. 
   b. 

2. List the steps in the sticking procedure for hogs.

3. Explain the proper procedure for hair removal in hogs.

4. Explain the accepted procedure for eviscerating hogs.

5. How are hog carcasses properly handled after slaughter?
Lesson 3: Slaughter Procedure for Lamb

I. Preparation for Instruction

A. Student Objectives

1. **Terminal:** Explain the proper procedure for lamb slaughter from stunning to the chilling of the carcass after slaughter.

2. **Specific:**
   a. List the accepted methods of stunning and sticking the stunned animal.
   b. Explain the proper and accepted procedure for removal of the hide from the carcass.
   c. Explain the proper procedure and accepted method of eviscerating the lamb carcass.
   d. Describe the proper procedure for caring for the lamb carcass after slaughter.

B. Review of Teaching Material


C. Materials Required

1. Overhead Projector
2. Projector Screen

II. Presentation of Lesson

A. Content Outline

1. **Accepted Methods of Stunning and Sticking**
   a. Of the three major methods of stunning of lambs, only two are used extensively—mechanical and electrical.
   b. The mechanical method most generally used is the compression stunner. The compression
stunner has a mushroom type, nonpenetrating head that delivers a high velocity impact very effectively.

c. The electrical stunner uses an electrical current of 90 volts with 3 to 5 amps delivered for 2 to 8 seconds for effective stunning (TM3).

d. After being stunned by an approved method, the lamb may be stuck while suspended from the rail or in a cradle. In either case, hold the lamb's nose in the left hand, insert the sticking knife behind the jaw even with the base of the ear, completely through the neck. Pull the knife outward, which will cut the carotid arteries and jugular vein. The lamb should complete bleeding in 6 to 10 minutes. Blood loss will equate to approximately 5 percent of the body weight.

2. The Proper and Accepted Procedure for Removal of the Pelt

a. The pelting procedure can be completed either in the cradle, on the rail, or by a combination of the two. Generally, the animal is placed in the cradle. The hind and fore legs are skinned. The pelt is opened along the center line and the pelt is removed over the abdomen by "fisting."

b. Fisting is used due to the ease of separating the lamb's skin from the thin connective tissue membrane under the pelt called the "fell." Fisting, or forcing the fist between the pelt and fell, can be done to prevent damage to the pelt or appearance of the carcass.

3. The Proper and Accepted Method of Eviscerating of the Lamb Carcass

a. Since the throat has been cut, the esophagus should have been tied off. The evisceration process entails the removal of the contents of the abdominal and thoracic cavity.

b. A cut is made from the crotch to the breast with a knife, using care to avoid cutting the intestines. The rectum is then loosened from
the backside and pulled through the pelvic canal into the abdominal cavity. The thoracic cavity is completely opened by splitting the breast bone with a saw.

c. The stomach, intestines, liver, and spleen are loosened. Cuts are made around the skirt, through the diaphragm to remove the heart, esophagus, lungs, and trachea. The evisceration process requires care and attention not to puncture the paunch or intestines.

4. **The Proper Procedure for Caring for the Lamb Carcass after Slaughter**

   a. Lamb carcasses should be trimmed to remove any pieces of adhering skin, wool, bruises, or manure. The carcass is washed with high pressure water, weighed, tagged, and chilled at 28°-32° F. for 12 to 24 hours, then stored until processing in a holding cooler at 32°-34° F.
LESSON 3 EXAMINATION

1. What are the most frequently used methods used to stun lambs?
   a.
   b.

2. List the steps in the sticking procedure for lambs.

3. Explain the proper procedure for removing the pelt from lambs.

4. Explain the accepted procedure for eviscerating lamb.

5. How are lamb carcasses properly handled after slaughter?
COMPRESSION STUNNER

(may be used for cattle, hogs, and sheep)

CATTLE COMPRESSION STUNNER
Proper procedure for sticking swine.
ELECTRIC STUNNERS
MEAT'S RESOURCE GUIDE

I. MEAT IDENTIFICATION

A. TEXTS

Title: Bovine Anatomy
Contents: This text enables the student to study the bovine basic "pattern" animal. 296 pages, 2nd edition (1958).
Source: William Max McLeod
Burgess Publishing Company
7108 Orms Lane
Minneapolis, MN 55435
612-831-1344

Title: How to Carve Meat, Game and Poultry
Contents: The book explains step by step procedures for making different cuts of meat, plus gives lessons on the anatomy of beef, pork and lamb. There are also helpful suggestions on meat tenderizing. 209 pages.
Source: M. O. Cullen
McGraw-Hill Book Co.
1221 Avenue of the Americas
New York, NY 10020
212-512-2000

Title: Lessons on Meat
Contents: A comprehensive four-color source book. Includes the latest research findings relative to meat's nutritive value, preferred cooking and freezing methods and buying guides. Helpful tips on meal planning, meat identification, new approved meat identification charts, carving and serving. 8 1/2" x 11". 86 pages.
Title: Meat Evaluation Handbook
Contents: National Livestock and Meat Board. Color, texture, finish, quality, muscling, firmness, marbling, cutability, and confirmation. These are all contained in one handbook. 190 full-color photographs of beef carcasses - wholesale cuts, quality grades, yield grades; pork carcasses - cut grades; lamb carcasses - quality yield grades. 70 pages.

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

Title: Meat for the Table
Contents: This book is an attempt to answer some of the questions asked of the author by thousands of home economics students and homemakers. It includes chapters on the economics of meat production, the meat packing industry, meat composition and nutritive value, cooking of meat, the art of carving, and pictures and diagrams of different cuts of meat. 1st edition, 240 pages.

1221 Avenue of the Americas
New York, NY 10020
212-512-2000

Title: Uniform Retail Meat Identity Standards
Contents: This manual is "the" working guide for the National Meat Identity Standards Program being adopted by retailers across the nation.
The manual includes a master list of recommended retail cut names of beef, pork, lamb and veal and new labeling system for ground beef. Excellent reference source for those teaching meat identification. Comes in sturdy plastic 3-ring binder. Printed in two colors. 8-1/2" x 11". 120 pages.

Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Gowrie, IA 50543
515-352-3303

B. PAMPHLETS

Title: A Hog's Not All Chops

Contents: Informative leaflet shows how a modern-day hog yields 122 lbs. of saleable retail cuts of chops, ham, bacon, ribs and sausage, plus lard. Also includes explanation of factors involved in pork production and reasons for the "ups and downs" of pork prices. Printed in 2 colors. 3-7/8" x 8-1/2". 6 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: A Steer's Not All Steak

Contents: This leaflet explains how a 1,000-pound steer yields only 432 pounds of retail beef cuts and how this affects the price of beef. Also includes easy-to-understand information about the supply and demand for beef. Printed in 2 colors. 4" x 8-1/2". 6 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
PAMPHLETS (Continued)

Title: Beef Slaughtering, Cutting, Preserving, and Cooking on the Farm

Contents: Consumer guide to slaughtering, cutting, preserving, and cooking of beef. Tips on how to cook better are included. No. F2263

Source: Office of Governmental and Public Affairs
U.S. Department of Agriculture
Washington, DC 20250

Title: "Four Food Groups for Better Meals" Game

Contents: This game entertains as well as educates children on the importance of the four major food groups in their diets (milk, meat, vegetable/fruit, cereal/bread). Each game includes an instruction sheet, 25 game cards for players, and a sample completed game card. Also included is a 22 x 28 inch "Daily Food Guide" which tells how many servings a person must have daily of each food group. (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: 4-H Swine Project Manual - Modern Meat-Type Hogs

Contents: A 17-page guide describing modern meat hogs yielding superior meat-type quality and finish. Included is a pork chart which shows retail cuts, where they came from, and how to cook them. Also, a breed and breed characteristics section is included, plus addresses of purebred swine associations. A small glossary of pork-related terms and three graphs are included.

Source: L.S.U. Cooperative Extension Service
Baton Rouge, LA 70803
Title: **Institutional Meat Purchase Specifications**  
*For Cured, Smoked and Full-Cooked Pork*

**Contents:** Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 10 pages (1978).

**Source:**  
Superintendent of Documents  
U. S. Government Printing Office  
Washington, DC 20402

---

Title: **Institutional Meat Purchase Specifications**  
*For Edible By-Products*

**Contents:** Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 4 pages (1970).

**Source:**  
Superintendent of Documents  
U. S. Government Printing Office  
Washington, DC 20402

---

Title: **Institutional Meat Purchase Specifications**  
*For Fresh Pork*

**Contents:** Contains descriptions of various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 6 pages (1975).

**Source:**  
Superintendent of Documents  
U. S. Government Printing Office  
Washington, DC 20402
PAMPHLETS (Continued)

Title: Institutional Meat Purchase Specifications For Fresh Veal and Calf

Contents: Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 8 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Institutional Meat Products Specifications For Sausage Products


Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Lamb Slaughtering, Cutting, Preserving and Cooking on the Farm

Contents: Consumer guide to slaughtering, cutting, preserving and cooking of lamb. Tips on how to better prepare lamb are also included. No. F2264.

Source: Office of Governmental and Public Affairs
U.S. Department of Agriculture
Washington, DC 20250

Title: Meat and Poultry Inspection Manual

Contents: Discusses the trends and technology in the meat and poultry inspection spectrum.
PAMPHLETS (Continued)

Source: U.S. Superintendent of Documents
United States Department of Agriculture
Washington, DC 20402

Title: Meat Evaluation Series

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

Title: Meat Judging and Grading
Contents: The brochure has 42 pages of material concerning judging of quality of meats and grading of meats.

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

Title: 101 Meat Cuts
Contents: Included in this booklet are 101 retail cuts of meat, including beef, pork, lamb, veal, and variety meats. There is a picture of each cut, plus a description of the cut and its identifying characteristics. 40 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork Slaughtering, Cutting, Preserving and Cooking on the Farm
PAMPHLETS (Continued)

Contents: A 65-page booklet, including selection and care of animals before slaughter; preparing for slaughter; slaughter; chilling the carcass; cutting, freezing and frozen storage; further processing; meat cookery and precautions. (1978) No. 2265.

