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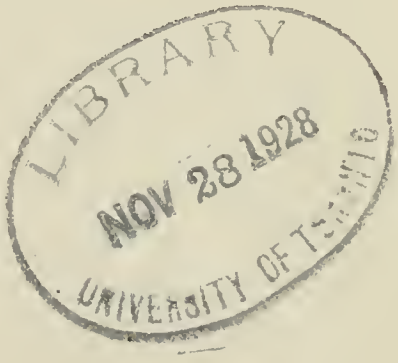
THE ARRANGEMENT OF FARM FIELDS

By J. I. FALCONER

Department of Rural Economics



THE OHIO STATE UNIVERSITY, COOPERATING WITH THE UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL COLLEGE EXTENSION SERVICE, CLARK S. WHEELER, Director

FREE—Cooperative Agricultural Extension Work—Acts of May 8 and June 30, 1914

The Arrangement of Farm Fields

Convenience and economy of operation are of prime importance in determining the most desirable field arrangement. So far as it is practical to do so, the farm fields should be arranged with these two points in view. It is apparent, however, that the best possible layout of any particular farm may be far from ideal. It will depend upon the contour of the land, the uniformity of the soil, the boundaries of the farm, the prevalence of highways, right-of-ways, rivers or other natural obstructions, etc. It is evident also for the same reasons that a good field arrangement for one farm may not fit another. It will vary with the type of farming followed, the soil, and the rotation system.

The present arrangement of many Ohio farms is the result of accident. Farms, especially those in the eastern one-half of the state, were laid out in the days when farm work was done with hand implements, and a small field was no disadvantage; when land was plentiful and cheap, and a few acres of waste land was of no consequence. Farms which were at one time well arranged have since had land added by purchase, or by the clearing of new land; or have had land taken away by sale, by the division of estate, or for other reasons. These changes frequently result in a field arrangement which is inconvenient and uneconomical. A change in the type of farming, the purchase of a tractor, or the drainage of wet, low spots frequently makes desirable the rearrangement of the fields. When a haphazard cropping system gives way to a definite crop rotation it is often found advisable to make permanent changes in the field arrangement.

The question of farm layout involves the location of the fields with respect to the buildings and highways, the size, shape and arrangement of the fields, the location of lots, gardens, etc. A practical, well-balanced farm business cannot be built up without a great deal of careful planning. The ease with which the farm may be operated and the consequent financial returns are largely dependent upon the arrangement of the buildings and fields and upon the plans for operating the farm. There are set forth in this bulletin a few general principles which may be helpful to those who wish to work out a plan looking towards a better arrangement of their farm fields.

LOCATION OF BUILDINGS

On a well-arranged farm the buildings should be so located that they will be convenient to the fields. Or, from another point of view, the fields should be convenient to the buildings. The farmstead, however, is a home as well as a place of business; the buildings should therefore be located in an attractive place. The ideal place for the buildings is on a slight elevation, sufficient to secure good drainage, but not high enough to make hauling from the fields or road difficult. Such a location gives better air and a better view. The buildings should be located on well-drained, dry soil. The house should be at least 100 feet from the road. The barn as a rule should be located back of the house, on the same side of the public road, and in a direction from the house opposite to that of the prevailing winds; there will then be less annoyance from odors from the barnyard, and the view from the farmhouse will be unobstructed. The farmstead should be so arranged that the work can be done without loss of time. From the standpoint of economy in operation, the best location for the farm buildings would usually be at the center of the farm; this would make a minimum amount of hauling and reduce the time required in traveling to and from the fields. When it is considered, however, that the farmstead is a home as well as a center for the farming operations, it will usually be found desirable that the buildings be located by the side of the public highway, where traffic can be seen. The farmstead as a home, as well as the matter of convenience to fields, should always be considered in locating the buildings. The many objections to being located away from the public road more than offset the advantages of being near the center of the farm. Comparatively few farms in Ohio are so located as to have land on both sides of the public highway, where the farm buildings can at once be in the center of the farm and by the side of the highway. Farms with buildings off the highway do not sell as well.

ACCESS TO FIELDS

The products of the fields are brought to the farmstead for preparation for market or to be fed to livestock, while the manure from the barns and barnyards should be taken back to the field to aid in maintaining the fertility of the soil. Easy access lessens greatly the labor in traveling to and from the fields, in hauling the crops, and in returning the by-products to the fields. It makes more certain the even distribution of manure over the farm. Steep grades between the buildings and the fields should be avoided. A large number of trips are necessarily made to and from the fields in

preparing the land, and in cultivating and harvesting the crops. If each of these trips is only a few rods longer than is necessary, or if there is a steep grade to haul up, much loss of time will result. Such loss is expensive and increases the cost of operation. Anyone can figure the approximate time lost in going to and from distant fields with his particular type of farming, and determine the approximate value of such fields as compared with fields near the barn. As the farming becomes more intensive, as larger crops are grown, and more manure is returned to the ground, the disadvantage of having fields located at a distance from the buildings becomes greater.

