

to connect these to the source of supply probably the well. When the tank is set up it is full of air, this air cannot escape since all outlets are closed. As the pump forces the water into the tank the air is compressed until it occupies say one-fifth of the original space. This compression of air constantly adds pressure to the water, so that when the faucet is opened in the kitchen or the barn the water will be forced through the outlet pipe. The pressure is registered by a gauge on the tank, and will be between 30 and 60 pounds. Under ordinary circumstances 20 pounds pressure will be sufficient for household purposes, this requires the tank to be a little over half full. To take advantage of more water in the tank, however, the pressure is run higher. The following table gives the pressure in the tank corresponding to the height of the water.

Tank	full of water	lbs. pressure
One-fourth	"	5
Two-fifths	"	10
One-half	"	15
Three-fifths	"	22
Two-thirds	"	30
Seventh-tenths	"	35
Three-quarters	"	45

A pressure of 30 pounds would force water to a height of about 70 feet, while at 60 pounds pressure it could be forced 140 feet. There should be a safety valve of some kind on the tank.

Horses drink 5 to 10 gallons per day. Cattle drink 7 to 12 gallons per day. Hogs drink 2 to 2½ gallons per day. Sheep drink 1 to 2 gallons per day. These figures may vary to a considerable extent but are close enough for estimating. It requires about 7½ gallons to flush a lavatory, 30 gallons for a bath tub, 300 gallons should do an average family for 24 hours. So that you can decide on the size of storage tank required, do not make too small, as it is well to have plenty water available in case of fire. The tank must be placed away from frost, and is usually in the basement.

The third or pneumatic water supply system is the latest in development. It possesses several good features, such as obviating the storage of water requiring only one air storage outfit to supply both hard and soft water, and is adaptable to practically all conditions. Here we require an air compressor and a storage tank for air. The tank can be placed anywhere in the barn without danger of being frozen, and air can be stored to a pressure of 100 pounds per square inch and throttled down to say 20 pounds for ordinary use. In case of fire it can be opened up and water could be forced a great distance, as a large supply of air can be stored. The pneumatic pumps are made small enough to go in a four-inch well casing, and as many wells can be used as desired with one central storage tank; it is a very efficient system. We have not attempted to give instructions regarding installing these systems, as many reliable firms have these systems in the market and supply catalogues giving much more detailed information. We have tried to interest you in the question of water supply for the farm, and before you decide on any system find out all you can about those available.

Remember the cheapest may not be the best, and a system of this kind must be carefully installed. Gasoline engines are usually used to run the pump or air compressor as the case may be.

Carburetor Queries.

I thought perhaps the department in your paper on Automobiles, Farm Machinery and Farm Motors could give me some help regarding a small gasoline motor I made last winter. I am not able to design a carburetor that will work satisfactorily. The motor has a two-inch cylinder, a two-and-a-half-inch stroke, and the space in the combustion chamber is about one-and-a-half cubic inches. The intake valve is fitted for a quarter-inch pipe.

1. Will you please publish the design of a carburetor suitable for this motor? If this is impossible please publish information regarding the construction of a carburetor.

2. Is the combustion chamber the right size?

3. Should a motor of this size have power enough to drive a fanning mill? W. M.

Ans.—1. It would not be advisable for you to go to the expense of making special castings for carburetor. Your best plan would be to purchase a carburetor suitable for a 2½ power motorcycle and install this in your machine.

2. Apparently.

3. Yes.

AUTO.

POULTRY.

These Leghorns Did Well.

EDITOR "THE FARMER'S ADVOCATE":