Source: Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

Title: The Meat Board Guide to Identifying Meat Cuts

Contents: Booklet provides basic information on the selection, identification, and recommended cookery method for retail meat cuts. Contains full color photographs identifying retail cuts of beef, pork, lamb, veal and variety meats. A valuable aid in teaching meat identification to high school home economics and meat science students and consumers in general. 4" x 9". 48 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: The National Provisioner (Periodical)


Source: The National Provisioner Publishing Co.
15 West Huron St.
Chicago, IL 60610
312-944-3380

Title: Variety Meats from the U.S.A... A Purchasing Guide

Contents: This guide features a full-color photograph of each variety meat (liver, kidney, heart,
PAMPHLETS (continued)

tongue, etc.) along with proper name, specifications and identification number similar to the IMPS/NAMP system used by the meat purveying industry. A valuable tool for both U.S. meat suppliers and foreign buyers, this guide provides minimum specifications and a system of standardized nomenclature for U.S. meats sold in foreign markets. Written in English, French and German. 8-1/2" x 11". 24 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago IL 60611
312-467-5520

C. SLIDES

Title: Beef Cattle Publications and Visual Materials

Contents: Lists private organizations, state beef cattle organizations, state extension services, and land-grant universities in the U.S. that have publications, visual materials or resource persons that may be consulted for information on beef cattle. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: How to Buy Beef

Contents: A set of 33 color slides with narrative guide. Presents a guide to buying beef by U.S.D.A. grade and by cut, and specifies which cuts are the most tender. (1973).

Source: U.S. Department of Agriculture
Photo Lab, Inc.
Washington, DC 20402
Title: Identification of Beef Cuts
Contents: Slide set, 96 frames of wholesale and retail cuts of beef.
Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Identification of Kinds of Meat
Contents: Slide Set, 33 Frames
Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Identification of Lamb Cuts
Contents: Slide set, 48 frames of wholesale and retail cuts of lamb.
Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Identification of Meat Cuts
Contents: This set of 131 slides has been broken down into five categories: kinds of meat, cuts of beef, cuts of pork, cuts of veal, and cuts of lamb.
Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-536-3446/1-800-558-9595
SLIDES (Continued)

Title: Identification of Pork Cuts
Contents: Slide set, 81 frames of wholesale and retail cuts of pork.
Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Identification of Retail Meat Cuts
Contents: Slide set, 110 Frames
Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Lesson 1: Basic and Varied Cuts
Contents: A general overview of the identification of the seven basic cuts of beef, lamb and pork: arm, blade, rib, loin, sirloin, round, and breast. Variety cuts include a discussion of the organ meats. Includes 30 full-color slides, a cassette tape, and script with introduction to the entire series.
Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: Lesson 2: Beef Cuts - Wholesale and Retail
Contents: Covers the identification of the wholesale cuts of beef and its retail cuts. Wholesale cuts include chuck, rib, loin, round, brisket, shank, plate and flank. Includes 77 full-color slides, a cassette tape, and script with introduction to the entire series.
SLIDES (Continued)

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-536-3446/1-800-558-9595

Title: Lesson 3: Lamb Cuts - Wholesale and Retail
Contents: Identifies the seven wholesale cuts of lamb and its retail cuts. The wholesale cuts include shoulder, rib, loin, leg, shank, breast, and flank. Includes 39 full-color slides, a cassette tape, and script with introduction to the entire series.

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: Lesson 4: Pork Cuts - Wholesale and Retail
Contents: Covers how to identify the eight wholesale cuts of pork and the retail cuts. Wholesale cuts include loin, ham, spareribs, picnic shoulder, Boston shoulder, jowl, side, and neck bones. Includes 56 full-color slides, a cassette tape, and script with introduction to the entire series.

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: Meat Cut I.D. Slide Set
Contents: Now you can teach meat cut identification skills whenever you want without obtaining expensive and perishable meat cuts. Photographs of 113 major wholesale and retail cuts of beef, pork, and lamb display the important identifying characteristics of each cut.
The accompanying information sheets list the most nationally accepted names, though no standards exist. All names correspond with the California Agriculture Curriculum Code list. The sheets also contain black and white reproductions of each slide, so they’re an excellent reference and study guide for students.

When similar cuts of meat are difficult to identify, the accompanying text gives particular characteristics to look for, such as bone locations, distinguishing muscle groups, color differences, etc.

The complete set comes in a sturdy binder for extra protection and organization.

Source: National Ag-Ed Curriculum Materials
California Polytechnic State University
San Luis Obispo, CA 93407

Title: Meat Identification Slide Set

Contents: Full color slides (136) identifying retail cuts of beef, pork, lamb, veal and variety meats as listed in the Uniform Retail Meat Identity Standards. A valuable aid in teaching meat identification to high school home economics and college meat science students.

Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Cowrie, IA 50543
515-352-3303

Title: Retail Cuts

Contents: This set of 95 color slides is based on the latest national F.F.A. Contest Scorecard for meat identification. There is one slide for each of the 95 cuts on the scorecard. Most slides have a ruler by the cut to aid in cut size visualization.
SLIDES (Continued)

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: Sheep Publications and Visual Materials

Contents: Lists private organizations, state sheep organizations, state extension services and land-grant universities in the U.S. that have publications, visual materials or resource persons that may be consulted for information on sheep. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Swine Publications and Visual Materials

Contents: Lists private organizations, state swine organizations, state extension service and land-grant universities in the U.S. that have publications, visual materials, or resource persons that may be consulted for information on swine. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

D. FILMSTRIPS

Title: Beef Cattle Publications and Visual Materials

Contents: Lists private organizations, state beef cattle organizations, state extension services and land-grant universities in the U.S. that have publications, visual materials, or resource persons that may be consulted for information on beef cattle. (1980).
FILMSTRIPS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Identification of Beef Cuts
Contents: This 96-frame color filmstrip illustrates the different cuts of beef. Useful information is given to aid in identification of beef cuts.

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Identification of Kinds of Meat
Contents: This 33-frame color filmstrip discusses differences between beef, pork, lamb, and veal. The filmstrip helps in the identification of meat by species.

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Identification of Lamb Cuts
Contents: This 48-frame color filmstrip illustrates the different lamb cuts. Useful information is given to aid in identification of lamb cuts.

Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801
FILMSTRIPS (Continued)

Title: Identification of Pork Cuts
Contents: This 81-frame color filmstrip illustrates the different cuts of pork. Useful information is given to aid in identification of pork cuts.
Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Identification of Retail Meat Cuts
Contents: Slidefilm, 110 frames of retail cuts of beef, pork, and lamb.
Source: Vocational Agriculture Service
College of Agriculture
University of Illinois
Urbana, IL 61801

Title: Sheep Publications and Visual Materials
Contents: Lists private organizations, state sheep organizations, state extension services and land-grant universities in the U. S. that have publications, visual materials or resource persons that may be consulted for information on sheep. (1980).
Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Swine Publications and Visual Materials
Contents: Lists private organizations, state swine organizations, state extension service and land-grant universities in the U. S. that have publications, visual materials or resource persons that may be consulted for information on swine. (1980).
FILMSTRIPS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

E. CHARTS

Title: Be a Smarter Meat Shopper

Contents: Booklet designed to answer questions frequently asked at the meat counter. Explains retail cut labeling, provides illustrated charts for beef, pork, lamb and veal. Also includes information on ground beef and ground pork; inspection and grading; buying; storage; and has a complete description of cookery methods, including microwaving meats. Printed in two colors. 5-1/2" x 7-1/2".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Beef Buyer's Guide

Contents: Handy pocket- or purse-size slide rule calculator helps shoppers make the most of their beef dollar. Converts price per pound to cost per serving and contains beef identification chart, food buying tips for shoppers, and description of the basic beef cookery methods. Printed in full color. 3-7/8" x 9".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Beef Cattle Publications and Visual Materials
CHARTS (Continued)

Contents: Lists private organizations, state beef cattle organizations, state extension services and land-grant universities in the U. S. that have publications, visual materials or resource persons that may be consulted for information on beef cattle. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Beef Chart Wholesale and Retail Cuts

Contents: This chart illustrates the wholesale and retail cuts of beef and the percentage of each by carcass weight.

Source: U. S. Department of Agriculture
Agricultural Marketing Service
Livestock Division
Washington, DC 20402

Title: Bone Shapes - Pork Cuts

Contents: Two-sided wall chart depicts the primal (wholesale) and retail cuts of pork. Shape of the bone which characterizes each retail cut is highlighted. Reverse side illustrates
the label, inspection mark and the cost-preserving formula. Printed in two colors. 18" x 24".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Bone Structure Charts

Contents: Individual notebook-size bone structure charts of beef, lamb, pork and veal. Designed so carcasses can be marked off to show location of wholesale and retail cuts.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Foodservice Cuts of Beef Notebook Chart

Contents: A practical chart for everyone connected with the foodservice industry. Can be used by purveyors, educators, students and salesmen. Lists 22 beef cuts properly identified by their NAMP IMPS numbers. Printed in full color. 8-1/2" x 11".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Foodservice Cuts of Beef Wall Chart

Contents: A practical chart for everyone connected with the foodservice industry. Can be used by purveyors, educators, students and salesmen. Lists 22 beef cuts properly identified by their NAMP IMPS numbers. Printed in full color. 8-1/2" x 11".
CHARTS (Continued)

Title: Foodservice Cuts of Pork Notebook Chart
Contents: Four-color notebook version of "Foodservice Cuts of Pork" Foodservice Wall Chart. Designed for inclusion in student notebook. Lists 20 pork cuts properly identified by their NAMP IMPS number. Printed in full color. 8-1/2" x 11.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Foodservice Cuts of Pork Wall Chart
Contents: The only chart of its kind for the foodservice industry, showing and identifying 20 pork cuts by name and NAMP IMPS number. Useful in foodservice operations, training programs and classrooms. Printed in full color on heavy varnished paper. 24" x 36".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: "Four Food Groups for Better Meals" Game
Contents: This game entertains as well as educates children on the importance of the four major food groups in their diets (milk, meat, vegetables/fruit, cereal/bread). Each game includes an instruction sheet, 25 game cards for players, and a sample completed game card. Also included is a 22 x 28 inch "Daily Food Guide" which tells how many servings a
CHARTS (Continued)

person must have daily of each food group. (1978).

