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EXPLORATION OF SOIL CONDITIONS AND SAMPLING OPERATIONS

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Soil Sampling Tube. A convenient form of apparatus for obtaining "undisturbed" soil samples from the verge adjoining a road has been developed in connection with an investigation concerning road foundation problems. The device consists of a soil punch which is fitted to the framework of a light lorry. A diagram illustrating the essential features is given in Fig. 1.

The coring tool consists of a thin hollow cylinder of hard steel, split longitudinally into two halves. These are held together when taking a core by means of a flush piston ring near the cutting end and an adaptor at the top. The tube is turned inwards, a small amount at the bottom, so that the internal diameter at the cutting edge is slightly less than the internal diameter of the tube. This reduces the friction between the soil core and the tube to a minimum and was found to be essential if compaction of the specimen was to be eliminated. The coring tool extracts a cylindrical core about $\frac{1}{4}$ in. in diameter and 2 ft. long.

In the process of sampling, the cutting edge of the tool is forced slowly into the soil without rotation by gradually transferring the weight of the lorry to it. This is effected by the rotation of a square threaded rod in a gun metal nut which is integral with the main framework. Fig. 2 is a photograph showing the apparatus in readiness for taking a soil core.

When the soil punch has entered the soil a sufficient depth for the sample to fill the tool, it is rotated one half turn to assist breaking away at the bottom and is then withdrawn. Blocks are placed under the lorry for withdrawal purposes in order to protect the springs of the vehicle.

To extract the core, the tool is removed from its adaptor, the piston ring is taken off and half the tube removed. The core is then slid into a close-fitting tin, which is closed with a cap and sealed off with insulating tape, for transportation to the laboratory.

Using extension pieces core sampling has usually been carried to a depth of 6 or 8 ft. but of course greater depths can be attained. By means of this apparatus cores have been obtained from waterlogged soft clays with negligible compaction and samples of very stiff laminated clays and slightly cohesive sandy soils have been successfully procured. With most soils the lorry is sufficiently heavy to provide the necessary force for penetration but with soils in a very dry compacted state it has sometimes been found necessary to tie the lorry down by means of pickets screwed into the ground.

The tool is especially applicable to the sampling of clay soils but it is not suitable for soils which are predominately stony. Samples have been obtained from clays containing flints when the flints were not too large.

The manner in which the apparatus is assembled is convenient for the purpose of shallow borings in the verges adjoining roads, and the time required to procure samples to a depth of 8 ft. has rarely exceeded an hour and a half.

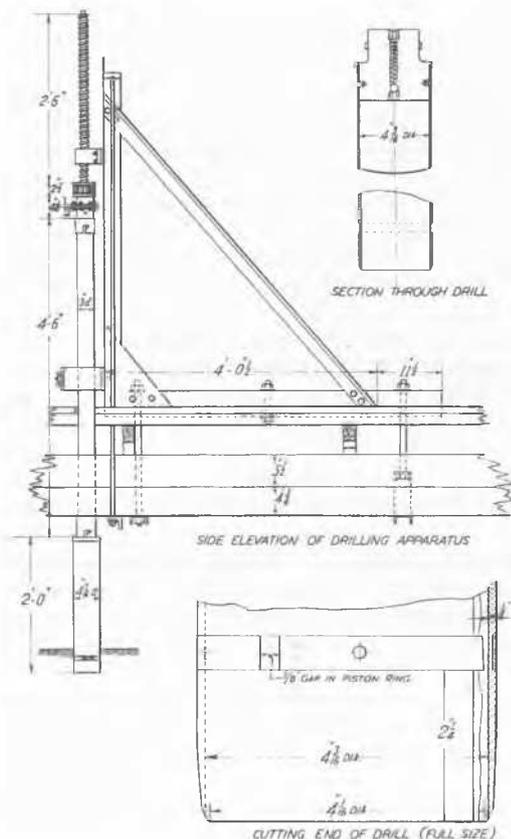


Fig. 1. Diagram of soil sampling tube.
Gerät zur Entnahme von Bodenproben



Fig. 2. Apparatus for soil sampling.
Gerät zur Entnahme von Bodenproben