SIZE AND SHAPE OF FIELDS

For economy in operation the fields should be large. The small field is wasteful of time in turning. It is expensive to fence. It is not adapted to modern farm machinery. The more horses one drives per team, the more important it is to have long rounds so as not to waste time in turning. With a tractor, large fields are necessary. For most kinds of general farming the fields should be at least 40 rods long; 80 rods is very much better, and 120 rods is still better. The shape of the field is also very important. All irregular shapes are objectionable. A long field is economically worked. Such a field requires less turning which consumes the time of men and teams. The Ohio Experiment Station found that it took an average of 53 hours to produce an acre of corn on rectangular fields of from 10 to 15 acres, and 61 hours on irregular fields of the same size. Unless very large, a field at least twice as long as it is wide is a desirable shape. If large enough to be cut in two for mowing, harvesting or such operations as require going around the field, the square field is of no disadvantage. On hillsides, to prevent washing, the fields should go around the hill rather than up and down. The main fields to be cropped should be of nearly the same size. If the fields are to be pastured, the expense of building and maintaining the fences must be considered. Rectangular fields require more fencing per acre than square fields. A square field of 10 acres requires 160 rods of fence. A rectangular field of 10 acres, 20x80 rods, requires 200 rods of fence. If the fields are not to be fenced this disadvantage of the rectangular field need not be considered. Irregular fields are especially wasteful of fencing and land, and uneconomical to operate. They have too many corners. Where the obstacles are not too serious it pays to gradually combine fields so as to get fields of good size and shape. Whether or not the fields should be fenced will depend primarily upon the desire to pasture

the fields after harvest or whether the rotation calls for one year of pasture. The value of the pasture provided should be balanced against the cost of building and maintaining the fence.

NUMBER OF FIELDS

The number of fields which it is desirable to have on a farm will depend upon the rotation followed. There should be a field for each year of the rotation. In addition to this, many farmers like to have an odd field for miscellaneous or extra crops where more or less of a crop can be grown without breaking up the established rotation. Some have three or four of these small fields and carry on a minor rotation in addition to the main crop rotation. In some cases where there are certain special crops, such as tobacco, potatoes, silage corn, or soiling crops, this may be advantageous, but it is usually desirable to work these crops into the general field system; they can be more economically handled in that manner. The fields in the minor rotation should be located close to the barns and immediately connected with the farmstead.

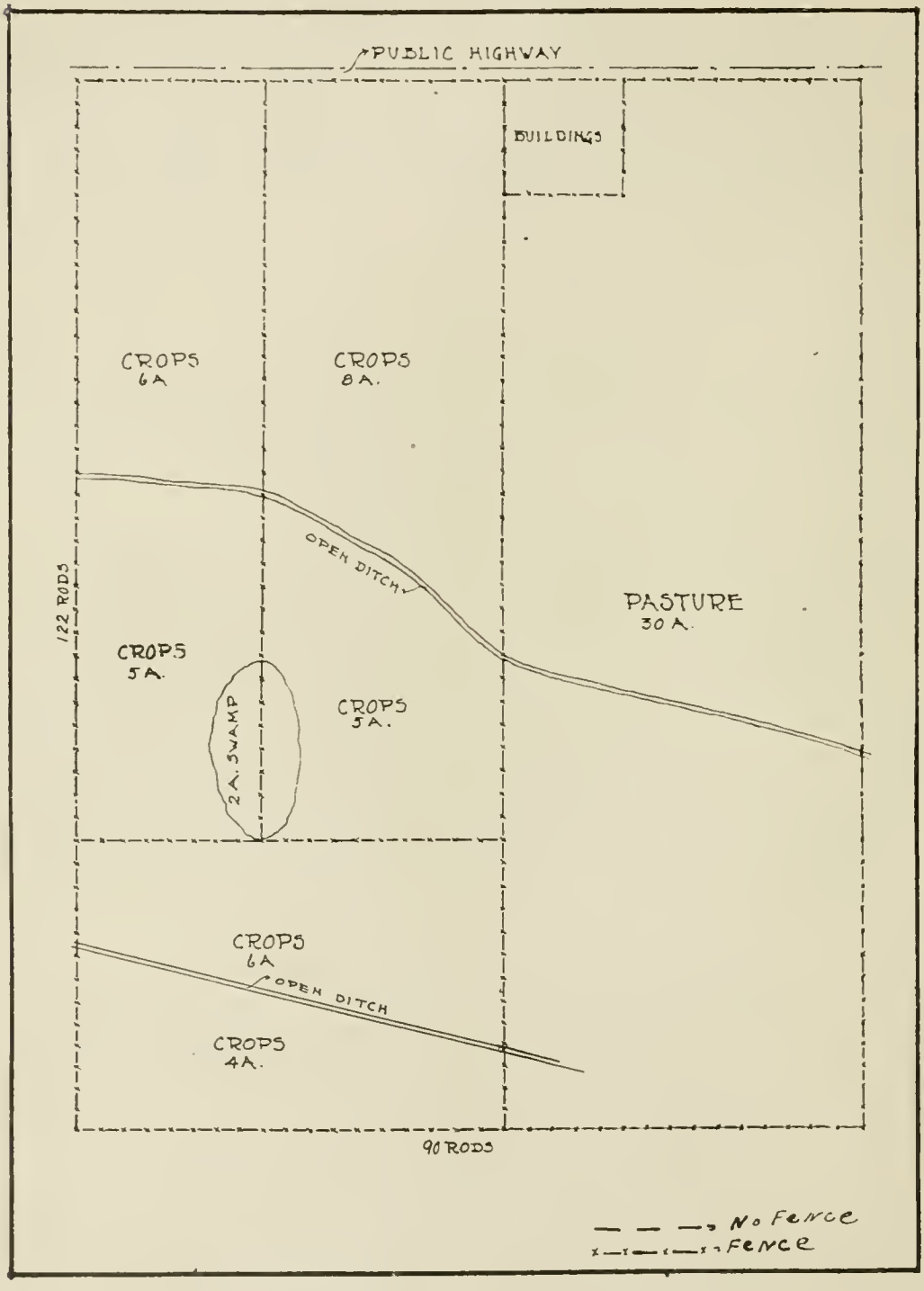
In few instances would it be practical for a farmer to make radical readjustments in the field arrangement of his farm all at once. It is better to have in mind a well-developed plan of what is the ideal field arrangement for his particular conditions and type of farming, and then to work toward this as rapidly and economically as time and means will permit, draining out a wet hole one year, clearing a piece of stump land the next, rearranging a fence the next year, and so on, but always working toward the final desired arrangement. By proceeding in this manner the work can be done at a minimum of expense.

