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and thus local influence of the At night the cur- checks the radia- air in the forest the open. The open country to cks extremes of at night and cooling of the ured it has been summer and of mountains than

stigation in Ba- the lowest daily ear was 2 degrees than in the open e highest daily an average lower e same observa- he hottest day in grees cooler in a nd that the cold- was 3 degrees

r Central Europe; America, but the govern on both we are in a coun- remes and more mate, we may ex- e forest has even e in Canada than has been studied

the air in the for- hat of the air out- weight of water out of air is the cubic foot of air ry under similar the forest air is to contain mois- experiments show umidity of forest greater than out- the reason that ent near timber

forest has but the quantity of ict. The chief re the great cur- in the ocean, the lies of water and ction of the pre- cooler than the t the winds, and, l showers. Europ- and Indian ob- tions encourage belief that for- in this manner ase the annual all by about 10 ent.

ie forest has a er effect in pre- ing the evapora- of water than increasing the all. The air of forest being cool- cannot absorb ture as quickly e warmer air of open country. forest also re- s air currents obstructs winds, h, when blowing dly, dry the s and open s. In this re- the forest is of more influence the wind-break only planted. rian experi- s show that the oration from a surface of water forest is only of that from same body

of water in the open. The influence of the forest to prevent evaporation increases with the elevation of the country above sea level. This furnishes justification or reason for the Government reserving the forests at the headwaters of streams in mountain regions. In the Rockies a large proportion of the water evaporates before it reaches the streams; especially is this the case when the snow is going off in the summer. Large snowbanks evaporate without wetting the ground around them. Experiments by the United States Geological Survey have proven that when exposed to the sun the snow evaporates at least four times faster than water. Where water is important for irrigation this is a serious consideration.

The chief influence of the forest is in modifying the run-off of the water after it has fallen. From 10% to 25% of the rain falling in a forested country is held by the branches and the leaves of the trees. This is later evaporated, and tends to keep the air moist. The water which reaches the ground is absorbed by the decayed vegetable matter and soft permeable soil, as it would be by a sponge two inches to two feet thick spread over the whole surface of the land. Such a soil will hold a five-inch rainfall before it becomes saturated. The water thus held slowly soaks into the subsoil, is held as a reservoir to support vegetation, or seeps away to feed springs and streams. None of it is wasted or lost. When rain falls upon a bare slope, the result is different; it does not sink into the ground half so readily, but immediately runs off the surface in rivulets and creates floods. Investigations by the United States Forest Service show that a forested watershed in California discharged its water only one-half as fast as a denuded watershed in the same region; that the stream from the forested watershed maintained an equable flow, while the stream from the denuded watershed was flooded after rains and dry in the summer, because of the failure of the water to soak into the ground.

Floods, as well as decreasing a stream's value for water supply and water-power, wash from the unprotected country large quantities of silt and gravel, and in preventing this the forest plays its most important part, say that of supplying wood. Flowing water has been a great influence in modifying the earth's surface—it has worn down mountains and built up plains, and yearly carries huge quantities of earth from the fertile fields out to fill the river valleys, the lakes and harbors. The forest binds the soil together and prevents the rapid washing of the earth into the streams. When the rate of flow of water in a river is doubled, its power to carry sediment is increased sixty-four times; it becomes able to carry a weight of rocks and earth greater than the rate of the water itself. Thus when the presence of leaf mould, roots and forest growth retard the water in its run-off by one-half, the eroding of the stream is decreased sixty-four times. Everyone has noticed where the removal of the timber covering has been followed by the deep gullying and rapid washing away of soft loam and loose sand. All soil material washed away is carried down stream and deposited where the speed of the water decreases. Thus storage dams and ponds are quickly filled and rendered useless when constructed on streams with denuded watersheds, particularly if the tributaries of the streams flow through agricultural land, or any type of country excepting bare rock. Thus while the construction of storage reservoirs may be necessary to maintain an even flow and prevent floods on such rivers as the Ottawa and Saskatchewan, forests will be necessary on the upper tributaries if the reservoirs are to be kept from filling with silt.

