

soil, and he intends to sub-soil his whole farm, being satisfied that it will pay. He makes great use of clover as a fertilizer, and uses plaster to benefit the clover. Never could perceive that plaster benefited the wheat much, but it greatly increases the growth of clover. He attributes the improvement of the soil by clover mostly to the roots; they penetrate the earth to the depth of two to two and a half feet, and raise the soluble substances on which the plant feeds, to the surface, where, by decomposition, they supply food to the wheat crop.

Mr. L. said wheat was formerly raised in Yates county chiefly on fallows; but latterly, the more common course is to take first corn, then barley, then wheat—the corn generally manured—but it must be remembered that this cannot be done on a poor soil. He had tried wheat after various kinds of grain, but it does best after barley. The system of drilling wheat is beginning to be practiced in Yates county, and Mr. L. concurred with what had been before said in regard to the advantages of this mode of sowing. Palmer's is the kind of drill most in use in his neighbourhood, and it gives good satisfaction. The quantity of seed sown can be regulated to a quart to the acre. It covers the seed one and a half to two inches deep. The rows are nine inches apart. The cost of the machine is \$55. The best varieties of wheat in Yates county, are the Hutchinson, Soule's, and Flint. Many preferred the Hutchinson on account of its earliness and freedom from rust. It would ripen two weeks earlier than the red chaff. Mr. L. thought they raised as good crops of wheat in Yates as in any county in the state. He had himself raised forty-four bushels per acre on sixteen acres, in 1846.

Lieut. Gov. Patterson said his experience was in favour of deep ploughing. The wheat lands in the Genesee valley, when new, produced about fifteen bushels of wheat per acre. They were ploughed shallow—the farmers generally had not then sufficient strength of team to plough deep; now they plough much deeper than formerly, and obtain from twenty-five to thirty bushels per acre. In Livingston county, thirty-five bushels per acre were obtained on some farms. Some farmers there, now plough ten inches deep. Deep tillage has many advantages; an important one is this, that it enables crops to stand drouth. As to varieties of wheat, the old red chaff had done best with him, and he had tried many kinds. The Soule's variety had done better than the flint; but two crops of the red chaff are better than three of the flint. The blue-stem is being introduced, and meets with favour. The proper time to sow wheat in the Genesee valley, is from the 15th to the 25th of September. If sown earlier than this, it is very liable to be injured by the Hessian fly. As to the quantity of seed per acre, he thought a bushel and a half, if thrashed with a flail or trodden out by horses, was about right; if the seed was thrashed with a machine, two bushels per acre were necessary. The difference was owing to the wheat being broken in passing through a machine, so that many of the grains would not germinate. In regard to summer fallowing, he had better success with it on ground so prepared than in

any other way, and thought he could raise wheat in that way cheaper than he could raise corn or oats. As a crop to precede wheat, he considers peas preferable to any kind of grain, or any crop, except flax. The cheapest manure for wheat is clover, though he would use all the manure from the barn-yard; considers a good crop of clover equal to twenty loads of ordinary yard manure per acre. His practice is to sow six to eight pounds of clover seed per acre—seed costs about ten cents per pound—in spring sows 100 pounds of plaster per acre—pastures the clover till latter part of May, and ploughs it under in June—could never see that plaster benefited the wheat, but it makes the clover, and the clover makes the wheat. He is much in favour of the system of drilling wheat. Wheat put in by this method is less likely to be winter killed. The roots of grain that is sown broadcast, are often injured by the earth being blown off from them; by the drill system, this is prevented—the earth which forms the ridges between the rows being blown over the wheat, keeping the roots covered. His wheat crops have sometimes been forty bushels per acre—has raised thirty bushels per acre on sixty acres.

Mr. Cowles, of Onondaga county, said there was great variety of soil in that county—that on which oak and chestnut constituted the chief timber growth, was best for wheat; but thirty years ago this kind of land was generally thought good for nothing. When it was first tilled, it was ploughed about four inches deep, and it did not produce very well; now it is ploughed from seven to ten inches deep, and the crops are good and the land is growing better. On this kind of land, plaster benefits all crops; but on some other soils plaster has no apparent effect. On the chestnut and oaklands, the best crops of wheat are obtained by sowing about the 1st of September. He had noticed the effect of different crops on wheat. A field was sown as follows:—one-third with peas, one-third with barley, one-third with oats; the next crop was wheat; it was best after the peas, next best after barley, and poorest after oats. So far as his observation had gone, wheat was generally poorer after oats than after any other crops. On his land, wheat was generally best after a summer fallow. As to varieties, the old-fashioned flint was best—the Canada flint next best. He related an experiment: a neighbour of his took some winter wheat—a white variety—put it into tubs, wet it, and left it to freeze—it being in the winter season. It remained frozen till spring, when it was sown; the produce was a red spring wheat, which had continued in his neighbourhood until this day. This experiment convinced him that all wheat was of one species, and that varieties might be originated by causes unusually affecting the germ or the plant.

Lieut. Gov. Patterson had no reason to doubt the result of the experiment just cited; it brought to his mind the long-contested point of the transmutation of wheat into chess. He had known chess produced under circumstances which seemed to favour that hypothesis. He knew a piece of new land, just cleared from the forest, at a considerable distance from any other cleared land, sown to wheat, and on