

TREE CLIMBING WITH THE PRUSSIK LOOP SYSTEM

by M.J. Whitehead

In Britain the 1974 Safety at Work Act has strongly influenced a rethink in many aspects of safe tree surgery practices. Problems of being injured in a technically safe situation and climbing trees at a commercial pace have probably hindered the output of work. Methods of climbing became much safer in the early seventies but consequently much slower. In the past, experienced climbers could take certain risks but now it is undesirable to be without some form of continual safe attachment while in a tree. In education our practical guardianship must be of a high standard where we ensure that no knot or karabiner is undone when climbing, without another being secured beforehand.

In 1977 my colleague Jack Kenyon introduced a safe and very efficient system of climbing, adapted after many trials, by using the prussik loop which is used by rock climbers. This method of climbing is extremely good for teaching students and inexperienced people because there is virtually no knot tying involved while climbing. Therefore, the person can devote more attention and practice in adapting more quickly to heights, discovering bark types, routeways and branch habits of various tree species. Before the prussik loop system is explained it is worthwhile noting a word of warning that a climbing method should be introduced through expert demonstration. It is unsafe practice to learn how to use climbing systems from written instructions.

The basic equipment required for a prussik loop system is a climbing rope, two loops and two karabiners. Additional strops and karabiners may be required for undertaking various work operations in the tree.

A 12 mm (½ inch) diameter 3-lay nylon climbing rope is converted by putting an eye-splice (by an expert) in each end of the rope. During various tree work operations there may be the possibility of the eye-splice getting stuck up in the tree on twigs or in acute forks but is of minor occurrence and can be rectified by using the other end of the rope or another climbing set.

Two 12 mm diameter nylon loops about 1 meter (yard) in circumference are required and these should be spliced by experts. One loop is attached to each end of the climbing rope just under the eye-splice by double threading to form a prussik knot. Ensure that the prussik knot fits neatly and test its run on the rope and avoid having the loop twisted.

After inspection, the climbing rope tends not to get tangled if laid in two coils near the trunk of the tree to be climbed. The two attached loops are fixed to the climber's harness, each by fairly large lightweight karabiners to form two separate climbing systems on each end of the rope, the rope ends hang free ready for use. Incorporating color code markers may help to aid the changeover of the rope ends which match with the loop and karabiner. The advantage of the system is the quick procedure of securing and releasing the rope-end eyes to and from the karabiners instead of traditional knot tying.

Ascending the tree once the climbing system has been inspected and correctly attached to the climber is as follows: Firstly, by standing aside of the rope, positioned orderly on the ground, both sets of eyes, loops and karabiners are parked on the front of the climber's harness, and one is selected for the start of the ascent. Check that the eye in the end of the rope is attached through the prussik knot on the loop which in turn is attached to the karabiner. Once a loop is attached with a prussik there is no need to take it off the karabiner. Only the rope-end eye is taken on and off the karabiner.

Having selected a suitable branch for the first anchor point the rope end is pulled through the prussik knot until there is enough spare to enable the end of the rope to be thrown over the branch and fixed back on the matching karabiner which is then securely locked. The system is tightened up and ready for climbing and the other end of the rope is parked with its loop and karabiner. Ascend in the normal manner by pulling on the rope, holding and sliding the prussik knot upwards. On reaching a position below the branch a stationary position is achieved by checking and ensuring that

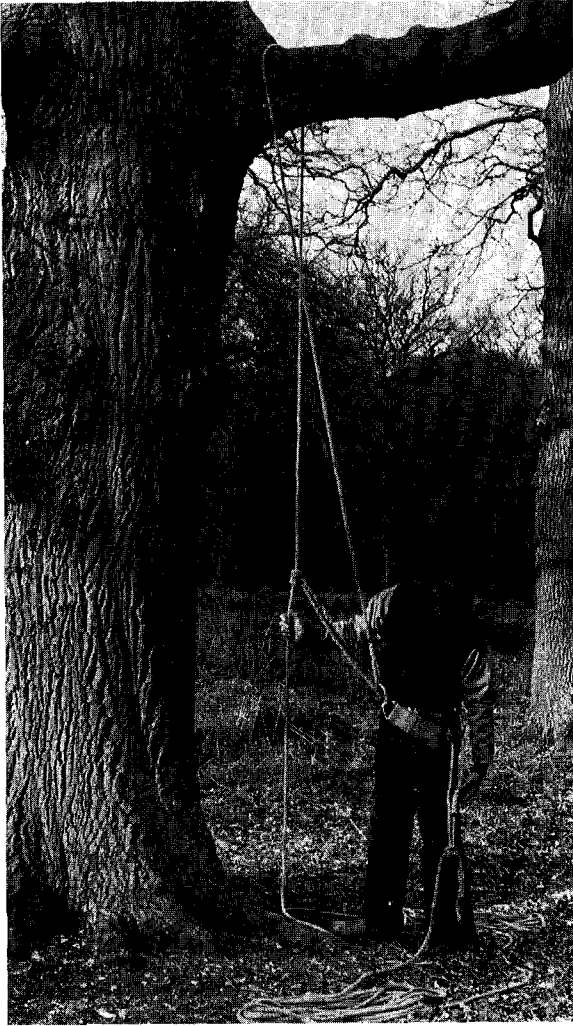


Fig. 1. First anchor point attached with the remainder of the rope in two neat coils to avoid tangling while ascending the tree.

the prussik knot has tightened up correctly. The prussik knot can loosen up from the pushing action or slip on worn or dirty ropes, therefore it may be necessary to tighten up the formation of the prussik knot.

