made much more economically when it is used with grain, than without it.

Among the soil-enriching crops, alfalfa takes first place, and of this I will now speak.

Alfalfa belongs to the same order of plants as clovers, and it enriches the soil the same as all clovers do, by the growth of bacteria upon its roots. These bacteria have the power to take nitrogen from the air and store it up. When the ground is then plowed, it is found to have been wonderfully improved by the addition of the nitrogen. Then, by its deeply-penetrating roots, it feeds upon the lower depths of the soil, and draws up to the surface the stores of fertility of the lower soil. Thus, the surface soil is greatly enriched. When alfalfa is again sown on this soil, the crop will yield better than before. Of course, in time this will not hold good, as the soil will become exhausted of the mineral elements of plant food. Then it will be found necessary to add something to the ground in the shape of fertilizers. However, alfalfa adds to the available fertility and increases the productivity of the land in several ways. The bacteria on the roots of the plants take nitrogen from the air, and change it into food for the plant. Much of this nitrogen is contained in the roots, and when these are plowed up and decay, the soil is very greatly enriched in nitrogen. Also, much rich material is brought up from the subsoil, and made available as plant food. The continued dropping of leaves also adds to the humus and nitrogen of the soil.

Estimates made at the New Jersey Experiment Station indicate that the plantfood gathered by an acre of alfalfa in two years was equal in nitrogen to that contained in 3,500 pounds of nitrate of soda; in phosphoric acid, to that contained in 600 pounds of superphosphates; and in potash, to that contained in 1,200 pounds of muriate of potash; the whole having a commercial market value of $124.00.

Then, if the farmer who has some depleted land is able to get an alfalfa field established, and saves the hay from it, he can, by feeding with care, saving the manure, and putting it out upon another tract of land, enrich this sufficiently to grow alfalfa. Thus, now, by growing two fields of it, using the hay and saving the manure, he is able to enrich a third field. Thus, in a short time he may have all of his farm in a productive state, and yielding him profit, where before he had loss.

Thus we get a slight idea of the value of alfalfa as a crop and as a feed. G. S. DUNKIN.
O. A. C., Guelph.

Thin Seeding of Grain.

Editor "The Farmer's Advocate":

An old and influential journal like "The Farmer's Advocate" must time and again refer to the same topics. This is needful, if the paper is to do its duty faithfully. We must remember that every year adds new readers of its instructive pages, many of whom have become subscribers because of lack of necessary knowledge in a calling new to them. Talking with a young man whose father was a tradesman, and who had recently bought a farm for the boys, he spoke of how they were handicapped for want of farm knowledge. When asked what farm papers they took, he replied: "None; father does not believe in them." "That is bad," I said. "Yes," he replied, "I know it is. Only last year we were stuck, not knowing what to do, when, by chance, I got a copy of 'The Farmer's Advocate,' which contained the very information we needed, and it was worth dollars to us." Doubtless, many could give like testimony. So, when we see articles on familiar topics, we may be sure that someone will find it interesting and instructive reading.

The quantity of seed grain to sow per acre for best results is a much-disputed question. Some argue that the better the land, the less seed is required, and, for poor soils, more; others hold the opposite view. We give here our experience, which may be helpful. We space our fruit trees to allow for root and branch development. We thin our roots for the same reason. Plants of all the grains require the same consideration. As a general thing, wheat, oats and barley are sown too thickly, while peas are not sown thick enough. It is computed that there are in wheat, per pound, 13,920 grains; barley, 12,000 grains; oats, 12,000 grains; large peas, 1,600 grains; small peas, 3,840 grains. At this computation, one bushel of each variety per acre would give, of wheat, 19 plants per square foot; barley, 13; oats, 9; large peas, 2.2; small peas, 5.3, or, it allows 7 square inches per plant for wheat, 11 for barley, 16 for oats, 65 for large peas, and 27 for small peas.

