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foreign countries, like dates and figs, we should be sure to wash carefully before using.

If we buy bread and cake from a baker's cart, as we do sometimes in the country, especially in the summer, we should know whether or not the bakery is clean. It is a great comfort in the hot weather to give up the baking for a while; but how unfortunate to buy food made of poor materials and in an uncleanly way. There are large bakeries in some cities where the bread is made without being touched by the hands, the paper wrapper even being put on by machinery. This is a matter for study by the Woman's Club. If there are bakery laws, they should be enforced. No one has a right to sell baked food on which flies have crawled. We all should be too intelligent to eat impure and unclean food.

Cannot a girl help herself and her family by earning a little money? Many mothers and daughters around Pleasant Valley have what we call the "egg money." In the lesson on eggs we have already talked over some points about selling eggs. The Girls' Club one day asked if Miss Travers and Miss James would not discuss with them the question of earning money in other ways. Barbara Oakes said that she wanted to go away to school and then to the State College, after she had finished at the Pleasant Valley School; but with their large family, she did not know whether she could ask her father to help her. The girls had already heard of the canning clubs and knew that in this way each girl could have a little income. As a result of their discussion with their teachers and with their mothers and fathers, two or three of the club members decided to make bread and some other baked foods for sale. Miss James called upon several of the members of the Woman's Club who might be willing to be relieved of some of their baking. Several of the ladies were glad to try



FIG. 128. — Raising ducks is a possible occupation. An old iron sink is used for a swimming pool.

this experiment and they have found that the girls can make really delicious bread, rolls, cake, cookies, and desserts.

An experiment in making butter for sale. A part of Mr. Allen's income comes from his selling his very good milk to a creamery. Marjorie said to him one day: "Father, you certainly have good cows. How differ-

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ent they are from those on Mr. Blank's farm ! Miss Travers noticed it one day when she was here and we were taking her to drive. She said, 'Why does Mr.



FIG. 129. — Marjorie Allen and her new work and play.

Blank have such poor cows?' I could not help telling her that he has only three cans of milk from fifteen cows, and you have four cans from six."<sup>1</sup>

This little book cannot tell you very much about dairying, but the U. S. Department of Agriculture will

<sup>1</sup> This is an actual fact in one town.

send all the pamphlets about cows and butter that you need.

Marjorie astonished her father by asking if he would give to herself and her brother Frank one of the fine calves, if they would care for it. She was not sure that she could now pay for all its feed, but when it was older she thought that she could return to him what the calf had cost, in butter. Mr. Allen talked it over with Mrs. Allen, and finally allowed Marjorie and her brother Frank to try the experiment. The brother and sister read all the pamphlets that they could find, studied the question of food for the calf, and kept an account of its cost. They learned, too about butter making and ways of selling butter. The experiment has not ended yet, but in the meantime Marjorie is making butter with her mother. Do you suppose that some one of you could do this, too? Although they plan always to live in the country, Marjorie and her brother are very anxious to go to the State College, and they want to help educate themselves.

**Pin money from fresh vegetables.** A girl who will give herself the pleasure of working in a vegetable garden in the summer will probably be able to sell her delicious fresh vegetables. These can even be sent away by parcel post. You can get directions from the post office about mailing boxes to be used in this way.

### FOOD AND HEALTH

#### EXERCISES AND PROBLEMS

1. Study the labels on all the food packages and bottles that you have at home and at school.

2. If you have scales of any kind, measure a few of the food packages either at home or at school.

3. Measure the contents of a few bottles to see if they agree with their labels.

4. Find out the laws of your own state and town in regard to pure food.

5. What are some of the important points to remember in selling food ?

6. Is it good business to sell material of poor quality? Why not?

7. Is it good business in selling fruit to put the best on the top and the poor underneath?

8. Can you think of other ways than those suggested in this lesson for a girl to earn a little money at home?

#### REVIEW

I. What is the use of a thermometer?

2. Do you know how to use a Centigrade thermometer ?

3. What is a calorie?

4. What is meant by a 100-calorie portion?

5. What are you going to be particular about when you buy food ?

6. What is the government doing to help you to have pure food and honest weights ?

7. If some one in your family seems to be under weight, what can you suggest?

### THE ELLEN H. RICHARDS HOUSE

You will be glad to know that all the townspeople in Pleasant Valley were delighted with the year's work in home making at the new schoolhouse. Mr. Roberts,



Courtesy of Mr. R. J. Plauten.