The other end of the rope which is parked on the climber's harness is now used while being safely attached with the first rope-end system. A repeat operation is carried out by using the parked system to throw higher over the next convenient anchor point and attaching back onto the karabiner. The climber's weight is transferred to

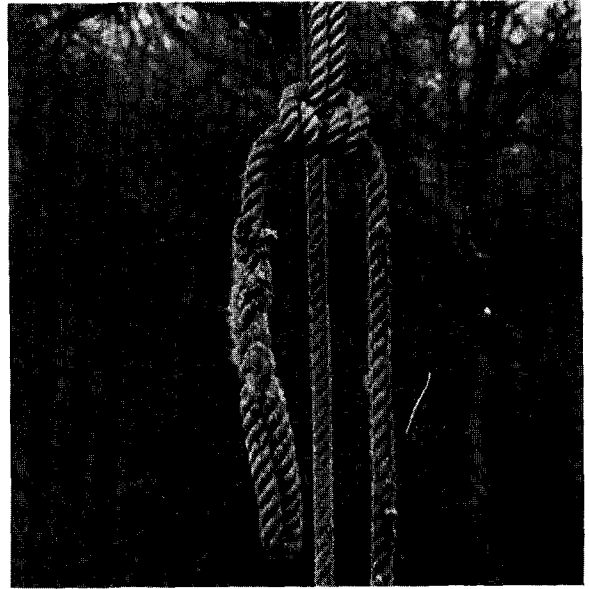


Fig. 2. Parked position with the loop with prussik knot attached to the rope with the rope-end eye ready for use.

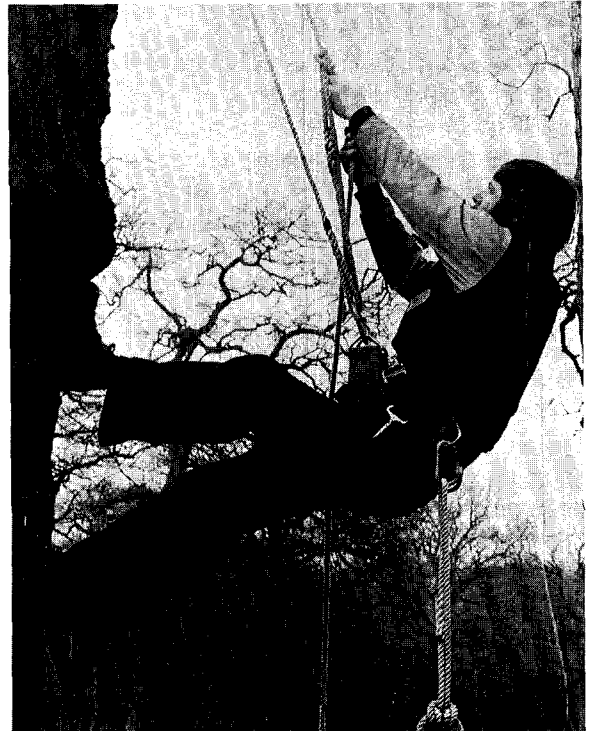


Fig. 3. Ascend by pulling on the rope below the prussik knot and have the feet in a supporting position.

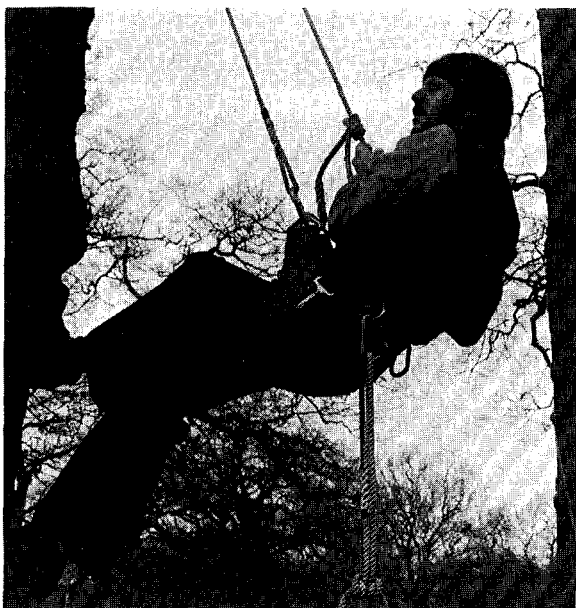


Fig. 4. After pulling the prussik knot and moving the body to gain height, the rope is briefly held and the knot is pushed upwards.



