

Gradually, knowledge accumulated which began to make the soil processes and the nitrogen cycle clear, and mineral fertilizers began to fall into their place as immensely important, but not all-important. Then came minute studies of human and cattle diets and the modern discovery of vitamins, and once again vistas were opened up the end of which are not yet clear.

Work in which the Research Institute at Coimbatore has taken a part of which it may well be proud, has begun to show us that organic fertilizers play a part hitherto unsuspected in the manufacture of elusive bodies the composition and functions of which are not yet fully understood. These we call vitamins. The plant absorbs them, being apparently unable to manufacture them for itself, and on their presence or absence depends the feeding value of the resulting grain or fruit or vegetable as the case may be. Animals, including man, get their vitamins from the vegetable world which they use as food and again are apparently unable in most cases to manufacture them for themselves, except perhaps through the medium of certain rays in sunlight falling on the skin. If these vitamins are absent, or not present in sufficient quantities, a group of diseases are apt to develop, known as deficiency diseases, of which rickets and beri-beri are typical examples. All of which goes to show that soil fertility is a most complicated business which ramifies into the quality of the food products produced and the ultimate effects of this on diet and disease.

We have by no means come to the end of our knowledge on this subject; possibly we are only at the beginning of it and the future may open up to us an entirely new view of agricultural Chemistry and the management of the soil, into which organic and inorganic fertilizers will fall into their proper places as nicely-balanced supplementing aids to crop production. Already our ideas have undergone vast changes since Liebig's days and they may undergo in the distant future still more drastic changes as knowledge accumulates, and we gain power and control over natural laws and learn to obey them. However that may be, we cannot be too grateful to the pioneers to whose devotion to science we are indebted for our present knowledge and their memory should be ever kept warm in our hearts as examples of whole-hearted devotion to the pursuit of truth and knowledge.

HINTS FOR FITTING PLOUGHS

BY DONALD J. BEATON, B.Sc. (TECH.)

The Cooper Engineering Works, Salara.

When fitting ploughs, the shares should be fitted first. If the share has more than one bolt, both bolts should be fitted with their respective nuts and tightened up as far as possible with the fingers. In the final tightening up with a spanner, both nuts should be slightly tightened, one at a time until the nuts are bearing the same pressure and a final pull on each in turn will finish the job without fear of breakage. *When fitting Chilled cast shares, never tighten one nut up tight and leave the other loose because if there is the very slightest irregularity in the casting, it will crack as soon as the second nut is tightened.*

(2) Mouldboard should be fitted after fitting the share, and the very same precaution should be taken while tightening up the nuts, in order to

avoid warping and breakages in the case of chilled cast mouldboards as fitted to some of our Cooper Ploughs.

(3) Landsides should be fitted last and the greatest care should be taken to have the same pressure on each nut by tightening them up slightly *one at a time*. *Never tighten one nut first and leave another loose; warping or cracking is bound to occur.*

This applies to landsides whether fitting them for the first time or when fitting spare ones and *the precaution mentioned should never be neglected.*

(4) *Fitting Spare Shares.* In all cases before fitting spare shares, all mouldboard bolts should be slackened off until the mouldboard can be shaken with the fingers. The new share should then be fitted and tightened up, snugly, employing the same precautions as given in para 1 above. After the share is duly fitted, the mouldboard should be pushed down hard against the share and the bolts should be tightened up also employing the same precautions to tighten all of them a little at a time until they are properly tight.

(5) While fitting spare mouldboards, the share bolts should never be slackened, but all the foregoing precautions should be strictly observed while tightening the nuts.

(6) Share mouldboard, and landside bolts usually project from $3/8''$ to $1/2''$ when properly fitted into their holes. The nuts should be screwed on very carefully with the fingers until they take up the full distance of the free projecting part. Never fit a nut on the point of the bolts and then force it home with a spanner. This will cause what is commonly known as cross threading, and once this is done, the bolt is useless for any purpose.

(7) It may sometimes be found necessary to increase the suction pitch of shares in order to penetrate hard clayey surface soils. This can readily be done by removing the share and fitting either (a) a strip of $1/8''$ thick \times $1/2''$ wide cardboard, (b) A roll of thick paper of the required thickness, (c) a flat strip of wood or bamboo under the full length of the share next to where it joins the mouldboard and the share to be tightened up as directed above. This will generally give an increased suction pitch of $1/4''$ to $3/8''$ according to the length of the share point.

The M.A.S.U. Parliament

(Proceedings of a Meeting held on the 8th July 1931)

Motion before the House: 'That this House is against increase of the rice area any further in this Province.

Proposer: Mr. K. Ramiah, L.Ag., M.Sc., Dip. Agri. (Cantab.)

Opposer: Mr. T. V. Rajagopala Acharya, Dip. Agri.

Speaker: Rao Bahadur T. A. Ramalingham Chettiar, B.A., B.L., M.L.C.

Speaker's Opening Remarks:

Gentlemen,—The subject before the House is one of momentous importance not only to the members of this Union but also to outsiders.