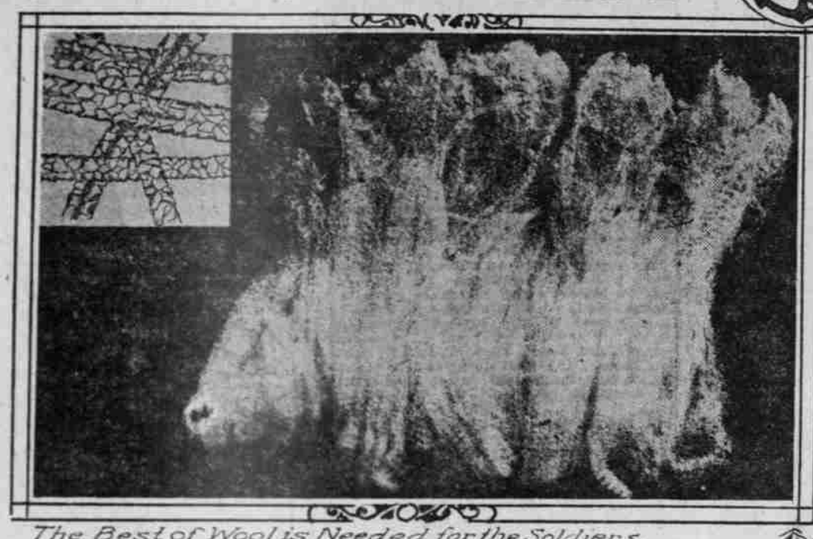
TWENTY SHEEP NEEDED TO SUPPLY EVERY SOLDIER

25,000,000 MORE EWES MUST BE RAISED TO PROVIDE GOVERNMENT'S WOOL SAYS FRANK G. CARPENTER. WHERE THE FLEECE WILL COME FROM.



The Best of Wool is Needed for the Soldiers. At Left Hand Corner Wool Fibers Greatly Magnified.

A $5000 Australian Ram. Its Fleece Weighs 45 Pounds.

Shearing Sheep by Machinery.

WASHINGTON, D. C.—How much wool shall we need for the Army?

I have put this question to the experts of the United States Bureau of Animal Industry. They reply that it will take 160 pounds a year for every soldier that we send to the trenches, and that it will keep 20 sheep working to supply that amount. This is supposing that each sheep gives a fleece of eight pounds. So you see that for every million men we send over the ocean we must have 20,000,000 full-grown sheep here at home or in some other part of the world, and this in addition to the vast amount of wool we need to clothe our own people.

One hundred and sixty pounds! It seems like a lot of wool for one man, but you must remember that the fleece as it comes from the sheep is about two-thirds grease and dirt, and that the fibers selected to make woolen cloth are only a part of the whole. In order to know just how the wool is used I have asked some of the private soldiers at Camp Meade as to the outfits they are carrying with them to France. They tell me that the Government has issued to each man one overcoat, two service uniforms, two olive-drab shirts, three suits of heavy underwear, six pairs of lightweight and four pairs of heavyweight socks, two pairs of thick gloves and four warm blankets. All of these must be of the purest of wool, and the same is true of the helmets and sweaters which our women are knitting all over the country. I venture there are now something like a million women and girls plying their needles, and that the yarn they consume will add one or two sheep to the flock of each soldier.

There is already a shortage of wool, and, as the men in the trenches must be kept warm, the rest of us will be forced to wear shoddy or mixtures of cotton and wool in order that the supplies for the Army may not be impaired. I am told that England is discussing the mixing of cotton with all woolen fabrics. She is cutting down the weight of the cloth and is reducing her exports to other parts of the world. This loss will be greatly felt by our tailors, who have been buying a large part of their stuffs from her. During the first 15 months of the war England used 121,000,000 yards of piece goods for her soldiers—enough to have made a strip of cloth more than two yards wide reaching clear around the world.

