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BULLETIN No. 330

RELATIVE ECONOMY OF THE VARIOUS
CUTS OF PORK

By SLEETER BULL AND J. H. LONGWELL



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FIG. 1.—WHOLESALE CUTS OF PORK

(a) feet; (b) ham; (c) belly, partly under spare ribs and leaf fat; (d) spare ribs; (e) loin; (f) fat back, on outside of loin; (g) clear plate, on outside of boston; (h) boston; (i) picnic; (j) leaf fat; (k) neck bones, over picnic and boston; (l) head.

RELATIVE ECONOMY OF THE VARIOUS CUTS OF PORK

By SLEETER BULL, Associate Chief in Meats, and J. H. LONGWELL,
Formerly Associate in Meats

Much is heard about the high price of meats. While it is true that certain cuts are expensive and uneconomical, it is equally true that some cuts are cheap. Furthermore a cut that sells for a relatively low price may be uneconomical because of the low proportion of edible meat present, while a cut that apparently is quite expensive may be economical because it includes a large proportion of edible meat.

Pork cuts from the same carcass may sell from 10 to 50 cents or more a pound. Both producers and consumers naturally question why there is so much difference in the prices of the different cuts and whether the differences are justified. Is it that the higher priced cuts are more palatable than the cheaper cuts? Do the expensive cuts have a higher nutritive value? Are the cheaper cuts really more economical than the more expensive cuts when the amount of lean or total amount of lean and fat is taken into consideration?

Consumer Preference a Large Factor in Prices

The first question that as to palatability—is difficult to answer in any very definite way since individual tastes differ so greatly. Many people regard beef tenderloin as the acme of perfection from the standpoint of quality, while others prefer a chuck steak. The question may therefore be answered only in a very general way, for there will be as many exceptions to any statement as there are individual variations in taste. Generally speaking it may be said that the higher priced cuts are more tender and, to most people, more palatable than the lower priced cuts. This is especially true of meat from low-grade carcasses. Furthermore, the methods usually employed in the home for cooking the more expensive cuts are simpler and easier than those used for the cheaper cuts, tho it might be mentioned that at least as much skill is required to cook properly the high-priced, tender cuts as to cook the low-priced cuts.

The fact that the buying public generally recognizes the superiority of certain cuts makes them high priced. In communities where this is not the case, there is far less difference in the prices of the various cuts. In many small-town meat markets, for instance, porterhouse steak sells for the same price per pound as round steak simply because the local consumers have no particular preference for porterhouse.

Carcasses on Which Study Was Based

In connection with recent swine-type experiments reported in Bulletins 321, 322, and 323 of this Station data were accumulated that at least partially answer questions as to the relative economy of the different cuts of pork.¹

Twelve hogs were slaughtered at live weights of approximately 175 pounds, 161 hogs when weighing approximately 225 pounds, and 13 at approximately 275 pounds. Since most of the pork that goes into the better class of domestic trade comes from hogs within these weight limits, the carcasses may be considered as comparable to those that supply a large amount of the better class of domestic trade.

The Various Cuts and Their Physical Composition

Each carcass in the study referred to above was divided into the wholesale cuts shown in Fig. 1, and the proportion which each wholesale cut constituted of the total carcass ascertained. Each cut was then separated as accurately as possible with the knife into lean, fat, skin, and bone, and each constituent weighed. Figures showing the results of this part of the study are given in Tables 1 and 2.

Practically all the carcasses were good to choice butcher carcasses. Since there were no material differences in the physical composition of the cuts from the various weights—that is, the amount of lean, fat, skin, and bone in them—and since the 225-pound hog represents the average requirement of the market, the graphs and discussion in this bulletin are based on the figures for that group.

Before directing attention to the different meat cuts, it may be well to explain that a certain amount of fat in meat is necessary in order to insure its palatability and quality. Nevertheless, many consumers object to even a small amount. In bacon and sausage, however, practically all the fat except what is melted out in cooking, is eaten. In some cuts (ham and picnic for example) a small or large part of the fat may be trimmed off and not eaten. Skin is inedible and hence undesirable. Fortunately none of the cuts have much skin. Bone is objected to by practically all purchasers, since it is practically useless to them.