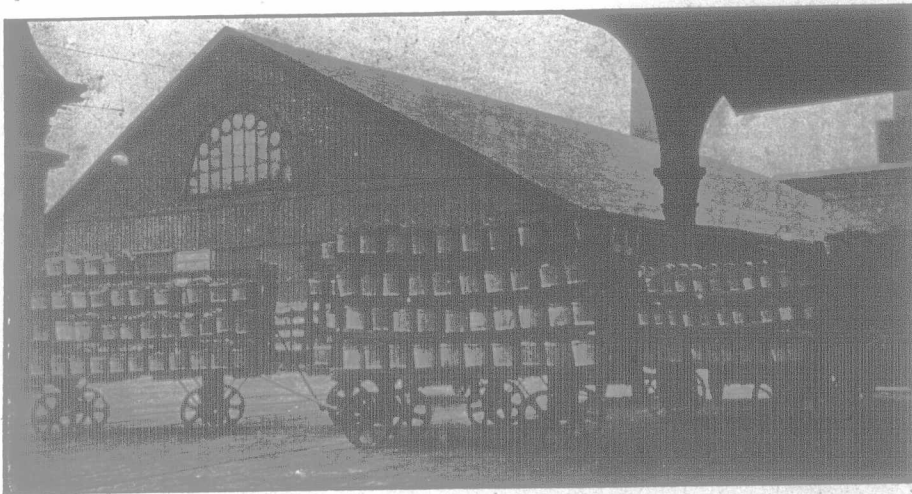
Many of the readers of your poultry column will probably remember having read, some time ago, various letters of mine giving some practical experiences with bred-to-lay hens. For some time now I have been overseas with the British forces in France, but have, at the same time, directed the laying of the foundation for my poultry farm in England. In this I have been very successful, and, as I have followed the methods I have advised repeatedly in your columns, I would like to place the results before your readers in the hope that they may act as a stimulus.

I left Canada about a year ago. After arriving in England I spent some time on two large English poultry farms, one very successful, the other decidedly the reverse and now extinct. My own conclusions were fully confirmed by this additional experience, so that what I did when starting on my own account last spring was as follows: I got hold of a pen of bred-to-lay White Leghorns, consisting of one cockerel and 12 two-year-old hens. The dam of the cockerel had laid 260 eggs in her first year of laying, and 5 full sisters had won second place in the North American laying contest, after being sent over from England with a total of 1,105 eggs to their credit in twelve months. The hens I mated this cockerel with were not of the same quality but had proved good layers during their first year, and I relied upon the extra high laying qualities being transmitted to the chickens by the cockerel. I also procured a pen of White Orpington hens mated with a Leghorn cockerel for crossing purposes, and it was my intention to hatch every egg laid by these two pens, in order to reduce my first outlay for plant and stock. I was called up for the army six weeks afterwards which spoiled this, but the results my people have obtained are nevertheless very interesting.

The two-year-old Leghorn hens have from February 20 to September 17, that is, nearly 7 months, laid on the average 115 eggs apiece. They are now in full moult and have practically stopped laying, but in consideration of their good performance this summer I am keeping them over the winter for breeding purposes, and it will be interesting to see the final results for the year.

I had a few chickens hatch out on March 29. Of these nine pullets remain. The first commenced laying on August 17 at 4 months 19 days old. By September 17 I am getting an average of over five a day from the nine, though I am not sure whether all are laying. The next batch of chicks appeared two months later, at the end of May, and none have laid yet. I am expecting that when they do start they will keep up through the winter, though the first lot will possibly moult a little and slacken off.

I have not at hand the profit and loss account.



Luscious Peaches in Transit.

There is, I know, a balance in hand after allowing for considerable feed in stock and paid for and the expense of raising the chickens to their present age. All cockerels have been disposed of for the last two or three weeks. As nearly as I can estimate the profit per bird is about \$2.75 to date, and I expect the pullets to keep not only themselves but the breeding stock over the winter and return a surplus as well.

This is being done on "scientific" lines, with all feed bought. Eggs are sold at a high price, but feed also runs high. Figure out the profit if your hens laid as mine are doing, using your own prices paid and received.

W. J. FLETCHER.

HORTICULTURE.

Radical Views on Spraying in Nova Scotia.

