

CONTENTS

Chapter 1

History

| | |
|--------------------------|----|
| General | 19 |
| Hebraic | 19 |
| Medieval Florentine | 20 |
| American | 20 |
| Poultry | 34 |
| Poultry Inspection Bills | 39 |

Chapter 2

Elements of Meat Hygiene

| | |
|---|----|
| Ante Mortem Inspection | 40 |
| Post Mortem Inspection | 40 |
| Reinspection | 41 |
| Sanitation | 41 |
| Condemnation and Destruction of Unfit Materials | 41 |
| Adulteration | 41 |
| Misrepresentation | 41 |
| General | 42 |

Chapter 3

Humane Slaughter

| | |
|------------------------------|----|
| History | 46 |
| Federal Humane Slaughter Law | 49 |
| Accepted Humane Devices | 51 |

Chapter 4

Ante Mortem Inspection

| | |
|------------------------------|----|
| Technique | 53 |
| Specific Diseases | 58 |
| Etiology and Pathogenesis | 58 |
| Signs and Lesions | 58 |
| Significance and Disposition | 59 |

Chapter 5

Past Mortem Inspection

| | |
|----------------------------------|-----|
| Technique | 92 |
| Specific Diseases and Conditions | 122 |
| Etiology and Pathogenesis | 122 |
| Lesions | 123 |
| Significance and Disposition | 125 |

Chapter 6

Trichinosis

| | |
|-----------------------------|-----|
| General | 251 |
| <i>Trichinella spiralis</i> | 253 |
| Trichinosis | 255 |
| Clinical | 256 |
| Incidence | 257 |
| Swine | 257 |
| Wildlife | 260 |
| Man | 261 |
| Control | 262 |
| Courts | 272 |

Chapter 7

Physical and Chemical Characteristics of Meat and the Principal Organs

| | |
|--------------------|-----|
| Histology | 278 |
| Skeletal Muscles | 278 |
| Cardiac Muscle | 279 |
| Purkinje Fibers | 280 |
| Smooth Muscle | 280 |
| Fatty Tissue | 281 |
| Lymph Nodes | 282 |
| Spleen | 283 |
| Liver | 285 |
| Kidney | 287 |
| Lung | 289 |
| Mammary Glands | 290 |
| Chemistry | 290 |
| Muscle Tissue | 291 |
| Extractives | 294 |
| Connective Tissue | 296 |
| Fatty Tissue | 296 |
| Poultry | 296 |
| Respiratory System | 296 |
| Digestive System | 297 |

| | |
|-------------------------------------|-----|
| Liver | 298 |
| Kidneys | 299 |
| Reproductive Organs | 299 |
| Organs of the Blood Vascular System | 299 |
| Lymphatic System | 299 |
| Spleen | 300 |

Chapter 8

Deteriorative Changes in Meats

| | |
|---|-----|
| Durability Factors | 301 |
| Species | 301 |
| pH | 301 |
| Environment | 302 |
| Ingredients | 302 |
| Bacterial Action | 304 |
| Bacterial Action on Protein | 306 |
| Molds | 306 |
| Spoilage | 307 |
| Factors Affecting Meat Color | 309 |
| Discoloration of Heme Pigment | 309 |
| Chemical Tests for Incipient putrefaction of Meat | 310 |
| Insect Infestation | 311 |
| Crystals of Amino Acids | 312 |
| “Freezerburn” | 312 |
| Vinegar Pickled Product | 312 |
| Deterioration of Fats | 314 |
| Odor Absorption | 314 |
| “Tank Water Sour” | 314 |
| Hydrolysis | 315 |
| Oxidation | 316 |
| Canned Meats | 320 |

Chapter 9

Food-Borne Illness

| | |
|--|-----|
| Introduction | 324 |
| Chemical | 326 |
| Microbial | 328 |
| Botulism | 328 |
| Staphylococcal Food Poisoning | 335 |
| Salmonella Food-Borne Illness | 342 |
| Food-Borne Illness Due to Other Bacteria | 351 |
| <i>Clostridium Perfringens</i> | 351 |
| <i>Streptococcus Faecalis</i> | 352 |

| | |
|--|-----|
| <i>Bacillus Cereus</i> | 352 |
| <i>Vibrio Parahaemolyticus</i> | 352 |
| Other Bacteria | 353 |
| Mycotoxins | 353 |
| Significance of Microbiological Findings | 353 |

Chapter 10

Wholesomeness, Adulteration and Misrepresentation

| | |
|---|-----|
| Wholesomeness | 356 |
| Adulteration | 356 |
| Affect Wholesomeness | 357 |
| Inappropriate or Unexpected Ingredients | 367 |
| Misrepresentation | 372 |
| Mislabeling | 373 |
| Masking Inferiority | 379 |
| Deceptive Containers | 380 |

