

supply of potable water, and be protected against unnecessary dust and dirt.

The building can no longer be any kind of shed or basement, but should be adapted to the use to which it is placed. It need not necessarily be expensive, but should be so constructed that it can be kept *clean*. The ceilings should be high and all walls, supporting columns, and partitions be made smooth so that adhering dirt be reduced to the minimum, and that cleaning be done easily. The preference is for a finish that will admit of being washed with a hose. The floors should be water-tight and well pitched so that any material which may fall on the floor can be flushed off and that drying take place quickly. It is preferable that the lines of drainage should pass under the permanent machines and tables where most water is used, in order to limit as far as possible the damp areas. Daily scrubbing is a necessity in a clean cannery, and the labor can be reduced more than two-thirds by a proper construction of the floor. These conditions apply with special force to that part of the factory where the preparation is carried on and much water used.

The lighting and ventilation should be as nearly perfect as possible. Where the floor space is small, dependence can be put in large sidelights, but in any large rooms there should be either turrets or a saw-tooth roof construction. No part should be dark. With saw-tooth or turret roof construction artificial ventilation is rarely necessary, but in cases where it must be employed, the air should be forced into the building rather than depend upon sucking it out. When the intake of the air is controlled, it can be made clean and be distributed where wanted. When dependence is placed upon suction, no such control can be exercised. Good lighting and ventilation contribute so much to the efficiency of labor that it should be regarded as an economy at any cost.

Water should be available at many points for hose connections, for washing machinery, tables, floors, etc., and for the hands of the employees. Steam lines should be

run to points where cleaning and sterilization by steam is desirable. The capping machines, filling machines, etc., can be cleaned much better with steam than by any other method.

The tables used in the preparation room should be plain and as free from joints, cracks, angles, and corners as possible, and of materials that can be thoroughly cleaned. They should be of the proper height for comfort, whether the workers stand or sit. The machines should be designed to admit of cleaning, and set far enough from the wall or



Type of sanitary table on which the buckets or pans are carried to the peelers, and when the preparation is completed, the product and waste are carried away. The pans may be washed after each operation.

other machine to be easily reached from all sides. The first consideration in both factory and equipment should be cleanliness, and these principles apply as well to one kind of food production as to another.

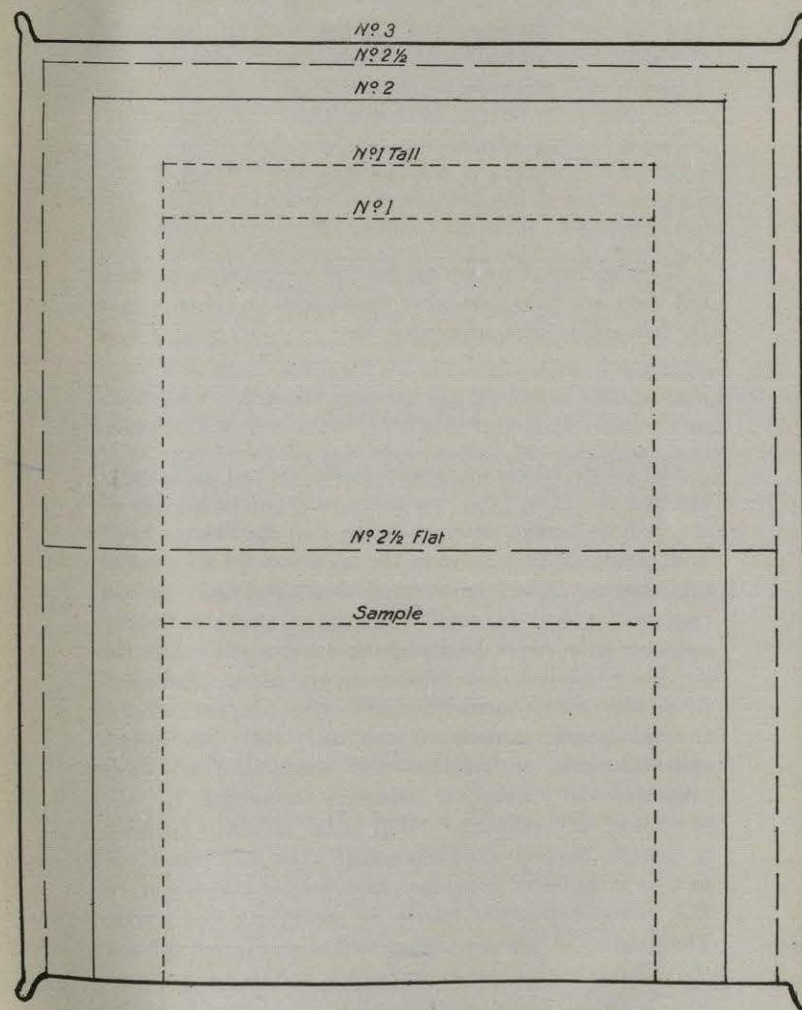
A modern food factory must go farther than providing building and operating equipment; it must make adequate provision for the comfort of the employees. There should be a place for hanging wraps and placing parcels,

separate from the factory room. There should be sanitary toilets and sanitary drinking fountains. A first aid cabinet should be provided for accidents and emergencies and some one coached to render proper assistance. Stools should be provided for employees for operations which may be done as well sitting, as continuous standing becomes exhausting and lessens efficiency. Uniforms, while not necessary, are advantageous from both the standpoint of employer and employee.