In some parts of the Annapolis Valley spraying has been carried on for a period covering from ten to fifteen years, and many of the growers during that time have been paying strict attention to the results of the different fungicides and arsenicals used. They have with this experience pretty well mastered the art from the practical viewpoint and are now in a position to judge of the feasibility of any recommendations handed down by the experimentalists or scientists. They were of course started on the right road by the advocates of spraying and the authorities who made a study of it, but now they are in a position to impart some valuable information gleaned from a decade's experience in fighting insect pests and attempting to control the persistent apple scab. They have used materials freely and they have not spared themselves. The most up-to-date power sprayers are common, so any complaints regarding too much pressure or too strong a mixture cannot be looked upon as the expression of a people who desire to shirk their work or lighten their labors, at the handle of the hand-pump. Regarding fungicides and

poisons they are willing to purchase any amount in reason and apply it in the most effective manner. However, the feeling is now becoming quite prevalent that a large percentage of the crop is being sprayed off the trees, by the summer applications. Whether the material is too strong, the pressure used too great, or a combination of the two factors is causing the trouble, the people do not know, but some of the most experienced growers are satisfied in their own minds that the fruit, Kings and Starks particularly, is caused to drop after setting in a perfect manner. There are still of course a great number who do not spray thoroughly or methodically. We are not voicing their sentiments here; these are the ideas of orchardists who understand the work and know whereof they speak.

The Nature of the Complaint.

The recommendations followed in Ontario adhered to fairly closely in Nova Scotia. The lime-sulphur wash is used quite generally, and a strength of 1.009, or 1.008 for the summer sprays. At least this is the strength advised, but it is usually obtained by diluting the commercial mixture according to the instructions which accompany the purchase, or the advice handed out by the Agricultural Department. When the wash is home-made a hydrometer is used and the dilutions made according to standard recommendations. It appears uncommon to test the mixture after it is in the tank and ready for application; here we believe some work could be done before any conclusions should be drawn. However, the fact remains that the spraying material is being prepared in the same manner as in other fruit-growing districts of Canada, yet the results are not so favorable. Two-and-one-half horse-power engines are commonly used in connection with the power sprayers, and the pressure varies between 175 and 250 pounds.

A number of the most experienced growers recently expressed themselves to the writer as being thoroughly convinced that some of the apples set were being sprayed off, the foliage injured, and the fruit spurs for the succeeding crop destroyed. Five or ten years ago we might have considered these views as the off-spring of prejudice and the desire not to spray. The growers find the work very unpleasant, but those who know what clean fruit really is, and realize how important it is to produce it, know full well that they must continue to use the rod and hose, but they are seeking for a preparation that will not defeat their purpose.

A Bordeaux Advocate.

John Buchanan, who resides and has a large acreage of orchard in King's County, is a strong advocate of the Bordeaux mixture, yet the proportions entering into the preparation he uses are anything but orthodox.

His reasons for using Bordeaux instead of lime-sulphur are based on the conditions referred to in the preceding paragraphs. He has found that he cannot produce crops of Kings and Starks when spraying with lime-sulphur, neither do the other varieties fruit as abundantly as he would like when sprayed with the wash. Starks and Kings, particularly the latter, he believes are injured by the lime-sulphur spray. The general spraying in his orchard is done twice before the blossoms open and once after they fall. Gravensteins, and some varieties very susceptible to scab, are sprayed ten days later, making four applications in all. For the first spray 3¼ pounds of blue stone and 30 pounds of lump or burnt lime are used, with 100 gallons of water. The old recommendation regarding Bordeaux mixture was 4 pounds of blue stone, 4 pounds of lime, and 40 gallons of water. The mixture Mr. Buchanan uses, it will be observed, is much weaker in blue stone and stronger in lime than has been commonly advised. The second application is made in the proportion of 3¼ pounds of blue stone and 20 pounds of lime to 100 gallons of water. The third application has only 1¼ pounds of blue stone and 20 pounds of lime to 100 gallons of water. The last spray is practically all lime; very little blue stone is used with 30 pounds of lime and 100 gallons of water. This mixture he has used for several years and finds that the lime itself has considerable fungicidal value as well as a favorable effect upon the foliage and general thrift of the trees. As to the effectiveness of this preparation, the writer can say that the orchard was inspected on September 22 and the fruit with which the trees were heavily laden, generally speaking, was exceptionally clean. The Gravensteins, which spot easily, had been harvested; and out of one lot of 114 barrels, 85 barrels graded No. 1, and 12 barrels, No. 2's. This is a very good percentage of first-class fruit for a season such as this has been. Some thinning is usually done in the orchard, and of course the inferior specimens will be picked off. However, Spys, Wageners, Ganos, and Ben Davis were clean and well loaded. This method of spray-