Every woolen mill in the United States capable of making anything for the soldiers is now busy upon war orders, and the question is where we shall get the wool to supply them. We have something like 500 factories in New England, and there are hundreds of others scattered here and there over the country. They range in size from small concerns, with two or three dozen hands, up to that of the American Woolen Company at Lawrence, Mass., whose machines occupy 10,000,000 square feet of floor space and eat up the fleeces of 25,000 sheep every day.

As to our own product of wool, this has been steadily declining, while the consumption has just as steadily increased. We produced 321,000,000 pounds of wool in 1910, and our production last year was 26,000,000 pounds less. At present, as it comes from the fleece, the total amount of wool we produce is so little that if equally divided it would give only three pounds to every man, woman and child in the United States. It is so little that if it were all made into clothing it would hardly suffice to supply a suit for one person in three and the rest of us would have to go naked.

Moreover, a decline is going on in the production of wool all over the world. The crop of 1914, the year the war began, was less than 2,000,000,000 pounds, and at that time the whole world had only a little more than 600,000,000 sheep. Since then Australia which had more sheep than any other country, has had a great drought, which has reduced her flock more than 12,000,000 head.

The sheep of Europe have been slaughtered by thousands as food for the soldiers. At the time she marched into Belgium Germany had less than 5,000,000 sheep and Austria not half that number. In both of these countries the flocks have been so greatly reduced as to create a wool famine. Every one is skimping and saving, and the German government has cut down the wool consumption by making the people turn in all their old clothes before they get new ones and allowing them to buy woolen goods only with cards. The same shortage is true in the sheep of the Balkan states, and, in fact, there is no place on earth, except South Africa, where the sheep are now increasing in number.

There has been a notable decline in our flocks since the year 1900. Wool has been so cheap that the lands have been turned from pastures to grain, and we now find some of our best grain-producing areas in the great plains where 30 years ago there were only cattle and sheep. Intensive agriculture is breaking up the sheep ranges of the West. They are being divided into homesteads and fenced so that the sheepman must have open trails to move his flocks from the Winter grazing grounds to the forest reserves, where they feed in the Summer. The total number of sheep now in the United States is about 48,500,000, and there is only one farm of over 20 acres in every seven that supports a sheep.

As to the sheep of the whole world, here is a census by continents that is approximately correct: North America, 65,400,000; South America, 112,700,000; Europe, 174,000,000; Asia, 110,000,000; Africa, 51,000,000; Australasia, 103,000,000.

Almost nine-tenths of the sheep in North America are found in the United States, and almost all of those of South America graze on the basin of the Rio de la Plata. The chief sheep country of South America is Argentina. It has 80,000,000 sheep and it gives us a large part of our wool. As to Europe, almost half the sheep of that continent are in Russia; Spain and France have each 16,000,000 and England about 1,000,000 more. South Africa has 30,000,000 sheep, and its wool product goes mostly to England.

The biggest pasture on earth is Australia, which at the time the war began had more than 85,000,000 sheep and was annually producing more than 600,000,000 pounds of wool. The sheep of Australia are remarkable for the increased product of wool cut from one animal and the high prices paid at the sales. The farmers there give more for blooded sheep than do those of any other country. When I was in Sydney a few years ago the sheepmen told me that it was not uncommon for a well-bred ram to sell for $2000 and upward and that a number of instances had occurred in which rams have sold for 1000 guineas, or more than $5000. In 1896 the ram President, owned by James Gibson, sold for $8000, while a year later the same man sold Royalist for $5000. At that time Mr. Gibson got on the average of $830 for a flock of sheep he brought to the sales, and prior to that time he had received on the average $1290 for each sheep at one auction.

