The three exceptions were clearly not traceable to the site chosen, because neighbors in precisely the same positions were successful. In first of these three cases, the grain put in at different depths, and the shallow-drilled seed, though sprouting with the rest, did not survive the winter. In the second case too many heavy cattle were, I think, allowed to roam on the field, uprooting and hoofing much of it, only about a remnant of the crop survived, but that remnant is doing well. Small cattle, however, do no harm. In the third case, the grain was put in on September 27th and October 1st, and though sprouting an inch or so before winter, and a portion actually surviving the winter, the bulk perished. Aspect, therefore, seems to be a great feature to be regarded.

Equally, or even more so, to be considered is the date for seeding. Farmers east of Red Deer advocate seeding between July 15th and August 1st. One or two seeded on August 15th in 1901. But the July seeding produced the heaviest crop. In both cases the variety sown was the Kansas Red. One farmer seeded on September 1st and 7th, and, thanks to an unusually open fall, during which vegetation continued till late, he secured a good growth before frost set in, and successfully wintered the crop. That these late dates are somewhat risky may be inferred from the fact that this crop was very irregular, part heading out on June 20th and part only six inches high.

One characteristic peculiar to fall wheat it is as well, perhaps, to remind those of our readers who contemplate trying it for the first time, is that as it is sown by, at any rate, not later than the first week in August, and is not harvested till say August 15th of the following year, they should lay in a stock of seed, enough, housed in good granaries, to carry them through next year's seeding also. An experiment, in order to try whether it was possible to seed the same year from the current harvest was made by Mr. Skinner in 1901. For nine years he had grown fall wheat and harvested without a failure on 10th to 15th August. In 1901 he cut somewhat earlier, with the result that grain was not properly mature, and became ruined for seed. Fortunately, he had still some old seed, which he put in, and last year had a very fine crop.

With regard to depth of drill, experience seems to show that the seed should be drilled in just as deeply as the drill can be set—a depth of not less than three inches.

Four kinds of fall wheat are grown around here: the Kansas Red, White Fife, Dawson's Golden Chaff, and White Clawson. White Fife is a heavy cropper, and has been grown successfully for several years. It is a very good wheat, but perhaps a shade less firm than Kansas Red. The same may be said with regard to Dawson's Golden Chaff. White Clawson seems to be thought by many to be somewhat too soft.

There is no doubt that the successful wintering by so many farmers of fall wheat, coupled with the many advantages—e.g., fields clean of weeds, a time of comparative leisure for seeding, an early harvest (before frost or snow)—will induce many more men to try.—[Blackfold's Mercury.

Canadian Butter.

One of the most important functions of government is to ensure pure foods for the uses of the people. Bogus or imitation products should not be allowed to masquerade as the genuine article, thus deceiving and injuring the public. Once such articles gain a foothold under any guise it becomes almost impossible to regulate or control them; hence the necessity for efficient prohibitory measures. Like Canadian cheese, our butter is now securing an enviable reputation in the world's markets for purity and excellence, and this should be sustained. The manufacture or sale of oleomargarine or butterine is already prohibited under penalty in Canada, and a bill has been introduced in the Dominion Parliament by Hon. Sydney Fisher, Minister of Agriculture, including the foregoing provisions, and also prohibiting the manufacture or sale of renovated, adulterated, or "process" butter; also, that only butter made in a creamery shall be marked "creamery"; that any butter containing more than 16 per cent. of water shall be considered adulterated, and forbidding the use of any acid, alkali or chemical to cause butter to absorb water. The United States has legislated against "process" butter, and it is said that manufacturers design transferring their operations to Canada. With the establishment of dressed meat enterprises in Canada, attempts may be made to promote the "oleo" or butterine business. Dairymen should keep their representatives in Parliament warned against conceding any points that might subsequently militate against the interests of legitimate dairying. Care must also be taken that bogus products from the United States are not permitted to be shipped through Canada, thus endangering our good name in Great Britain

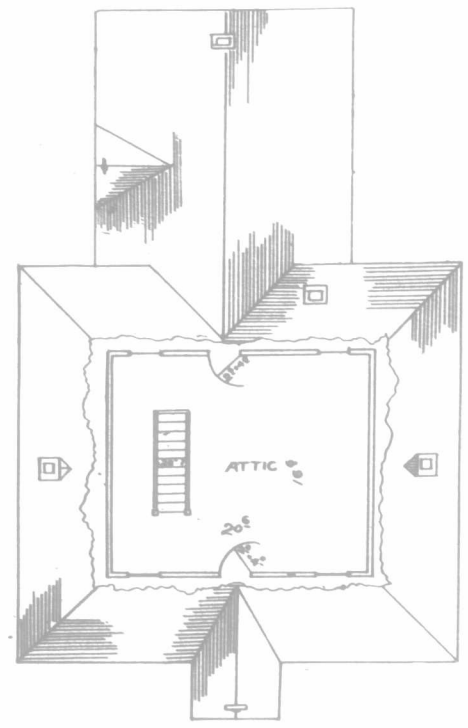
House Plans.

The plans here illustrated are those of W. R Motherwell's house at Abernethy, Assa

Experiments with Clovers.

BY K. M'IVER, VIRDEN, MAN.