Chapter 11

Facilities and Procedures Relating to Sanitation in Plant Operation

| | |
|--------------------------------------|-----|
| Water Supply | 381 |
| Liquid Waste Disposal | 389 |
| Outside Premises | 392 |
| Rodent Control | 393 |
| Insect Control | 401 |
| Packing House Employees | 412 |
| Cleanup | 414 |
| Equipment | 421 |
| Slaughtering Department | 426 |
| Viscera Separating | 452 |
| Refrigerating Department | 457 |
| Carcass Cutting | 461 |
| Edible Rendering Department | 462 |
| Equipment for Handling Rendered Fat | 466 |
| The Residue Resulting from Rendering | 467 |
| Curing Department | 468 |
| Smokehouses | 472 |
| Sausage Department | 473 |
| Dry Storage | 477 |
| Hide Cellar | 477 |
| Inedible Department | 477 |

Chapter 12

Inspection-Controls, Techniques and Facilities

| | |
|--|-----|
| Ante Mortem Inspection | 483 |
| Post Mortem Inspection | 484 |
| Inspection of the Manufacture of Meat Products | 494 |
| Labeling | 496 |
| Control of Condemned Product | 496 |

Chapter 13

Preparation of Meat and Meat Food Products

| | |
|--|-----|
| Chilling | 498 |
| Cutting | 500 |
| Freezing | 508 |
| Defrosting | 509 |
| Aging | 510 |
| Ozone | 511 |
| Meat Tenderizer | 512 |
| Dehydrated Meat | 513 |
| Curing | 514 |
| Smoking | 522 |
| High-frequency Cooking | 526 |
| Vinegar-Pickled Meats | 527 |
| Sausage Room Products | 528 |
| Products Other Than Sausage that are Prepared in Casings | 540 |
| Canning | 544 |
| Rendering | 562 |
| Shortening | 569 |
| Oleo Stock | 570 |
| Oleomargarine | 570 |

Chapter 14

Materials Added to Meats

| | |
|----------------------------|-----|
| Salt | 573 |
| Seasonings | 574 |
| Sugars | 581 |
| Molasses | 582 |
| Corn Sugar | 584 |
| Protein Hydrolysates | 585 |
| Nitrites | 587 |
| Milk and Its Products | 587 |
| Cereal and Cereal Products | 590 |
| Corn | 592 |
| Soya Flour | 593 |

| | |
|------------------------|-----|
| Vegetables | 594 |
| Vegetable Oils | 596 |
| Mono-and Diglycerides | 600 |
| Lecithin | 600 |
| Artificial Colors | 601 |
| Chemical Preservatives | 603 |
| Starter Cultures | 605 |
| Polyphosphates | 606 |
| Ascorbic Acid | 607 |
| Smoke | 608 |
| Smoke Flavorings | 608 |
| Vinegar | 608 |
| Enzymes | 609 |

Chapter 15

Evaluation of Residues and Preservatives in Meat

| | |
|---------------------|-----|
| General Principles | 613 |
| Basis of Evaluation | 613 |
| Direct Additives | 619 |
| Indirect Additives | 623 |

Chapter 16

Exposure to Ionizing Radiation

| | |
|----------------------------------|-----|
| The Atom | 636 |
| Types of Radiation | 637 |
| Electromagnetic Spectrum | 640 |
| The Nature of Radiation | 641 |
| Radiation Hazards | 643 |
| Assessment of Radiation Exposure | 646 |
| Salvage and Decontamination | 647 |
| Radiation Preservation of Foods | 648 |
| Glossary of Terms | 651 |

Chapter 17

Organized Meat Hygiene Control

| | |
|--|-----|
| State and Local Meat Inspection | 655 |
| Federal Meat Inspection | 655 |
| Contracts and Enforcement | 661 |
| Labels and Standards | 661 |
| Inspection Procedures and Requirements | 662 |
| Plants and Equipment | 663 |
| Chemical Evaluation and Control Laboratory | 663 |
| Biological Sciences Laboratory | 664 |

| | |
|---|-----|
| Employee Development and Training | 664 |
| Federal-State Relations | 664 |
| Planning and Appraisal | 665 |
| The Association of Official Agricultural Chemists | 665 |
| FDA-MID Relationship | 666 |
| Federal Food and Drug Administration | 672 |

Chapter 18

Meat Grading

| | |
|---|-----|
| Purposes of Grade Standardization and Its Application to Livestock and Meat | 677 |
| Historical | 678 |
| Federal Meat Grading Service | 681 |
| Official Grading Standards of the USDA | 685 |
| Poultry | 687 |

Appendix

| | |
|--|-----|
| Meat Production and Per Capita Consumption in U.S., Including Farm Production | 693 |
| Proximate Composition, Mineral and Caloric Content of Fresh Organ Meats | 695 |
| Standard Methods for the Examination of Water and Sewage | 697 |
| Cook Pork and Its Products Thoroughly | 703 |
| Proposed Model State Meat and Poultry Inspection Law | 706 |
| The Meat Inspection Act | 714 |
| The Poultry Inspection Act | 719 |
| Federal Food, Drug, and Cosmetic Act and General Regulations for Its Enforcement | 726 |
| Trichinae Regulations | 740 |
| Glossary | 747 |
| Bibliography | 753 |
| Index | 768 |