SOME POINTS OF A GOOD FARM LAYOUT

1. In the interests of tillage, harvesting, and crop adaptation, an effort should be made to avoid widely different soil types or drainage conditions in the same field.
2. Fields to be used for pasture should have water.
3. Have the entrance to as many fields as possible near the barn.
4. Have no steep grades between fields and buildings.
5. Long, rectangular fields are more economically worked than square or irregular ones.
6. The main fields should be of nearly the same size.
7. The number of fields will depend upon the rotation followed.

A PORTAGE COUNTY FARM

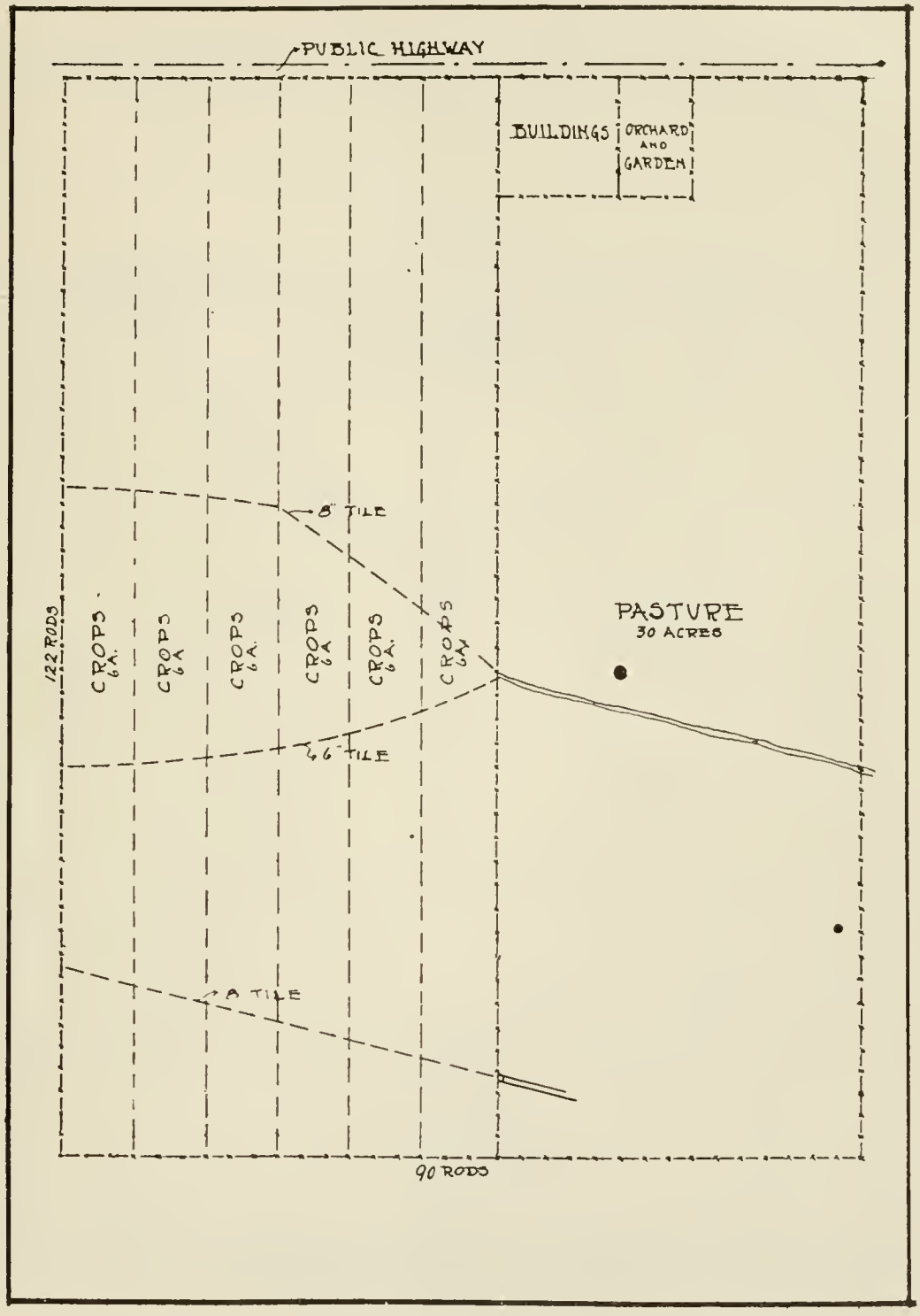
Tile drainage made possible a more economical arrangement of the fields upon this Portage County farm. Three main lines of



Before rearrangement of fields

tile were put in; two of them took the place of open ditches, the third drained out a swampy tract. Two acres of swamp land were reclaimed for cultivation. The two open ditches which had formerly obstructed cultivation and served as a propagating place for weeds

were done away with. The number of the turns necessary to carrying out the field work was reduced one-half. When the drainage was completed and the old fences removed, the 36 acres of crop