A great many of the fine sheep of Australia are brought from Vermont. I met one Australian squatter who valued his Vermont sheep at $250 a head. This was Samuel McCaughey, who at that time owned more sheep than any other man in the world. He had a round million and some of his flocks cut on the average as much as 22 pounds and at one shearing he sold 1,250,000 pounds of wool. I saw one of his rams at a stock show, which had, I was told, at least 45 pounds of wool on it and at the same time saw ewes wearing 30-pound fleeces. When it is remembered that eight pounds is the average estimate of the fleece of the United States as given by our wool experts, it will be seen what these figures mean. McCaughey's $5000 ram had so much wool that its ears were entirely hidden and the fleece came out three inches over its eyes, so that it looked out at the world through these two little holes in its head. I stuck my finger into the fleece and had to press my whole fist in before I could reach the skin.

During my stay in Australia Mr. McCaughey gave me some ideas that may be of value as to the increase of our wool supply. He was an enthusiast in up-breeding his flocks. He believed that the fleeces of all sheep could be greatly increased. He told me that he had raised the average output of wool per sheep in some of his flocks from 7 pounds to 15. He had as many as 20,000 sheep in one flock and it is easy to see that an increase of only two pounds per fleece for that flock would add 40,000 pounds to his clip. If we could increase our average fleece half as much as Mr. McCaughey did, the new wool created thereby would supply the annual output of 1,000,000 soldiers and give each of them every article mentioned at the first of this letter.

The Government at Washington is urging the farmers to raise more sheep and the high prices of wool and mutton caused by the war will probably induce many of them to go into this business. For ten years before the war began, wool sold, according to its character and the market, all the way from 19 to 25 cents per pound. In 1915 the average price was less than 23 cents and in Midsummer, 1916, it had risen to 29 cents. Last year the average price per pound was just under 55 cents and today it is selling for more than that. Sheep have trebled in value and there is more money in sheep raising than there has been at any time in our history. The agricultural experts tell me that we could easily double our sheep population. They say there should be more sheep in New England and that there are millions of acres of suitable land in the West which should be occupied by them. Moreover, the present-day labor conditions are such as to encourage the business, as comparatively few men are needed in connection with it.

Not only the Department of Agriculture, but several patriotic wool associations as well, have organized a movement to increase our product of mutton and wool. Among the latter are the National sheep and wool bureau and the More-Sheep-More-Wool Association of the United States. These are composed of wool dealers, textile manufacturers, bankers and others, all of whom are uniting with the packers to give us more wool and more meat. Secretary Houston has sheep specialists who are traveling over the country lecturing to the farmers on sheep husbandry and he is planning to organize boys' and girl' sheep clubs as a part of the extension farm movement of every state. He is especially anxious to increase the flocks in New York and New England and also in West Virginia, North Carolina, Texas and Michigan.

The wool experts are also sending out over the country educational exhibits illustrating sheep and wool, and with them are lecturers who are urging the farmers to increase their number of sheep. We have experiment stations for the studying of sheep management in Maryland and Vermont, and in Fremont County, Idaho, there is a sheep farm of 30,000 acres, which is experimenting on a large scale. The Bureau of Animal Industry has a flock of 1000 ewes on that station, and this number will be increased as rapidly as possible. It is especially desired that the farmers east of the Missouri River raise more sheep. The experts say that 25,000,000 more ewes can be kept there at a profit, and that if this is done it will greatly help the meat supply for ourselves and our allies. It will also add 200,000,000 pounds more wool to our annual clip.

As it is now, the United States wool product is several hundred million pounds short every year. In 1915 we imported 308,000,000 pounds, and we have now the additional needs of our Army. How can they be supplied? In the past we have imported a great deal of wool from Australia. This supply was cut off in 1916 when the British government put an embargo on all wool shipments from there to this country. I understand that 100,000,000 pounds have now been released and that the embargo may be raised as far as we are concerned. The Pacific shipping facilities are not good, however, owing to the need of vessels for the Atlantic service, and we shall probably have to rely upon getting most of our wool from Argentina. The product of that country is of the lower grades, and it cannot replace the fine Australian wool.