The laws of most of the States define the conditions under which a factory can operate, the hours of labor, the age at which employment may begin, the owner's liability in case of accidents, provision for safety devices, etc. These are not uniform, but they indicate the trend toward making food factories what they should be.

SIZE OF CANS

There are certain sizes of cans that are regarded as standard but unfortunately are not based upon any unit of volume nor upon average domestic requirements. Most of them have originated in trying to make a certain number of cans out of a sheet of tin plate of a certain size, the logical alternative of making the sheet of tin plate to such size as will build cans of certain capacity does not seem to have been considered. The regular No. 2 can is too large for peas, corn, and beans in amount for the average family to use at one time, and the unused part is not as attractive when reheated. The No. 3 can of tomatoes is likewise an anomaly though the objection is not so strong as for the No. 2. The No. 2½ can was introduced as a compromise on the No. 3, especially for fruits, but recently a better size is being used having the diameter of the No. 2½ but only one-half the height. After machines have once been built to make and close cans of a certain size, it is difficult to make changes no matter how desirable it may be.



A diagram in full size cross section of the principal round cans for household use.

The following are the dimensions of the regular cans:

No.	Diameter, inches	Height, inches	Capacity, ounces
1	2 11/16	4	12
2	3 7/16	4 9/16	22.2
2 1/2	4 1/16	4 3/4	32.6
3	4 1/4	4 7/8	36.4
10	6 3/16	7	116.1

The majority of staples are packed in cans of these sizes, but there are numerous other round, oval and square cans for fish, meat, milk, asparagus, etc.

THE LABEL

The labels in use on canned foods are not sufficiently descriptive. The type originated early in the history of the industry when secrecy in the factory was an asset and, strangely enough, even the label avoided giving any information. After the business developed and the real grading for size or quality became a part of factory operations, instead of using such legends as would enable the purchaser to follow these differences, brands like "Sunrise," "Noonday Sun," and "Sunset" were adopted. Later the lithographers came to the aid with appropriate embellishments to heighten the effect, and one was permitted to make a selection according to the gaudiness of coloring. Why this anomaly persists is almost beyond comprehension. The fact that the food is completely concealed from inspection should be the strongest possible reason for describing the grades. The grading of peaches serves well as an example of how the differences are made at the factory, and they can only be seen by the consumer on opening the can. The differences, however, are not greater than with other fruits to which the

same principles apply. The very large perfect stock of peaches is packed seven to nine pieces in the can, and a 55° syrup added; the next size is packed nine to twelve pieces in a can and a 40° syrup added; and the third size is packed twelve to fourteen pieces in a can and 30° syrup added. In all these the fruit must be in prime condition, even in texture and color, and nicely pitted and peeled. The difference in the grades is not in quality, but in the size of the fruit and in the density of the syrup used. There are some persons who like large fruit in a heavy syrup, but there are probably many more who prefer fruit of medium size but also in heavy syrup; there are also persons who like fruit moderately acid in character; but under present conditions these are deprived of the privilege of making a selection. There are grades of peaches known as standards, seconds, and pie or water. The fruit is of smaller size, some may be a little soft, some a little green, some spotted and more or less blemished in trimming. The standard is the better grade with a syrup of 20°, the seconds next with a syrup of 10°, and the water or pie grade that which is packed in water. These contain good food material, though less attractive in appearance than the higher grades, and need to be sold for what they are. The trade custom is to label the different grades as special extra, extra or fancy, extra standard, standard, seconds, and water or pie stock, but the label conveys no definite information and should be supplemented by appropriate description. There is clearly a distinction between labeling a product the composition of which is standard, as already cited, and one which might be largely the result of a process of manufacture, such as soup. In the latter case, the product is due to the skill in blending ingredients, adding certain condiments, method of cooking, etc., and these are the factors which give individuality. The use of a broad name in such cases needs no further elaboration.