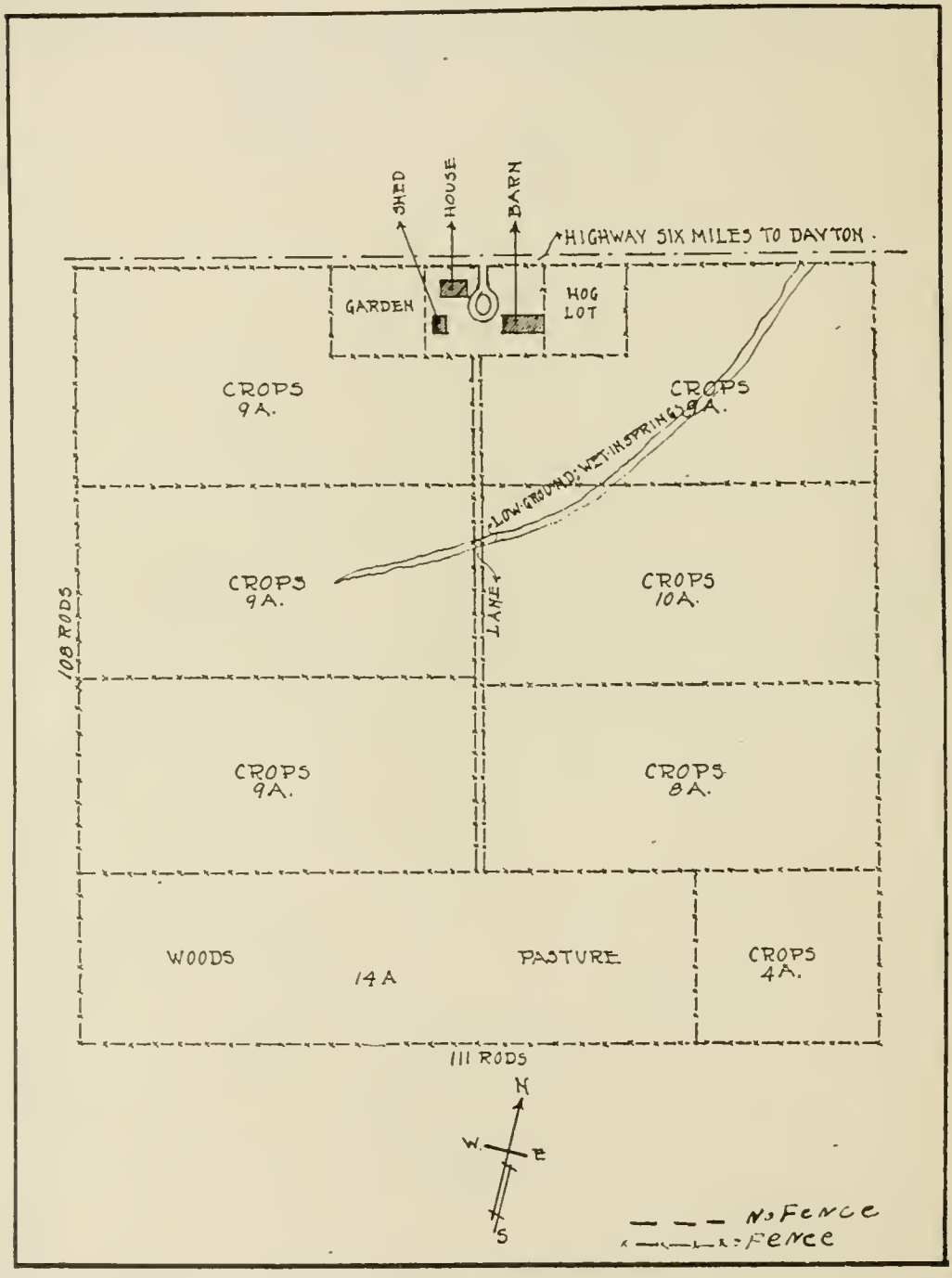


After rearrangement of fields

land made one large tract. It is now cropped as six separate fields with no division fences. The uniform size of fields makes possible a systematic crop rotation and facilitates an even distribution of labor.