These figures seem to show that one bushel of seed per acre should be sufficient for wheat and barley; oats would require somewhat more, and peas much more. Our experience justifies these conclusions. We have grown very heavy crops of both wheat and oats from one-bushel sowing. Last year we sowed one acre of barley with one bushel, and the rest of the field with one-half bushel per acre. At harvest time there was little difference in the appearance of the whole field; the thin seeding gave the plumpest sample. One season we sowed thirty acres of fall wheat. We sowed part at the rate of 2½ bushels, part at 1½ bushels, and part at 1¼ bushels. It was a good wheat year, and at harvest all of it appeared equally good. The thick seeding gave most straw, but the heads were shorter. We threshed 1,200 bushels off the 30 acres. If the fall seeding is favorable, we now sow about 1½ bushels per acre, and consider any more a waste of seed. For spring grain, we usually sow about 2 bushels oats, 1½ barley, and 3 bushels of small peas; large peas would require 4 bushels. We have observed that side-oats do not tiller as do branching oats, and require to be sown thicker. Peas require thick seeding, for the reason that insects and cutworms eat so many of the plants.

The advantages of thin seeding are a saving of seed, longer straw and heads, a plumper sample of grain, and it gives grass and clover seeds a better chance. The disadvantages are a greater liability to go down by heavy storms, and, should an early drouth occur, the stand may be too thin to yield well.

The advantages of heavy seeding are shorter straw, and more of it; not so liable to go down by wind-storms, and gives less chance for weeds to grow.

In closing, we would recommend the sowing of one acre of each class of grain thinly, and reserve that acre for seed, letting it stand until fully ripe. The grain will then have a better-developed germ, be plumper and heavier, and consequently will be worth much more for seed for the next season. This is especially true of barley; no grain suffers so much from early cutting; the straw being soft and weak, the hot weather dries it out before the grain is matured. FOYSTON BROS.
Simcoe Co., Ont.

Elevation of Mr. Loghrin's House.

Field-crop Competitions.

In connection with the Field-crop Competitions, to be held throughout Ontario, provision has again been made for sheaf and threshed-grain exhibits at the autumn and winter fairs. Following are particulars of these two phases of competition:

Grain Exhibit at Winter Fairs.—Prizes will be offered by the Department for two-bushel sacks of grain at both Guelph and Ottawa Winter Fairs, the competition for which will be confined to prizewinners in the Standing Field-crop Competitions. Fuller particulars will be furnished later to the prizewinners.

Sheaf Exhibit.—In addition to the above, arrangements have been made with the directors of the Canadian National Exhibition, to be held in Toronto, August 27th, to Sept. 12th, to donate $240 in prizes for the sheaf exhibit of grain from the fields in the Standing Field-crop Competitions. Those eligible to enter are the first, second and third prizewinners. For this sheaf exhibit, the Province has been divided into three districts, and prizes amounting to $80 will be awarded to competitors in each of the three divisions mentioned below for the following kinds of grain:

Fall Wheat.—First prize, $6; second, $5; third, $4; fourth, $3; fifth, $2.

Spring Wheat.—First, $6; second, $5; third, $4; fourth, $3; fifth, $2.

Oats.—First, $6; second, $5; third, $4; fourth, $3; fifth, $2.

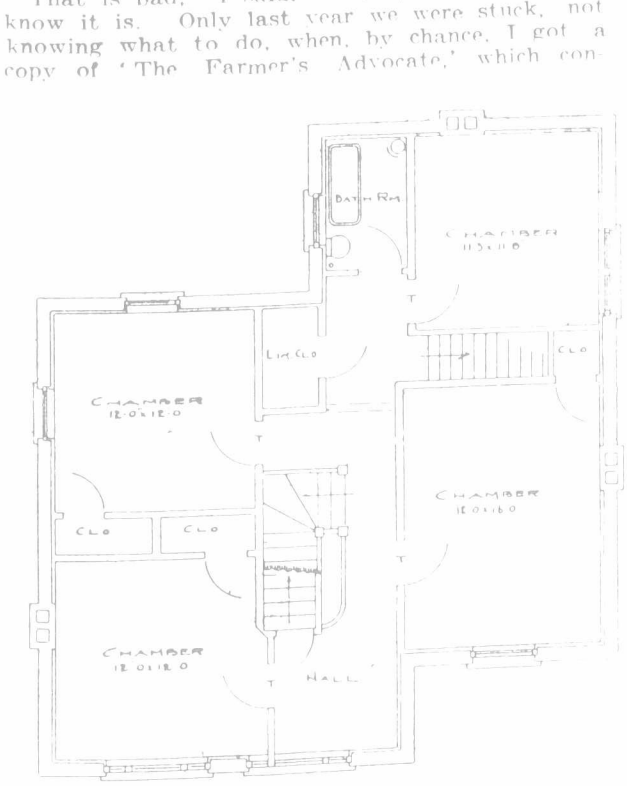
Barley.—First, $6; second, $5; third, $4; fourth, $3; fifth, $2.