FIG. 130. — The Ellen H. Richards House.

the president of the Pleasant Valley Bank, was so pleased with the results both at school and in the homes of the valley that he gave the house that you v 280

# THE ELLEN H. RICHARDS HOUSE 291

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see in the picture (Fig. 130), to be used for homemaking classes by the girls, and for the boys' clubs as as well. The house was named for Mrs. Ellen H. Richards, the great and good woman of Boston, Massachusetts, whose friends are found all over the world, and who helped to develop the teaching of home economics everywhere.

What are some of the facts about food and health that a girl may learn useful to herself and her family? This is the question at the beginning of the first chapter. Do you not think that you can all give an answer now? And would you not like to write a composition about it? Perhaps your teacher will have a gathering at the school of all the fathers and mothers. Maybe one of you can write a little play or pageant connected in some way with household arts for this closing party of the school year.

And where is Pleasant Valley? Perhaps you asked this question when you looked at the picture on one of the first pages. Pleasant Valley is your own home town; and, though it really has quite another name, it still may be Pleasant Rivers, or Pleasant Hill, or Pleasant Fields, or Pleasant Plain. Why not? In this wide country of ours there are many forms of natural beauty. Even in the dry sections where trees are grown with difficulty, there are still the far reaches of the plains and the beautiful effects of sky and cloud, sunrise and sunset. If our own town is ugly and unhealthy, it is not nature's fault, for the beauty and homelikeness and the healthfulness of any place depend upon its inhabitants. Even the simplest and plainest village or countryside has one kind of beauty if it is kept perfectly clean. At the same time, it costs but little money in many places to plant trees and shrubs and to keep the grass green.

You must see, however, that it is something more than beauty in the things about us that we have been. studying together. You boys and girls in your own school are to be the men and women who will make the homes and the town the best possible places for successful and happy living. Do you realize what it means to be citizens of a great commonwealth like this of our United States? Do you understand the word " commonwealth "? It is a good, old word that means a land where all the people share their wealth and work together for the good of all. We cannot succeed in making our country a commonwealth until we begin in our home and in our home town. More and more must our country stand for democracy for ourselves and the whole world. You must bring to the problems of the future strong bodies, and clean and strong hearts and minds.

#### PAGES FROM MARJORIE ALLEN'S NOTEBOOK

1. Utensils for the school lunch. Polly sent me this answer, when I wrote to ask her for a list of utensils that they were using at the Big Tree School (see Fig. 6):

"With the money we gave and a part of our prize money from our school exhibit at the Erie County Fair, we bought the rest of our cooking equipment: 12 towels, 2 dish pans, 1 granite kettle (8 qt.), 1 granite saucepan (6 qt.), 1 basin, 1 dipper, 1 measuring cup, 2 toasters, 1 strainer or sieve, 2 large spoons, 1 paring knife. We bought large granite dishes so that we might cook enough food for lunch at noon. Soap, matches, holders, etc., were given by some of our Mothers. We also bought a small washboard which could be used in the dish pan to wash out the towels after using, and each week some one took the towels home to be washed there."

A friend of Miss James who teaches in the Extension Department of the Ohio State University sent this list :

I	two-burner oil sto	ve						-		245	1		\$4 or \$8
1	oven to fit one bu	rne	r	-		-						1	1.50
1	dish pan (tin) .					1992		1.		-			.10 to .20
1	drain pan (tin or	grai	nite	)				-				-	.20
I	large container, 8	or	10	qt.	(a	ke	ttle	e or	st	ock	p	ot	
	retinned or g	rani	te)									-	.60-1.75
I	kettle, 6 or 8 qt. :	size	(re	tin	nea	lo	r g	ran	ite	)			.60
2	covers to fit kettl	es	1		-	-		Il.s.		10	-		.20
I	colander (tin) .	-		-	24						1		.10
1	tray							a.					.10
1	spatula	1.3	12		-	Sie		a				1.	.3540
2	tablespoons	-	100				-	-				2	.10
2	teaspoons	500											.10
1	measuring cup (ti	n oi	r gl	ass	)	2.67	-		1		WHE	-	.10
1	can opener	191		-	4	100	-	-	-	1	-	- 23	.15 \
	and the second second second												