It will surprise some to know that there is as much difference in the hair which grows on a sheep as that which grows on a man. Some races of men have fine silky hair, others have hair that is coarse, straight and wiry, and there is also the kinky woolly hair of the negro. A baby's hair is fine, and it grows coarser as the child grows older. It is the same with sheep. Lamb's wool is finer than sheep's wool, and the wool on sheep varies according to the breeds or families to which they belong.

Wools are also different according to the wave or curl in them and in certain other things that fit them for weaving. To the naked eye merino wool as it comes from the sheep seems to be made of fine curly hairs. They are so fine that 10,000 of them are grown on a space the size of a silver quarter, and so fine that a pound can be spun into a thread 100 miles long. It is only by putting the fibers under a microscope that you can see how they differ from hairs. Enlarged to the size of a lead pencil you observe that each is covered with sharp scales, which overlap one another like those of a fish. The scales are so close together that there are several thousands of them on a single inch of the fiber. These scales are found on all wool, and it is the scales that enable the wool to be woven. They interlock so that the fibers of which the cloth is composed cling closely together. It is this character of the fiber, its length, its curl and other things affecting the weaving which have to do with the value of the wool.

There is a difference in the wools of sheep of the same breed, according to where they are found. Just now some of the finest wool of the world is the merino raised on the high, dry lands of Australia and South Africa. The sheep of Algeria and Morocco grow excellent wool, and so also do those of Asia Minor and Persia, as well as those which graze on the highlands of the Andes. Our Ohio and Pennsylvania sheep produce some of the strongest wool in the world. They are chiefly merinoes, and they pasture on the sod-covered land. Our Michigan and New York wools are almost as good, and after them come the wools from Kentucky, Indiana, Missouri and Wisconsin. There is a special grade for Texas wool, and also for certain wools of Oregon and California. We have one grade known as "territory wool," which comes from the great range states of the West, such as Montana, Wyoming, Idaho, Nevada and Colorado. Much of that wool is from sheep which feed on the high plateaus, where the wind blows sand and dirt into the fleeces. It is related that one sand storm which came up while the men were shearing a flock caused them to stop work for an hour, and that at the end of the storm the average weight of the fleece had risen from six to nine pounds. In such wool a great shrinkage has to be allowed for on account of the dirt.

The grading of wool is a science and it must be done by experts. It is taught in the agricultural colleges of Australia and at Sydney, which is the chief wool market, there are night classes where the students learn how to grade wool. The bales are sent in by the dealers and the boys pick out the good and bad wool and sort it according to quality. We have experts at our wool markets, some of whom can tell by the feel just how much each shipment should bring when sold in the market. Some years ago there was a blind buyer at Boston who operated with success, making his purchases by the touch and odor. He could tell not only the quality of the wool, but the section of the country or the part of the world from which it came.

The most of the wool is shipped in burlap bags, which contain several hundred pounds each, comprising the fleeces of 40 or 50 sheep. After the wool has been graded it is put up in piles and is then ready for sale to the mills. At the mills it is sorted and graded again according to the part of the sheep from which it comes. The wool from the back is not as good as that from the shoulders, and that from the belly has its own grade. The wool from the head is short and coarse, and in the black-faced sheep it is likely to contain black fibers. There is also short wool from about the face and eyes. The number of sorts vary also with the quality and length of the fibers and the goods for which the wool is intended. Each mill has its own way of sorting and uses its own names and numbers. From this it will be seen that a great deal of intelligent work has to be done from the time the wool leaves the sheep until it reaches the machines which make it into the yarn our women are knitting.

Modern Poultry Culture

We Americans have long appreciated the need for labor-saving devices. Our inventors and engineers have contributed many, if not most, of the world's stock of useful appliances. Witness the telegraph, the telephone, the harvesting machinery, the tractor, the sewing machine, the typewriter, and hundreds of other appliances too numerous to mention. We have had to improvise these things because our manpower was more or less limited. A desire for greater economy of production was the incentive for our inventions. Not only have we sought to save human labor but we have endeavored to cut down the toil of our animal labor. Or rather we have insisted upon getting the most from our animals. There is no better example of this fact than the incubator, without which our poultry industry could not have attained its present magnitude and importance.

