8. CONTROLLING SURFACE ROT

The time has now come to coat all accessible surfaces with the preservative of choice, which, as explained in section 1.5, will either be CNE or creosote. As noted in section 6.8 the entire project should be planned and scheduled so that this job can be done when moisture content is as low as possible. The work should not begin if heavy rain is predicted within a day or two of completion. Scaffolding, ladders and pollution control precautions should all be readied beforehand, so that when the right weather comes along it can immediately be taken advantage of. A number of tarpaulins should be on hand, to protect as much of the structure as possible against unexpected showers before, during, and immediately after the work is done.

8.1 APPLICATION OF CNE AND/OR CNL

The amount of preservative needed can be predicted by allowing 0.5 kg of CNE per square metre. The amount used will vary enormously depending on surface texture, fissuring, and the depth of dozy surface wood. About 2 kg per square metre should be allowed for end grain, and one kg per square metre to provide an especially generous coating for normally inaccessible surfaces which are exposed during repairs.

CNE has unlimited pot-life, so there is no harm in ordering more than is likely to be needed. The leftovers will keep for the next job.

Precautions need to be taken in advance to minimise the risk of environmental contamination. Given the consistency of CNE - similar to very soft margarine - spillage or drippage is unlikely. CNE is also of low toxicity to most forms of life other than fungi, so a small spill is not of great consequence. The main risk of environmental pollution is wash-off from unexpected heavy rain shortly after CNE has been applied. A decision has to be made as to whether it is better to put tarpaulins over the structure to prevent washing-off, or tarpaulins under the structure to catch wash-off.

If CNL is being sprayed (see below) wash-off is less of a problem than overspray. Spread tarpaulins on the ground to catch overspray and drippage. Dry wood shavings or sand on the tarpaulins can help soak up anything that does come off the structure, and will also make the tarpaulins less slippery if they have to be walked over.

The CNE should be brushed across the grain and into fissures as much as possible. A moderately stiff nylon broom or brush on a long handle will probably be more useful than a paintbrush or roller. It is not necessary to reach right to the bottom of every fissure, as the CNE will “creep” into places inaccessible to the brush, especially in warm weather. The emulsion should be brushed on as thick as the surface layer of dozy wood is deep. It should be thick enough - maybe 2 mm - to leave a visible layer on the surface, which will soak in and disappear after a day or so. Any surfaces which look dry in less than a day should be re-coated. When the CNE has soaked in, the surface will look darker in colour, like freshly oiled timber.

On end grain and on normally inaccessible surfaces CNE can literally be laid on with a trowel. It should be spread 3-5 mm thick, and if necessary given some temporary protection from rain. Ingenuity may be needed to get CNE into tight spaces.

On a well-prepared site the surface coating will go on surprisingly fast. It may take several days to prepare the site, but two people can easily coat a single span Howe truss bridge in one fine day.