#### MARJORIE ALLEN'S NOTEBOOK

kitchen fork				89%	*		-			245			\$.10
large fork .		-		-	-		1946		Res			*	.10
bread knife		(8)			10%		din.		1				.60
egg beater		-			-								.05
paring knife					-				-				.10
potato mash	er	1		-	-		-		38		-	4	.10
soup ladle (h	all	f pt	t.)		201	20	100						.25
wooden spoo	n	(sti	rri	ng)	-			1	*			-	.15
sauce pan (1	qt	. s	ize	).	-		100					-	.30
Total .	-	1.			-		-		-				\$9.95 to \$15.2

Small covered cans or jars are useful for holding supplies, as flour, sugar, salt, etc. A Mason jar or tin lard pail can be used. A pail for water and one for garbage are necessary. All garbage should be burned or buried.

2. An easy way to write measures in our books :

DZ.	=	ounce	cp.	-	cup
b.	W	pound	pt.	-	pint
sp.	-	saltspoonful	qt.	=	quart
sp.	-	teaspoonful	gall.	-	gallon
b.	-	tablespoonful	pk.	=	peck
		· · · · · · · · · · · · · · · · · · ·	bu.	-	bushel

3. What food does for us. Food builds our bodies, and gives us fuel; and so gives us heat and power to work. It also helps to make the body run properly — "regulates the body," Miss James says. She explained this by saying that one thing that water does is to help keep our bodies at an even heat.

4. What do we mean by foodstuffs? There are many kinds of food materials, but they are all made of a few substances called foodstuffs.

BODY BUILDERS	FUEL FOODS	BODY REGULATORS		
Protein Mineral matter or ash	Protein Fat Carbohydrates (Starch and sugar)	Water Mineral matter		

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Cellulose, or vegetable fiber, is not digested, and does not nourish us, but it helps to keep the digestive tract in order. It is a good plan to use some bran in cereals and muffins.

5. Some food materials have one foodstuff only, and others all of them. This list helps me to remember the foodstuffs in different food materials:

Foods largely protein : lean meat of all kinds, fish, shellfish, eggs, cheese.

Foods rich in protein but with more of other substances than the above : milk, cereals, bread, macaroni, nuts, dried peas, beans, and lentils.

Foods largely fat: butter, cream, olive oil, bacon, lard, oleomargarine, fat from meat or nuts.

Foods rich in fat but with more of other materials than the above: milk, egg yolk, nuts, fat meats.

Foods largely carbohydrate: sugars, starches, honey, molasses, sirups, tapioca, potatoes, bananas.

Foods rich in carbohydrate but with more of other materials than the above: bread, cereals, macaroni, milk, sweet fruits, carrots, parsnips, corn, dried peas and beans.

Foods rich in mineral matter : milk, egg yolks, cereals made from the whole grain, fruits, green vegetables, dried peas and beans.

6. Why do we cook, and how? We cook food sometimes to make it look good to eat; to change the flavor; to make it digest more readily; to kill yeast, bacteria, and molds. We can cook in all these ways:

Heat direct from coal, charcoal, wood, or gas:

Toasting: Surfaces of food exposed and turned for browning. Broiling: Thin portions of meat or fish exposed and turned for searing, browning, and short cooking of the interior.

Roasting: Thicker cuts of meat exposed and turned frequently for searing, browning, and gradual cooking of the interior. This is an ancient method. We use it in gas stoves when we cook directly under the gas. Heat through some substance:

Cooking in water:

Boiling: Cooking in boiling water, temperature, 212° F., or 100° C.

Simmering, stewing, or "coddling." — Cooking in water below the boiling temperature, 180° F. up to 210° F.

Steaming: Cooking in a receptacle into which steam passes, 212°F.—or in a closed receptacle with steam or boiling water around the inner vessel as in a double boiler, or a "steamer," temperature from 200° F. to 210° F.

Cooking in fat :

Deep fat frying, temperature 350°-400° F.