The technical requirements for labeling canned foods are quite simple. They are: 1st, that the name of the product be given; 2d, that if the article be colored, made from trim-

mings, or from dry stock which has been soaked, that the proper descriptive term be used in connection with the name; 3d, a statement of the weight or volume; 4th, that the name of the manufacturer and place of manufacture be given in case of compounds; in the case of a product not a compound, the name of the packer may or may not appear, instead, the name of a distributor may be used; 5th, the design shall not be misleading; 6th, the descriptive matter must be in English, though the use of other languages is permissible in addition. The second regulation, as far as it relates to color, has almost no application to American packed products. French peas colored with copper came under this regulation, but since the use of copper has been prohibited, there are practically none to be found on the market. The provision relating to trimming stock has its principal application in the use of tomato waste used in ketchup, pureé, soup, etc. Peas and lima beans are designated as soaked when made from ripe or dry stock. They are perfectly good and wholesome, but it is proper that they be described in a manner to prevent their being sold for the green article. The statement of weight should be in pounds and ounces for the net contents of the can. A ruling of the officials charged with the enforcement of the Federal Food and Drugs Act requires that the cans be filled as full of the article as is possible and only the amount of water, brine, or syrup used that is necessary for the proper preparation of the product without injuring its character or appearance. A safeguard has thus been made to protect the consumer against short weight of the principal product. The fourth regulation, pertaining to compounds has almost no application to canned goods as there is very little mixing; it applies chiefly to jellies, jams, etc. If the place of manufacture be given, it must be the true place, as Maine corn must be packed in Maine, Columbia River salmon packed on the Columbia River, and not in Alaska. In the case of a large company having a number of factories, only the home office need be indicated, unless in the judgment of the officials, the label might be mislead-

ing. The design must not give a false impression, as a picture of green peas in pods used upon a can containing soaked peas. This covers the essential requirements in labeling. The food officials have rendered some decisions which serve as a further guide for labeling certain lines of products and indicating what they consider proper size of lettering, etc.

SYRUP

The syrup is a very important part in the canning of fruits. It becomes as much a part of the grade as does the size or quality of the product. Nearly all fruits need the addition of sugar before being eaten, especially after being cooked, and the proper time to make this addition is when the fruit is placed in the can. The processing and subsequent standing give a blend that cannot be obtained if the sugar be added at the time of consumption. The further effect of the syrup is to secure a marked conservation of flavor, retention of better color, and to hold the shape of the fruit by giving protection in shipping.

The syrup is made to definite degrees upon a Balling or Brix scale. A 20° or 30° Balling syrup means the percentage of sugar in water, 20 or 30 pounds of sugar and 80 or 70 pounds of water in a 100 pound batch. The making of syrups on the percentage basis is much more easily understood than upon the Baumé or specific gravity scale. The testing of the syrup is done with a float or spindle.

To make a syrup of the degrees usually employed taking one gallon of water as a basis, the following amounts of sugar are added:

Water, 1 gallon

Density Degrees, Balling	Quantity of sugar	
	Ounces	Pounds
5	7.	.44
10	14.8	.92
15	23.5	1.47
20	30.8	1.92
25	44.5	2.8
30	57.1	3.57
35	71.8	4.48
40	88.8	5.55
45	109.	6.81
50	133.3	8.33
55	163.9	10.24
60	200.	12.5

The water and sugar should be heated to near the boiling point, thoroughly stirred to be certain that the sugar has been dissolved, then strained to remove the scum.

The syrup in the finished product can be tested in the same manner as the original, but the reading will not be strictly correct. The syrup in the finished product will contain some soluble extractives from the fruit, but these are not sufficient to seriously interfere with getting approximate results. The syrup in the finished can will not be the same as the original on account of some of the sugar going into the fruit and some of the water coming out, but there is a ratio by which it is possible to determine fairly closely what degree was used. These data are in Bulletin No. 196, United States Bureau of Chemistry.

BRINE

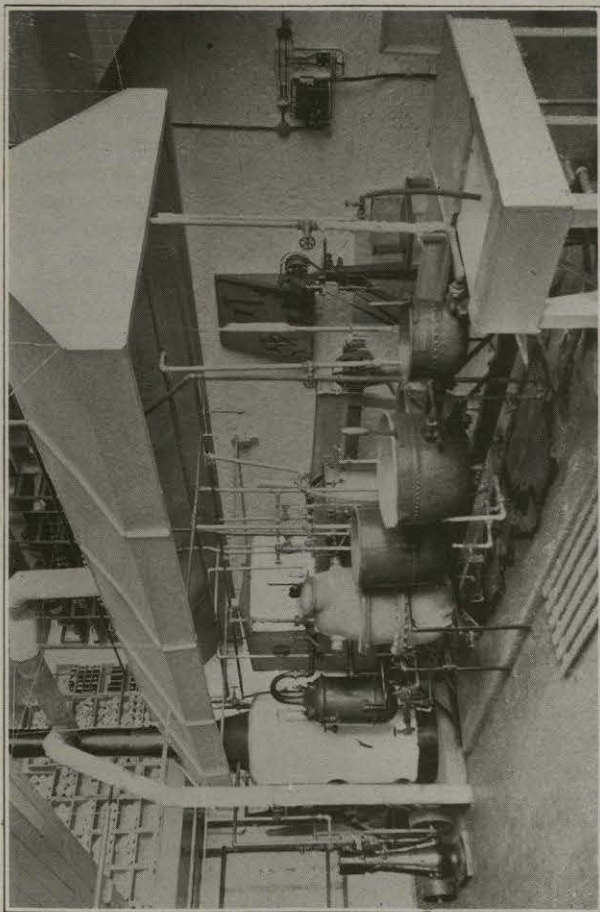
The making of brine is subject to little variation, the percentage of salt being, in most cases, between $1\frac{1}{2}$ and 2 per cent. The rule is to use only a sufficient amount to

overcome the objectionable feature of lack of flavor, and that additional seasoning may be added later to suit the individual taste.

