

of that year. The fruiting varieties were all of crab descent.

Cherry and plum trees continue to prove unsuitable to the prevailing conditions; but currants, raspberries and gooseberries do well and are represented by a number of varieties.

Potatoes, cabbages, cauliflower, lettuce and radishes produce good crops of high quality, not only in the coastal region of Sitka, but also at the interior stations of Rampart and Fairbanks.

FARM BULLETIN.

Circumstantial Evidence.

By Peter McArthur.

Mr. Klugh's article on hawks in the issue of May 27th caused me some uneasiness, and after investigating I am afraid that I have been destroying some valuable friends. He said, "The hawks which commit depredations in the hen yard are very seldom seen. They are not birds of the open country or given to sailing in the air, but make a sudden descent from the cover of the woods and a sudden return with a chicken." The hawks whose housekeeping I have been breaking up regularly every spring for the past four years are given to soaring, and may be seen circling in the sky almost any fine day. I am not sufficiently familiar with hawks to know the chicken thieves at sight, and circumstantial evidence seemed convincing against the ones I have been persecuting. There is a tree on a neighboring pasture farm that has had a hawk's nest in the top of it since the memory of man runneth. When we moved in four years ago the hawks that were occupying that nest were certainly chicken thieves. They came just as Mr. Klugh describes, making a sudden rush and capturing a chicken. Before I got after them they had taken at least a score of broilers. I saw them in the act, but they were always too sharp to come within range of the shot gun. After getting a chicken they flew straight towards the nest, and there is no doubt that the broilers were taken to feed their young. If we were to have any chickens that year, this pair of "robber barons" had to be routed out, and getting a rifle I shot up the nest. As some of the bullets sent feathers flying it was quite evident that the young hawks were at home, and I made a thorough job of the work of destruction. The old birds hovered around screaming for a couple of days, and no doubt protesting against the application of the Mosaic law, by which the sins of the fathers are visited on the children. Then they disappeared, and we lost no more chickens that season. Next spring the nest was occupied again, and, acting on the very general belief that birds come back to their old nests, I decided that our enemies of the previous year were with us again. It is true no chickens were taken, but remembering that an ounce of prevention is worth a pound of cure, I sent several ounces of lead through the nest when the young hawks had reached a size where they could be seen stirring. Last week I performed this yearly function, but I am inclined to think that it was not only unnecessary but a mistake. The hawks that have occupied the nest this year have been particularly noticeable for their soaring, and they have never come near enough to the buildings to frighten the chickens. The evidence is all in their favor. As nearly as I can judge from descriptions, they are of the beneficial kind that are commonly called hen hawks. After reading Mr. Klugh's article I tried to find out something more about hawks and their habits, and learned from C. W. Nash's book, on The Birds of Ontario, that "Cooper's Hawk," the worst chicken thief in the lot, very often takes the nests of other large birds instead of building for itself. I am now inclined to think that the occupants of the nests four years ago were a pair of these destructive birds, and that since then it has been occupied by harmless varieties. If my suspicion is true, we have, in this, another proof that circumstantial evidence is not to be relied on.

"What if my house be troubled with a rat," asks Shylock, and there is only one answer. The rat must be killed. This spring there has been a veritable plague of rats in this district. Every time old boards or rails are removed or a stack bottom cleaned up, the dog has a few seconds of excitement killing rats. This morning a manure pile yielded twelve, and one big wily one got away. A barn that was moved in the neighborhood a couple of weeks ago yielded an incredible number. Over three hundred were killed when the foundations were shifted. As rats are dirty, destructive and disease-bearing, something should be done to stamp them out when they become so plentiful. This year we are fairly free from those winged rats, the sparrows, because an active boy with a rifle has been making things lively for them ever since

Santa Clause visited us last Christmas. As no other birds have been interfered with, they are unusually plentiful in the orchard and among the shade trees. There are orioles, blue birds and song sparrows all about the place, and I understand that the sparrows are accused of driving away these native birds. Mistress Jenny Wren is now occupying a vacant sparrow's nest, and by the way, this has raised a question which I am unable to answer. If Mistress Wren's name is "Jenny" what is Mr. Wren called? And what does he look like? We never see but one at a time. That one is always either singing frenziedly, or popping in and out of the nest. Is it Mr. or Mrs. Wren? We are all anxious to find out. While working in the orchard this spring I noticed something in favor of the song sparrows which I have not seen recorded. I saw a couple of them very busy among the blossoms, and by watching them with an opera glass decided that they were eating the aphids. This shows that it is a wise move to drive out the sparrows, and give our little native friends a chance.