Cooking by heated surfaces:

- Pan broiling: Cooking of chops or steaks in a heated pan, without additional fat.
- Sauter: To cook in a heated pan with a small amount of fat, enough merely to prevent the food from sticking to the pan and to hasten the browning process. "Baking" cakes on a griddle is one form of this.
- Baking: Cooking in a heated oven, temperature from 300° F. to 450° F. or higher for rapid browning. Meat and poultry cooked in an oven are baked and not roasted, although we use the word "roast" for this method.
- Braising: Cooking meat in a heated oven in a closed vessel, with a supply of water to keep down the temperature. This might be called an "oven stew."

These methods are sometimes combined in one process. In a brown stew, the meat is first cooked in a pan with a little fat to brown it, and to sear the outside for keeping in the juices, before the stewing begins. A "pot roast" is an old-fashioned method of cooking a solid piece of meat with a little water in a pot on top of the stove. The water simmers out, and the meat is browned.

7. Something about baking. Miss James says that the only way to test an oven is by a thermometer with a bulb that is really

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in the oven. Mother says that she will have a hole bored into the oven when I have saved enough money to buy a long "chemical" thermometer that can be run in through the hole. The thermometers on oven doors are a help, but they are not exact. Miss James has a friend at Teachers College, Columbia University, New York, who sent her a pamphlet, "Oven Temperature," by Professor May B. Van Arsdale. Here is one table that she gives. The arrow means high temperature at first and then low.

SLOW	MODERATE	HOT OR "QUICK"	VERY HOT	
250-350 F.	350-400 F.	400-460 F.	450-550 F.	
Custards Meringues Sponge Angel	Cake Food Bread Gingerbread Plain Cake Cookies	Baking Rolls Popovers	Powder Biscuit	

While I am waiting for my thermometer, I must do my best by browning pieces of white paper, and "learning by experience."

8. Time-table for canning. Mrs. Jane S. McKimmon of Raleigh, N.C., sent us this time-table to help our Canning Club. We sent to Mr. O. H. Benson, States Relation Service, U. S. Department of Agriculture, Washington, D.C., for full directions about our Canning Club.

	12	BLANCH	LIQUOR	NO. CAN	EXHAUST MINUTES	PROCESS OR BOIL
Tomatoes String beans . Sweet potatoes	 	 5 minutes Cook 3 done	No water Brine Pack dry	3 3 3	3 5 15	22 minutes 1 hour 3 hours

1		BLANCH	LIQUOR	No. Can	Exhaust Minutes	PROCESS OR BOIL
Baby beets		Cook <sup>3</sup> / <sub>4</sub> done	Brine	3	5	2 hours
Annles		I minute	#1 sirup/	3	2	8 minutes
Dorrios			#3 sirup	3	3	10 minutes
Dernes		1	#3 sirup	10	4	32 minutes
Bernes		r minute	#3 sirup	3	3	15 minutes
Peaches		1 minute	#2 sirup	3	3	25 minutes
Pears		1 minute	#3 sirup	at glass	2	30 minutes
Cherries (sweet)	• • ·		#3 shup	jar	14	
Cherries (sour) .	1		#4 sirup	qt. glass jar	2	30 minutes

(A heavy pack of peaches such as those that are layered in glass jars will require a  $50^{\circ}$  sirup.)

The following vegetables should be processed (boiled) the same length of time on each of three successive days.

	BLANCH	LIQUOR	No. Can	Exhaust Minutes	PROCESS OR BOIL ON EACH OF THREE SUCCESSIVE DAYS
Soup mixture		Salt and sugar Water, salt and	2	8	1 hour
Corn · · ·	On cob 2	sugar	2	IO	1 hr. 15 min.
Carlan near	t to 4 min.	Water	2	3	45 min. to I hr
Okra	3 minutes	Brine	2	3	I hour

Brine is made of  $2\frac{1}{2}$  ounces  $(\frac{1}{3} \text{ cup})$  of salt to I gallon of water. To make sirups recommended, boil sugar and water together in proportions given below:

Sirup #1, use 14 ounces to 1 gallon water.

Sirup #2, use I pound 14 ounces to I gallon water. Sirup #3, use 3 pounds 9 ounces to I gallon water. Sirup #4, use 5 pounds 8 ounces to I gallon water. Sirup #5, use 6 pounds 13 ounces to I gallon water. I pint sugar is one pound. A pound is 16 ounces.

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9. Canning meat at home. Bulletin No. 101, Vol. V, New York State College, Cornell University Talk about Canning Meat at Home.