Fig. 5. If the climber needs to stop at any time, then the prussik knot should be checked to ensure that it is functioning correctly.

the new anchor system by ascending a short way and after satisfactory checks of the prussik knot at this stationary position the first system usually becomes slack and is ready for parking on the harness for later use. It is this system of switching rope ends correctly that requires practice many times near the ground to become safe. The use of and checking of locked karabiner gates is just as important as learning traditional knots. Once the top anchor point has been reached by a series of changeovers of rope ends on various anchor branches, one of the end systems can be dismantled which prevents the rope getting-tangled up and only one rope-end system is necessary for tree work and descent from the tree. For ease of work some adjustment can be made to the prussik loop by tying a figure of eight knot in the bridge of the loop.

Few problems have occurred with the prussik loop system. The main points to be aware of are

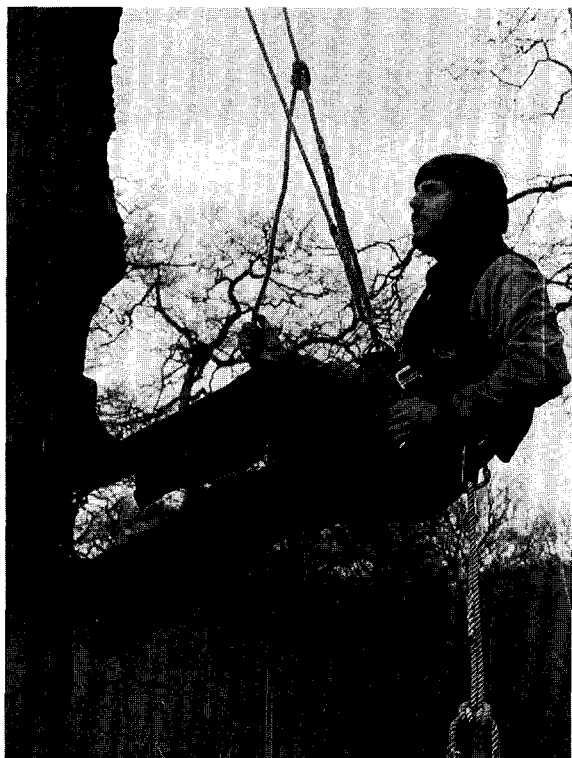


Fig. 6. The prussik knot in action taking the climber's weight, the remainder of the rope being slack and the other end of the loop system parked on the side for ease of illustration. It would normally be parked on the front of the harness.



Fig. 7. Ready for the next anchor.

incorrect sized loops, twisted loops, and worn loops. The prussik loop in most cases becomes tied in a regular position and undue wear can occur on the rope. It is, therefore, recommended to use the loops only for two or three months and replace with new ones on a regular rotation according to the work and assessment of wear. Some types of karabiners may have fairly sharp edges on the gate which can cause wear on the

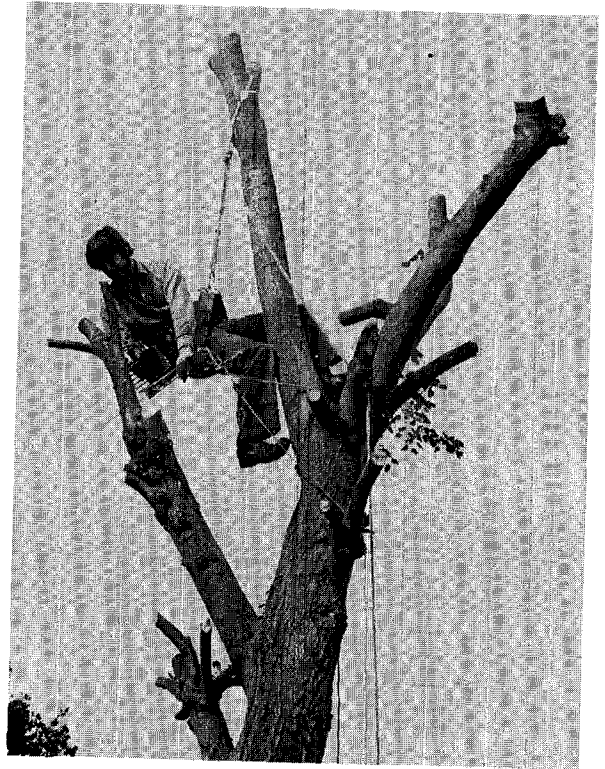


Fig. 8. Prussik loop system used while dismantling a tree with an electric chain saw.

eye of the rope end.

New and experienced climbers who seek instruction or undertake short courses will hopefully find the prussik loop climbing system a safe and very efficient method for tree surgery work.

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