KEEPING QUALITY

There seems to be a general assumption that all canned foods deteriorate with age. This is probably true within limits, but the rate with which the change takes place may be so slow as to be scarcely appreciable within three or four years. Much depends upon the character of the product, the method of preparation, and the condition of storage. A pack of corn put up in 1916, if the crop is of exceptional quality, may easily be better in 1919 than the pack of 1917 or 1918, if the crops in these two years should be of ordinary quality. The difference in the quality of the crop may far more than offset any changes due to time. There seems to be very good evidence accumulating that fruits packed at a low temperature may actually improve in flavor while in the can, that after three or four years they are richer than at first. This is somewhat along the lines of the aging of wines. There are products, especially some highly acid fruits, which attack the container, causing loss of color and flavor in the product, dissolution of the tin and iron in appreciable quantity, and development of sufficient gas to cause springers and perforations in the cans. Improvements, in the methods of packing these products have been going on very rapidly in the past few years, so that many criticisms which were warranted on the ground of deterioration are rapidly passing. The unjust assumption was often made that what applied to a few products was equally applicable to all.

A very important point in the keeping quality of canned foods is that they be stored in a cool, dry place. Freezing causes injury to the product, dampness causes rust and perforation of cans, while a very warm temperature increases any tendency toward attack by the product upon the container.



A view in a laboratory especially equipped to study canning methods. Every preserving process may be duplicated.

FRUITS

Apples

Only good cooking apples are canned, usually of the late fall and winter varieties. They must be sound, smooth, of medium size, and free from bruises. It is preferable that they be slightly acid as they retain their flavor better than do the sweet varieties. A few are canned whole and unpeeled, in order to be served, when heated, as baked apples; some are canned whole, but peeled and cored to be used for dumplings, and some canned in halves, quarters, slices, or cooked as a sauce.

Apples are peeled or cored by hand or by power machines. They are dropped into water at once and kept covered, or, better still, placed in the cans and covered with hot water or hot syrup to prevent browning. A light syrup is preferable to water in canning.

Apple Butter

Formerly it was the practice to make apple cider, boil it down to one-half its volume, then to add about twice the volume of sliced apples and boil the whole down to a fairly heavy consistency. The process is greatly simplified at present by crushing the apples, steaming them until they are soft, and then running them through a pulping machine. This gives a heavy pulp free from seeds and skin, to which juice may be added, and then be cooked to the desired consistency. It is filled while hot into cans, sealed, and no process is required.

Apple Juice or Cider

Clean, sound apples are run through a crusher and the juice pressed out. This is run through cloth filters to remove the flocculi, then filled into cans. The cans should be exhausted slowly to 160° F. (77° C.), sealed, and No. 2½ processed for twenty-five to thirty minutes at 180° F. (82° C.). This product is what is usually labeled cider and what nine-tenths of the people in the apple-growing districts understand as cider. Technically, however, the

term cider refers to juice which has undergone more or less alcoholic fermentation, though the dictionaries define cider as the expressed juice of the apple either before or after fermentation.

Apricots

The apricot is a fruit that has a very distinctive and agreeable flavor, especially when well ripened on the tree. The canning is done almost exclusively in California. The fruit is hand-picked when firm and just ready to turn soft, and is handled in shallow boxes to prevent bruising. At the factory the fruit is split and pitted and then graded for size, using screens having openings of 40, 48, 56, 64, and sometimes 68 thirty-seconds of an inch. They are further graded into prime fruit, soft fruit, and hard fruit, according to the state of ripeness. These are filled into the cans according to size and quality. The very large, prime, and evenly colored are called special extra; the next size, extra; then extra standard. The standard grade may contain some overripe, slightly blemished, and small fruit. The underripe, soft, and irregular quality are used in the lower grades, seconds, and pie stock. The syrups used on these grades are 55°, 50°, 40°, 30°, 20°, 10°, and water in the order given. Good apricots need a heavy syrup and much of that given 40° and 30° on account of size would be greatly improved if the same degree as for extra were used. Very few apricots are peeled as the labor is excessive in comparison to the amount which can be done. Some apricots, especially those which are very soft, are kettle cooked—that is, placed in a steam-jacketed kettle and cooked until soft. They may or may not be put through a pulper to remove the skins. The pulp is evaporated to the desired consistency and canned. In order to give more character, some canners add about one-third or one-fourth the volume of rather hard fruit to the pulp just before the cooking is completed. This gives whole pieces in the pulp

Blackberries

The blackberry grows over a considerable part of the United States, but is not properly appreciated for its worth as a canning berry. It has a distinctive and excellent flavor which is well preserved in a heavy syrup. Packed in water and in plain cans, it loses color and flavor, and is unattractive.