A MONTGOMERY COUNTY FARM

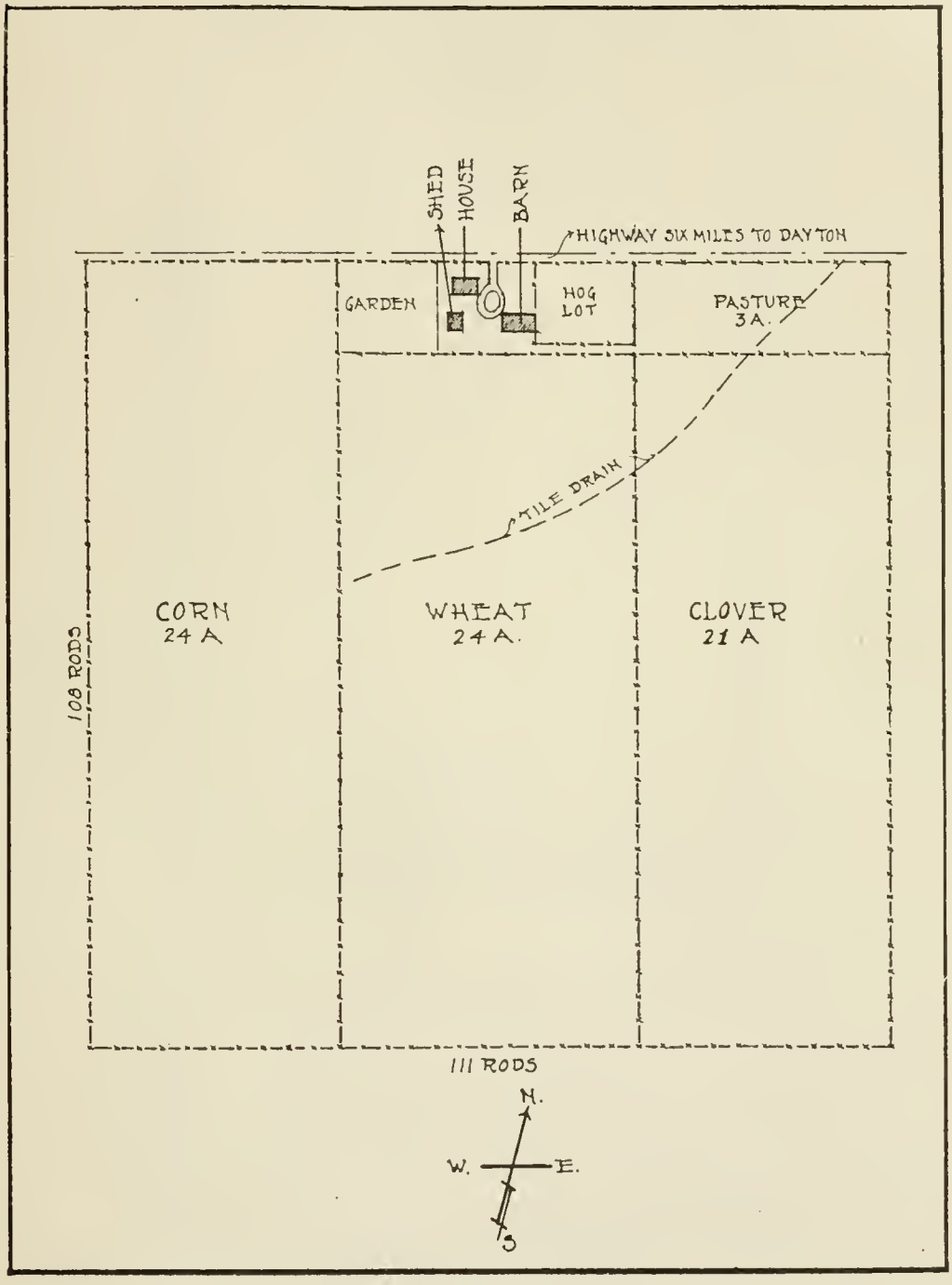
A Montgomery County farm of 75 acres. A string of tile thru the wet swale, the clearing of the wood lot, and the rearrangement



Before rearrangement of fields

of fences resulted in many improvements. The size and the number of the fields was adapted to the rotation. The internal fencing was reduced from 508 to 200 rods, the expense of fence upkeep thereby being reduced. One acre of land was reclaimed for cultivation by

the elimination of the fences. The fields were more economically worked. There was less turning, and larger machinery could be used to advantage. The owner had in mind the possible future use

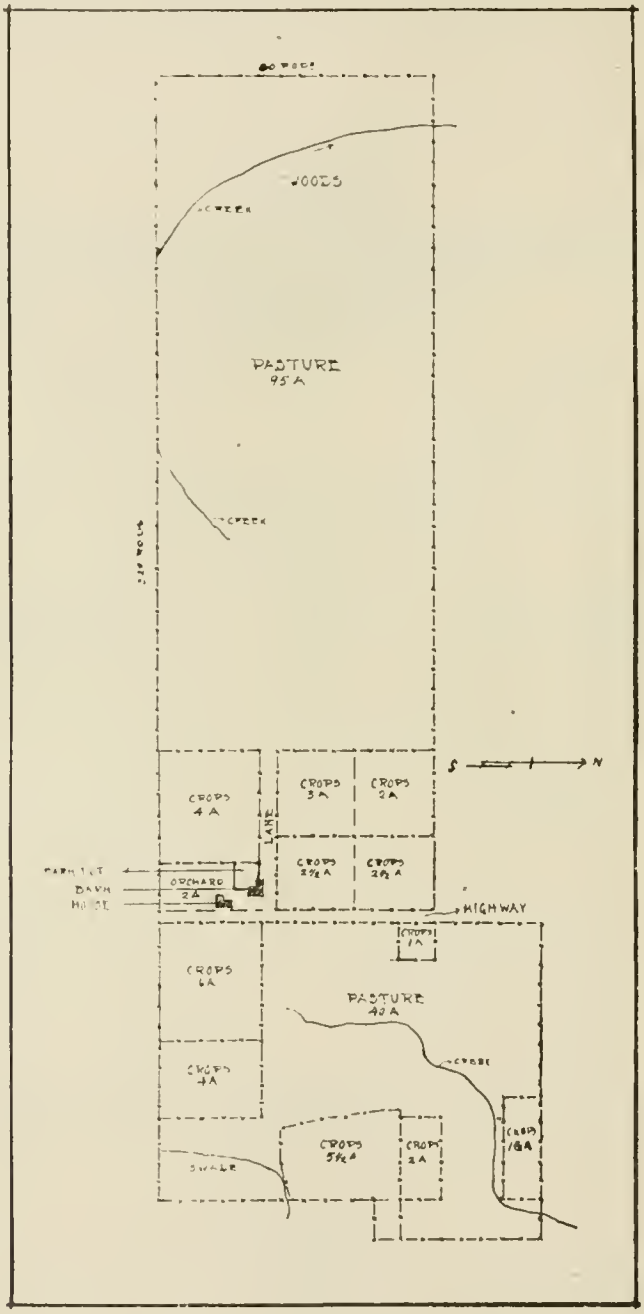


After rearrangement of fields

of a tractor, the economical use of which calls for few turns. The entrance to all fields was made close to the barn. Pasturing the clover field each year makes it desirable to maintain permanent fences between the three main fields.

