

## REINFORCING AND BOXING FOR CONCRETE . . .

be poured as slowly as is consistent with economy and in layers about 12in. thick. Column boxes should never be filled to the top without a break; instead each batch of concrete should be distributed over several columns. Concrete in heavy walls and piers in which large stones or "plums" can be embedded will always exert less pressure on the shutters than when the stones are omitted, because true hydrostatic pressure will not exist.

The consistency of the concrete also affects the pressure, which increases with the increase of the percentage of water in the mix.

### Construction of Shuttering

As shuttering is the mould in which the plastic concrete is cast to the shape required the inside of that mould must be the exact profile of the finished concrete. Any roughness or irregularity in the mould will show on the finished concrete.

Shuttering for walls or vertical sections must be set true in relation to the vertical; if one or both sides of a wall are battered, the angle of batter will be relative to the vertical.

The procedure in erecting shuttering for walls is shown in the diagrams on the preceding page. If the founda-

tions have been dug and footings run with the vertical reinforcing rods cast in (preparation of the foundations and footings for walls will be dealt with in a later article in this series), the shuttering for the walls is built on vertical supports of 4in. by 2in. timbers at least 12in. longer than the finished height of the wall above the footings. Nail the bottom two planks firmly to the supports, placing one at each end and spacing intermediate supports at about 18in. to 2ft. centres, depending on the height of the wall. If the planks are not sufficiently long to span the full length of the wall, the first planks must lap one end support 1in. only to permit other planks to be butted to the same support. Make sure all plank ends are square and nailed squarely to the supports. Erect this section of shuttering on the footings in correct line and position, and support it rigidly in a vertical position with braces from the top of every second support nailed to stakes driven into the ground.

The other side shuttering can now be erected, using the same method and keeping the supports opposite each other. This side does not need any bracing, being tied at the top by a piece of timber nailed across opposite

supports. Cut spacer blocks equal to the finished thickness of the wall, and with these between the planks bind the bottom of opposite supports with wire or bolts. The best way to bind with wire is to pass the wire round the supports in a slack loop and, after twisting it well together, to tighten it as a "Spanish windlass" with a fin. nail or short bar. The spacer blocks are knocked out as the concrete is poured.

When bolts are used spacer blocks are not necessary as ferrules or distance pieces cut from pipe equal in length to the finished width of the wall can be slipped over the bolts inside the shuttering.

When the supports for the full length of the wall have been erected the shuttering for the non-working side can be completed to the top, being finished level to the completed height of the wall. The shuttering planks for the working side can be slipped in as the concrete is being poured, sufficient wire ties being placed as the work progresses to ensure rigidity of the shuttering.

This method of construction, by keeping the top of the work within easy reach, ensures that tamping or spading can be properly carried out as the concrete is placed in relatively short lifts. Bonding between hardened and fresh concrete can also be done more satisfactorily. This applies particularly to narrow walls of 4 to 6in. thickness. The shuttering on the working side should be completed to the level of the shuttering on the non-working side, so that the last pour can be screeded off with a straight-edge and, if necessary, trowelled smooth.

### BOOK REVIEW

#### "The Fruit, the Seed and the Soil": John Innes Horticultural Institution

GROWERS, gardeners, and seedsmen will welcome the second edition of "The Fruit, the Seed and the Soil," a collection of leaflets prepared by the staff of the John Innes Horticultural Institution, the first edition of which appeared in 1948. The leaflets in the first edition have been revised and brought up to date in the second edition and three more leaflets added. One of these, of interest to nurserymen, is on the raising of plants in blocks of compressed John Innes compost, a method developed during a period when pots were in short supply. The last leaflet describes the colchicine method, which has been effectively used in plant improvement for 10 years and gives answers to some of the questions horticulturists ask most frequently. Nurserymen will find much useful information in the leaflets describing composts and their soil ingredients, and on soil sterilisation. A leaflet on fertility rules in fruit planting gives tables showing incompatible groups of cherries, plums, apples, and pears, and another on the growing of pure seed is of interest to seedsmen. It is a book for all who are interested in horticulture.—G.A.H.H.

Macmillan and Company Ltd., London. 3s. 6d.



SEVERAL modern machines that are trailer drawn derive their power from the tractor engine through a power take-off shaft. Most implement manufacturers provide shields to cover these shafts, but in many instances drivers neglect to place these shields in position when hitching tractors to the implements. Failure to do so leaves a driver liable to an accident such as this one caught by the camera. The coat tail became caught in the universal joint of the shaft as the driver dismounted from his machine, and a serious accident might have resulted had not prompt action been taken by an assistant to short out the motor.

Never dismount from a tractor without disengaging the power take-off shaft and always cover revolving shafts and axles with the shields provided.

—C. J. CROSBIE, Farm Machinery Instructor,  
Department of Agriculture, Christchurch.