The berries, where the best practice is followed, are picked in shallow trays and not allowed to accumulate in layers of more than 1½ inches. They are not quite as ripe as



Type of crate used to carry berries at the canneries. It gives the maximum protection.

those eaten fresh and are handled as quickly as possible from the vine to the cannery, the hauling being done in chests to prevent bruising or marking. The trays are not used a second time as the wood becomes infected with mould and tends to inoculate fruit with which it may subsequently come in contact.

At the factory, the fruit is inspected for unfit material, leaves, stems, etc., washed and filled into the cans by weight. The cans are tapped lightly during the filling, but not sufficiently so to jam the fruit, are made level, full, and syrup added to fill the interspaces.

Blueberries

Blueberries and whortleberries have become so scarce that they are nearly all consumed fresh. A few are canned in Maryland, Maine, and in northern Michigan. The berries grow wild, are brought to the local markets in almost any kind of container, and are shipped to the factories in shallow boxes. They are run through a fanning mill to remove the bits of leaves, etc., are washed, after which they are placed in open kettles, or corn cookers, and cooked with water for from four to eight minutes, and then filled into the cans and sealed. They may be given a subsequent cooking by immersing for a few minutes in boiling water. The blueberries packed in this manner are mostly used for pies. If instead of water a 30° syrup be used, they make a very good product.

Cherries

The cherries almost naturally divide themselves into two groups—the large black and white sweet cherries of the western coast, and the acid cherries of the central and eastern states. The former are nearly all packed unpitted while the reverse is true for the latter. The unpitted make the better appearance, while the pitted are the more agreeable at the table. The retention of the pit, however, gives a distinctive flavor which many persons like.

The cherries are picked with the stems attached after they have become well colored but not so soft that the pit will come away with the stem, and are handled in shallow boxes. At the factory they are hand-stemmed, and imperfect fruit culled out. Machines have been devised to remove the stems, but have not come into general use. The grading for size is done by passing the fruit over screens having openings of 22, 24, 26, 28, and 32 thirty-seconds of an inch. The pitting is done by machinery, except those packed for fancy display purposes.

After washing, the fruit is filled into cans, the average being about 20 ounces for a No. 2½ can. This necessitates tapping the can quite vigorously during the filling opera-

tion. A few canners drop the cherries into hot water at about 82° C. (180° F.) to slightly soften the fruit before filling. This also lessens the bursting of the skin in the subsequent process. Syrup of 50°, 40°, 30°, 20°, 10°, and water are used according to the size of the fruit in order to give special extra, extra, extra standard, standard, seconds, and water or pie grades. The pitted fruit is usually packed in either 50° syrup or in water.

Figs

Whole figs are packed in South Carolina, Mississippi, Louisiana, and Texas. Some of the figs are not skinned, but after washing are placed in cans as tightly as they can be laid and heavy syrup added. Some are immersed in a hot but weak lye bath, then washed under jets of water to remove the rougher outer portion of the skin. They may then be filled into cans and syrup added. The majority are kettle cooked in sugar until they are a preserve and then filled into cans. The fig, though a weakly acid fruit, needs a rather heavy syrup to bring out the distinctive flavor.

Gooseberries

The gooseberry was once highly esteemed for pies, but only a few are grown at present. The berries are picked when nearly full grown, but green. They are stemmed by a machine and filled into cans with water. They are very acid.

Grapes

There is a decided preference for the white grape over the colored for canning. In the East the Niagara grape is used, and on the West coast, the Muscat. The flavor is unlike in these two varieties, the Muscat being distinctive and unlike any other. The stemming of the grapes is done by hand, after which they are washed and graded for size over screens having holes of 20, 21, 25, and 26 thirty-seconds or an inch. The syrups used on the Muscats are 40°, 30°, 20°, 15°, 10°, and water. The same attention is not paid to grading in the East, each packer using what he deems sufficient.

Loganberries

The loganberry is the result of a cross between the blackberry and the red raspberry. It has the size and shape of the large blackberry, the color and texture of the red raspberry, and the flavor of both. It is very highly acid. It is handled and packed the same as the blackberry.

Peaches

The peach is the most popular fruit that is canned and leads all the others in volume and in value. About 85 per cent of the pack is put up in California. The growing of peaches for canning is a business in itself as only varieties can be used that have the proper size, texture, and flavor, and will hold these after processing. Some peaches are excellent when eaten fresh that are a failure when canned. It is also necessary to have the varieties mature in succession to give a long period for work. The fruit must be hand



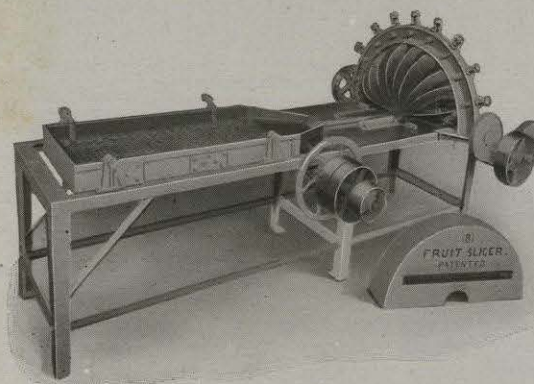
Peach pitting spoon.

picked and handled from the orchard to the factory in shallow lug boxes to prevent bruising. The peach should be picked when just beginning to turn soft.