This week we had a visit from Mr. Whale, our district representative, and Mr. Neilson, of the Fruit Branch. They were making a round of the orchards hunting for the San Jose scale, and I was delighted not to be able to provide them with any specimens. They were surprised, however, to find how severely our orchard had been affected by the frost. Yesterday I had a letter from Mr. Whale in which he said that our orchard had been damaged more than any they had visited. We had a wonderful showing of blossoms, but it hardly seemed worth while to give the third spraying. We gave it, however,

fact that it was his custom to haul out the manure to his orchard in the winter. He would put a thin layer on the snow, around the trunks of the trees. This would keep the snow from melting, and his orchard would not bloom until a week or two later than other orchards in the district. That reminded me that a couple of years ago I noticed some trees in a neighboring orchard that were in bloom a couple of weeks after all the other blossoms had fallen off. On asking the cause I learned that a snowdrift several feet deep had gathered along the fence under these trees during the winter. These things led me to believe that it might be a good idea to do something to delay the blossoming of the apple trees in the spring. I shall try to find out about it before next spring, for we have certainly been hit hard this year.

Road Management.

Many roadmakers make the serious mistake of omitting to allow sufficient for cost of maintenance. A United States bulletin on "Repairs and Maintenance of Highways," treats of the management of country roads in this manner:

The repair and maintenance of public highways has suffered greatly from poor administrative systems. Such work is necessarily of a more routine character than the work of new construction, and the failure to recognize its importance has in the past led road officials to subordinate it to the execution of new work. It would seem that at just the point in road operations where stimulus of effective organization was most needed it has been absent. The only successful attempts at systematic repair and maintenance that are on record are those attempts which have been managed with skilled and strong central control. Almost without exception, those States which have undertaken State aid in any form for road building have, in the annual reports, reiterated the necessity of removing the responsibility of repair and maintenance of such roads from local authorities. In a number of States this change has been made, and the results have been an immediate improvement.

Viewing public roads as a whole, the defects of subdivided administrative units are conspicuous. The number of men who have more or less authority and personal direction over road matters in some sections of the country is extraordinary. There are at least 150,000 such road officials in the United States. The term of office of these men is but a year or two, and rotation in the office tends to be the rule.

A fundamental difficulty with the organization of road systems, which must handle repair and maintenance appears to be the failure to recognize that road work is a trade which requires training. Training for road work must necessarily be obtained at the expense of the community. As a rule, road officials are not in office long enough to mature their experience, and there is constant economic waste of road funds.

Repair and maintenance operations upon all public roads necessarily extend over a period of years. In order to secure sufficient execution of such operations, a comprehensive plan for several years is necessary. The work for each season must be carefully laid out in advance as far as possible. When maintenance work has been seriously undertaken under such a system it has responded with gratifying results. Whatever the civil subdivision may be which constitutes the administrative road unit, a good road map showing all the various classes of roads is desirable.

It has been found that the best results fol-



Easily Satisfied—That's All He Wants.

so that even if we have only eating apples they may be clean. The heavy frost may perhaps be explained by the fact that part of the orchard was on low ground, and none too well drained. It is protected from the north by a thick row of maples, while the south side is exposed to the sun. As the ground was well worked last year and manured again this spring, it is probable that the blossoms were more advanced than in other orchards, and in that way more liable to damage by frost. As nearly as I can find, by examining the trees, all the Peewaukees, Ben Davis and Red Astrachans were killed. The Spys, being later in blossoming, did not suffer so severely, and there seems to be a scattering of fruit on the Baldwins. Anyway, it is not likely that I shall have to do any thinning this season. The experience has brought me some news that may be worth considering. A farmer, who used to live some miles from here, always had apples, even when his neighbors lost theirs through spring frosts. This is attributed to the