An investigation of the great Kansas River flood of 1903, which destroyed \$22,000,000 worth of property, showed that where timber stood along the banks the overflow into the neighboring farms was gentle, and resulted only in a deposit of fine silt, enriching the land; but that where the banks were unprotected by trees and the soil not knit together by roots, the river cut new channels through valuable farm land, washed some farms full of huge channels, and buried others several feet deep beneath sand and gravel. As a result of this lesson farmers and municipalities along the valley are planting along the river banks narrow belts of willow, cottonwood, catalpa and walnut. If willow, cottonwood and walnut were planted along rivers which regularly flood, they would be of great assistance in protecting the banks and neighboring fields from destructive erosion.

H. R. MACMILLAN,

Asst. Inspector Dominion Forest Reserves.

POULTRY

Suburban poultry-keepers whose time is not otherwise occupied, may busy themselves to advantage now getting something ready for their birds to scratch in during the winter. Exercise is essential for good results in winter eggs, and burying feed in litter is the ideal way to insure it. Leaves or chaff suit very well, and the resulting compost has a not inconsiderable fertilizing value.

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From now until Christmas lean, scrawny poultry, will deck the grocery counters with their skinny, blue-white, pin-feathery carcasses. After having gone to the trouble and expense of raising chickens, then to market them at a stage when they represent a maximum of bone and offal, with a minimum of edible flesh, is simply shameful. It is defiance of all the laws of economics and business policy. It takes so much food to grow the frame, feathers and vital organs. It is the extra feed, going to pad out that frame with flesh and fat, that increases its weight, quality and value. Prof. W. R. Graham, of the Ontario Agricultural College, has stated that they have made 50 cents an hour fattening chickens at Ontario Agricultural College. How many farmers make that much out of their time?

Barley for Laying Hens

EDITOR FARMER'S ADVOCATE:

Variety of food is essential in successful feeding for eggs, especially in winter. Barley used sparingly with other foods has its use to add to the variety, but when fed liberally during the winter and spring it is always a cause of infertile eggs. Hens, especially of the lighter breeds may lay well in winter when fed a considerable quantity of barley, but I have never known a flock fed on barley largely during the winter and spring, to lay eggs as fertile as they should be. Barley is the most heating and fattening of the small grains. Anything which tends to fatten the hens tends to produce infertile eggs. If fertile eggs are sought, hens should be fed as varied a diet as possible without introducing any fattening food as at least very little of it in proportion to nourishing but non-fattening foods.

Alta.

W. I. THOMAS.

Colony Houses for Poultry

According to Farmers' Bulletin, No. 374, issued by the United States Department of Agriculture the main requirements of a good poultry house are good ventilation and protection from storms and cold winds. Hens will not lay when weather conditions prevent them from scratching and exercising. Many poultry houses have failed because the variations in night and day temperatures were too great. At many of the experiment stations it has been found that open-front houses are more successful than houses with glass windows.

J. Dryden and A. G. Lunn, in a circular of the Oregon Experiment Station, state that:—

"Ventilation can best be furnished by leaving one end of the house open or covered with burlap or canvas, using no glass windows unless necessary for light. The idea of building a warm house should be abandoned. It is shelter that is needed. The house should be built in such a way that the fowls will not roost near the open front where they would be exposed to winds; nor should it face the prevailing winds. A long house is more expensive to build, for a given capacity, than one more nearly square. A long, narrow house is also a cold house, having more exposed surface for a given capacity than a square house.

"The size of the house necessary for a certain flock will vary in different sections. Where there is little or no snow and where the fowls can be outdoors every day in the year, two square feet of floor space per fowl will be ample. Where the climate is such that the fowls will seek shelter part of the year, rather than go outdoors on the range, considerably more space should be provided, say four to five square feet per fowl. The idea should be not to crowd them so much that their activity will be interfered with. Whether the shelter is provided by enlarging the house or providing cheap scratching sheds is immaterial. Two square feet per fowl, or even less, is ample for roosting quarters.