Source: Superintendent of Documents  
U. S. Government Printing Office  
Washington, DC 20402

Title: 4-H Swine Project Manual—Modern Meat-Type Hog

Contents: A 17-page guide describing modern meat hogs yielding superior meat-type quality and finish. Included is a pork chart which shows retail cuts, where they came from and how to cook them. Also, a breed and breed characteristics section is included, plus addresses of purebred swine associations. A small glossary of pork-related terms and three statistical graphs are included.

Source: L.S.U. Cooperative Extension Service  
Baton Rouge, LA 70803

Title: Lamb Chart

Contents: This chart illustrates the wholesale and retail cuts of beef and percentage of each by carcass weight.

Source: United States Department of Agriculture  
Agricultural Marketing Service  
Livestock Division  
Washington, DC 20402

Title: National Livestock and Meat Board (Chart)

Contents: Individual charts showing wholesale and retail cuts of beef, pork, lamb and veal. Set of four 25" x 33" charts. Set of four 8-1/2" x 11" charts.

Source: Ohio Curriculum Material  
Ohio State University  
Columbus, OH 43210
Title: Notebook Charts: Beef, Pork, Lamb and Veal
Contents: Three-color miniature versions of beef, pork, lamb and veal wall charts described above, suitable for inclusion in student notebooks. 8-1/2" x 11".
Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Gowrie, IA 50543
515-352-3303

Title: Pork Buyer's Guide
Contents: Handy pocket- or purse-size slide rule calculator helps shoppers make the most of their pork dollar. Converts price per pound to cost per serving and contains pork identification chart, food buying tips for shoppers and description of the six basic cookery methods. Printed in full color. 3-7/8" x 9".
Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork Chart
Contents: This chart illustrates the wholesale and retail cuts of beef and percentage of each by carcass weight.
Source: United States Department of Agriculture
Agricultural Marketing Service
Livestock Division
Washington, DC 20402

Title: Sheep Publications and Visual Materials
Contents: Lists private organizations, state sheep organizations, state extension services and
CHARTS (Continued)

land-grant universities in the U. S. that have publications, visual materials or resource persons that may be consulted for information on sheep. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Swine Publications and Visual Materials

Contents: Lists private organizations, state swine organizations, state extension service and land-grant universities in the U. S. that have publications, visual materials, or resource persons that may be consulted for information on swine. (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Wall Charts: Beef, 06-501, Pork 06-502, Lamb 06-503, Veal 06-504

Contents: Individual wall charts showing wholesale and retail cuts of beef, pork, lamb and veal. Each retail cut is named in accordance with the Uniform Retail Meat Identity Standards Program. Charts also give correct cookery methods for each cut pictured. Meat cut printed in red on vivid yellow background. Order by name and code. 25" x 33".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
II. PURCHASING OF MEAT

A. TEXTS

Title: Consumers All: Yearbook of Agriculture, 1965

Contents: Tells many things about buying, using, or making food, clothing, household furnishings, and equipment; managing money; caring for yards, gardens, and houses; bettering communities; using leisure time; and staying healthy. 512 pages (1965).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Lessons on Meat

Contents: A comprehensive four-color source book. Includes the latest research findings relative to meat's nutritive value, preferred cooking and freezing methods and buying guides. Helpful tips on meal planning, meat identification, new approved meat identification charts, carving and serving. 8-1/2" x 11". 96 pages.

Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Gowrie, IA 50543
515-352-3303

Title: Meat and Meat Foods

Contents: The purpose of this book is to explain in nontechnical language the processes that bring meats and meat products into the consumer's kitchen in sanitary and appetizing condition and which have made meat one of the safest as well as the most nutritious of foods. 218 pages.

Source: Lloyd B. Jensen
Ronald Press Co.
605 Third Ave.
New York, NY 10158
212-850-6418
Title: **Meat in the Foodservice Industry**

Contents: Written for the newcomer to the foodservice industry, this 80-page hard cover book is also a must for advanced foodservice students, salesmen, purveyors, foodservice employees with some experience and operators who want to build and improve their business. Covers basic meat information, its purchasing, buying, receiving and storing as well as large quantity cookery equipment, meat cooking methods and timetables. Printed partially in full color. 8-3/4" x 11-1/4". 80 pages.

Source: National Live Stock and Meat Board 444 North Michigan Ave. Chicago, IL 60611 312-467-5520

Title: **Meat, Poultry and Seafood Technology**

Contents: This text has been assembled after many years of accumulating facts and preparing them for use by the student. Special care has been taken to provide practical information for those interested in food selection, processing, preparation, preservation and serving of meat. 276 pages (1978).


Title: **Meat Science**

Contents: In this 3rd edition, the author has included three chapters on storage and preservation of meat plus a chapter on meat nutrition. 451 pages (1979).
Source: R. A. Lawrie
Pergamon Press
Maxwell House
Fairview Park
Elmsford, NY 10523
914-592-7700

Title: Processed Meats

Contents: This book was written to serve as a text and reference for advanced undergraduate and graduate students enrolled in meat processing courses. The emphasis of the book is on sausages, smoked meats, and meat canning. 348 pages (1973).

Source: W. E. Kramlich and F. W. Tauber
AVI Publishing Co.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

Title: The Meat We Eat


Source: Romans and Ziegler
The Interstate Printers
and Publishers, Inc.
19-27 N. Jackson Street
Danville, IL 61832-0594
203-226-0738

Title: Yellow Pages

Contents: Answers to predictable questions consumers ask about meat, including nutrition of meat.
B. PAMPHLETS

Title: And the Winner Is... Ground Beef

Contents: This new six-page folder, designed for junior high school home economics or consumer education students, covers all aspects of buying, storage, cookery and nutritive value of ground beef. Consumer buying principles are emphasized. Quantity orders will include a teacher's guide and printed originals (for making quantity copies of student worksheets). Printed in full color. 8-1/2" x 11". 6 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Basics About Beef

Contents: A colorful booklet for senior high, consumer and home economics students, which covers all aspects of buying, storing, preparing and serving beef. A variety of word puzzles are designed to arouse student interest, reinforce the information and serve as a means of review. SCHOOL USE OF THIS BOOKLET IS RESTRICTED TO GRADES 10 THROUGH 12 ONLY. Printed in full color. 8-1/2" x 11". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
Title: Beef and Veal in Family Meals: A Guide for Consumers

Contents: Buying guide for consumers trying to stay within their beef budget.

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, DC 20250

Title: Beef Buying Basics

Contents: This audio-visual kit familiarizes students with the basic cuts of beef and their relation to tenderness and cooking methods.

In the filmstrip, "Family Hero," the main character, 17-year-old Steve, is given the responsibility for shopping for food for his dad and sister during his mother's absence. Coincidentally, his "home economics" teacher is covering a meat unit. Steve becomes the star pupil as he applies what he learns in class at the supermarket. For senior high students.

- Color filmstrip - "Family Hero" - 100 frames, 16 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - "Beef Cuts" - 24" x 36", full color
- Adapter Forms - for class activities, using the "Beef Cuts" poster
- Student Booklet - "Basics About Beef" - 16 pages, one copy
- Printed Originals (for making quantity copies of student worksheets), two copies

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
Title: Buying Food: A Guide for Calculating Amounts to Buy and Comparing Costs in Household Quantities

Contents: The guide helps family food buyers plan food purchases so leftovers — and costs — are kept to a minimum. An "amount to buy" factor is supplied for each of 727 different foods. The "amount to buy" factor can also be used to compare costs per serving. 71 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Facts About Beef

Contents: Full-color folder gives latest information on beef selection, storage, freezing, cooking, carving and nutritive value. Six cookery methods colorfully pictured. Beef cooking timetables are included. Nutrients supplied by two beef servings daily are graphically portrayed, along with percentages of daily recommended allowances of 10 nutrients supplied by a three-ounce serving of beef. 3-5/8" x 9". 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Focus On Pork

Contents: Designed for junior high consumer and home economics students. This colorful booklet covers all aspects of buying, storing, preparing and serving pork and pork products. Several word games included throughout the book will arouse student interest, reinforce learning, and serve as a means of review. Printed in full color. 8-1/2" x 11". 16 pages.
PAMPHLETS (Continued)

Source: National Livestock and Meat Board  
444 North Michigan Ave.  
Chicago, IL 60611  
312-467-5520

Title: Getting the Most from Freezer Beef

Contents: Comprehensive consumer guide to buying beef in quantity. Includes information on storage time, wrapping, cut selection, how to calculate costs, grading and other related subjects. Printed in two colors. 3-7/8" x 8-1/2". 12 pages.

Source: National Livestock and Meat Board  
444 North Michigan Ave.  
Chicago, IL 60611  
312-467-5520

Title: Guide to Budgeting for the Family


Source: Superintendent of Documents  
U. S. Government Printing Office  
Washington, DC 20402

Title: How to Buy Beef Roasts

Contents: Contains consumer information on the purchasing of meats and roasts. 15 pages (1977).