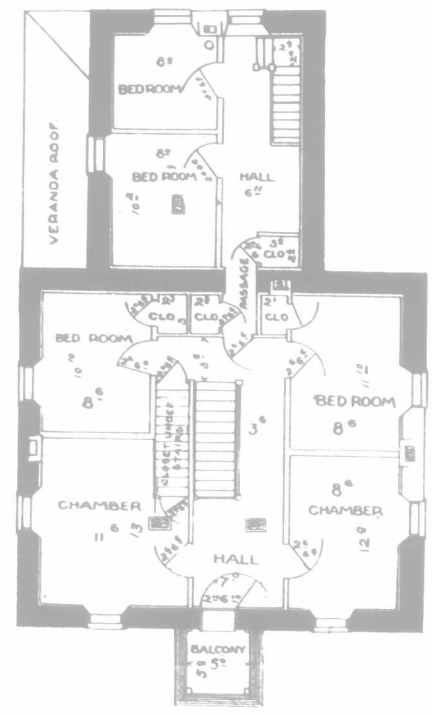
A thing greatly to be desired by the farmers of this country is a clover suited to our climate and variation of soils. Seventeen years ago I tried a plot of every clover and grass then known to me. The soil was light sandy loam (backsetting), and with all the varieties I got a good catch. Every one, however, got winter-killed, except a few plants of White Dutch clover. Two years later I tried Alsike and White Dutch mixed



ATTIC PLAN, SHOWING RIDGE AND VALLEY LINES OF ROOF.

with Kentucky blue grass. One part of the field was wet, springy soil, and on it they stood two winters. In 1901 I sowed some alfalfa, mixed with Western rye grass; last season there were a few plants living, but I cannot see any this spring. Last year I ordered a few pounds of Mammoth Red, but got Crimson instead. I sowed one pound per acre, in a mixture I was sowing for a bull pasture. This has wintered nicely, except on a sandy ridge.

By the courtesy of Prof. Spillman, Agrostologist, Washington, D.C., I got some Turkestan Alfalfa seed last season. I sowed it on a piece of very light sandy soil, to the west of a shelter belt, in June. It had, therefore, no protection during the winter except a good covering of snow. It stood the winter all right, however, but got slightly thinned owing to the spring frosts. It



SECOND-FLOOR PLAN.

now (June 12th) stands from one to two feet high.

I am of the opinion that from the seed of clovers grown here, varieties could eventually be grown that would be perfectly hardy. The experiment is certainly worth trying, as leguminous plants, so badly needed at present, certainly will be encouraged, as the almost exclusive system of wheat-raising is surely, if slowly, reducing the fertility of our soil. Wheat practically can only be maintained by [illegible] the amount already contained [illegible] by systematic farming, growing as much as possible of leguminous plants and grasses. Our cousins to the south of us fell into the same mistake, and almost ruined their soil. The result was they were forced to follow a different system, i.e., growing more clover and grasses and keeping stock to consume the same. Now their land is worth from $60 to $100 per acre; but it must also be borne in mind that they have considerably the advantage of us in climate, as they grow clovers of all kinds, besides a variety of other nitrogen-collecting plants, such as soy beans, cow peas, etc. My experience with common peas for the above purpose has not been very encouraging. Last year I sowed one bushel per acre with oats; the mixture threshed fifty bushels per acre, with only forty pounds of peas. I am trying the same mixture this year, with a bigger percentage of peas.

Progress in Wheat Breeding.

BY PROF. W. M. HAYS, MINNESOTA AGRICULTURAL COLLEGE.

A few words in a general way concerning the progress of our breeding of wheat may be of interest to your readers. This work was started 14 or 15 years ago, by collecting hundreds of samples of wheats from America, and from other continents. Nothing was imported that proved better than Fife and Blue-stem for the fields of the Northwest. In 1892 systematic efforts were begun to breed these two standard wheats by selection, and also to improve them by hybridizing them with other superior wheats. Out of the first lot of 31 varieties, started from single mother plants, eight proved to be better yielders than the parent wheats, and the best two varieties have been widely distributed. One of these wheats, Minn. No. 163, bred from a Fife foundation, was distributed by the Minnesota Experiment Station in 1899, 1900 and 1901. In trials by the experiment station for five years it had averaged a yield 2.8 greater than its parent. In trials by farmers all over the State in 1899 this wheat yielded an average of 18.1 bushels per acre, while the wheats it was displacing yielded 16.7. An increase of 1½ bushels per acre is worth $1 an acre, or an added value of about $6,000,000 to the wheat crop of the State. The problem of securing the general adoption of superior varieties is quite as important as breeding them. It is estimated that this variety was so widely distributed that 60,000 acres of it were grown in Minnesota in 1902, and that 100 to 200 thousand acres will be grown in 1903, thus demonstrating the wisdom of methods of distribution in vogue by the Minnesota Station.

A variety of Blue-stem wheat also stood out prominently as the best yielder, and was distributed in the spring of 1902 under the name "Minn. No. 169." In five years' test at University Farm this sort averaged nearly six bushels more per acre than its parent. Reports made last season by many farmers show that their common wheats yielded an average, for 89 farms, of 18.2 bushels, while Minn. No. 169 on the same farms gave an average of 21.5, a gain of 3.3 bushels per acre, nearly 19 per cent. Nearly 400 farmers purchased four bushels each of this wheat, at $1.50 per bushel, and planted it in 1902 to raise seed. Many of them sold some seed; others planted all they raised. Next season many will have it for sale.

Other varieties which have been originated by selection have been taken to the field tests, and some of these promise still greater increased yields, and will, no doubt, be distributed within several years. Still other varieties are just now passing from the nursery selection to the field tests, and from them, in turn, will be selected those which yield the greatest values per acre. The breeding of wheat has been reduced to a regular system, and there is reason to believe that the yields of a State may eventually be increased twenty-five per cent. by breeding alone. Of course, this is separate from the increased yields that come from better rotation of crops and better methods of farming generally.

Catsfield, Battle, England.

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