The first operation at the factory consists in splitting and pitting the peach. A cut is made entirely around and to the pit on the line of cleavage. Next, the pitting spoon is inserted, the halves separated, and the pit removed. This should be done without marking the fruit. The pitters pass the halves into pans according to whether they are prime, over-ripe, or under-ripe. The next step is the peeling, and this may be done by hand, using a special knife, or by means of hot lye and subsequent washing. The latter method is superseding the former because of economy and of being more sanitary. Formerly there were objections

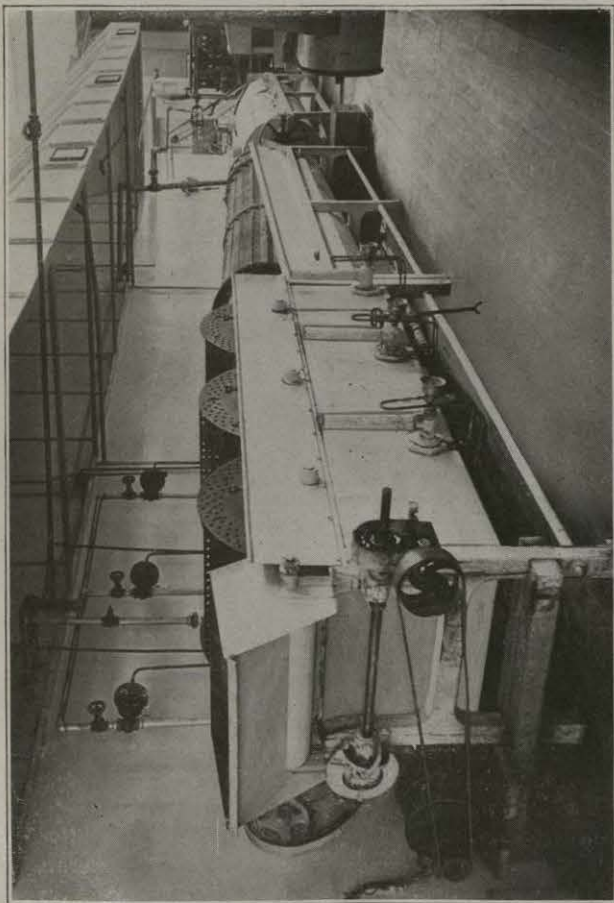
HOW TO USE CANNED FOODS

to this method, due in some measure to improper usage. The method consists in first dropping the peaches into scalding water for about twenty seconds to blister or cauterize the surface, after which they pass into scalding lye for a like period, the solution containing about one-fourth of a pound concentrated lye to the gallon of water and then for a like period into a second bath of about one-ninth of a pound of lye to a gallon of water. The treatment loosens the peel, and they are then given a most thorough



The slicing machine will cut two bushels of fruit per minute, and do it accurately.

washing under jets of water, or are dropped into running water a number of times. Tests show that all traces of lye are removed with the thin layer that comes away, and that there is no injury to the fruit. The fruit is next run through a blancher and heated sufficiently to make it slightly flexible as this aids materially in securing a good, uniform fill. The fruit is then graded for size by passing over screens having openings of 64, 68, 72, and 76 thirty-seconds of an inch. Those failing to pass through the largest holes are sliced, being too large to pack in halves.



Machine for lye-peeling, washing, and blanching. A small machine will do the work of a hundred persons.

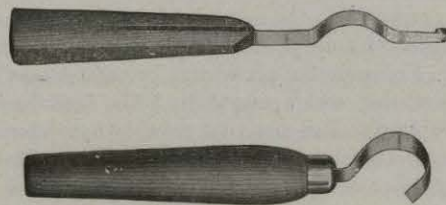
HOW TO USE CANNED FOODS

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The grades are special extra, extra, extra standard and standard, according to size, and seconds and pie based on the condition of the fruit, whether over-ripe, green, bruised, or badly trimmed. The syrup which goes with the grades is 55°, 40°, 30°, 20°, 10°, and water. A few are canned whole in heavy syrup and are called Melba peaches.

Pears

The Bartlett pear is preferred to the other varieties for canning, due to its size, fine texture, and excellent flavor. It belongs to the soft type of pear as distinguished from the hard or Keifer type. The fruit is hand picked while still



Knives of special design are required for neat peeling and coring of fruits.

hard and allowed to soften in the boxes after it reaches the factory, otherwise the handling and hauling would cause bruising which would brown very rapidly. The peeling is done by a special guard knife, the splitting done by a plain knife, and the core removed by a curved coring knife. The requirements are that the fruit be nicely peeled, evenly divided into halves, and cored so as to remove all the coarse fiber and seed cells without cutting away any of the edible portion. This necessitates careful manipulation and skill, which is acquired only after long experience. The grading of the fruit is all done by hand at the time of peeling and by those who fill the cans. The fruit must be

kept submerged in water after it is peeled to keep discoloration at the minimum.

