

almost powdery state, still more reduced by the action of the air. The same soil carted on a meadow would have benefited it beyond any doubt."

"That a large share of our land needs working up from below, is as clear to the writer as any fact in agriculture. It is probably best to do this gradually, bringing up an inch or two of soil at a time; but do it at all events, if it has to be deepened at one ploughing. A fallow is a good means to treat soil in this way. The difficulty is, we are discouraged when we bring up considerable raw soil at a time, and it proves for a year or two to be no benefit, or even perhaps a hurt. It will in the end, and that soon, pay. Another correspondent says:—"I know by experiment and experience that there are subsoils (worthless, judging by the eye), that, used as top-dressing for grass lands, will give as large an increase of hay as a heavy dressing of farm-yard manure, phosphates of guano or any other manure I have ever used." Now this same soil, brought up in ploughing and exposed to the elements, must, from necessity, have the same effect, for the mere fact of applying it cannot alter the case; the soil is there, acted upon in the same manner. This at least is true, that such soil, or some soil, brought up to the surface, is an advantage to the crop, and forms an excellent seed bed for clover and timothy, with heavy yields following."

We may add, that, considerable scepticism was manifested by the members of the club as to the efficacy of Mr. Mechi's views. Admitting the sound policy of ploughing deep, the practice will for some time be difficult to popularize in Canada, from the fact that years have to pass before the full benefit of manuring the land with a desirable subsoil is realized, thereby reducing the immediate returns of the husbandman.

### A New Wheat, the "Square Head."

The best variety of wheat grown in Scotland, has for long been admitted to be the Fenton wheat, originally propagated by Mr. George Hope, of Fenton Barns. A competitor for the palm of superiority has however now come on the field that bids fair to distance the Fenton variety. At a recent meeting of the East-Lothian Agricultural Society, the following incident occurred in the proceedings:

Mr. George Hope (Fenton Barns) said he would take the liberty of drawing their attention to a variety of wheat named "Square Head," which Mr. Shireff, Saltecoats, had advertised. He was not likely to say anything that might be considered unfavorable to his own wheat, the "Fenton," but he thought it only right to state his experience of this year. He had been induced to sow four bushels of the square head wheat last autumn by Mr. Scholey, of Eastercroft Grange, near Goolb, Yorkshire, who strongly recommended it for its uncommon stiffness of straw and its extraordinary prolific nature. He had made a small experiment with it as compared with Fenton, and found that it yielded nearly 6 bushels per imperial acre more than Fenton, and the litter was decidedly more lodged than the former. Of course this was a singularly wet year, but the grain of the square head appeared good quality; he could not tell what sort of flour it would produce, but he had no reason to suppose it would be inferior to other varieties of red wheat. This morning he had received a letter from Mr. Scholey in which he detailed an experiment with the square head, Fenton, woolly-eared, and Browick red, the results being: square head 157 stones, Fenton 135 stones, woolly-eared 112½ stones, and Browick red 124 stones; but in a hollow, where the square head was sown the grain was destroyed, so that Mr. Scholey calculated it exceeded the Fenton by nearly 6 bushels per imperial acre, as he himself found it to do. You would hardly believe the crops Mr. Scholey had grown in the two previous good years. He would therefore recommend the members of the Club to make a trial of it. He intends to sow all he had grown himself.

Mr. Shireff (Saltecoats) warmly recognised the generosity of spirit displayed by Mr. Hope, who having cultivated a wheat which he had established as the best in cultivation, had the candor, after trying another kind, to acknowledge himself beaten on his own farm. To the square-headed wheat they could not give too much manure. It had a big, bold head, and a golden straw nearly as thick as his finger. He advised every farmer to sow not all but half of his farm with it. It should be sown thick, at any rate, a ball or five bushels to the acre, especially this year, when so many of the pickles had sprouted.

The handsome conduct of Mr. Hope in this matter,

was exactly what was to be expected. He is one of the first, if not the very first agriculturist in Britain, and as generous and liberal minded as he is able and successful in his profession. As many of our readers are aware, Messrs. Adam and Charles Hope of Hamilton are brothers of Mr. Hope, of Fenton Barns.

### Top-dressing and Soiling.

Were I able, with pen or voice, to reach every young farmer in the land, and to secure his attention, chief among all farm operations I would urge upon him to fully understand, and thoroughly to practice two things, namely: 1) *top-dress* all meadows and fields of winter grain, and to *soil all their stock*. With all who have practiced it to any extent, applying manure and compost on the meadows and winter wheat and rye, it is found to be the most advantageous way to use manure, and to bring the most speedy profit for the operation. Spread on winter wheat late in autumn does much to prevent winter-killing, by preventing the plants from being torn out by frost or blown bare by the wind in dry times in winter, as is often the case. This mulching or top-dressing also shelters the young grain and grass from the early hot sun in spring, and prevents the moisture and ammonia from being evaporated, and thus entirely avoids, or largely lessens, the evils of drought. It also fertilizes and stimulates the growth of the young plants, by being leached and soaked into the soil gradually by the rains. We have succeeded in raising, and have seen others raise bountiful crops of first-rate winter-wheat on lands where none before ever did, or even expected to get crops, on account of winter-killing; but top-dressing or mulching makes winter grain a sure thing, where otherwise it could not succeed.