Ham. The ham is usually cured, smoked, and sold for roasting, frying, or broiling, altho it is sometimes sold fresh for roasting or frying. It contains about 63 percent of lean, 24 percent fat, 10 per-

¹These questions with respect to beef cuts are considered in Bulletin 158, of this Station, "Relative Economy, Composition, and Nutritive Value of the Various Cuts of Beef," by L. D. Hall and A. D. Emmett, 1912. See also Research Bulletin 83 of the Missouri Station, "The Physical Composition of a Lean, a Half Fat, and a Fat Beef Carcass, and the Relative Cost of the Nutrients Contained in Each," by A. T. Edinger, 1925.

TABLE 1. PERCENTAGES WHICH VARIOUS WHOLESALE PORK CUTS CONSTITUTE OF TOTAL CARCASS

Cut	Average of 12 175-pound hogs	Average of 161 225-pound hogs	Average of 13 275-pound hogs
Fat back	7.6	9.4	10.3
Clear plate	2.6	3.0	3.3
Ham	19.7	18.9	17.9
Premie	9.4	8.6	8.6
Boston	5.7	6.3	5.7
Loin	14.2	14.3	13.6
Belly	14.0	12.1	13.0
Spare ribs	2.3	2.2	2.2
Neck bones	1.2	1.3	1.3
Head	9.9	8.8	9.0
Trimnings	7.9	9.1	9.0
Leaf fat	2.4	2.4	3.0
Feet	2.5	2.6	2.5

TABLE 2. PHYSICAL COMPOSITION OF PORK CUTS
Expressed in percentage of total weight of trimmed cut

	Average of 12 175-pound hogs	Average of 161 225-pound hogs	Average of 13 275-pound hogs
Fat back			
Fat	89.5	90.2	91.8
Skin	9.7	9.7	7.7
Clear plate			
Fat	90.7	90.6	91.8
Skin	8.9	9.1	7.3
Ham			
Lean	64.3	62.6	61.6
Fat	22.5	24.4	25.8
Skin	3.3	3.0	2.8
Bone	9.5	9.6	9.0
Premie			
Lean	63.6	61.4	63.7
Fat	18.5	20.6	19.6
Skin	4.5	3.9	3.6
Bone	13.4	13.8	12.6
Boston			
Lean	85.0	84.2	84.3
Fat	10.5	10.9	10.8
Bone	5.2	4.7	4.6
Loin			
Lean	68.7	66.5	67.8
Fat	14.2	14.9	14.9
Bone	17.0	18.1	16.6
Belly			
Lean	42.7	44.8	43.8
Fat	51.4	49.4	51.0
Skin	5.7	5.6	4.7
Spare ribs			
Lean	60.6	59.3	61.9
Bone	38.4	40.6	34.9
Neck bones			
Lean	38.6	35.6	43.4
Bone	64.1	63.7	54.6
Head			
Lean	28.6	23.0	26.9
Fat	29.8	36.8	34.5
Skin	16.1	14.0	14.4
Bone	25.1	26.0	23.3
Trimnings			
Lean	18.9	20.3	18.5
Fat	69.9	68.5	70.0
Skin	8.9	9.3	8.9
Bone	2.0	1.5	1.5

The data available for each hog in the above groups are reported in Bulletin 322 of this Station, "Type in Swine as Related to Quality of Pork."

cent bone, and 3 percent skin. It is one of the most popular and consequently one of the most expensive cuts. Unfortunately only 19 percent of the pork carcass is ham. (Fig. 2)

Loin. The loin is usually sold fresh. It furnishes the most desirable chops and roasts of the carcass and consequently sells for a high price. It contains 67 percent lean, ranking next to the boston in this respect. It has no skin, but about 18 percent bone, which is high considering the market value of the cut. The rest of the cut is made up of fat—15 percent. The loin constitutes only 14 percent of the carcass. (Fig. 3)

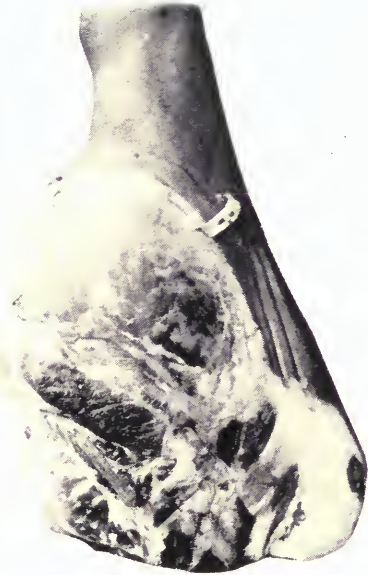


FIG. 2.—HAM

Ham is much in demand. Unfortunately only 19 percent of the weight of a hog carcass is ham, and it therefore commands high price. Hams are usually cured.