Sear the meat or chicken in a hot oven, in hot fat, or in boiling water, and steam it or simmer it until it can be torn apart. Pack the meat into the jars, fill the space with stock, and add one-half teaspoonful of salt to each pint of meat. Sterilize the meat for three hours, in a boiler (page 100). Unless the meat is first browned, it does not have so good a flavor.

10. Starch experiments we like to try. Starch turns a pretty blue color in iodine and water.

1. Grate a piece of potato into a small amount of water, and strain out the pulp. The starch settles from the water in a few minutes. Pour off the water, and add a drop of diluted iodine to the remaining starch. Dilute this mixture and with a dropper tube place a drop upon a slide. We could see the potato starch granules through our microscope.

2. Drop a teaspoonful of dry starch into boiling water.

3. Mix a teaspoonful of starch with a small quantity of cold water, and stir this into boiling water.

4. Mix a teaspoonful of starch with  $\frac{1}{4}$  cup of cold water, and bring the water to the boiling point, stirring the mixture as it heats.

Why are 3 and 4 similar in result, and different from 2?

5. Test all these with a drop of iodine.

11. Experiments with baking powder. These are the experiments we tried when the Woman's Club met at the school. We liked No. 3 the best of all.

1. Dissolve half a teaspoonful of baking powder in two tablespoonfuls of water and heat in a test tube, or saucepan, over a flame; notice the effervescence when the bubbling is at its height, and hold a lighted match in the mouth of the tube. This is a simple test for carbon dioxide.

2. Dissolve 2 teaspoonfuls of cream of tartar in  $\frac{1}{2}$  cup water in a glass.

Dissolve I teaspoonful of bicarbonate of soda in  $\frac{1}{2}$  cup water in a glass.

Taste both of these.

Test both with litmus paper, noting the change of color. There are several vegetable coloring matters that change color in this way, in the presence of an acid or an alkaline substance.

Turn the two solutions together, and test with both blue and pink litmus paper, after the solution has stood for several minutes. What results?

Taste this mixed solution to see if you can detect any difference.

To prove that there is a substance still left, evaporate the water.

3. A pretty form of this experiment is to use, instead of litmus, the water in which red cabbage has previously been boiled, and which, therefore, contains some of the coloring matter of the cabbage. The changes in color are very striking, and prove conclusively that neither the cream of tartar nor the soda remains such.

12. Where does that carbon in the plants come from ? When I asked Father how much he paid for the carbon for his plants he said, "Not one penny!" Miss James says that we cannot understand the whole true fairy story until we study biology and botany. It is *something* like this. Plants breathe through their leaves, and they take in carbon dioxide gas which is in the air. Then in some way the carbon is used in making starch and sugar in the plant. We eat the sugar and starch and so have the carbon. When we study more about physiology and nutrition, we shall understand how it is that we breathe out carbon dioxide gas! And as to the carbon in our coal, it is the carbon that was stored up in plants that lived so many thousand years ago, that we cannot count the years. This we learn about in geology.

13. What does heat do to the foodstuffs?

Protein. There are several forms of protein, with differences that we can understand only after a thorough study of chemistry.

#### FOOD AND HEALTH

The most important proteins in meat, fish, eggs, milk, old beans, and peas coagulate, or become slightly harder or firmer at a temperature below the boiling point of water. There is no marked chemical change; that is, the protein is not changed to another substance.

Fats. Solid fats are liquefied by heat, and freed from the tissue that contains them in animal fats like suet.

When a fat begins to smoke with heat, a chemical change is taking place. If intense heat is continued, all the hydrogen and oxygen are driven off and pure carbon remains. When the fat is "brown," giving the flavor we like, a part of the oxygen and hydrogen have been driven off. The "boiling" of fat in a kettle is ordinarily due to the boiling of the water contained in the fat.

Starch. Starch occurs in the form of granules. See Fig. 56. In boiling water, the granule expands and finally bursts, and frees the content, the pure starch, and the whole mass thickens.

Boiled with an acid the starch is changed to dextrin, a substance resembling a gum, and the mixture becomes thin; and this process continued changes the dextrin to dextrose.

With intense "dry" heat, as in toasting, the granule expands and opens, and the contents change to dextrin. Continued heat reduces the starch to pure carbon. The brown color and pleasant flavor in toast are a stage on the road to carbon.