Source: Superintendent of Documents  
U. S. Government Printing Office  
Washington, DC 20402
Title: How to Buy Food: Lesson Aids for Teachers

Contents: These lesson aids can be used in home economics or consumer education courses. Each of the first six lesson aids covers a major food category. The seventh aid, "More for your Money," talks about smart buying in all categories. 52 pages (1975).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: How to Buy Meat for your Freezer

Contents: Describes how to most economically purchase meats for storage in the freezer. 27 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: How to Buy Meat, Poultry, and Dairy Products

Contents: Contains consumer information on the purchase of meats and dairy products. Eight books, sold as a set (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: How to Get the Most for Your Pork Dollar

Contents: Consumer folder explains how to save money with pork by purchasing wholesale cuts like smoked ham, blade Boston (butt) shoulder and whole pork loin. Includes "hands-on" cutting instructions with illustrations for at-home preparation. Printed in 2 colors. 3-5/8" x 9". 10 pages.
PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Institutional Meat Purchase Specifications for Cured, Smoked, and Fully-Cooked Pork**

Contents: Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 10 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Institutional Meat Purchase Specifications for Edible By-Products**

Contents: Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 4 pages (1970).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Institutional Meat Purchase Specifications for Fresh Pork**

Contents: Contains descriptions of various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 6 pages (1975).
Institutional Meat Purchase Specifications for Fresh Veal and Calf

Contents: Contains descriptions of the various meat products customarily purchased by institutional users of meat in accordance with the United States Department of Agriculture's Meat Acceptance Service Guidelines. 8 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Lamb in Family Meals

Contents: An illustrated guide to buying, storing, and cooking. Includes recipes using the particular product. 24 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Lamb in Family Meals: A Guide for Consumers

Contents: Tells how to identify lamb cuts in the market and provides tips on how to select good quality lamb, how to estimate the right quantity to buy and how to store it properly. Also included are directions and timetables for cooking lamb, as well as recipes featuring lamb as a main dish. 21 pages (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402
PAMPHLETS (Continued)

Title: Pork in Family Meals: A Guide for Consumers

Contents: Tells how to identify fresh and cured pork cuts in the market and provides tips on how to select good quality pork, how to estimate the right quantity to buy, and how to store it properly. Also includes directions and timetables for cooking pork, as well as recipes featuring pork as a main dish. 33 pages (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Pork on A Budget

Contents: Eighteen economical and delicious pork recipes are featured in this full-color booklet to help consumers meet the challenge of stretching their food dollar. Included are smart shopping tips and important nutrition information. Printed in full color. 5-1/2" x 7-5/8". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork Slaughtering, Cutting, Preserving and Cooking on the Farm

Contents: A 65-page booklet, including selection and care of animals before slaughter; preparing for slaughter; slaughter; chilling the carcass; cutting, freezing and frozen storage; further processing; meat cookery and precautions. (1978) No. 2265.

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402
PAMPHLETS (Continued)

Title: The Art of Selecting Cuts of Pork

Contents: This audio-visual kit on pork helps home economics and consumer students understand basic principles of selecting and storing the many varied cuts of pork and processed pork products. In the filmstrip, "Glaze on Pork," a reporter for a gourmet food magazine visits Mr. Pigg's cooking school.

Through interaction with Mr. Pigg and his students, she learns about where cuts come from, how to use the package label to select pork cuts and determine best buys and how to store fresh processed pork products. All characters are animals drawn in cartoon style. The kit is a sequel to "Campaigning for Nutrient Density," but can be used alone.

- Color Filmstrip - "Glaze on Pork" - 106 Frames, 13-1/2 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24", 2-color
- Student booklet - "Focus on Pork" - 16 pages, one copy
- Printed Originals (for making quantity copies of student worksheets), two copies

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Variety Meats

Contents: Main dish recipes are featured for beef, veal, pork and lamb variety meats. Includes buying and preparation guide; lists nutritional values of each variety meat. Printed in 2 colors. 3-3/4" x 8-1/2". 12 pages.
PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Your Money's Worth in Foods

Contents: Teaches consumers to sharpen food shopping skills and cut food costs. Includes tables and charts that a highly motivated cost-cutter can use to find the best buys. 28 pages (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

C. FILMSTRIPS

Title: Beef Buying Guide

Contents: This audio-visual kit familiarizes students with the basic cuts of beef and their relation to tenderness and cooking methods. In the Filmstrip, "Family Hero," the main character, 17-year-old Steve, is given the responsibility for shopping for food for his dad and sister during his mother's absence. Coincidentally, his "home economics" teacher is covering a meat unit. Steve becomes the star pupil as he applies what he learns in class at the supermarket. For senior high students.

- Color Filmstrip - "Family Hero" - 100 Frames, 16 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - "Beef Cuts" - 24" x 36", full color
- Adapter Forms - for class activities using the "Beef Cuts" poster
- Student Booklet - "Basics About Beef" - 16 pages, one copy
FILMSTRIPS (Continued)

- Printed Originals (for making quantity copies of student worksheets), two copies

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: The Art of Selecting Cuts of Pork

Contents: This audio-visual kit on pork helps home economics and consumer students understand basic principles of selecting and storing the many varied cuts of pork and processed pork products. In the filmstrip "Glaze on Pork," a reporter for a gourmet food magazine visits Mr. Pigg's cooking school.

Through interaction with Mr. Pigg and his students, she learns about where cuts come from, how to use the package label to select pork cuts and determine best buys and how to store fresh processed pork products. All characters are animals drawn in cartoon style. The kit is a sequel to "Campaigning for Nutrient Density," but can be used alone.

- Color Filmstrip - "Glaze on Pork" - 106 Frames, 13-1/2 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24", 2-color
- Student Booklet - "Focus on Pork" - 16 pages, one copy
- Printed Originals (for making quantity copies of student worksheets), two copies

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
D. CHARTS

Title: How to Buy Food
Contents: Set of 6 posters, 10" x 15" (1976).
Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Your Money's Worth in Foods
Contents: Teaches consumers to sharpen food shopping skills and cut food costs. Includes tables and charts that a highly motivated costs cutter can use to find the best buys. 28 pages (1982).
Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402
III. NUTRITION OF MEATS

A. TEXTS

Title: Lessons On Meat

Contents: A comprehensive four-color source book. Includes the latest research findings relative to meat's nutritive value, preferred cooking and freezing methods and buying guides. Helpful tips on meal planning, meat identification, new approved meat identification charts, carving and serving. 8-1/2" x 11". 86 pages.

Source: Agri-Farm Publications, Inc.
1019 Market Street, Box 43
Gowrie, IA 50543
515-352-3303

Title: Menu Planning Guide for School Food Service

Contents: Contains information on nutrition and meal planning for school food services. 97 pages.

Source: Superintendent of Documents
Government Printing Office
Washington, DC 20402

Title: The Meat We Eat


Source: Romans and Ziegler
The Interstate Printers and Publishers, Inc.
19-27 N. Jackson St.
Danville, IL 61832-0594
217-446-0500

Title: The Science of Meat and Meat Products

Contents: This text includes nutrient content and value of meat and meat products, meat preservation,
TEXTS (Continued)

curing, packaging, and by-products of meat. The first part of the book is devoted to the science of meat; the second, to meat processing. 438 pages.

Source: American Meat Institute Foundation
Trade Distributor: Reinhold Publishing Corp.
135 W. 50th St.
New York, NY 10020
212-265-8700

Title: The Nutritive Value of Cooked Meats

Contents: This bulletin reports the results of analysis of common retail cuts of meat cooked by usual household methods. The different portions of each cut were analyzed separately and the three portions constitute the total potentially edible meat. This bulletin concentrates on the methods of cutting and selecting meats and the nutritive value of each selection and cut. 90 pages, No. MP-49.

Source: Ruth M. Leverton
Oklahoma Agricultural Experiment Station
Stillwater, OK 74075

Title: The Vitamin Content of Meat

Contents: The aim of this book is to summarize the available information on the nutritive value of meat and meat products. Individual chapters are devoted to the more important nutrients. Sufficient fundamental information is supplied in each case so that the value of meat in meeting the requirements of these nutrients can be considered in light of the most recent developments. 210 pages.

Source: Harry A. Waisman
Burgess Publishing Company
7108 Ohms Lane
Minneapolis, MN 55435
612-831-1344
TEXTS (Continued)

Title: What's to Eat? Yearbook of Agriculture, 1979

Contents: This publication, designed and written exclusively for children, features stories, games, jokes, craft projects, recipes, and fun facts. The target age group is 8-13. Parents, teachers, and librarians will find this edition of the Yearbook an ideal way for kids to learn about the food network and discover the connection between good nutrition and good health. 142 pages (1979).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Yellow Pages

Contents: Answers to predictable questions consumers ask about meat, including nutrition of meats.