A GEAUGA COUNTY FARM

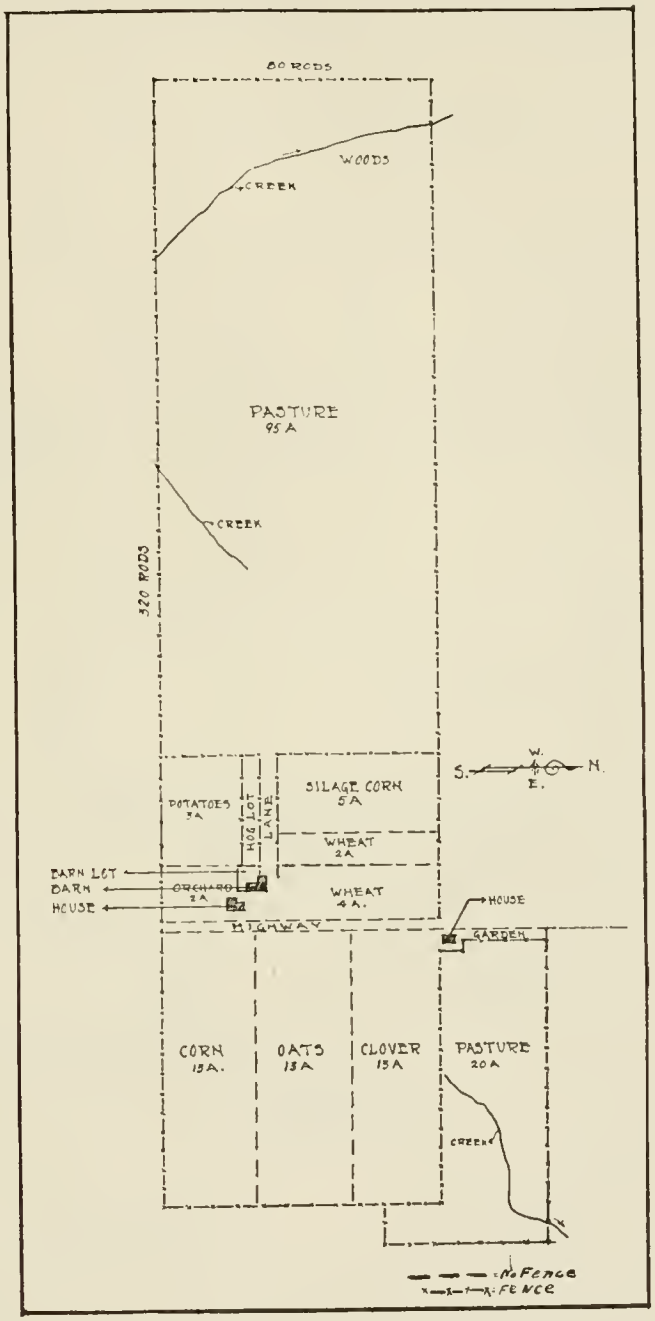
A Geauga County farm of 178 acres. The original farm comprised the land lying on the west side of the public road. The land on the east side was added by three separate purchases. The south



Before rearrangement of fields

one-third 40 years ago, the middle one-third 20 years ago, and the north one-third 3 years ago. A gradual readjustment has perfected the arrangement shown in the above maps. The clearing of brush and the elimination of two wet runs by tiling enabled much of the pasture land on the east of the road to be taken into cultivation,

thus increasing the crop acreage. Thirty-nine acres of cultivated land east of the road is now tilled in three fields of equal size, whereas formerly 20 acres were tilled in six miscellaneous patches.