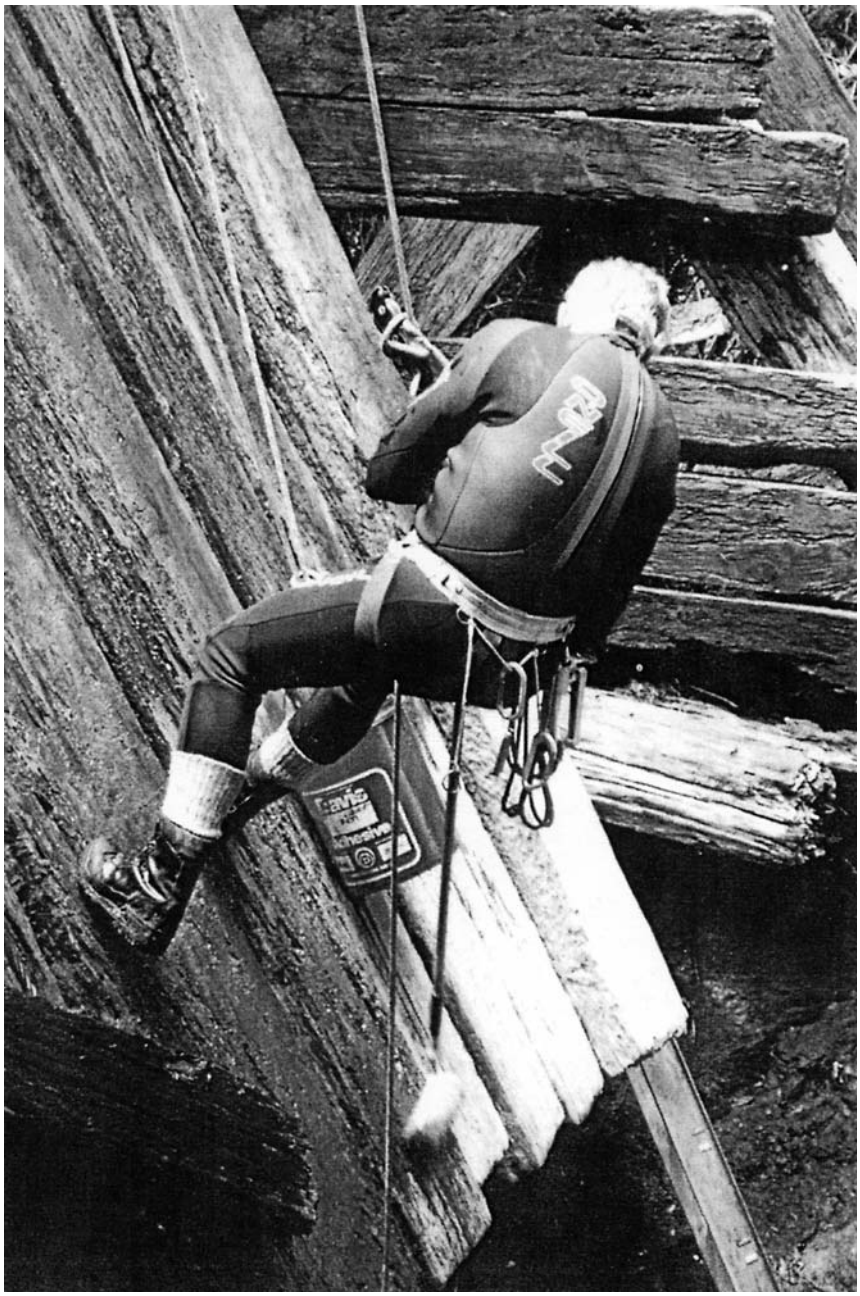

Fig. 14: Applying CD50 to Christmas Creek dam. Note wetsuit, abseil gear and long handled roller. Working below one's own body minimises risk of contact with preservative.

If a contractor is employed to apply the surface preservative without on-site supervision it may be advisable to carry out some spot checks afterwards to be sure that total coverage was achieved. Presence or absence of copper naphthenate, the active ingredient in CNE, is very easy to test for, either in-situ on the surface of the structure or in a sliver of wood taken for the purpose. The test area is sprayed with an ammonia solution and then with a rubeanic acid solution. If copper is present a black coloration develops instantaneously to the full depth of copper naphthenate penetration.

If desired, samples can be taken for laboratory assay. A 4 mm thick sliver 40 x 40 mm in area taken with a 40 mm chisel will be sufficient. Currently the minimum cost for chemical analysis of copper in wood is about $110 (up to five samples) and the cost of analyses for other chemicals can be several hundred dollars per sample. There may also be additional sample preparation costs hence it is advisable to get a quote from the analytical laboratory before taking samples.

Keep a record of weather before, during and after application, and of the quantities of preservative used. Make a note of any components which were not treated for any reason, and of any normally inaccessible surfaces which were able to be treated on this occasion.

In perfect weather with bone-dry timber, CNL could be just as effective as

CNE, and somewhat cheaper. It has the potential advantage of being sprayable. Spraying can be much faster if there are large flat areas to be covered (e.g., planking or slab walling) but is likely to be wasteful and environmentally contaminating on structures made up of posts and beams, where overspray is hard to avoid. Ordinary horticultural knapsack sprayers are fine for the purpose, and should be fitted with cone nozzles rather than fan nozzles. The nozzles should be adjusted to produce fairly coarse droplets. Atomisation of CNL results in excessive evaporation of solvent as well as spray drift away from the job and into the surrounding environment.

For similar reasons spraying should not be done in very hot or windy conditions. Rollers [fig. 14] and brushes are best in some locations. The recipe for success with CNL is to keep reapplying it every few hours to all surfaces until it is obvious they are all completely saturated. This hopefully ensures that the CNL has penetrated to the full depth of the dozy surface wood. The need for several applications means that using CNL is likely to take longer than using CNE, where only one application is necessary as long as the thickness of that application is about equal to the thickness of the dozy wood that needs to be impregnated (generally a couple of millimetres). Total volumes of CNL used will be about the same as for CNE if it had been used.

Some CNE should be present on site, even when relying on CNL, to deal with areas that are damp, or where higher loads of preservatives are needed.

8.2 USE OF CREOSOTE

Creosote is not widely available in New Zealand and may need to be imported. Emulsified creosote is said to be more "user friendly" than unmodified creosote.

We have very little recent experience in the use of creosote, but in general the use of run-of-the-distillery creosote will be very similar to use of CNL, with more attention to avoiding personal contact with the preservative and avoiding environmental contamination.

We also lack experience in the use of thickened creosote. The likelihood is that it is best applied in the same way as CNE, again with more attention being given to both personal and environmental contamination.

Chemical tests for creosote presence are unnecessary, since its presence is quite obvious to both the eye and the nose.

8.3 PREVIOUSLY TREATED STRUCTURES

If the structure has previously been treated many of the procedures described above may be unnecessary, particularly waterblasting - if the previous treatment was reasonably successful and re-treatment has not been put off for too long, there will be negligible growth or rot to be waterblasted off.

You need to decide whether to follow the guidelines in this manual for re-treatment, or whether to repeat the previous treatment. If the previous treatment appears

to have been successful then it is probably best to keep using it, supplementing it where necessary with some of the additional procedures recommended here. This way, we build up a better idea of the relative efficacy of all the available treatments.

If you decide to repeat a treatment using Busan 30L (which is not recommended) then it should be applied at 10% concentration of active ingredient rather than the 1% formerly used. [See Appendix 1]