Mr. Shutt—Forty bushels every second or third year would give you all the potash your crops could use. Forty bushels of good wood ashes would give from 100 to 120 pounds of potash. We have to feed the tree not only for the fruit but for the leaves and wood. The presence of available potash in the soil has been shown to be conducive to the maturing of the wood, and also to a choice flavour in the fruit.

Hon. Mr. Fisher—That would be a bushel per tree?

Mr. Shutt—Practically so. Of course, we must understand that owing to the disposition of the roots in the soils, it is not possible for us to utilize all the plant food which is in the soil. There must necessarily be a very large amount of what we might call unoccupied land. It is only where the root fibres penetrate that they abstract the food. More must be put in the soil than can be immediately taken out, but this additional amount or margin is not lost. Just as in a bank account, we must always have a margin, so it should be with our soils. We do not, however, want too much unused soil capital, or there will be a tendency for a part of it to become wasted through leaching.

Ques.—What can be used in the place of wood ashes ?

If we cannot get wood ashes at reasonable rates, we can purchase Kainit or Muriate of Potash. The first of these contains about 12 per cent. actual potash, the latter about 50 per cent. potash. Muriate of Potash is usually applied at the rate of 100—200 lbs per acre—Kainit, at the rate of 300—700 lbs per acre.

With regard to phosphoric acid, if you apply wood ashes, I doubt very much whether it is necessary to apply much phosphoric acid as such for orchards. It may be well, however, to supplement with ground bone every second or third year. That will give you phospheric acid in an excellent form, and also a certain amount of nitrogen. If you do not use ground bone, you can obtain superphosphates, which contain usually 10 to 15 per cent. of soluble phosphoric acid; 100 to 150 pounds of such material would be sufficient per acre to supply all the phosphoric acid for the tree.

How can we most economically furnish our trees with the necessary nitrogen? We could buy nitrate of soda, and the nitrogen would then cost us about 14 cents a pound, or we could purchase sulphate of ammonia, which is a little cheaper, or organic manures, such as dried blood, fish guano, could be used. But I am convinced that the most economical method will be to employ the legumes to gather the free nitrogen of the atmosphere.

By the growth of clover we may add to the soil a large amount of nitrogen. Our experiments at the Experimental Farm, both in the field and the laboratory have shown that by this means there may be a distinctive gain of more than 100 pounds per acre of nitrogen. From 12 pounds of clover seed we can obtain foliage and roots containing 100 pounds of nitrogen. This, purchased in the form of commercial fertilizers, would cost between \$10 and \$15. If clover seed is worth 20 cents a pound, ten pounds would be worth \$2, so that we should have a gain of eight or ten dollars in fertilizing material per acre. The following table gives the int Farm of address

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