sealing compound, being very easily handled. The sealer is available in cellulose-wrapped cartridges which are placed in the gun for use. After use the cellulose wrapper is extracted from the gun, in which another cartridge can be placed.

One big advantage in using a gun for the application of this sealing compound is that there is no loss of compound with intermittent use. The gun can be put away after use for an indefinite period with no deterioration of any compound left in it. When it is taken out and used again a small quantity of compound is wiped away from the nozzle and the gun is ready for immediate use.

Waterproofing Compounds

Building materials such as brick, stone, or concrete, being of granular construction, have hygroscopic characteristics and can absorb and retain moisture. It is this fact, together with atmospheric conditions and the presence of micro-organisms, which produces the ageing of construction materials.

The atmosphere with its variation of temperature and pressure and variable pollutions according to geographical localities can lead to sulphurations (in towns) or chlorinations (near the sea) and erosion by wind and rain. Micro-organisms by transforming insoluble salts into soluble ones permit moisture to draw these salts to the exterior surfaces and their crystallisation leads to the formation of blooms, with consequent disintegration of the granular structure.

If the entry of moisture to these materials by capillary action could be prevented, erosion and destruction by ageing would be considerably reduced. This can be accomplished by two methods. The first consists of disposing a continuous coat on the surface of the material to produce a mechanical dam. The efficiency of this method is subject to its resistance against wear and the permanence of the coating material used. The second method consists of treating the surface of the material to suppress the mutually attractive actions of the material and water.

The granular structure of these materials entrains a volume of air which is subject to expansion and contraction with changes of temperature, causing respiration of the material. The sealing of the surface with a mechanical dam also seals in the entrained air and prevents respiration. This can cause a pressure differential between the entrained air and the outside atmosphere, resulting in the lifting of the surface membrane.

Treatment of the surface of the material to suppress capillary action of moisture does not seal the surface in such a manner as to prevent respiration. The material can still breathe and retain an internal and external equilibrium.

Synthetic resins are available in solution which when applied to these materials by brush or spray coat the granular structure with a thin waterproofing coating which makes the grains shed water but does not make the surface impermeable. This coating is carried to a depth of a few millimetres, depending on the density of the material. It does not change the colour of the surface, is invisible to the naked eye, and can be detected only by the action of water on the treated surfaces.

The solutions are procurable in two types, one with a spirit base which is suitable for all normal dense materials and one with a water base which is suitable for less dense materials such as concrete made from light-weight aggregates. If a spirit-base solution were used on materials with relatively high absorbent properties, deep penetration would occur, with consequent dispersal of the water-repellent film. For this reason a water-based solution should be used on absorbent surfaces.

Cutting Silage with a Chainsaw

By D. F. SCOTT,
Machinery Instructor, Department of Agriculture, Auckland

EARLIER attempts to cut silage in either a pit or a stack with a chainsaw were largely unsuccessful owing to the silage jamming in and around the chain and sprocket. In these attempts saws were used with chain speeds of about 1200ft. per minute or less.

In recent trials near Auckland with a small chainsaw with a 17in. blade and a chain speed of 3300ft. per minute it was possible to make a cut about 12in. deep across a pit 20ft. wide in about a minute. The saw required one minor alteration to a shield, and this completely eliminated blocking without reducing the safety of the machine. It was also found advisable to remove the spiked bumper.

The type of chain tooth used in this saw is that used on most saws sold for general use and is known as the chipper tooth. This tooth can be readily sharpened by unskilled operators. The only other common tooth in use is the planer or chisel tooth, which is used only by timber workers cutting hardwood and requires servicing by an expert. This tooth is unsuitable for general farm use and would very likely block on silage.

In regular feeding out it appears that the most satisfactory system would be to spend 5 to 10 minutes cutting silage into blocks about 2ft. 6in. square and 10in. to 12in. deep. Forking is then much easier and the silage can be loaded on to the trailer in easily handled lumps. After use the saw is allowed to cool, washed with a hose, and run briefly to spread oil round the chain. The saw is immediately usable for its normal duties of cutting wood.