The pears must be filled into the cans by hand as it is necessary to layer the larger sizes to obtain the proper fill. The special-extra grade calls for eight or nine perfect pieces; the extra, eight to twelve pieces; extra-standard, nine to fourteen pieces; and standard, twelve to eighteen pieces. The seconds and water may be any size, irregularly cut pieces, soft and hard. The syrups used are 40°, 30°, 20°, 15°, and 10°, and water. A 40° syrup is rather too sweet as the pear is low in acidity.

Pineapple

Pineapple packing has been taken to the Hawaiian Islands in response to the necessity for locating the factory at the source of fruit production, to be assured of prime material. Formerly the pines were brought from Cuba to eastern factories, which meant that the fruit had to be picked very green, and also that more or less deterioration took place. On the Hawaiian Islands, the effort is to cut the fruit in as an advanced condition as possible and to get it into the cans within thirty-six hours.

The fruit is first trimmed top and butt and then run through a sizing and slicing machine which cuts the fruit to slightly less than the diameter of the can and in cross-sections so that eight pieces will make the proper fill. The core is removed at the same operation. The slices are inspected as they pass along on a belt to the filling tables. Those which are perfect with the eyes fully developed, of fine texture, and good color are passed as extra; those having the same characteristics but a little greener and lighter in color, become extra-standard; those with some imperfect eyes, irregularities in color, or slight defects in cutting, become standard; and tops, butts, torn pieces, soft and hard, become seconds and water. A 50° syrup is used on both extra and extra-standard, and 40° syrup on the standard. The pineapple, though naturally high in sugar, requires a heavy syrup. Crushed pineapples come in two grades:

that made from the excessively large fruit and that made from small fruits, tops, butts, and defective slices. The small disks from the core are packed for confectioners' use.

Plums

The plum is one of the fruit staples, though the quantity required to meet the demand is not large. The green-gage, yellow egg, and Lombard are the varieties mostly used. The plums are handled to the factory like apricots. They are stemmed, washed, graded for size over screens having openings of 32, 40, 48, and 56 thirty-seconds of an inch, and are filled into the cans by hand, as it requires close packing to get the proper fill. The grades are extra, extra-standard, standard, seconds, and water, according to size and quality, and the syrups used to correspond are 40°, 30°, 20°, 10°, and water. The green-gage plums have a somewhat tougher skin and hold their shape better than the other varieties. The fresh prune, which is a variety of plum, as grown in Idaho, produces an article that has more of the damson flavor and that gives a beautiful brilliant color to the syrup. These are not found upon the market at present.

Prunes

Canned cured prunes, while not a new product, are not generally known to be upon the market. Cured prunes when canned give a different product from the fresh and also very different from the cured prune as stewed in the home. Cured prunes are graded for size, washed, and gently steamed for from five to fifteen minutes. They are then picked over for splits or marked fruit, filled into the cans by weight, and a 20° to 30° syrup added. They are given a process of about one hour, and allowed to cool very slowly. The fruit becomes very tender and conserves a delicious flavor that is lost in the regular method of home preparation. The broken or marked fruit if pitted and run through a food chopper makes a delicious jam or basis for soufflés.

Raspberries

Both the red and black varieties of raspberries are used, but are kept separate. The handling and treatment are the same as described under blackberries.

Strawberries

The strawberry used for canning should be of moderate size, of good color, firm, but not too acid. They should be stemmed and particular attention given to washing. The other treatment is the same as for blackberries.

Olives

The canned ripe olive has been used in this country almost exclusively as a condiment, owing partly to price, and partly to the irregularity of the product. It has unusually high nutritive value and a peculiar pleasing taste, two elements which commend it as a food, provided the consumer can depend upon getting these qualities. The methods of packing are in a more or less experimental stage and improvement is constantly being made.