BY ROBERT ARMSTRONG.
Expert Poultryman and Writer.

WE have in this country close to 500,000,000 domestic fowls. Each year the greater part of these fowls are killed off as meat, and a new generation is reared to take the place of the old. The energy involved in this reproduction is enormous. It is so stupendous, words and numerals fail to measure it. It is done by two processes: Natural and artificial. In the former, female birds are used to hatch and brood the young; in the latter, machines are employed to do this work, which they perform almost as successfully as the birds themselves.

Incubators Versus Hens.

Hatching is not so much a question of which method produces the greatest number of chicks—the hen or the incubator? It is a question of economy. The Hen's greatest value lies in the eggs she produces. If she is kept in laying trim, she is a money-maker, one of the best assets on the farm. If she fails to lay prolificly, she is an expense, especially during these times of high prices for feeds.

Very well, the hen cannot be expected to lay and reproduce her young at the same time. If she raises a brood, it is at least a two months' task, and then another month before she is in physical condition to commence laying again, which she seldom does, because by the time she has weaned her brood, the hot weather is at hand and more than likely she enters the molt. The molt keeps her busy for another three or four months, and then Winter weather is at hand.

This is the way of the average farm hen. It is the natural way. And it is the reason why the farm hen seldom produces over 60 eggs a year. Five dozen eggs a year, unless they are produced as a by-product, with little or no expense to the keeper, will not show a profit. Hence farmers aver that chickens do not pay.

Of course, chickens do not pay under such circumstances. Neither would cows pay if they were allowed to follow their own inclinations. It is doubtful if any farm crop would pay if it was neglected so much as chickens are ignored on the average farm.

Save the Hen's Time.

The single plow was superseded by the double plow; the double plow was replaced by the three and four-horse gang plow; the gang plow has been replaced by the tractor which hauls a number of gang plows. Why? Because too many men and too many horses were required by the old methods. It was too expensive; it did not pay. The draft animals and the men's wages absorbed all the profits. They were more productive in other lines of work. The machine was made to take their place. And so it is with the hen.

The incubator hatches hundreds of thousands of eggs, while the hen hatches a dozen or 15. The machine is attended by one man, and only a portion of the man's time, while the hens required to hatch an equal number of eggs would require the attention of three or four men. The incubator can be run on a few gallons of oil or a ton of coal, while the hen's energy measured in the eggs she fails to lay by reason of her being on the nest, would run into hundreds of dollars.

There is still another factor, and a highly important one. When you deal with hens, you deal with mighty perverse creatures. You may want to bring off some early hatches in order to have early pullets for Fall laying, but if there are no broody hens you are helpless. Again, you may find some broody hens, sitting on nests in some obscure place, and when you try to make them sit on a setting of eggs in the place you provide for them, they will have none of it. Or, they may accept the proffered eggs and sit on them for a week, then abandon them. If there is no other hen to take the eggs promptly, the partly hatched eggs must spoil. Anyone who has had any experience with chickens knows only too well how exasperating a broody hen can be. She is the last word in obstinacy. She will sit when it pleases her, where it pleases her, and as long as it pleases her, and no amount of coaxing will alter her views in the matter.

Machine Means Control.

The incubator is the reverse of the foregoing troubles. It can be started in late Winter in order to produce early pullets, perhaps months before the hens would even think of becoming broody, and it can be run as long as desired, and wherever it is desired. It is always under perfect control of the operator. Give it reasonable care and good eggs and it is the most obliging thing in the world. Use it once and you will abandon the perversity of the hen for all time.

To the inexperienced mind the incubator appears as an intricate machine requiring special training for its operation. It is a mistake to assume that they are difficult to manage. Reliable incubators are made almost automatic and fool-proof these days, and previous experience is altogether unnecessary. I do not mean that you can neglect them, or give them the indifferent care that you might give to a washing machine. But, the incubator is so simple that children have gotten excellent results with them, and all that is required of the operator is that he shall follow the directions which accompany each machine, and be punctual in doing so.