Source: American Meat Institute
Trade Distributor: Reinhold Publishing Corp.
135 W. 50th St.
New York, NY 10020
212-265-8700

B. PAMPHLETS

Title: And the Winner Is... Ground Beef

Contents: This new six-page folder, designed for junior high school home economics or consumer education students, covers all aspects of buying, storage, cooking and nutritive value of ground beef. Consumer buying principles are emphasized. Quantity orders will include a teacher's guide and printed originals (for making quantity copies of student worksheets). Printed in full color. 8-1/2" x 11". 6 pages.
PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Beef: A New Look at its Nutritive Value
Contents: Describes the new nutrient data for beef as a result of recent nutrient analysis. The information updates the existing 25-year-old beef nutrient data base. The publication points out the nutrient contributions beef makes to a balanced diet and also discusses the fat and cholesterol content of beef. 4 pages printed in 4 colors. 8-1/2" x 11".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Calorie-Conscious Pork Recipes
Contents: Guide to making pork an important part of a dietary fitness plan. Features 10 tasty calorie-controlled pork recipes and important information on nutrition, dieting, and exercise. Calories calculated for each recipe. Printed in full color. 3-3/4" x 8-1/2". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Composition of Foods: Sausage and Luncheon Meats, Raw, Processed, Prepared
Contents: Each page presents the nutrient profile of a single food item, given on the 100-gram food basis in common measure, and in the edible portion of one pound as purchased. Values
are provided for refuse, energy, proximate composition, 7 mineral elements, 9 vitamins, individual fatty acids, cholesterol, total phytosteroids and 18 amino acids. 92 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Conserving the Nutritive Values in Foods

Contents: Calls attention to some of the important nutrients in foods that are affected by different practices of handling and preparation and suggested ways these nutrients can best be conserved in the home. 11 pages (1983).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Exploring the Known... Meat, Diet, and Health

Contents: Much is known about four of the nation's most pressing health concerns - heart disease, cancer, hypertension, and obesity. But even at our current level of knowledge, there is still much information that is unknown, including meat's possible role in the development or even prevention of these diseases. This publication takes an in-depth look at what we know about meat and its possible relationship with these health concerns. 5-1/2" x 8-1/2". Printed in full color. 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
Title: Facts About Beef
Contents: Full-color folder gives latest information on beef selection, storage, freezing, cooking, carving, and nutritive value. Six cookery methods colorfully pictured. Beef cooking timetables are included. Nutrients supplied by two beef servings a day are graphically portrayed, along with percentages of daily recommended allowances of 10 nutrients supplied by a three ounce serving of beef. 3-5/8" x 9", 10 pages.
Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Facts About Pork
Contents: Up-to-the-minute facts about pork variety, selection, storage, freezing and defrosting, cookery, carving, and nutritive value are presented in this folder. Pork cookery methods are illustrated; timetables are given for roasting, broiling, braising and cooking in liquid. Graphs tell story of pork in relation to daily nutrient needs. Printed in full color. 3-5/8" x 9". 12 pages.
Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Facts About Sausage
Contents: Being an educated sausage consumer will be easier with this new consumer brochure. Up-to-the-minute information on ingredients, processing, and nutrition are included. An easy-to-follow identification key to the various types of sausage is also pictured. Printed in full color. 3-5/8" x 9". 12 pages.
Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Family Fare: A Guide to Good Nutrition

Contents: This handy booklet tells you how to get the nutrients you need from a variety of foods, provides tips on meal planning, and offers menu suggestions. Included is a daily food guide that sorts food into four groups on the basis of their similarity in nutrient content. The guide will help you to plan meals that include family favorites, foods in season, and foods to fit the family budget. 91 pages (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Food: A Publication on Food and Nutrition by United States Department of Agriculture

Contents: Contains a hassle-free guide to a better diet; breakfast and snacking ideas; and recipes. 64 pages (1979).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: "Four Food Groups for Better Meals" Game

Contents: This game entertains as well as educates children on the importance of the four major food groups in their diets (milk, meat, vegetable/fruit, cereal/bread). Each game includes an instruction sheet, 25 game cards for players and a sample completed game card.
Also included is a 22 x 28 inch "Daily Food Guide" which tells how many servings a person must have daily of each food group. (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Food and Nutrition News

Contents: A 6-8 page periodical published five times in a calendar year: January-February, March-April, May-June, September-October, and November-December. Features a lead article by a noted authority. Timely nutrition topics and related topics of current interest are presented in lead and inside articles. Also: book reviews, scientific abstracts, and short items about nutrition, food, and health. Free in U. S. and its territories to nutrition, home economics professionals who write stating occupation on business letterhead. Not available to students.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Ideas for Better Eating: Menus and Recipes to Make Use of the Dietary Guidelines

Contents: Ideas, recipes, and nutritional meals for better eating. 30 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Light and Lean Beef Recipes

195
Contents: Recipes and tips for those who want to lose weight sensibly and keep it off. Imaginative beef entrees are featured along with the caloric value of each serving. Contains nutrition information and other tips for the weight conscious. Printed in four colors. 9" x 4". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Meat Builds Better Breakfasts

Contents: Geared to the changing lifestyles of today, this colorful folder emphasizes the "why" of eating breakfast for family members of all ages. It provides a daily breakfast pattern with illustrations of traditional and non-traditional food choices from four food groups. Meat's value at breakfast time is explained. Printed in full color. 3-11/16" x 8-1/2". 6 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Meat In Nutrition and Health

Contents: The proceedings of the "Meat in Nutrition and Health" symposium, held in Colorado on September 2, 1980, have now been collected into a hard bound book. Included are papers presented by participants of the symposium on the topics of meat as a food, meat in nutrition, meat in health, and meat in the future. References for each presentation and questions and answers which followed each session are also included. Printed in one color. 7" x 9-3/4". 210 pages.
Source: National Live Stock and Meat Board  
444 North Michigan Ave.  
Chicago, IL 60611  
312-467-5520

Title: Nutritive Value of Foods

Contents: A table of nutritive values for household measures of commonly used foods makes up a greater part of this bulletin. Values for phosphorus and potassium are included, and measures and values for all foods reviewed and updated as necessary. New information is provided on the dairy products group and on the enrichment levels of white bread and rolls, white flour, self-rising flour, and products prepared with these enriched flours; and on the fatty acid content of the foods. Home and Garden Bulletin No. 72.

Source: Superintendent of Documents  
U. S. Government Printing Office  
Washington, DC 20402

Title: The Hassle-Free Guide to a Better Diet

Contents: This guide tells you the kinds and amounts of food that make up a nutritious diet. It divides commonly eaten foods into five groups, according to the contribution they make. No. 567.

Source: U. S. Department of Agriculture  
Science and Education Administration  
Superintendent of Documents  
U. S. Government Printing Office  
Washington, DC 20402

Title: The Lean Facts About Pork

Contents: Completely revised with new nutrition data, this four-page, full-color leaflet emphasizes the nutritional benefits of pork. Brochure
includes colorful graph giving dietary contributions of one three-ounce serving of pork. 3-5/8" x 9".

Source: National Live Stock and Meat Board 
444 North Michigan Ave. 
Chicago, IL 60611 
312-467-5520

Title: Variety Meats 
Contents: Main-dish recipes are featured for beef, veal, pork, and lamb variety meats. Includes buying and preparation guides; lists nutritional value of each variety meat. Printed in 2 colors. 3-3/4" x 8-1/2". 12 pages.

Source: National Live Stock and Meat Board 
444 North Michigan Ave. 
Chicago, IL 60611 
312-467-5520

C. FILMSTRIPS

Title: Beef: Your Stake in Basic Nutrition
Contents: Designed for high school students, this Meat Board audio-visual kit overviews the nutrient contributions of all foods and discusses nutrient functions of beef's key nutrients in detail. Explains the cholesterol and fat controversies, describes serving size and suggests ways of reducing calories by reducing fat in cooked meat. Activities in teacher's guide reinforces these concepts.

- Color Filmstrip - 63 frames, 14-1/2 minutes
- Cassette Narration - auto or manual
- Teacher's Guide - 16 pages
- Chart - % U.S. RDA, listing over 100 commonly eaten foods. 8-1/2" x 11", 4 pages
FILMSTRIPS (Continued)

- Beef Recipe Booklet - 30 copies
- Teacher's Reference - "The Nutritive Value of Meat"

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Campaigning for Nutrient Density

Contents: This unique audio-visual kit helps junior high students understand the concept of nutrient density, as proven in an extensive field test. A press conference is the setting for the filmstrip, "Mr. Pigg Meets the Press," in which mayoral candidate Pigg is interviewed by an assortment of reporters (illustrated in political cartoon style). Humorous questions relative to misconceptions about pork add levity to the presentation and balance the more complex explanation of nutrient density.

- Color Filmstrip - "Mr. Pigg Meets the Press" - 96 frames, 16 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24", 2 sides, 2-color
- Printed Originals (for making quantity copies of student worksheets), 3 copies

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

D. CHARTS

Title: Food Value Charts

Contents: This set of charts was prepared for use in schools, nutrition clinics, and adult classes studying nutrition and food preparation.
CHARTS (Continued)

Each chart gives a capsule story of key nutrients.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: "Four Food Groups for Better Meals" Game

Contents: This game entertains as well as educates children on the importance of the four major food groups in their diets (milk, meat, vegetable/fruit, cereal/bread). Each game includes an instruction sheet, 25 game cards for players, and a sample completed game card. Also included is a 22 x 28 inch "Daily Food Guide" which tells how many servings a person must have daily of each food group. (1978).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Percent U. S. RDA Chart

Contents: This folder lists over 100 commonly eaten foods and gives the following information for each: size of serving, the number of calories provided by a serving, and the U.S. RDA percentage of the eight leading nutrients. 8-1/2" x 11". 4 pages, No. 17–101.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
IV. MEAT COOKING AND PREPARATION

A. TEXTS

Title: Lessons on Meat

Contents: A comprehensive four-color source book includes the latest research findings relative to meat's nutritive value, preferred cooking and freezing methods and buying guides. Helpful tips on meal planning, meat identification, new approved meat identification charts, carving and serving. 8-1/2" x 11". 86 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Meat for the Table

Contents: Includes chapters on the economics of meat production, the meat packing industry, meat composition and nutritive value, cooking of meat, the art of carving, and pictures and diagrams of different cuts of meat. 1st Edition, 240 pages.

1221 Avenue of the Americas
New York, NY 10020
212-512-2000

Title: Meat in the Foodservice Industry

Contents: Written for the newcomer to the foodservice industry, this 80-page hard cover book is also a must for advanced foodservice students, salesmen, purveyors, foodservice employees with some experience and operators who want to build and improve their business. Covers basic meat information, its purchasing, buying, receiving and storing as well as large quantity cookery equipment, meat
cooking methods and timetables. Printed partially in full color. 8-3/4" x 11-1/4".
80 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork Slaughtering, Cutting, Preserving, and Cooking on the Farm

Contents: Contains basic information about pork slaughtering, cutting, and preserving on the farmstead. 62 pages.