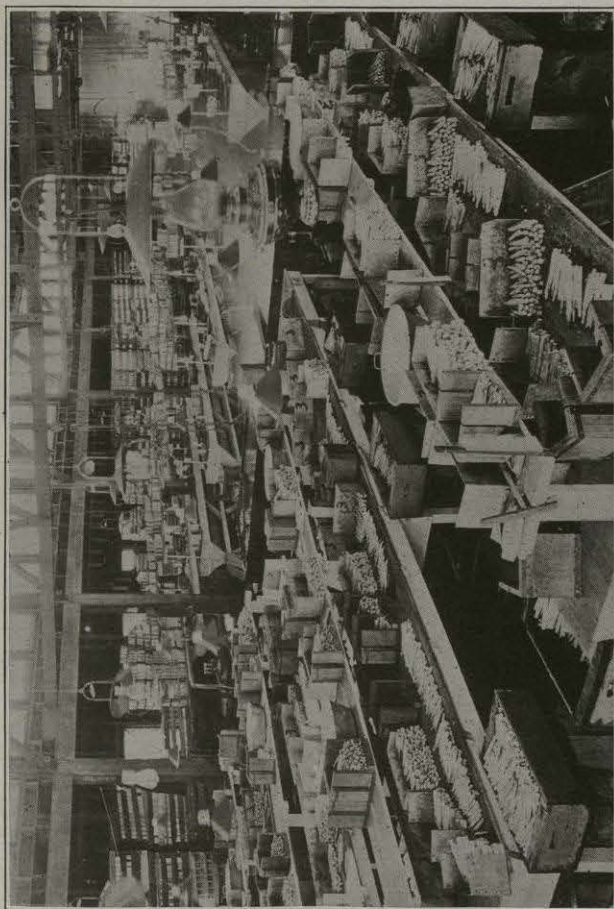
The mission olive is preferred for canning owing to the superior flavor and better texture. Olives are picked when as nearly ripe as the handling will permit. If under-ripe, the pulp is rather "woody" and there is the absence of the rich oily, nutty flavor that is so much desired. If picked too ripe, the olives bruise too easily. They are hand-graded for quality and sorted for size by a special machine. The next step, the curing, is the most important in the entire operation. The treatment starts with soaking the olives in a weak solution of lye to remove the bitter, astringent principle. This treatment requires a day or two, during which time the olives are taken out and returned to the solution a number of times and the strength of the solution altered according to the condition of the fruit and the rate with which the lye penetrates to the pit. This work requires skill as no tests have been developed to serve as a safe guide. As soon as the olives have been acted upon sufficiently, they are soaked in cold water for

several days to remove the lye, and then placed in brine. The time for curing varies from fourteen to twenty-five days after which the olives are canned in weak brine.

VEGETABLES**Asparagus**

More than 90 per cent of the asparagus packed in the United States is grown and canned in a small district in California. The conditions for growth both in soil and climate are ideal. The long tender stalks as they break through the ground are in the condition when metabolic changes take place very quickly, so they must be packed immediately to preserve them at their best. This has necessitated erecting the factories near the beds. Asparagus, such as that shipped across the continent and sold fresh cannot be used.

The asparagus beds are gone over every day or every other day and the stalks cut just as they begin to show through the ground. If the stalk is cut before the tip has been exposed to sunlight, it will be white; if it projects through the ground an inch or more, it will become green. Some persons like the white, and others prefer the green, so both are canned. The stalk is seized at the tip and cut off a distance of 8 inches or more below the surface by means of a special chisel-like knife. When sufficient quantities have been cut, they are collected and taken to some convenient point, packed in forms, and the stalks trimmed to a uniform length of $7\frac{1}{2}$ inches. They are washed to prevent any staining from the soil and carefully layered in lug boxes to be taken to the factory. The first operation is to grade for size; the very large, known as giant, requires about fourteen stalks; mammoth, from twenty to twenty-two; large, from thirty to thirty-four; medium, about forty; and the small, about fifty stalks per can. The grading is done by hand, judging entirely by appearance. That which is intended for the No. $2\frac{1}{2}$ tall square can is cut to $5\frac{1}{2}$ inches; for the No. 1 tall and No. 2 round, cut to 4 inches; and for the tips, 3 inches. The stalks are blanched,



View in an asparagus cannery.

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after which they are again graded into white and green. Some of the very large stalks are peeled, some scraped, and some brushed, the treatment being based on the condition. The stalks are placed in the cans, after which brine is added, and the processing done in the retort. There is no other vegetable or fruit which requires approximately the same amount of hand-work, so it is necessarily expensive. The practice of the better packers is to can each day's cutting as it is brought to the factory, and not to allow any to stand over night.

Artichokes

Only a few artichokes are packed and these are used almost exclusively in the hotel trade. The difficulty has been that they turn dark and become unattractive in appearance, though the flavor may be unchanged. The heads are selected and the coarser outer leaves cut off. They are blanched until tender, then the leaves are tied together to make a compact head. They are packed in the can and brine added, and are processed in a closed retort. The domestic artichokes have a thicker and more edible pulp on the base of the leaves than those which are imported.

Artichoke Hearts

The base of the flower is $1\frac{1}{4}$ inches or more in diameter and nearly $\frac{1}{2}$ of an inch thick when the leaves are removed. These are esteemed as a delicacy, and after being trimmed are handled in essentially the same manner as the whole head.

Beans

Green or string beans are rapidly becoming a staple food the same as peas. The only drawback is the large amount of work necessary for their harvesting and preparation. The harvesting is strictly a hand-picking job, as is also the snipping, as no machine has been developed which is satisfactory for either operation. The beans are picked while they are young and tender, preferably while they are less than 4 inches in length and less than $\frac{3}{8}$ of an inch in