Then, we have taken old, dry, "sod-bound" meadows, and liberally spread manure and compost on them in the fall, and next summer cut three tons of good hay to the acre. The mulching kept the soil moist and soft, sheltered off the sun, leached down and stimulated the growing of the grass; we have also top-dressed right after the first mowing in June, so that the hot sun should not dry and scorch the ground and roots, and bare by mowing, and thereby obtained another good sward of over a ton to the acre. This operation pays well if done once in two years, and will prevent a good meadow from ever "running out" or getting sod-bound, so that ploughing and re-seeding is never necessary, unless it is desired to plough occasionally and sow to grain; but if there be a good market for the hay, it is by this process more profitable than grain raising.—*Maryland Farmer.*

### Lucerne Soiling.

We believe the Agricultural Journals cannot well do their readers a greater service than persuading them of the great value of *Lucerne*, both as meadow and as a green soiling crop. If sown on deep ploughed land it yields immensely, and never suffers from drought, as it runs its roots deeply in the ground; if there be no unusual hindrance, it will run down many feet to find moisture, thus also acting as a subsoiler; we have found the roots of this nutritious plant more than three feet below the surface soil; they are nearly as large as parsnip roots, and when cut off by the plough, at a depth of from seven to twelve inches, they rot below that and leave a moist fertilizer or *humus*, which aids to keep the ground porous at that depth; while the portion above, which is turned under and mixed with the soil, furnishes a large amount of fertilizing elements. On deep, strong land it may be mowed several times in the season, yielding a vast amount of excellent feed, which is liked by all stock, and is first rate for milk. It sprouts early in the spring, and may be mowed earlier than clover for a silage.

"Mr. C. W. Howard, in the *Southern Farm and Home*, Memphis, Tenn. rec. says, concerning lucerne: As a forage plant at the South, lucerne is very far superior to all others. It is used for three purposes. First, for feeding green, or soiling; used in this way, it is best to cut the lucerne a day in advance, so as to feed in a wilted state. *It must never be pastured.* Lucerne hay is extremely nutritious, and is relished by horses, cattle and sheep. It is preferred by the domestic animals to any other kind of hay. The product of lucerne is enormous. Five tons of excellent hay may be cut from an acre. It is estimated that fodder, green and dry, may be obtained from an acre of lucerne for the support of five horses during the entire year. This included the great bulk of green food during the spring, summer, and autumn.—*L. S. C. Cor. Maryland Farmer.*

### Wheat—Winter-Killing and Tillering.

Winter-killing is constantly complained of by farmers without the causes being accurately known. When sown deep, wheat produces but few roots. When the ground freezes and thaws many times, these roots are broken, thus depriving the plant of necessary nourishment and support, when it either dies or only maintains a poor, sickly growth. Sometimes wheat is thrown entirely out of the ground, when it is sure to perish. The natural remedy is a good covering of snow; but seasons occur when no snowy blanket falls. The artificial remedy is under-draining; and if well done, it may be pronounced effectual against winter-killing.

One of the marvels of the wheat plant is that known as tillering. It is the secret of its great productiveness. Many experiments have been made to ascertain the limits of this faculty, and the results have been truly wonderful. An English gentleman sowed a few grains of red wheat June 24, one of the plants of which had tillered so much by the eighth of August that he then divided it into eighteen others, all of which were planted separately. In a few weeks so many of these had again multiplied their stalks, that he had set out 67 altogether to go through the winter. With the spring growth all these began tillering, so that in March and April a new division was made, and the plants increased to 500. It was believed that another division might have been made, and that it would have increased the number to 2,000. The 500 grew most vigorously, exceeding plants as ordinarily cultivated. When harvested, a single plant yielded over 100 ears, and the whole number of ears produced was 21,100, or more than 40 to each divided plant; the grain measured 3½ pecks, weighing 47½ lbs. All this was said to be the product of a single grain of wheat.—*N. Y. Tribune.*

### Too Much Land.

A correspondent of the *Boston Cultivator* thus writes:—

One of the greatest mistakes which farmers make is in cultivating too much land. It is a truth which needs no argument to prove, that it is cheaper by thorough manuring and cultivation, to raise 50 bushels of corn on one acre than it is by slovenly to raise that amount on two. If a farmer has plenty of manure and time to give to the two, then let him plant them by all means. Now the average yield per acre of any crop throughout the country is not half what it is upon the best cultivated farms. Supposing that farmers should give the same attention to one-half of the acres that they now do, they would be gainers in the saving of one half of the land for wood or pasture, while they would still have as much to sell. But it is not necessary to give the same attention; 50 per cent, more manure and labor would double the crop, for it requires the same ploughing and planting in either case. It is the thoroughness with which this is done, and the after cultivation, that tells; so that by planting one half as many acres farming would also save ½ of the expense, and these two savings would make a change from profit to loss. The great trouble with farmers is that they do not make sufficient calculation for drawbacks, as bad weather, sickness, breakage, and unstable help. It would be far better to allow too much the other way, and then after their crops were thoroughly tended, devote their spare time to improvements, such as fencing and ditching, than to be forever worried by the friction caused by being behind.

**A NEW STEAM PLOUGH.**—The *Scottish Farmer* of Nov. 13, makes mention of a new steam plough and subsoiler combined, just turned out of the Banff Foundry. The inventor is G. W. Murray, and it was made for L. Livingston Learmouth, of Linlithgow. It is made of Swedish wrought iron, so that it can work among the stones and rocks of Scotland, steel ploughs being there too much addicted to the breaking of shares, "skifes," &c. The principal new feature of this plough is that there is a combination of the common plough and the subsoiler, or it can be used for ploughing without subsoiling. This particular implement cuts three furrows as a plough simply, or two with the subsoiling apparatus attached. The subsoiler loosens the soil in the furrow from three to nine inches, as desired; it simply breaks up or loosens, without bringing the subsoil to the surface. The cost of the implement is £125, or \$625. This of course does not include the cost of the engine for running it.