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Protecting Our Food: Yearbook of Agriculture, 1974

Contents: Included are practical facts for the housewife in selecting and preparing food for her family, whys and hows of meat and poultry inspection, food grading, milk safeguards, the world problems in military and space operations. 416 pages (1974).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Quality of Ground Beef Patties Prepared by Microwave, Conventional, and Convection Methods

Contents: Contains comparative information about the cooking of ground meat patties (1983).
Source: Jo Havens
Louisiana Tech University
College of Home Economics
(Thesis: M.S. in Home Economics)

Title: Quality of Top Round Roasts Prepared by Four Methods of Microwave Cookery

Contents: Contains information about the comparative cooking of top round roast (1983).

Source: Laura Booth
Louisiana Tech University
College of Home Economics
(Thesis: M.S. in Home Economics)

Title: The Heinz Book of Meat Cookery

Contents: Quick one-dish dinners, meats men like, feasts from leftovers, party platters, recipes for all meats. 107 pages.

Source: Josephine Gibson
H. J. Heinz Company
1062 Progress
Pittsburgh, PA 15212
412-237-5757

Title: The Meat We Eat


Source: Romans and Ziegler
The Interstate Printers and Publishers, Inc.
Danville, IL 61832-0594
217-446-0500

Title: 365 Ways to Cook Hamburger
TEXTS (Continued)

Contents: This material is filled with innovative methods and recipes for cooking with hamburger. 189 pages.

Source: Doyne Nickerson
Doubleday and Company
501 Franklin Ave.
Garden City, NJ 11530
516-294-4561

Title: Yellow Pages

Contents: Answers to predictable questions consumers ask about meat, including nutrition of meat.

Source: American Meat Institute Foundation
Trade Distributor: Reinhold Publishing Corp.
135 W. 50th St.
New York, NY 10020
212-265-8700

B. PAMPHLETS

Title: A Feast of Facts on Pork Cookery

Contents: This audio-visual kit is the newest in a series on pork and is designed to teach junior high school home economics students the six cooking methods (moist heat and dry heat) used to prepare pork.

The filmstrip, "The Banquet of the Century," features celebrities attending the opening of Mr. Pigg's Pork Palace. Dennis Thornton, a T.V. reporter, interviews the famous guests to find which pork dishes they prefer and how they like them prepared.

All characters are animals drawn in cartoon style. This kit is a sequel to "Campaigning for Nutrient Density" and "The Art of Selecting Cuts of Pork," but can be used independently.
PAMPHLETS (Continued)

- Color Filmstrip - "The Banquet of the Century" - 94 frames, 13 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24", 2 sides, 2-color
- Student Booklet - "Focus on Pork" - 16 pages, 1 copy
- Black Line Masters - three titles

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **All About Cooking Beef Outdoors**

Contents: This full-color guide shows the way to greater enjoyment of beef in every outdoor cooking situation. It includes recipes for backyard, balcony, camping, picnics, tailgate and for entertaining larger groups. It contains information about equipment, building the fire, as well as open pit and covered pit barbeques for the very large groups. 5-1/2" x 8-3/4". 32 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **And The Winner Is... Ground Beef**

Contents: This six-page folder designed for junior high home economics or consumer education students, covers all aspects of buying, storage, cookery, and nutritive value of ground beef. Consumer buying principles are emphasized. Quantity orders will include a teacher's guide and printed originals (for making quantity copies of student worksheets). Printed in full color. 8-1/2" x 11". 6 pages.
PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Basic Beef Cookery Teaching Kit

Contents: A complete audio-visual kit for teaching beef cookery in home economics. Gives steps to use and lists cuts suited for each method.

Includes:
- Color Filmstrip - 101 frames, 20 minutes
- Cassette Narration - auto or manual
- Teacher's Guide - 20 pages
- Chart - Beef Cookery Methods - 18" x 24", 2-color
- Spirit Duplicating Masters - two copies
- Teacher's Reference - "Basics About Beef"

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5502

Title: Basics About Beef

Contents: This colorful booklet contains information about buying, storing, preparing and serving beef. Also has student motivational instruments. 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Beef and Veal in Family Meals: A Guide for Consumers

Contents: A buying guide for consumers trying to stay within their beef budget. No. R118.
PAMPHLETS (Continued)

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, DC 20250

Title: Beef Slaughtering, Cutting, Preserving, and Cooking on the Farm

Contents: Consumer guide to slaughtering, cutting, preserving, and cooking of beef. Tips on how to cook better are included. No. F2263.

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, DC 20250

Title: Beef That Satisfies... The Microwave Way

Contents: Microwave beef with success following the recipes and recommendations in this attractive full-color booklet. Sixteen easy-to-prepare recipes plus information on cut selection and step-by-step instructions for microwaving beef roasts, pot roasts, and burgers. Printed in full color. 5-1/2" x 7-5/8". 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Composition of Foods: Sausage and Luncheon Meats - Raw, Processed, Prepared

Contents: Each page presents the nutrient profile of a single food item, given on the 100-gram food basis in common measure, and in the edible portion of one pound as purchased. Values are provided for refuse, energy, proximate composition, 7 mineral elements, 9 vitamins, individual fatty acids, cholesterol, total phytosteroids, and 18 amino acids. 92 pages (1980).
PAMPHLETS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Conserving the Nutritive Values in Foods

Contents: Calls attention to some of the important nutrients in foods that are affected by different practices of handling and preparation and suggested ways these nutrients can best be conserved in the home. 11 pages (1983).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Cut Your Own Beef-In-Bag

Contents: Consumer folder explains how to purchase boneless vacuum packaged subprimals, cut and wrap beef for savings and convenience. Also includes instructions on storing and cooking beef, as well as information on the importance and proper care of a sharp knife. Printed in two colors. 3-7/8" x 8-1/2". 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Dare to Excel in Cooking: Award Winning Group Recipes in USS Summary

Contents: Recipes include soups, salads and dressings, poultry, meats, sauces and fish, cheese and eggs, vegetables, beverages, pies, cakes, and pastry. 52 pages (1968). No. DDG118.
PAMPHLETS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Eating for Better Health

Contents: Contains breakfast, lunch, dinner, snack and low-calorie menus and recipes that are low cost and easy to prepare. 26 pages (1981).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Eat More Beef – Spend Less Money!

Contents: Included in this 21-page booklet are cuts of veal, rib steak, baby beef T-bone, center blade chuck roast, and a baby beef crown roast. Also in this booklet are methods of cooking beef, plus some selected recipes. The guide has helpful hints on cooking beef.

Source: L.S.U. Cooperative Extension Service
Cooperative Extension Publication 1807
Baton Rouge, LA 70803

Title: Facts About Beef

Contents: Full-color folder gives latest information on beef selection, storage, freezing, cooking, carving and nutritive value. Six cookery methods colorfully pictured. Beef cooking timetables are included. Nutrients supplied by two beef servings daily are graphically portrayed, along with percentages of daily recommended allowances of 10 nutrients supplied by a three ounce serving of beef. 3-5/8" x 9". 10 pages.
PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Facts About Ham

Contents: Full-color folder includes information about buying, care and storage. Includes microwave instruction for ham, timetables for roasting, broiling and cooking in liquid. 12 pages.

Sources: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Facts About Lamb

Contents: Latest data on selection, cooking, carving, freezing and defrosting lamb are covered in this folder. Six cookery methods illustrated in appetizing full color. Nutritive value of lamb is graphically portrayed; complete lamb cookery timetables also included. 3-5/8" x 9". 12 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Facts About Pork

Contents: Up-to-the-minute facts about pork variety, selection, storage, freezing and defrosting, cookery, carving, and nutritive value are presented in this folder. Pork cookery methods are illustrated. Timetables are given for roasting, broiling, braising, and cooking in liquid. Graphs tell story of pork in relation to daily nutrient needs. Printed in full color. 3-5/8" x 9". 12 pages.
Title: **Family Food Budgeting for Good Meals and Good Nutrition**

Contents: Contains information about consumer buying on a limited budget and the preparation of good and nutritious meals. 15 pages (revised 1981).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Focus on Pork**

Contents: This colorful booklet covers all aspects of buying, storing, preparing and serving pork and pork products. 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: **Food: A Publication on Food and Nutrition by United States Department of Agriculture**

Contents: Contains a hassle-free guide to a better diet, breakfast and snacking ideas, and recipes. 64 pages (1979).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: **Freezing Cooked and Prepared Foods**
PAMPHLETS (Continued)

Contents: This guide helps the cook get the most from the freezer. It also gives tips on planning freezer space and meals which are to be frozen.

Source: L.S.U. Center for Agricultural Sciences and Rural Development
Publication 1834
Baton Rouge, LA 70803

Title: Getting to the Meat of the Matter on Processed Meats

Contents: Four-page, full-color publication gives nutrition information about processed meats and discusses important issues such as salt additives, calories and fat. 3-5/8” x 9”.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Guide to Budgeting for the Family

Contents: An illustrated guide to buying, storing and cooking for the family. It includes recipes for main dishes and money-saving tips. 14 pages (1976).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Ideas for Better Eating: Menus and Recipes to Make Use of the Dietary Guidelines

Contents: This material has information about better eating habits and dietary guidelines. Menus and recipes are included. 30 pages (1981).
PAMPHLETS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Lamb in Family Meals

Contents: An illustrated guide to buying, storing, and cooking. Includes recipes using the particular product. 24 pages (1980).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Lamb in Family Meals: A Guide for Consumers

Contents: Tells how to identify lamb cuts in the market and provides tips on how to select good quality lamb, how to estimate the right quantity to buy, and how to store it properly. Also included are directions and timetables for cooking lamb, as well as recipes featuring lamb as a main dish. 21 pages (1982).