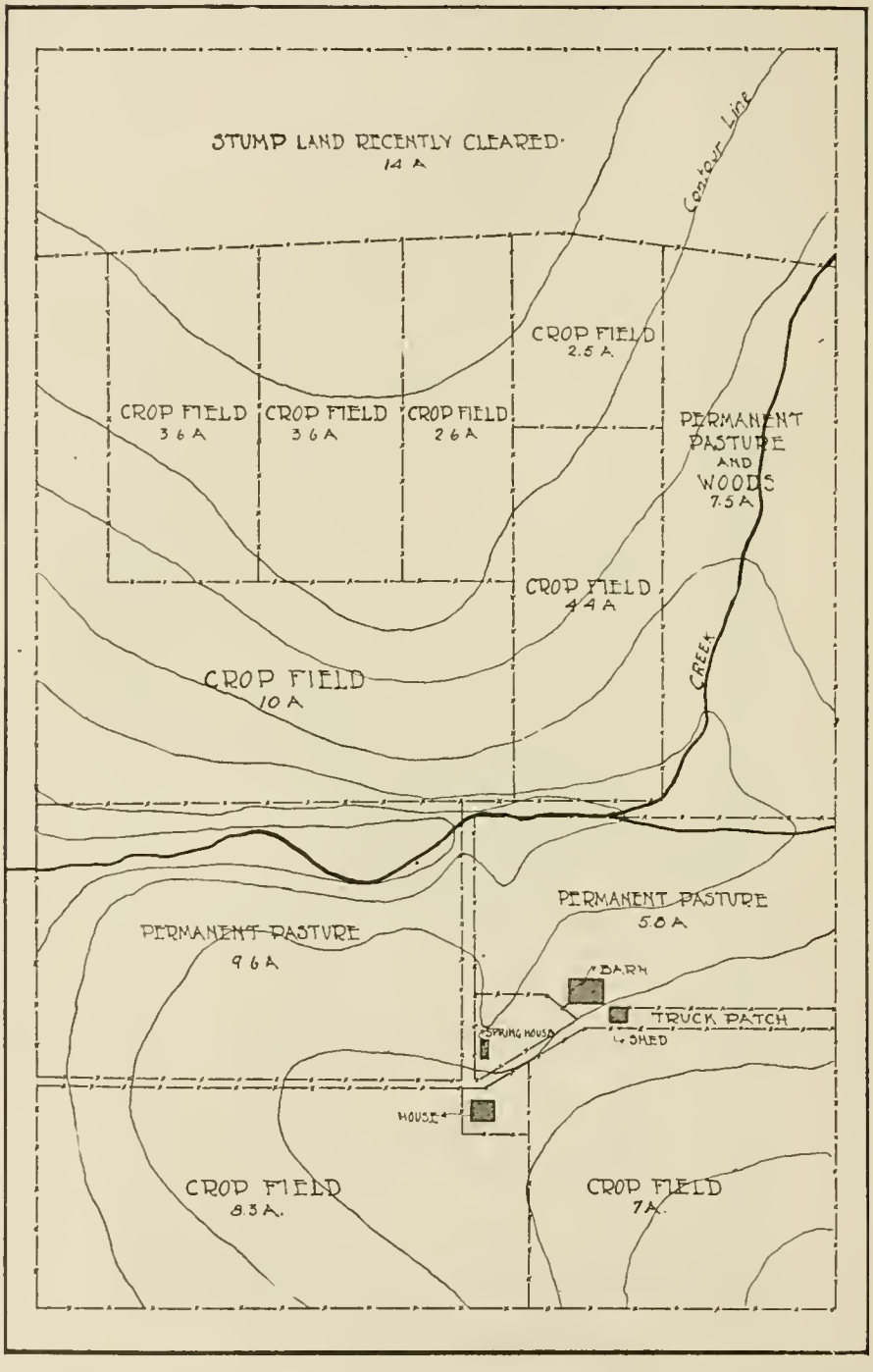


After rearrangement of fields

A large acreage of permanent pasture land makes it unnecessary to pasture the clover field. There are, therefore, no division fences between the crop fields. The farm fields are now so arranged as to provide for a major and a minor rotation. The bringing about of these changes has been a matter of years.

A NORTHEASTERN OHIO FARM

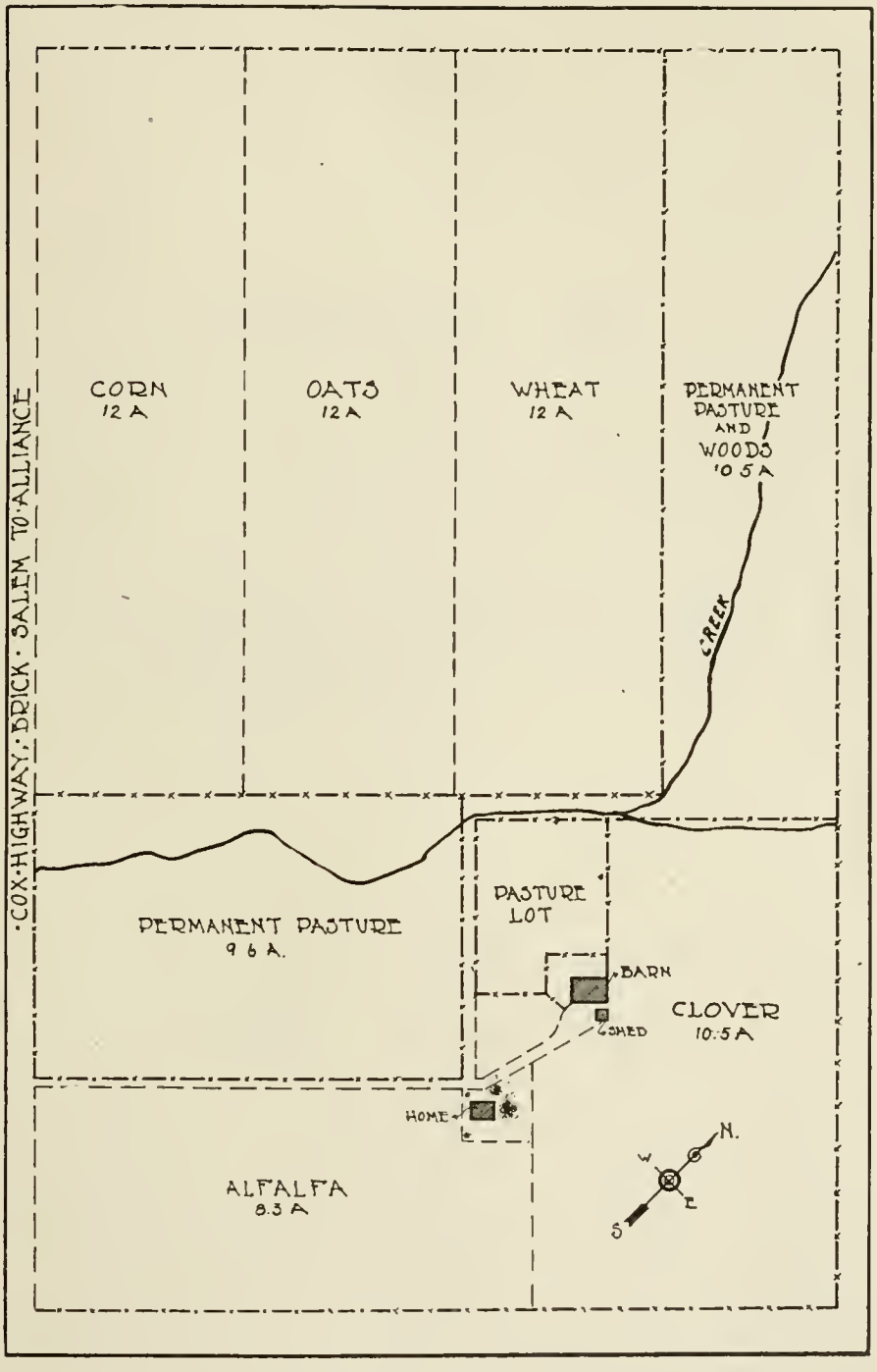
The above maps show a northeastern Ohio farm of 82 acres before and after rearranging the fields. The desire to establish a defi-