No incubator can vitalize infertile eggs or eggs which have weak life germs, and it cannot overcome conditions which may have had a bad effect on the eggs before they were placed in the machine. It cannot offset the evils of weak breeding stock or injudicious feeding methods. Therefore, when poor hatches result, it is well to look for other causes besides the machine.

Which Machine to Buy.

The prospective purchaser of an incubator is sometimes perplexed as to which is the best machine for his purpose. Size, of course, is a leading consideration. Choose one that will fill your requirements, but always buy a larger one in preference to one that may prove too small. It costs very little more to run a slightly larger machine, the initial cost is not great, very little additional labor is necessary, and usually the larger the machine the more accurately it will run.

In regard to price, it is well to bear in mind that the value of the machine is small compared to the value of the eggs which it will receive during its lifetime. It is poor economy to buy a machine simply because it is cheap. Buy one of the reliable makes. The good hatches that it will produce will soon return its initial cost.

There are so many makes of incubators on the market, and so many sizes, it would be impossible to describe them in a single article. Some are described as "hot air machines," others as "hot water machines." Then there are "moisture" and "non-moisture" designs. In principle they are all essentially the same. They have to be, for the reason the whole theory of artificial incubation is based upon the fact that if a fertile egg is kept for a sufficient period of time under certain conditions of heat, ventilation, moisture and position, it will be transformed into a healthy fowl.

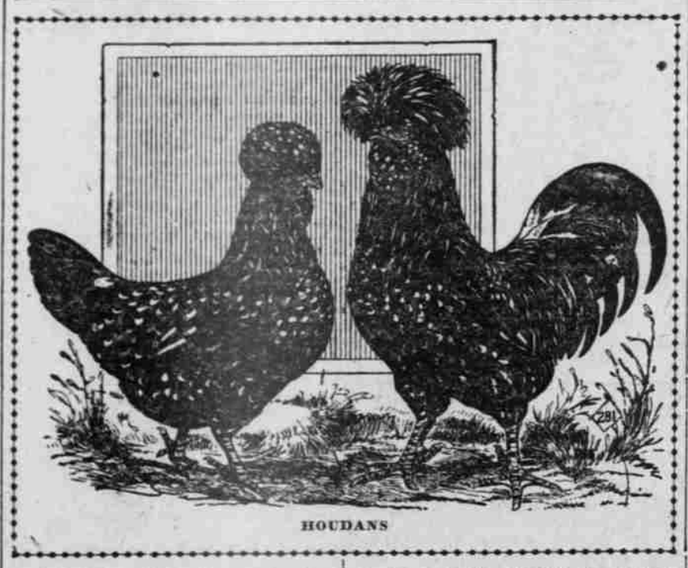
Incubators come in a wide variety of sizes, from the small oil machine having a capacity of 50 eggs, to huge coal-heated machines of many thousand-egg capacity. Gas is sometimes used to generate the necessary heat, and its fixtures may be fitted to the ordinary machinery with few modifications. Electricity is also used, and has proved satisfactory; but it requires a totally different principle of radiation.

Hot Air or Water.

The hot-air heated machines are those in which fresh air is taken in at the lamp heater, warmed as it passes around the heating drum, which corresponds to the chimney of a lamp, then passed through the egg chamber by means of a diaphragm in the ceiling of the machine. In some machines the heated air simply passes over the radiator above the egg trays, and never actually enters the egg chambers.

Hot-water machines are heated by tanks or a system of pipes above the egg trays, similar to a hot-water system for heating a dwelling. In practically all types of incubators the heat is supplied or controlled by a regulator, which, acting upon a valve or damper, governs the admission of heat to the egg chamber. These appliances are usually termed thermostats.