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Lamb Slaughtering, Cutting, Preserving, and Cooking on the Farm

Contents: Consumer guide to slaughtering, cutting, preserving and cooking of lamb. Tips on how to better prepare lamb are also included. No. F2264.

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, DC 20250
PAMPHLETS (Continued)

Title: Let's Have a Porkecue
Contents: Full-color booklet featuring pork recipes for grill and outdoor cookery. 8 pages.
Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Piggy Bank Pork Recipes
Contents: Convenient, self-indexed 4" x 6" folder containing 10 economy-type pork recipes featuring a variety of pork cuts. Illustrated with full-color pictures. 10 pages.
Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork in Family Meals: A Guide for Consumers
Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, DC 20250

Title: Pork in Family Meals: A Guide for Consumers
Contents: Tells how to identify fresh and cured pork cuts in the market and provides tips on how to select good quality pork, how to estimate the right quantity to buy, and how to store it properly. Also includes directions and timetables for cooking pork, as well as recipes featuring pork as a main dish. 33 pages (1982).
Title: Pork... in the Foodservice Industry

Contents: This booklet is designed specifically for the foodservice and hospitality industry to explain pork, its place on the menu and its versatility and promotional possibilities in the hotel, institution and restaurant field. Provides reasons why pork can be a profitable item in almost any foodservice operation. Printed in full color. 3-3/4" x 8-1/2". 40 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork's Great Outdoors

Contents: Selecting cuts for rotisserie, grill or kabobs. Recipes for pork in outdoor cooking. 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork on a Budget

Contents: Eighteen economical and delicious pork recipes are featured in this full-color booklet to help consumers meet the challenge of stretching their food dollar. Included are smart shopping tips and important nutrition information. Printed in full color. 5-1/2" x 7-5/8". 16 pages.
PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork Slaughtering, Cutting, Preserving, and Cooking on the Farm

Contents: A 65-page booklet including selection and care of animals before slaughter; preparing for slaughter; slaughtering; chilling the carcass; cutting, freezing, and frozen storage; further processing; meat cookery and precautions. (1978) No. 2265.

Source: Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

Title: Pork Today - Stir-Fry Recipes

Contents: Full-color folder features stir-fry technique tips and 7 tasty, internationally-inspired recipes. Fits conveniently into a 3" x 5" recipe file box. Printed in four colors.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork Today - 30-Minute Pork Recipes

Contents: Full-color folder with 7 main dish recipes you can make with ease from refrigerator to table in 30 minutes or less. Fits conveniently into a 3" x 5" recipe file box.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
PAMPHLETS (Continued)

Title: Six "Pork's Serving America More" Recipes

Contents: Set of six colorful recipes created specifically for the foodservice industry. The entrees are Oriental Pork Stir-Fry, Pork Tenderloin with Raisins, Pork Layered Sandwich, Stuffed Pork Chops, New England Pork Pasty and Ham Mousse Salad. Each card 8" x 5".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: The Host and Hostess Cook'n Carve

Contents: This 21-page booklet is filled with information about cooking and buying beef, lamb, pork and poultry.

Source: Swift and Company
1919 Swift Drive
Oak Brook, IL 60521
312-850-5606

Title: The Meat Board Guide to Identifying Meat Cuts

Contents: Booklet provides basic information on the selection, identification and recommended cookery method for retail meat cuts. Contains full-color photographs identifying retail cuts of beef, pork, lamb, veal and variety meats. A valuable aid in teaching meat identification to high school home economics and meat science students and consumers in general. 4" x 9". 48 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
PAMPHLETS (Continued)

Title: Variety Meats

Contents: Main-dish recipes are featured for beef, veal, pork, and lamb variety meats. Includes buying and preparation guide; lists nutritional values of each variety meat. Printed in 2 colors. 3-3/4" x 8-1/2". 12 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

C. FILMSTRIPS

Title: A Feast of Facts on Pork Cookery

Contents: This audio-visual kit is the newest in a series on pork and is designed to teach junior high school home economics students the six cooking methods (moist heat and dry heat) used to prepare pork.

The filmstrip, "The Banquet of the Century," features celebrities attending the opening of Mr. Pigg's Pork Palace. Dennis Thornton, a T.V. reporter, interviews the famous guests to find which pork dishes they prefer and how they like them prepared.

All characters are animals drawn in cartoon style. This kit is a sequel to "Campaigning for Nutrient Density" and "The Art of Selecting Cuts of Pork," but can be used independently.

- Color Filmstrip -"The Banquet of the Century" - 94 frames, 13 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24" - 2 sides, 2 color
- Student Booklet - "Focus on Pork" - 16 pages, one copy
- Black Line Masters - three titles
FILMSTRIPS (Continued)

Source: National Live Stock and Meat Board
444 Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Basic Beef Cooking Teaching Kit

Contents: A complete audio-visual kit for teaching beef
cookery in home economics. Gives steps to
use and lists cuts suited for each method.
Includes:
- Color Filmstrip - 101 frames, 20 minutes
- Cassette Narration - auto or manual
- Teacher's Guide - 20 pages
- Chart - "Beef Cooking Methods" - 18"
  x 24", 2-color
- Spirit Duplicating Masters - two copies
- Teacher's Reference - "Basics About Beef"

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

D. CHARTS

Title: A Feast of Facts on Pork Cookery

Contents: This audio-visual kit is the newest in a
series on pork and is designed to teach
junior high school home economics students
the six cooking methods (moist heat and dry
heat) to prepare pork.

The filmstrip, "The Banquet of the Century,"
features celebrities attending the opening of
Mr. Pigg's Pork Palace. Dennis Thornton, a
T.V. reporter, interviews the famous guests
to find which pork dishes they prefer and how
they like them prepared.

All characters are animals drawn in cartoon
style. This kit is a sequel to "Campaigning
for Nutrient Density" and "The Art of
Selecting Cuts of Pork," but can be used independently.

- Color Filmstrip - "The Banquet of the Century" - 94 frames, 13 minutes
- Cassette Recording - auto or manual
- Teacher's Guide - 16 pages
- Chart - 18" x 24", 2 sides, 2-color
- Student Booklet - "Focus on Pork" - 16 pages, one copy
- Black Line Masters - three titles

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Basic Beef Cookery Technique Kit

Contents: A complete audio-visual kit for teaching beef cookery in home economics. Gives steps to use and lists cuts suited for each method. Includes:

- Color Filmstrip - 101 frames, 20 minutes
- Cassette Narration - auto or manual
- Teacher's Guide - 20 pages
- Chart - "Beef Cookery Methods" - 18" x 24", - 2-color
- Spirit Duplicating Masters - two copies
- Teacher's Reference - "Basics About Beef"

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Be a Smarter Meat Shopper

Contents: Booklet designed to answer questions frequently asked at the meat counter. Explains retail cut labeling; provides illustrated charts for beef, pork, lamb and veal. Also includes information on ground beef and ground pork; inspection and grading;
buying; storage; and has a complete
description of cookery methods, including
microwaving meats. Printed in two colors.
5-1/2" x 7-1/2".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Beef Buyer's Guide

Contents: Handy pocket- or purse-size slide rule
calculator helps shoppers make the most of
their beef dollar. Converts price per pound
to cost per serving and contains beef
identification chart, food buying tips for
shoppers and description of the basic beef
cookery methods. Printed in full color. 3-
7/8" x 9".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Beef is... A Brunch Favorite

Contents: Full-color folder provides 6 unique beef
entree recipes for brunch entertaining. Also
includes a seasonal menu for each recipe.
Fits conveniently into a 3" x 5" recipe file
box.

Source: National Live Stock and Meat Board
444 Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Beef is... A Fast Favorite

Contents: Full-color folder features 10 main dish beef
recipes designed for rapid skillet, broiler
CHARTS (Continued)

and outdoor grill cooking. Fits conveniently into a 3" x 5" recipe file box.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Creative Microwaving with Sausage

Contents: Microwave sausages with success following the recipes and recommendations in this full-color folder. Each recipe is printed on a 3" x 5" panel that is perforated so that it can be easily separated and placed in your recipe file.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Food Value Charts

Contents: This set of charts was prepared for use in schools, nutrition clinics, adult classes studying nutrition and food preparation. Each chart gives a capsule story of key nutrients.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork Buyer's Guide

Contents: Handy pocket- or purse-size slide rule calculator helps shoppers make the most of their pork dollar. Converts price per pound to cost per serving and contains pork identification chart, food buying tips for shoppers and description of the six basic
CHARTS (Continued)

cookery methods (with illustrations). Printed in full color. 3-7/8" x 9".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: The Meat Board Beef Steak Color Guide

Contents: This guide shows cross-section cuts of beef top loin steaks broiled to internal temperatures ranging from very rare (130°F) to very well done (180°F). Illustrating the terms rare, medium rare, etc., it is an excellent guide to steak preparation. Printed in full color on high quality polished plastic which can be easily wiped clean. 8-1/2" x 11".

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
V. MEAT CUTTING AND MERCHANDISING

A. TEXTS

Title: How to Carve Meat, Game and Poultry
Contents: The book explains step by step procedures for making different cuts of meat, plus it gives lessons on the anatomy of beef, pork and lamb. There are also helpful suggestions on meat tenderizing. 209 pages.
Source: M. O. Cullen
McGraw-Hill Book Co.
1221 Avenue of the Americas
New York, NY 10020
212-512-2000

Title: Livestock and Meat Marketing
Contents: Contains basic information about wholesale and retail meat marketing.
Source: AVI Publishing Company, Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

Title: Meat Cutting - Individual Study Guide
Contents: Contains assignment sheets, information sheets and references. 200 pages.
Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

Title: Meat, Poultry, and Seafood Technology
Contents: This text has been assembled after many years of accumulating facts and preparing them for use by the student. Special care has been taken to provide practical information for those interested in food selection, processing, preparation, preservation, and serving of meat. 276 pages (1978).
Source: Robert L. Henrickson
Prentice-Hall, Inc.
Englewood Cliffs, NJ 07632
201-592-2000/1-800-624-0024

Title: Pork Slaughtering, Cutting, Preserving and Cooking on the Farm

Contents: Contains basic information about pork slaughtering, cutting, and preserving on the farmstead. 62 pages.