Before rearrangement of fields

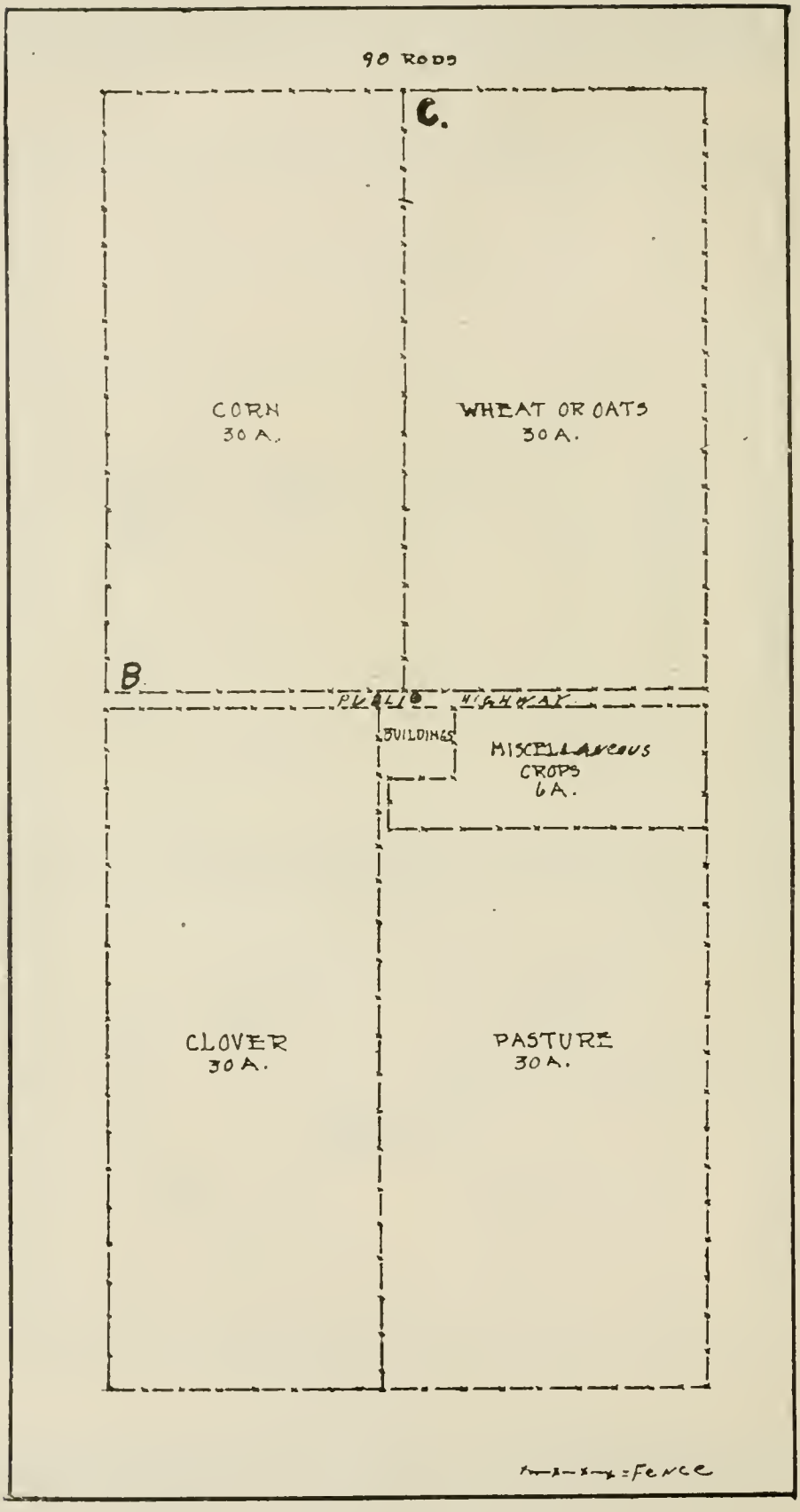
nite crop rotation and to have larger fields resulted in several changes. The rearrangement of fences eliminated 315 rods of fence, reclaiming thereby five-sixths acre of land for crop production, and saved the maintaining and clearing of these fence rows each year.

Eleven acres of stump land was brought into cultivation, thus increasing the crop area. By the rearrangement and enlargement of fields, 3200 turns with a team were saved during a year's work. All crop fields are now of nearly the same size. A 4-year crop rota-



After rearrangement of fields

tion has been established, the fifth field to be permanently in alfalfa. The permanent pasture between the buildings and the highway is rough and broken and of a different soil type. Having this land in pasture permits an unobstructed view of the highway.



A good farm layout

A GOOD FARM LAYOUT

With land on both sides of the highway the buildings may be located by the public road, yet in the center of the farm, with all fields adjacent to the buildings. Regular rectangular fields of the same size allow an economical use of labor and a systematic cropping of the fields. On the above 140-acre farm the average distance from the buildings to the center of the farm is 78 rods. If the buildings were located at B, the average distance would be 103 rods; if at C, 131 rods. The advantages of a central location are apparent.

Make a rough map of the layout of your farm and study its field arrangement. If improvements can be made, figure out what would be the best arrangement under your conditions. Then work toward this plan as rapidly as time and circumstances will permit. If a little is done each year when time permits, the cost of the readjustment can be kept low.