"Poultry keeping is most successful where the colony system prevails. The colony system means the housing of fowls in small houses, preferably portable, where the fowls have free range. The chief advantage is that the fowls are more active or busier than when confined in yards; second, there is less danger from outbreaks of disease, as it is possible to keep the houses on clean ground by moving them occasionally; and third, the fowls require less feeding and care, as they pick up considerable food on the range. Another advantage of this system is that the fowls will rid the farm of many injurious insects, such as grasshoppers. Then, the colony system will fit in with crop rotations and for part of the year the fowls will live on the stubble fields.

"In the construction of the colony house the runners are made of 3-inch by 6-inch by 14-foot rough material and act as side sills for the house. They should be beveled at ends, in order to slide easily. The cross sills are 3 inches by 4 inches by 7 feet. They are set 2 inches into the runners and 12 inches from the ends, and fastened with 1/2-inch bolts. When the siding is put on vertically there is no studding used. The plates are 2 inches by 3 inches by 12 feet, halved at each end. To the plates are nailed the 1-inch by 12-inch by 5-foot side boards, and these are battened with 1-inch by 3-inch. The siding is nailed flush with the top of plate and laps 3 inches on runners. The roof is one-third pitch, or 2 feet 4 inches at peak from top line of plates. There are five pairs of rafters, cut with a 1-inch plumb cut at plate. The roof boards are 1-inch by 3-inch material, set 3 inches apart. The roof is shingled and laid 5 inches to the weather. The front is covered with 1-inch mesh net wire. The cornice is made of 1-inch by 8-inch boards and projects 5 inches outside of walls. The frieze board, 1 inch by 4 inches, is nailed up tight against the cornice. The door is 2 feet by 6 feet and made from 1-inch by 3-inch material. The nest platform is 2 feet from the ground. It is nailed to a cleat on the side of the house and braced from top of runner. The platform is 22 inches by 5 feet. The nests are made of 5-gallon oil cans, the top and part of front being cut out; 2 inches is left of front to hold in nest material, and a small strip at top which acts as a brace. Over the nests is fitted a sloping top, which keeps the chickens from standing on nests, and helps to darken the nests. The dropping platform is made of 1-inch by 8-inch ship-lap, is 2 feet 6 inches from floor in front and 2 feet 9 inches in rear. The slope permits the board to be cleaned more readily. For the same reason the boards should be put on from front to rear. The perches are made of 2-inch by 3-inch material, set flat. They should also be level and about 12 inches from dropping board in front. The roosts are set 18 inches apart."

FIELD NOTES

The receipts of cattle during September and October in the principal western markets in the United States were about 9 per cent. greater than during the same months last year; the receipts of hogs, however, in western markets during September and October were nearly 20 per cent. less than during the same months last year. Prices of hogs at western markets averaged on or about November 1 nearly 30 per cent. higher than a year ago, and cattle approximately 18 per cent. higher.

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Again this year the Commissioner of Immigration has selected sample grain from the Carstairs district for sending to the United States and European countries as samples of Canada's product. Recently Messrs. Simon Downie & Sons shipped to the immigration department at Winnipeg five carloads of sheaf oats and wheat. The grain was selected by the Government's representative from the farm of W. H. Wood, a few miles northeast of Carstairs. The quality of the grain excited the admiration of all who saw it.

City's Interests in Good Roads

The city of Winnipeg has shown an interest in good roads for the surrounding municipalities by offering Kildonan gravel for road construction free of charge. Gradually the city fathers learn that good roads on leading highways from rural parts are essential to the progress of both country and city. Kildonan already has taken steps to provide good roads, and last year paid five cents a yard at the pit for gravel used in road construction. The city's offer will likely be taken advantage of.