Source: Superintendent of Documents
Government Printing Office
Washington, DC 20402

Title: Practical Meat Cutting and Merchandising, Volume I

Contents: Provides information on cutting, handling and merchandising of all cuts of beef offered in butcher shops and supermarkets. 235 pages.

Source: Thomas Fabbricante and William J. Sultan
AVI Publishing Co., Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

Title: Practical Meat Cutting and Merchandising, Volume II

Contents: This text gives detailed instructions, illustrated with 300 drawings, on the cutting of pork, lamb and veal for merchandising. 206 pages.

Source: Thomas Fabbricante and William J. Sultan
AVI Publishing Co., Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738
Title: **Processed Meats**

Contents: This book was written to serve as a text and reference for advanced undergraduate and graduate students enrolled in meat processing courses. The emphasis of the book is on sausages, smoked meats; and meat canning. 348 pages (1973).

Source: W. E. Kramlich and F. W. Tauber
AVI Publishing Co., Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

Title: **Training Manual for Meat Cutting and Merchandising**

Contents: Information on beef carcass primal and subprimal cuts, beef flank, hindshank and foreshank, beef round, beef loin, beef forequarter and strip, beef rib, beef arm and chuck, pork carcass, lamb carcass and veal carcass. 156 Pages.

Source: Thomas Fabbricante
AVI Publishing Co., Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

B. **PAMPHLETS**

Title: **Assessment of Proposed Net Weight Labeling Regulations for Meat and Poultry Products**

Contents: This study evaluates the potential economic impact on consumers, industry and inspection officials, and concludes the proposed regulations have been grossly misunderstood by both consumers and producers. 55 pages (1979).
Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Beef Slaughtering, Cutting, Preserving and Cooking on the Farm

Contents: Consumer guide to slaughtering, cutting, preserving and cooking of beef. Tips on how to cook better are included. No. F2263.

Source: Office of Governmental and Public Affairs
U.S. Department of Agriculture
Washington, DC 20250

Title: Cut Your Own Beef-In-A-Bag

Contents: This material explains how to purchase boneless vacuum packaged subprimals, cut and wrap the beef for savings and convenience. Also includes information on storing and cooking beef. 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Food Service Manual, Including A Model Food Service Sanitation Ordinance, 1976 Recommendations of the Food and Drug Administration

Contents: Discusses the need, purpose, and scope of a sanitation program, tells you how to conduct an effective program, and provides a model food service sanitation ordinance, incorporating the 1976 recommendations of the Food and Drug Administration. 96 pages (1978).
PAMPHLETS (Continued)

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: 4-H Swine Project Manual - Modern Meat-Type Hogs

Contents: A 17-page guide describing modern meat hogs yielding superior meat type quality and finish. Included is a pork chart which shows retail cuts, where they came from, and how to cook them. Also, a breed and breed characteristics section is included, plus addresses of purebred swine associations. A small glossary of pork-related terms and three statistical graphs are also included.

Source: L.S.U. Cooperative Extension Service
Baton Rouge, LA 70803

Title: Health and Safety Guide for Food Processors

Contents: Contains federal regulations as to safety and health standards for food processors. 84 pages.

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: How to Carve a Picnic Shoulder

Contents: This pamphlet shows how to carve a pork picnic shoulder into attractive servings.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
PAMPHLETS (Continued)

Title: How to Get the Most for Your Pork Dollar

Contents: This material contains money-saving hints on
the purchasing of wholesale cuts like smoked
ham, blade Boston shoulder and whole pork
loins. Includes at-home cutting instructions.
10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Lamb Slaughtering, Cutting, Preserving and
Cooking on the Farm

Contents: Consumer guide to slaughtering, cutting,
preserving, and cooking of lamb. Tips on how
to better prepare lamb are also included.
No. F2264.

Source: Office of Governmental and Public Affairs
U. S. Department of Agriculture
Washington, D. C. 20250

Title: Merchandising Beef: Muscle Boning the Chuck

Contents: This 19-page booklet gives step by step
instructions for making boneless inside
chuck, chuck tender, boneless neck, boneless
stew, individual Swiss steaks, ground chuck,
shoulder clod steaks, shoulder clod potroasts, chuck short ribs, petite steaks,
triangle, and chuck rib pot roast from the
beef square cut chuck.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520
Title: Merchandising Fresh Pork Loins

Contents: This pamphlet contains information on 30 ways to cut whole pork loins. Also contains tests for comparing different types of wholesale loins and information on vacuum packaging. 10 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Merchandising Ideas for Fresh Pork Shoulders

Contents: This merchandising manual illustrates 13 ways to cut and merchandise fresh pork shoulders complete with 68 detailed illustrations. 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Merchandising Pork Legs (Fresh Hams)

Contents: This manual contains 73 illustrations showing the merchandising procedures for fresh pork legs (fresh hams). 16 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Merchandising Pork: Rolling the Fresh Leg

Contents: This 4-page booklet gives detailed illustrated instruction for making a symmetrical boneless roast from a leg of pork (fresh ham).
PAMPHLETS (Continued)

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: More Meals from Meat

Contents: This pamphlet gives details for the cutting of beef arm pot-roast, pork Boston butt, lamb leg, porterhouse steak, lamb square-cut shoulder, beef blade rib roast, and smoked ham.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Pork Slaughtering, Cutting, Preserving and Cooking on the Farm

Contents: A 65-page booklet, including selection and care of animals before slaughter; preparing for slaughter; slaughter; chilling the carcass; cutting, freezing and frozen storage; further processing; meat cookery and precautions. (1978) No. 2265.

Source: Superintendent of Documents
U. S. Government Printing Office
Washington, DC 20402

Title: Prepackage Meats for Self-Service

Contents: This manual is designed to help retailers convert their meat department to a self-service basis by profiting from the experience of those who have preceded them. This is a booklet for the merchandising of meat.
C. FILMSTRIPS

Title: How to Buy Beef

Contents: Presents a guide to buying beef by U.S.D.A. grade and by cut, and specifies which cuts are the most tender.

Source: U. S. Department of Agriculture
        Photo Lab, Inc.
        Washington, DC 20402
VI. MEAT EVALUATION

A. TEXTS

Title: Livestock Judging, Selection and Evaluation

Contents: This text presents livestock judging, selection, and evaluation in a practical, brief manner. Considerable discussion is devoted to the influence which conformation and finish have upon value of carcass and there is an extensive description included for each kind of livestock. Also, the most up-to-date pictures and diagrams are included. 527 pages (1978).

Source: Roger E. Hunsley, W. Malcolm Beesen and Julius E. Nordby
The Interstate Printers and Publishers, Inc.
19-27 N. Jackson St.
Danville, IL 61832-0594
217-446-0500

Title: Meat Evaluation Handbook

Contents: This material has information on 190 full-color photographs of beef carcasses - wholesale cuts, quality grades, yield grades; pork carcasses - cut grades; lamb carcasses - quality yield grades. Information is also provided on color, texture, finish, quality, muscling, firmness, marbling, cutability and conformation. 70 pages.

Source: National Live Stock and Meat Board
444 North Michigan Ave.
Chicago, IL 60611
312-467-5520

Title: Meat Evaluation Series

Contents: This three-part publication has information about beef carcasses, pork carcasses, and retail cuts. This material is recommended for preparing students for meats judging contests.
TEXTS (Continued)

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

Title: Meat Handbook

Contents: This text has information about grading, purchasing, cooking, and identification of meats.

Source: Albert Levy
AVI Publishing Company, Inc.
250 Post Rd. East, P. O. Box 831
Westport, CT 06881
203-226-0738

Title: Meat Processing Plant Employee

Contents: This material contains 70 topics, including meat quality, carcass classification and grading, meat fabrication, meat by-products, and marketing. It also contains course outlines, assignment sheets and topic test with answers. 322 Pages.

Source: Ohio Curriculum Material
Ohio State University
Columbus, OH 43210

B. SLIDES

Title: Beef Carcass Grading Quality and Yield

Contents: This set of 50 color slides shows various degrees of marbling and maturity of beef carcasses. The set illustrates C maturities and actual rib eye tracings for student to estimate rib eye size. Rib eye and KD # fat are shown for each carcass. All carcasses are yield and quality graded. Rib eye tracing, keys, and comments on maturity are included.
Title: Meat Evaluation Handbook Judging Slides

Contents: This material has 95 color slides taken from classes illustrated in the "Meat Evaluation Handbook." It is recommended in training of meat judging and in use with the "Meat Evaluation Handbook."

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: Meats Judging Classes, Sets 1 and 2

Contents: This set of 84 color slides contains 5 beef carcass classes, 5 pork carcass classes, 5 beef wholesale (rib, chuck, round), 5 ham classes, and 8 lamb carcass classes. Slides detail fat and rib eye. Official placings and cuts are included.

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595

Title: U.S. Grades of Beef Carcasses

Contents: This set of twenty color slides was developed by the U.S.D.A. for teaching U.S. grades of beef carcasses. The slide set illustrates the 8 U.S.D.A. grades of meat. A lecture guide is included to provide detailed explanation of each grade.
C. FILMSTRIPS

Title: USDA Swine and Pork Carcass Grades

Contents: After a one-frame history of U.S.D.A. grading of swine, the filmstrip features side, rear, top, carcass, and cut views of U.S.D.A. No. 1, 2, 3, 4, and utility. The basic specifications of each grade are emphasized throughout the filmstrip. Shipping weight 9 ounces.

Source: NASCO
901 Janesville Ave.
Fort Atkinson, WI 53538
414-563-3446/1-800-558-9595