higher in lean than any of the other cuts, containing 84 percent. It contains only 11 percent of fat, yet many housewives refuse to buy it saying that it is too fat. It has no skin but about 5 percent bone. (Fig. 5)

Picnic. The picnic is sold both fresh and cured for frying or boiling or roasting. When cured, it is sometimes sold as an imitation ham or "Cala" (an abbreviation for "California ham,") which is much lower in quality than a ham. It is low in price and makes up 8 to 9 percent of the carcass. The picnic contains about 61 percent of lean, about the same as ham, 4 percent skin, and 14 percent bone. (Fig. 6)

Belly. The belly is nearly always made into bacon by being cured and smoked. Bacon is often the most expensive cut but makes up only 12 percent of the carcass or even less when trimmed for fancy bacon. The belly contains more fat than any other cut ordinarily eaten in this country—almost 50 percent. It has nearly 6 percent skin, but no bone. (Fig. 4)

Boston. The boston, which is sold both fresh and cured, may be fried or roasted, and is especially good for slicing cold. It is one of the cheap cuts and makes up 6 percent of the carcass. It is considerably

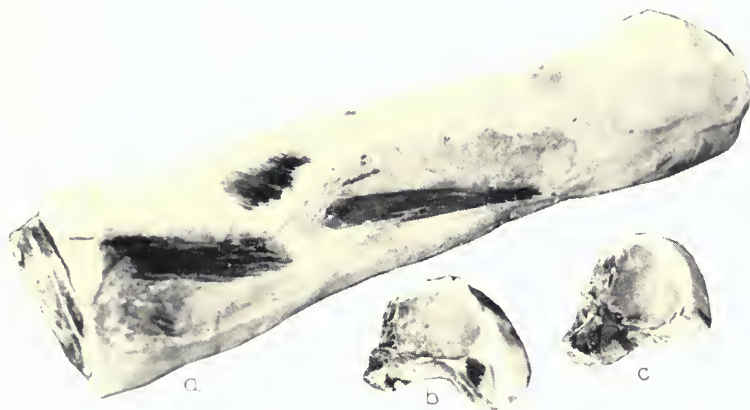


FIG. 3.—(a) LOIN, (b) RIB CHOP, (c) LOIN CHOP

The loin is usually sold fresh as chops or roasts. Both rib and loin chops come from this cut; some people prefer rib chops, others loin. Loin is one of the most expensive cuts. It makes up only 14 percent of the weight of the hog carcass.

Spareribs and Neck Bones. These usually are sold fresh for boiling or baking. *Spareribs* are more popular than neck bones and cost more; they make up a little more than 2 percent of the carcass. They rank next to neck bones in the amount of bone, 41 percent; they have

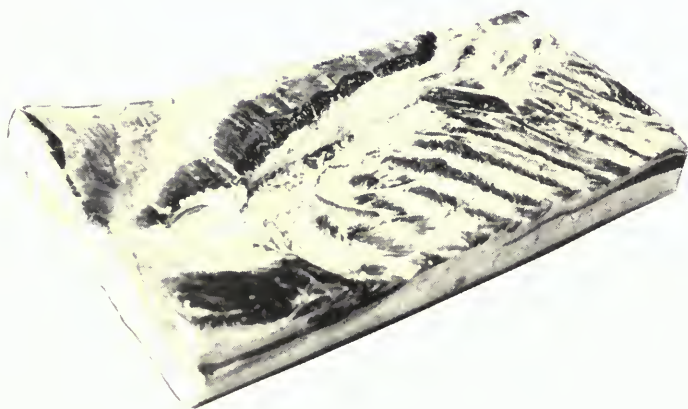


FIG. 4—BACON BELLY

Bellies are usually cured and sold as bacon. Bacon is one of the most expensive cuts of pork. Less than 12 percent of the hog carcass is belly.