Whether moisture should or should not be supplied has never been definitely determined; both principles have their advocates. Some machines are built with pans to hold moist sand or water; others have none. Some machines are built with a solid bottom, the idea being to conserve the moisture within the eggs; others are built with slatted bottoms, through which there is a constant circulation of air. All types are in general use, and all give good results. Apparently, the problem of moisture must be solved by the individual experience of the operator. Everything depends upon the design of the incubator, its location, the season of the year, climate and the external atmosphere at the time of the hatch.



HOUDANS

THE Houdan was the most extensively bred fowl in France, where it originated. In America it has been more or less popular for 50 years.

Aside from the fact that it is a handsome looking fowl, the Houdan is a good utility bird. The hens are heavy layers of large white eggs. They are particularly desirable for the backyard flock because of their docility and because they thrive in confinement. They are hardy, good foragers, and may be left to rough it.

The males weigh from seven to eight pounds and the females six pounds. For the average table this is a good sized fowl. The skin is thin, the flesh is fine-grained, there is an abundance of breast meat, and the bones are small.

The Houdan has five toes on each foot, instead of four, as in most other varieties. The skull differs too, in that it has a "bump," from which the crest grows. In newly-hatched chicks this lump is particularly noticeable. In addition to a crest, full grown birds have a V-shaped comb.

Rounding Up His Offenses.

Exchange.

The court called the negro to the stand. "Ben Jason." "Yas, sah." "Accused of being under the influence of liquor on Christmas eve." "Yas, suh." "Disorderly conduct." "Yas, suh." "Profanity." "I might er swo'—yah, suh." Resisting an officer." "I sho' tried to lick dat Irishman, judge." "Petty larceny." "Count dat in, too." "Ben, the law must deal heavily in your case. Is there anything you left out on your holiday spree?" The negro scratched his head. "Yas, suh; ef yo' could lemme out fo' a few minits I'd like to beat up my ol' woman fo' 'ceptin' presents from a Macon barber."

Cakes of Rye Flour Aid in Wheat Conservation.

Home Economics Department of University of Washington Shows Ways of Using Cereal.

NOT only yeast breads and hot breads can be made successfully with other flours than white, but cakes made with rye and graham flour are found to be light and attractive in appearance and delicious in taste. This is one of the most recent experiments of the department of home economics at the University of Washington. The strange taste of the rye flour is successfully masked by the use of spices. The coffee cake recipe below not only uses half rye flour, but contains no shortening. These recipes from the department are thoroughly tested many times and are issued because of the great demand of Washington housekeepers for conservation methods.

Boston Favorite Cake.

Two-thirds cup shortening (Cottolene, Kream Krisp, oleomargarine, drippings).
2 cups sugar.
4 eggs.
1 cup milk.
3½ cups flour (equal parts graham and rye).
½ teaspoon salt.
5 teaspoons baking powder.
¼ teaspoon cinnamon.
¼ teaspoon cloves.

Cream shortening, add sugar gradually, eggs beaten until light, then milk, and then flour mixed and sifted with baking powder. This recipe makes two loaves. If flavor of graham flour and rye is too prominent, use a little more spice.

Coffee Cake Without Shortening.

3 eggs.
1 cup sugar.
1 cup molasses.
1 cup coffee.
2 teaspoons cinnamon.
1 teaspoon cloves.
1 teaspoon alspice.
1 teaspoon soda.
1 pound raisins.
2¼ cups rye flour.
2½ cups white flour.

Mix dry ingredients, add molasses, coffee and beaten eggs and raisins.

Mother Knows in Advance.

Exchange.

Little Walter was eating lunch when he gave his arm a sudden shove, and splash! down went his glass of milk.

"I knew you were going to spill that," said mamma, angrily.

"Well, if you knew," queried Walter, "why didn't you tell me"

After an Argument.

Indianapolis Star.

Her—At the conclusion of an argument between a man and a woman, the man may be silenced but not convinced.

Him—Yes, and the woman may be convinced but not silenced.

It is sometimes difficult for a girl to find her ideal man, but she's nearly always willing to accept a substitute.