does not do so well in soils that are damp and heavy, and dies off soon in strong clays. The land need not be deep, for this tree has no tap-root—its roots are all laterals. Though the seed, which can be kept for two or even three years, ripens in autumn, still, it is advisable to sow in spring the seed of the previous year, of which one pound contains about fifty thousand pickles, 80 0/0 of which germinate under ordinary conditions. The seed is winged, as may be seen in the engraving: this is a common characteristic of the family, as of all the firs. They are contained, like those of all the conifers, in cones composed of overlapping scales. Sow thickly, and cover shallow with good mould, and then press the soil down: this is called *plomber*, in technical terms of the art. The seed germinates in three or four weeks, and at the end of the season the plant will measure three inches. The nursery-bed should be sheltered from the direct rays of the sun, and to this end it is covered with a trellis of laths sufficiently high to admit a man to hoe. Two years after planting out from the seed-bed, it is finally transplanted into its permanent location at three or four years old.

The white spruce attains a height of about fifty feet, and a diameter of two feet at the base. Forests composed of these trees may be felled every 10 or 15 years for lumbering purposes, provided that all trees less than a foot in diameter be left standing. White spruce makes fair firewood and good building timber; but it soon rots if exposed to the air, and, viewed from this point, is inferior to pine. The quality of the wood depends entirely on the soil in which the tree is grown. Eng. 21, shows bough, and 22, the seed of the white spruce. (1)

From the French.

J. C. CHAPAIS.

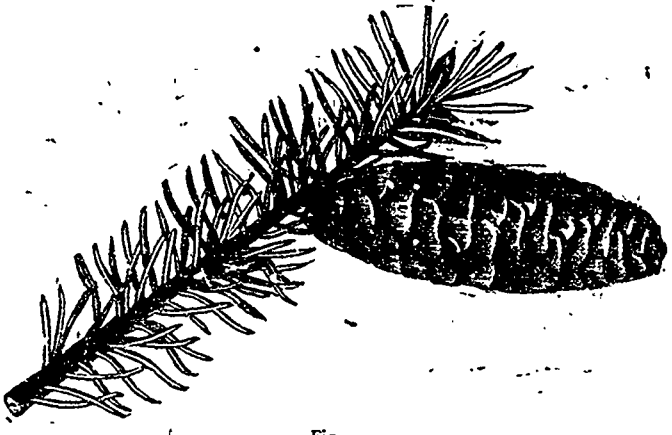

Fig. 21.

Fig. 22.

Harrowing Spring Grains.

EDS. COUNTRY GENTLEMAN—I am glad to see the favourable results of harrowing spring grain which W. J. F. reports in his notes on page 718. The benefit of harrowing winter grain in conceded—why should it be different with the other grains? There has been sufficient experience to show that the results are much the same, namely, the loosening of the ground, equivalent to hoeing, and superior to cultivating hoed crops: as it works all the ground, including the furrow, it makes clear work throughout. What weeds have sprouted perish or are checked in their growth, the increased vigor of the grain preventing their successful recovery. There may be less foothold with spring grain than with winter wheat, and more plants may be sacrificed by harrowing. But the loss in this respect is less than the gain, where the ground is good and the usual thick-sowing is practised. The plants thinned out will produce stouter stalks and larger, better ears. In thin sowing, less plants will be torn out, the greater cleanness of the land, and the increased growth of the grain, more than paying for the loss, especially in foul land, which, in connection with the foulness, requires the harrow all the more where the sowing is thin.

Of course, care is to be taken that the ground is in proper condition, neither wet nor dry—just sufficiently moist to loosen up mellow. If too wet, it is of course hurtful; less so in sandy soil than in clay; if dry and hard, there will be little benefit. The question arises, how far the grain should be advanced when the harrow is applied. If quite small, it is clear that the harrow would seriously injure it, as the plant then is easily displaced, having little root. There is less danger when the plant is strong, and has secured a good foothold. This requires a growth of some five or six inches, and a still more advanced stage of growth would result in benefit, as is the case with wheat in the spring, which has its root well established, and will bear with benefit two harrowings.

The labor here is a mere trifle; only a few hours are required to pass the broad smoothing harrow over an ordinary field. If there is any benefit at all, it must exceed the little labor thus expended, and there is authority to show that the benefit is considerable in the increase of the crop, and the greater cleanness of the land—a percentage of profit on the small outlay of labor, that is perhaps not surpassed, if equalled, on the farm.

The great principle that underlies all farming, is thorough working of the soil. Its benefit consists in the loosening up and fining the land, and thus fitting it for the admission of air and warmth, and the retention of moisture, which have their effect upon it, and through it upon the crops. This, to be fully successful, must be repeated as the growth advances, as with hoed crops, which, the more they are worked, are the better; and the principle holds good with wheat, and with grass lands where the sod is not thick. There is sufficient experience to show that it is equally beneficial to spring grain. One great advantage in this after cultivation is, that it is not expensive, is soon done, and at a time when the crowd of spring's work is over. F. G. *Fort Plain, N. Y.*

(1) These engravings are some of those contained in the work.

Devonshire Butter.

A curious discrepancy I have lately met with in the account by two thorough experts in the manufacture of butter from *clouted cream*. Mr Rowlandson, one of our best English practical farmers, now no more, published some thirty years ago, experiments in butter-making, and amongt them occurs