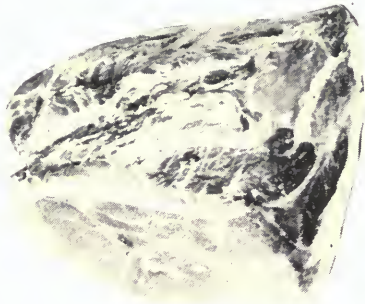


FIG. 5.—BOSTON BUTT

Bostons are not only cheap in price but economical. They are used both fresh and cured.

in proportion of skin, 10 percent, and 10)

Leaf Fat is used for the highest grade of lard. **Heads** are trimmed out and the cheeks cured as a cheap bacon known as jowl bacon or bacon squares. **Trimnings** are used for sausage and lard. **Sausage** contains about 75 percent lean and 25 percent fat.

Calculating the Economy of the Various Pork Cuts

From the foregoing paragraphs it is seen that certain cuts are better sources of lean or fat than are other cuts. The prices of the different cuts, however, vary with the demand of the consumers rather than with the amount of lean, or fat, or total edible meat in them. The picnic and ham, for example, contain practically the same amounts of lean and total edible meat; nevertheless the ham usually retails for about twice as much per pound as the picnic.

no skin. *Neck bones* make up a little over 1 percent of the carcass; they are quite cheap. They contain practically no fat, about 36 percent lean, no skin, and about 64 percent bone, being the highest of any cut in the amount of bone. (Figs. 7 and 8)

Fat Back and Clear Plate. These two cuts are cured in dry salt, unsmoked, and go into the cheap trade, principally European, or they are made into lard. They make up 9 and 3 percent respectively of the carcass. They are largely fat, 90 percent, the highest of any of the cuts. They are also highest They contain no bone. (Figs. 9



FIG. 6.—PICNIC

The picnic is sometimes sold as "California" ("Cala") or picnic ham. In reality it is the lower part of the shoulder. It sells at a low price, both fresh and cured.

The comparison of the economy of the picnic and the ham, as suggested above, is very simple, since the two cuts contain practically the same amounts of lean and of total edible meat. It is easy to



FIG. 7.—SPARERIBS

Spareribs are 41 percent bone. They usually are sold fresh.

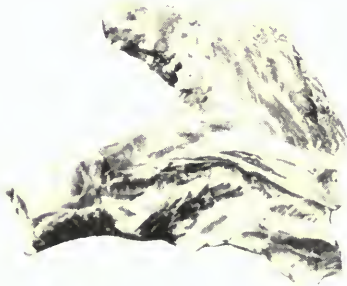


FIG. 8.—NECK BONES

Neck bones are nearly as nutritious and palatable as spareribs and sell for much less per pound. They are sold fresh.

see that for money spent, one obtains much more food value from a picnic than from a ham. With other cuts, however, the comparison is not so simple, and it becomes necessary to resort to various calcu-

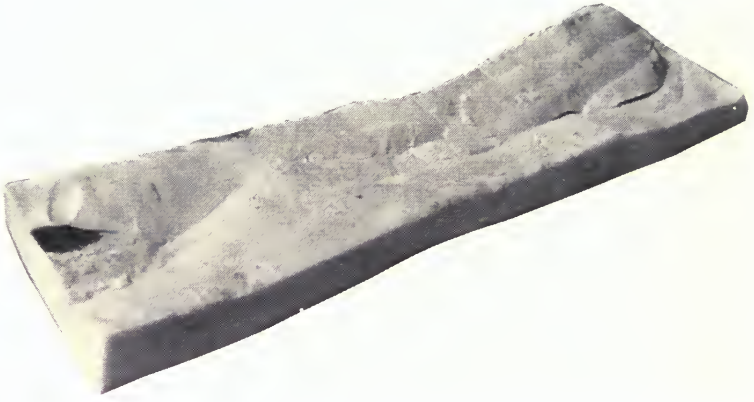


FIG. 9.—FAT BACK

The fat back is a very cheap cut. It is almost clear fat. It is cured in dry salt and exported to the cheap European trade or rendered to make lard.