Division 1.—Includes Muskoka, Parry Sound, Haliburton, Nipissing, Manitoulin, Algoma, and other districts in New Ontario.

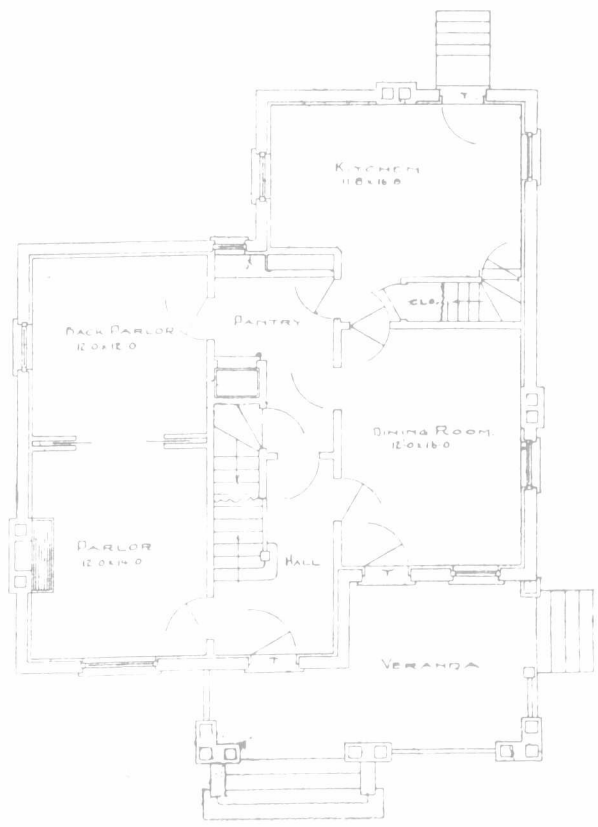
Division 2.—All counties east of York and Simcoe.

Division 3.—York, Simcoe, and all counties west and south-west of same. Each sheaf must not be less than eight inches in diameter, and must be boxed, and shipped C. O. D. to the Superintendent of Agricultural Products, Exhibition Park, Toronto, not later than August 20th. All entries for this exhibit must be made to J. Lockie Wilson, Parliament Buildings, Toronto, before August 1st, 1910.

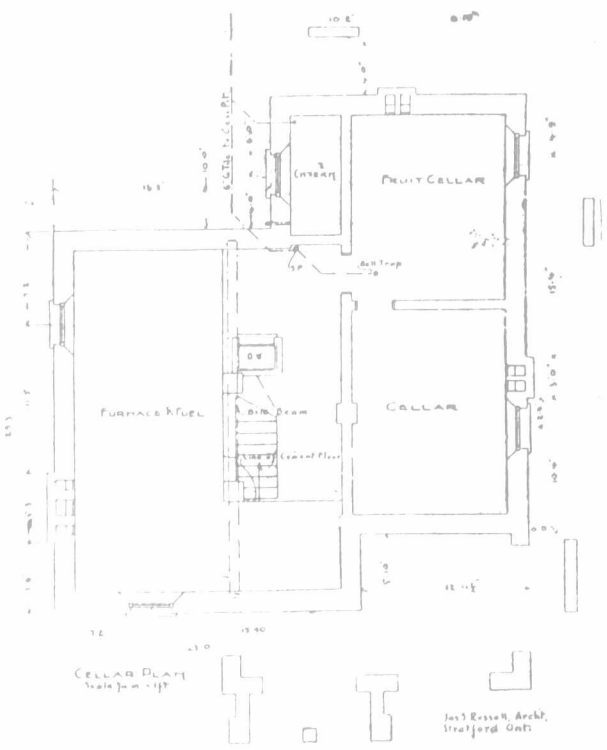
In addition to the above, the Directors of the



First-floor Plan of Mr. Loghrin's House.



Ground-floor House Plan.



Cellar Floor-plan of Mr. Loghrin's House.

Submitted without description, in Building-plan Competition, by Thos. A. Loghrin, Perth Co., Ont.