Sugar. Sugar first melts with heat, then begins to decompose, giving off water. This is also a stage on the road to pure carbon. Caramel, a familiar flavor, is sugar in the brown stage, with the water partly driven off.

The art in applying intense heat to fat, starch, and sugar is to know the stopping point, — to reach the "brown taste" and stop short of the "burnt taste."

Mineral matter. The "ash" remains for the most part unchanged by heat, but may be lost in the water in which vegetables and meat are cooked if the water is thrown away.

Vegetable fiber is softened by heat and moisture, and the pro-

tein, starch, fat, and sugar are freed, making them available for our digestion and nutrition.

Meat fiber softens at a low temperature, that is, below the boiling point of water, with moisture; continued intense heat shrinks and hardens it. A tender steak fried with fat in a hot pan will soon resemble sole leather.

#### 14. Suggestions for the basket lunch.

I copied this from Farmers' Bulletin No. 712, by Miss Caroline L. Hunt :

Paper napkins or paper towels of much the same size are very useful for packing lunches, and, like paraffin and parchment paper, may now be bought at a low price.

Napkins can be made also out of cotton crêpe at a cost of a very few cents each. The crêpe may be bought by the yard, and should be cut into squares and fringed. Such napkins do not need to be ironed.

In packing the lunch basket put at the bottom the things least likely to crush, and wrap the sandwiches, etc., into neat parcels, not all in one. Paper cups; jelly tumblers with covers, which can now be bought in several sizes; bottles with screw tops, such as those in which candy and some other foods are sold; and small jars such as those in which some goods are sold by druggists, can all be used for packing jellies, jams, and honey, and other foods.

#### A Few Bills of Fare for the Basket Lunch

1. Sandwiches with sliced tender meat for filling; baked apple, cookies, or a few lumps of sugar.

2. Slices of meat loaf or bean loaf; bread and butter sandwiches; stewed fruit; small frosted cake.

3. Crisp rolls, hollowed out and filled with chopped meat or fish, moistened and seasoned, or mixed with salad dressing; orange, apple, a mixture of sliced fruits, or berries; cake.

4. Lettuce or celery sandwiches; cup custard; jelly sandwiches.

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5. Cottage cheese and chopped green-pepper sandwiches or a pot of cream cheese with bread-and-butter sandwiches; peanut sandwiches; fruit; cake.

6. Hard-boiled eggs; crisp baking-powder biscuits; celery or radishes; brown-sugar or maple-sugar sandwiches.

7. Bottle of milk; thin corn bread and butter; dates; apple.

8. Raisin or nut bread with butter; cheese; orange; maple sugar.

9. Baked bean and lettuce sandwiches; apple sauce; sweet chocolate.

15. Preparation of Orange Pectin. Miss Agnes Harris, Assistant State Agent of Florida, in charge of Home Extension work, sent Miss James a box of jellies and jams that her girls had made, and a pamphlet of recipes.

Use  $\frac{1}{4}$  lb. white orange peel;  $\frac{1}{2}$  pt. water; 2 tablespoons lemon juice. Cut or scrape the yellow from the peel of the orange. Pass the remaining white portion through a food chopper; then weigh it. For each  $\frac{1}{4}$  lb. of the peel, add  $\frac{1}{2}$  pt. of water. Add the lemon juice, mix thoroughly, and allow to stand 1 hr. Add  $1\frac{1}{4}$  pts. of water. Let stand 1 hr., boil 10 minutes, and then let stand until cold. Place in a flannel jelly bag, press to remove the juice, and drain juice through a clean, flannel jelly bag. It may be prepared, poured into jars while hot, sealed, and kept for later use.

For strawberry and orange pectin jelly use  $\frac{1}{2}$  pt. orange pectin;  $\frac{1}{2}$  lb. sugar;  $\frac{1}{2}$  pt. strawberry juice. Mother and I are experimenting with pineapple, cherry juice, and other fruits.

The alcohol pectin test. Pour a teaspoonful of fruit juice, when cooled, into a clean cup, and pour in a teaspoonful of grain alcohol of 95% strength. Mix by gently shaking; then pour into a spoon. For jelly, if the pectin is in a solid lump, it is safe to add equal parts of sugar and juice; if it has not gathered in one lump, use less sugar, — say  $\frac{3}{4}$  sugar to 1 of juice.

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