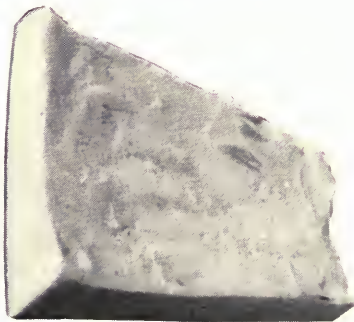


FIG. 10.—CLEAR PLATE

Clear plates are cured in dry salt and go into the cheap export and domestic trade or are rendered into lard. Most of the pork used in canned "pork and beans" is clear plate. It is almost clear fat.

lations in order to arrive at a common basis. By properly constructed charts it is possible to short-cut these calculations so that the matter of making comparisons becomes extremely simple and direct and a matter of mechanics rather than mathematics. In Figs. 12 and 13 we have such charts.¹ By using these charts the cost of edible meat or of lean meat in any given cut at any prevailing market price or any prices likely to prevail, may be quickly and easily ascertained.

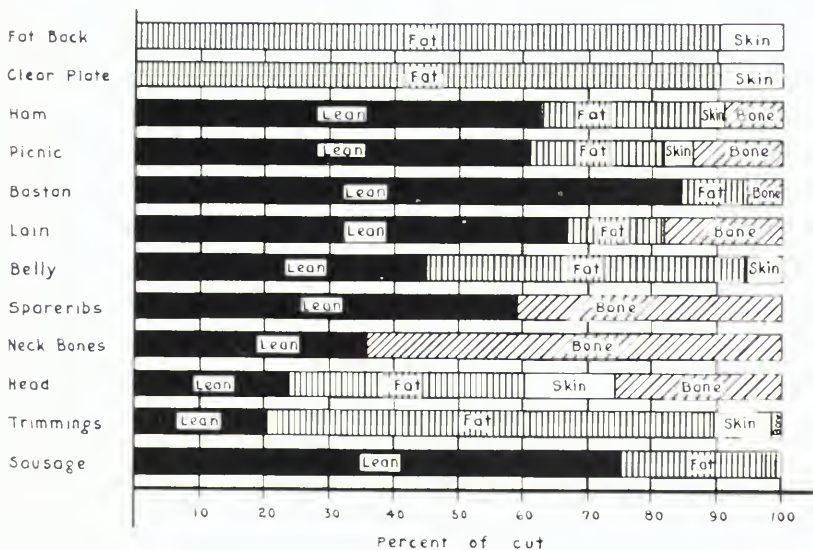


FIG. 11.—PROPORTIONS OF LEAN, FAT, SKIN, AND BONE IN THE VARIOUS CUTS OF PORK

This graph is based upon the figures for the 225-pound hogs shown in the middle column of Table 2. The prices of different pork cuts are determined by the demand of the consumer rather than by their content of lean and of edible meat. Thus loin and leg usually sell for nearly twice as much as boston, picnic, and sausage in spite of the fact that the last three named cuts contain as much or more lean and total edible meat than the first two.

While theoretically the term "edible meat" means the entire edible part of each cut, that is, the total amount of lean and fat, in many cases the consumer eats only the lean or the lean and a part of the fat. Part of the fat also melts out in cooking, tho the housewife may recover a large part of such losses in the form of drippings that are

The graphical method on which these charts are based is explained in Bulletin 234 of this Station, "A Graphical Presentation of the Financial Phases of Feeding Experiments," by H. H. Mitchell, 1921.

