

tising, low degree of sanitation in a large percentage of markets, and a total lack of uniform standards of quality in the sale of meats. Of these, probably the effect produced by misrepresentation is the most important. Consumers, for the most part, have little or no knowledge of differences in quality of meats, consequently are not in position to make selections intelligently. Because of this, some dealers did not hesitate to misrepresent their products to their own financial advantage. This was done principally through misleading displays and advertising. For these purposes meats of high quality were stressed and meats of low quality actually sold.

Procedures of this kind have affected producers of better grades of meat animals because meats of poor quality have, in many cases, been sold as meats of high quality with a consequent loss of confidence on the part of consumers. Misrepresentation in the sale of meats has demonstrated clearly the need for uniform grades. The industry in general will not be placed on a fundamentally satisfactory basis until uniform standards have been universally adopted.

The study showed that too many incompetent men were engaged in operating retail markets. Some of these lacked a knowledge of the fundamental principles on which any business is based. Many had little or no knowledge of the retail meat business prior to their entrance into it. They knew practically nothing concerning percentages and yields of cuts, therefore had no means of knowing how to determine selling prices. Many such operators followed price lists of one or more competitors, regardless of quality of meats handled. Consequently they were operating on a "hit or miss" basis, with the result that their period of operations was likely to be short lived and generally unsatisfactory to all concerned.

#### Many Without Records

Approximately 50 per cent of the stores studied were found to be operating without adequate bookkeeping records and many of these had no records by which even their operating expenses could be determined. Many admitted their inability to meet competition, yet they failed to appreciate the need for keeping records.

Many dealers were found who were trying to operate with insufficient equipment and inadequate refrigeration. In most such cases waste and shrinkage were factors which could not be controlled satisfactorily.

Despite the fact that conditions in the retail meat industry have changed materially in recent years, necessitating new methods of operating, many operators still cling to antiquated methods and as a consequence they are unable to meet competition of modern progressive dealers satisfactorily.

W. C. DAVIS.

## **M**EAT Spoilage; Its Prevention

The spoilage of meats in curing, while fortunately the exception and not the rule, is nevertheless a source of serious loss both to commercial establishments and to farmers. The magnitude of commercial meat curing is shown by the fact that about 3,000,000,000 pounds, chiefly pork, were placed in cure in establishments operating under Federal inspection during the last fiscal year.

Scientific study of the spoilage of pork in cure began soon after the inauguration of the Federal meat inspection service under the present law in 1906 and has been continued up to the present time. Twenty years of study and observation have developed some of the causes of spoilage as well as preventive measures.

#### Souring of Hams

Spoilage is due to bacteria, and in the preservation of meat the development of bacteria is controlled by the use of low temperatures. Bacteria of one particular type are regularly found in sour hams. This type is characterized by the properties of growing in the absence of air and of forming spores or seeds. All spore-forming bacteria are extremely tenacious of life when in the spore stage and some of them will grow at uncommonly low temperatures. Bacteria of this type are common in nature and are abundant in the dirt and dust of livestock pens and on the skin and hair of the animals themselves.



FIG. 152.—Curing meat in dry salt. The quality of the product and success in preventing spoilage depend first on prompt and efficient chilling, and next on salting to prevent growth of the organisms that cause spoilage

Their presence has been demonstrated repeatedly in hog-scalding equipment.

Bacteriological study of hams has shown the presence of bacteria of the type responsible for spoilage in such locations as to make it certain that they did not gain access to the carcass during the scalding or dressing processes. The state of present knowledge indicates that the bacteria are present in the blood and tissues of the living animal. They are invariably present in the meat, and no means are now known whereby they can be entirely excluded. It does not follow from this fact that cleanliness and sanitation may be neglected. On the contrary it is of the utmost importance that any further invasion of destructive organisms be avoided. Preventing the development of the bacteria already in the meat is sufficiently difficult without increasing their numbers unnecessarily.

#### Methods of Prevention

Experience has shown that the first step in prevention of spoilage is the chilling of the meat. It is necessary to reduce the temperature

of the meat below 40° F. as soon as possible. Freedom from spoilage is dependent on quick and efficient chilling.

The next and final check is the common salt used in curing. Salt will not kill the organisms concerned, but when all parts of the meat have taken up as little as 3 per cent of salt it is effective in preventing growth of these organisms.

The prevention of spoilage of meats in cure begins with the live animal. Holding the live animals overnight in clean pens, with plenty of water but no feed, ought to diminish the number of de-



FIG. 153.—Federal inspector testing smoked hams for soundness. A steel trier is used for making the tests

structive organisms in the flesh. The meat of an animal which has been driven, overheated, excited, roughly handled, or heavily fed shortly before slaughter may be expected to contain more than the normal number of such bacteria. Rapid and efficient handling through the different processes of slaughtering, scalding, dehairing, and evisceration, prompt and effective chilling, and holding the chilled meat at a low temperature until it has taken up salt enough for preservation comprise the means of prevention against spoilage.

Applied to commercial establishments, this means strict adherence to what is generally recognized as sound practice. There is no convenient short cut, but strict attention to every detail is required. The same principle applies to home slaughtering. In the absence of artificial refrigeration it is advisable to wait for clear, cool weather for slaughtering. The hogs should be confined in small pens the day before killing and should be watered, but not fed either the evening before or the day they are killed. Each hog should be scalded, scraped, and eviscerated promptly after killing. The carcass should be thoroughly cleansed with plenty of clean water, and hung where it will cool throughout without freezing. The meat should then be cut and placed in cure as soon as practicable. This procedure is recognized as good practice and is shown to be so by scientific study.

R. P. STEDDOM.

## **M** EAT Standards and the Live- stock Producer

One of the outstanding developments in the livestock industry in recent years is the marked increase of interest on the part of livestock producers in the dressed-meat market. Only a few years ago the interest of even the more progressive livestock producers ended at the stockyards when his livestock was turned over to the packer-buyer. In those days the stockman was vitally concerned with production costs, facilities and costs of transportation, and the price his stock brought when it reached market. But there his interest stopped. If the check or draft which he received from his commission man exceeded his production costs by a fairly wide margin he was jubilant; if by a narrow margin he was happy; and if it failed to equal his costs, as frequently happened, he was downcast and sometimes pessimistic.

### **Likely to Blame Buyers**

Under such circumstances he was likely to charge his losses up to the alleged greed and heartlessness of the buyers on the livestock market. Almost never did he attempt to look through, over, or beyond the purchaser of his livestock. The buyer was the man who took his stock and either did or did not give in exchange what the producer considered a fair price, and that, for the producer, was the end of the matter. Unfortunately there are still some livestock producers who conduct their business in this manner, but the number is growing rapidly smaller.

The up-to-date stockman recognizes the buyer for what he is—a middleman. Although the buyer can by no means shirk all responsibility for the price paid the producer, nevertheless the latter now looks far beyond him to the ultimate consumer of the meat which his livestock produces. He realizes that he is converting grass, hay, and concentrates into meat rather than livestock. He recognizes the fact that he is really producing for the meat consumer and not for the livestock buyer.

### **Consumer Must Be Considered**

Above all he has come to appreciate the fact that it is the meat consumer who holds the purse and supplies the money—not only that