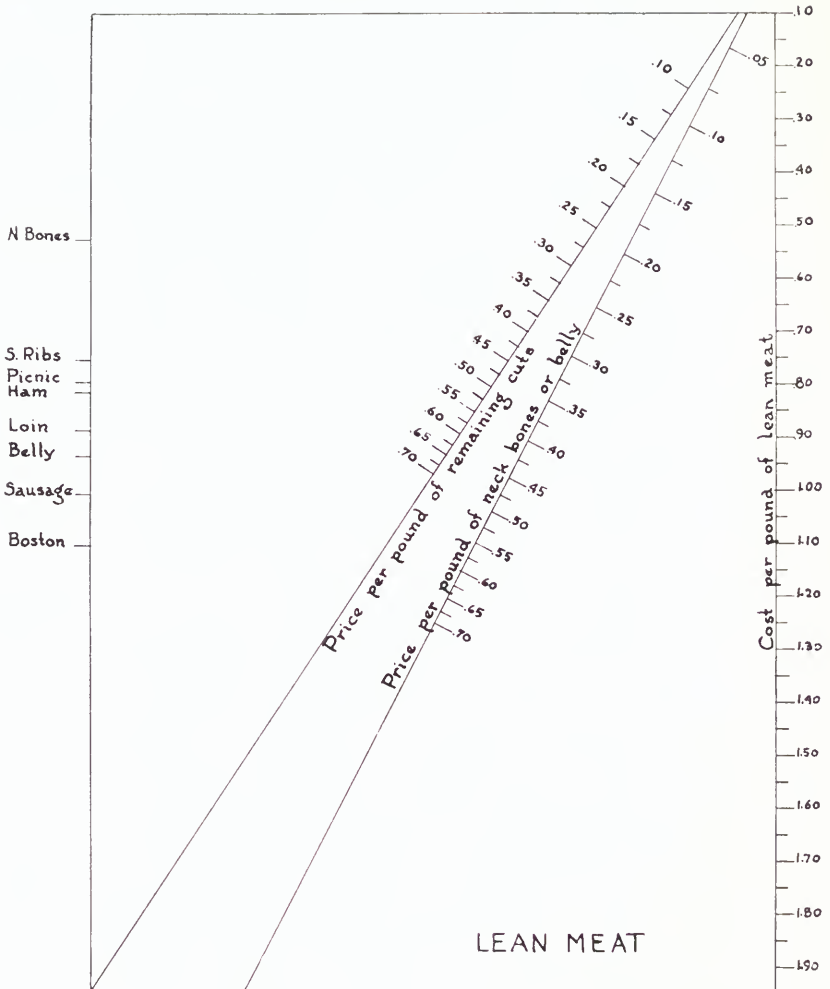


FIG. 12.—FIGURING THE COST PER POUND OF THE LEAN MEAT IN THE VARIOUS PORK CUTS

To ascertain the cost per pound of lean meat in any of the pork cuts listed, place a straight edge across the face of the chart. Connect the point on the left-hand perpendicular scale representing the particular cut with the point on the proper diagonal scale representing the price per pound. The point where the straight edge crosses the right-hand perpendicular scale will then indicate the cost per pound of the lean meat. For those cuts that are valued for their fat as well as for their lean, as is bacon (belly), this chart suggests little of value; Fig. 13 has more practical application in such cases.

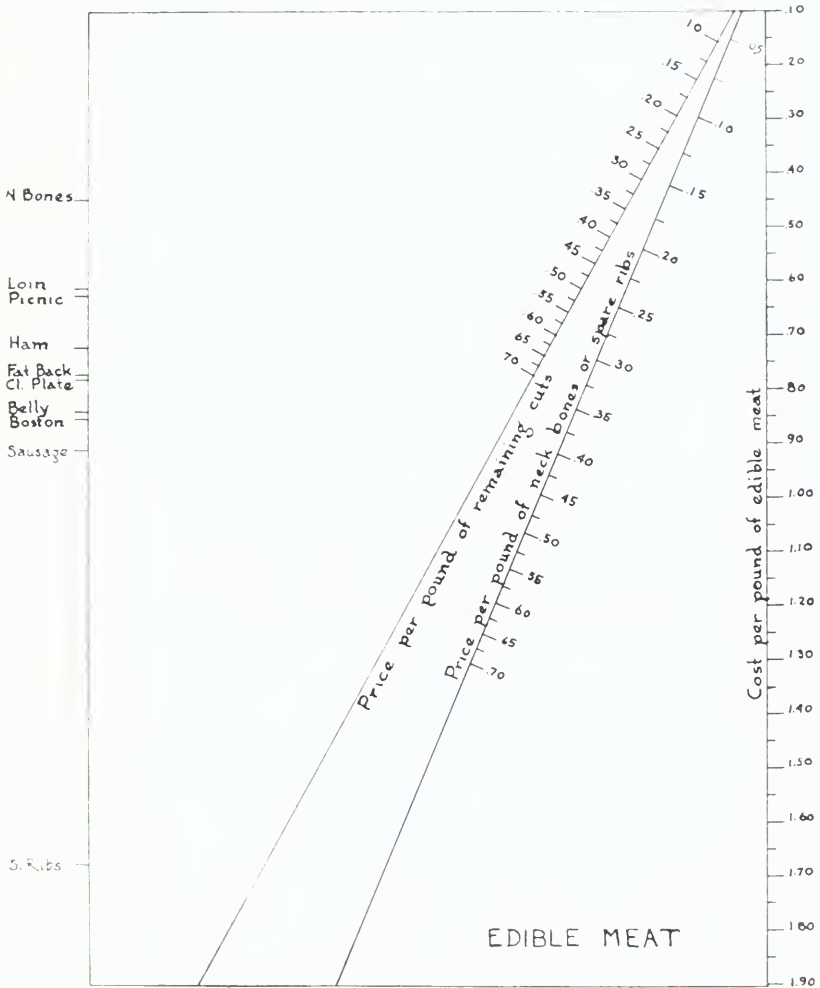


FIG. 13. FIGURING THE COST PER POUND OF TOTAL EDIBLE MEAT

This chart is used in the same way as is Fig. 12. It gives the price of total edible meat (*lean and fat*) instead of merely lean, and is based on the assumption that *all* the lean and fat will be eaten. As a matter of fact, some of the fat is usually trimmed off, some melts in cooking and is not recovered, and some will be discarded by most consumers. The true value of many cuts to most consumers lies therefore between the values suggested by these two charts.

used for gravy or are later used in cooking. Thus it becomes impossible to give exact figures as to the amount of edible meat that each consumer will use from each cut. For the purposes of this study the costs of the various cuts are therefore calculated on two different bases: (1) on the lean, assuming that the consumer eats only this part; and (2) on the lean and fat, assuming that the consumer eats all the lean and fat. As a matter of fact, the amount usually eaten is somewhere between the figures obtained by these two assumptions.

Relative Cost of Lean Meat in Various Cuts

Suppose, for example, that the various cuts of pork are selling at the following prices:

Ham.....	\$.40	Picnic.....	\$.25
Loin.....	.40	Spareribs.....	.20
Belly.....	.50	Neck bones.....	.10
Boston.....	.30	Sausage.....	.25

Take a ruler, string, or any straight edge and place one end on the mark for neck bones, on the left side of the chart. Then swing the straight edge to the mark .10 (the market price) on the right-hand diagonal scale. With the edge so placed read the figure on the right side of the chart where the straight edge crosses the scale. This is the cost per pound of the lean meat in the neck bones—28 cents.

The cost of the lean in the belly (bacon) is obtained in the same manner by using the same diagonal scale. For the other cuts the diagonal scale at the left is used instead of the one at the right; this is the only difference.¹

Following out this procedure for each cut, we would find that at the prices stated above the lean of the various cuts would cost per pound as follows:

Ham.....	\$.64	Picnic.....	\$.40
Loin.....	.60	Spareribs.....	.34
Belly (bacon).....	1.11	Neck bones.....	.28
Boston.....	.35	Sausage.....	.33

Thus neck bones, sausage, spareribs, boston, and picnic, at the prices stated, are much more economical as sources of lean than are ham and loin. Picnics, however, are not so economical as bostons. While the lean in the belly (bacon) costs much more than in any of the other cuts, it is to be remembered that the bacon is usually purchased for the fat as well as the lean, and any comparison on the basis of the lean alone is rather meaningless.

¹If space permitted, this chart could be constructed with but one diagonal instead of two.

Relative Cost of Edible Meat in Various Cuts

To ascertain the cost per pound of the total edible meat (lean and fat) in any cut, Fig. 13 is employed in the same way as explained for Fig. 12. With the same market prices as assumed above, we find the cost of a pound of edible meat in the various cuts of pork to be as follows:

Ham.....	\$.46	Picnic.....	\$.31
Loin.....	.49	Spareribs.....	.34
Belly (bacon).....	.53	Neck bones.....	.28
Boston.....	.31	Sausage.....	.25

Thus assuming that the consumer eats all the lean and fat in the cut, sausage, neck bones, boston, picnic, and spareribs are all much more economical than ham, loin, and bacon at the prices given. Of course, different results might be obtained under different market conditions.

It has been mentioned that most consumers do not eat all the fat in some cuts. In case of sausage, neck bones, spareribs, bostons, and bacon, practically all the edible portion of the cooked meat is eaten. It will be noted that all of these cuts, except bacon, are economical sources of food as compared with ham and loin. In fact, considering the amount of fat wasted, ham in most cases is by far the most expensive of the pork cuts.

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