Ropes, Cables, and Knots

Ropes: Figure 1 illustrates some of the ropes and cables you will need. Parachute cord, 1/8-inch-diameter nylon, is universally available, inexpensive, and lightweight. It is best used as the initial throw line to pull up heavier ropes and hardware. It also can function as a haul line to lift lightweight loads of 20 to 50 pounds.

Parachute cord stretches, which is a distinct disadvantage for a rope used in a hoisting system. A superior alternative to parachute cord is 1/8-inch braided Dacron, a strong cord that has less stretch than nylon parachute cord. It is available in mountaineering stores.

Manila rope (3/8-inch or 1/2-inch diameter), the traditional rope of choice for securing packhorse cargoes, is a good choice for any of the suspension systems, especially when it can double as a cargo rope. It is inexpensive, strong enough, and has limited stretch. It is not the most lightweight or strongest rope on the market.

Moving up in strength and price are a whole range of mountain-climbing ropes. Since full-strength climbing rope is very expensive and its strength is not needed for this application, smaller diameter versions, such as 5-mm climbing

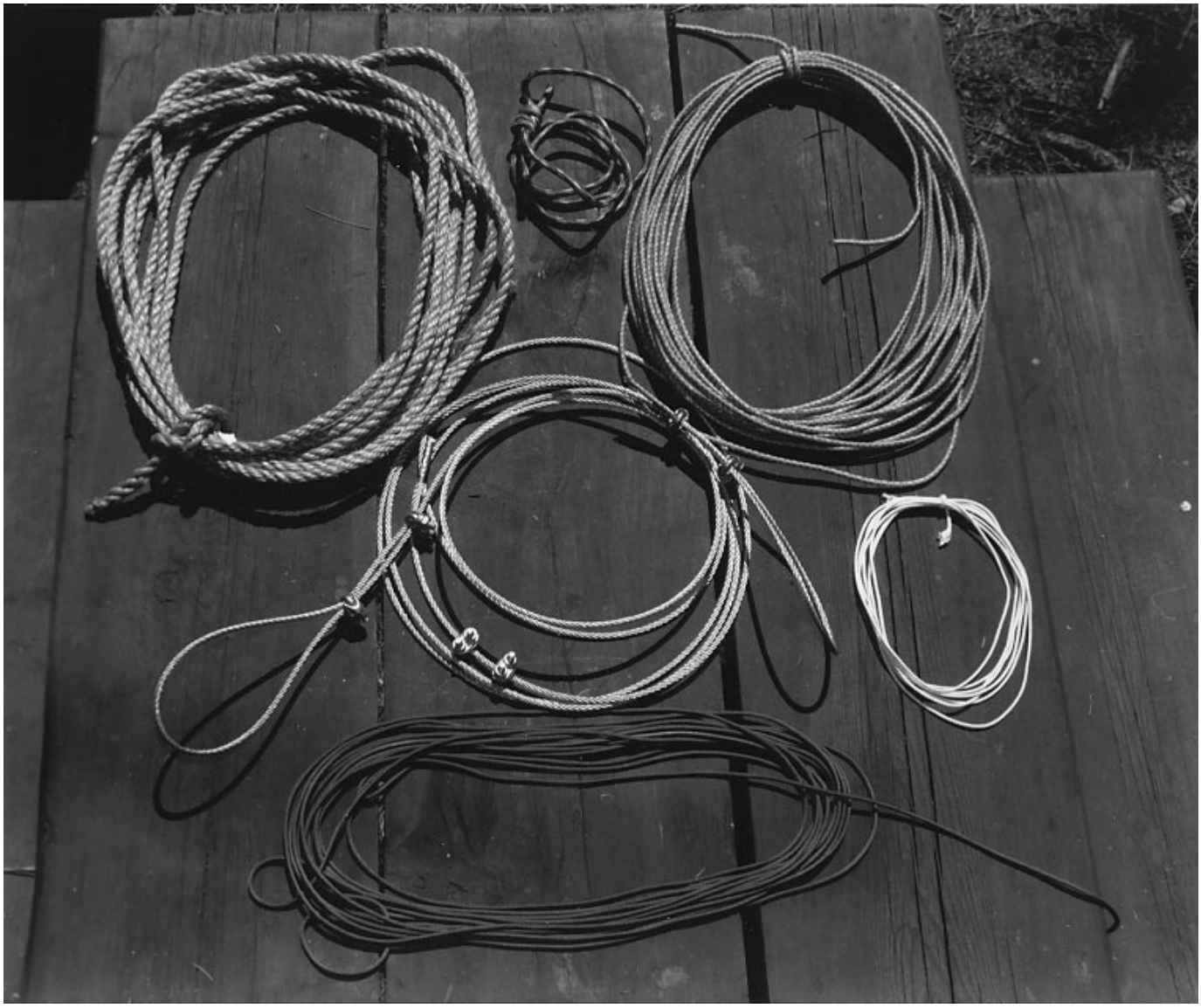

Figure 1.—Ropes and cables: 3/8-inch manila (upper left); 5-mm climbing accessory cord (upper middle and upper right); 3/16-inch wire rope (middle); 1/8-inch braided Dacron (lower right); and parachute cord (bottom).

accessory cord, are excellent cost-effective alternatives. Sixty-foot lengths of 5-mm accessory cord worked extremely well in field tests of all of the techniques. The cord costs about $0.25/foot. Match your rope with your pulley system.

There are many other ropes readily available that will work. A key factor for a hoisting system is to select a low-stretch or “static” rope. Many poly or nylon ropes stretch too much and are therefore not recommended.

Cable: Flexible steel cable, or wire rope (3/16-inch diameter, with a number of fine strands), is used in one method as a support cable between two trees. It is strong and will not stretch. Loops in the ends of the cable and slide arrester blocks need to be installed before heading for the field. Use double- and single-strand “nicro-press” sleeves to create the loops and to serve as slide arresters if you are having loops and slide arresters made up for you. If you are making them yourself, regular bolt-on cable clamps work fine. Fasten the clamps as shown in Figure 2. Clamps will not hold on vinyl-covered wire rope.

Knots: Knots can make or break your hoist system, and their proper use is the mark of a professional. There are many knots to choose from, but here are a few favorites (Figure 3). A loop knot can create a loop anywhere in the line, useful for attaching a block directly to the rope without carabiners, or for attaching a fence stretcher or cable hook.

Another method for attaching a carabiner (Figure 4, left) or block to a rope is to first tie two ends of a short section of rope together with a double fisherman’s knot, creating a loop. Then attach the loop to the main line with a Prusik knot, which will move sideways with no load attached, but will not slip sideways under tension.

A knot hard to beat for creating a nonslip loop on the end of a rope is the bowline. A secure knot for attaching rope to a carabiner or block is a swivel hitch.

For more ideas, you may wish to refer to a knot instruction book such as ***Bigon and Regazzoni***, 1982.

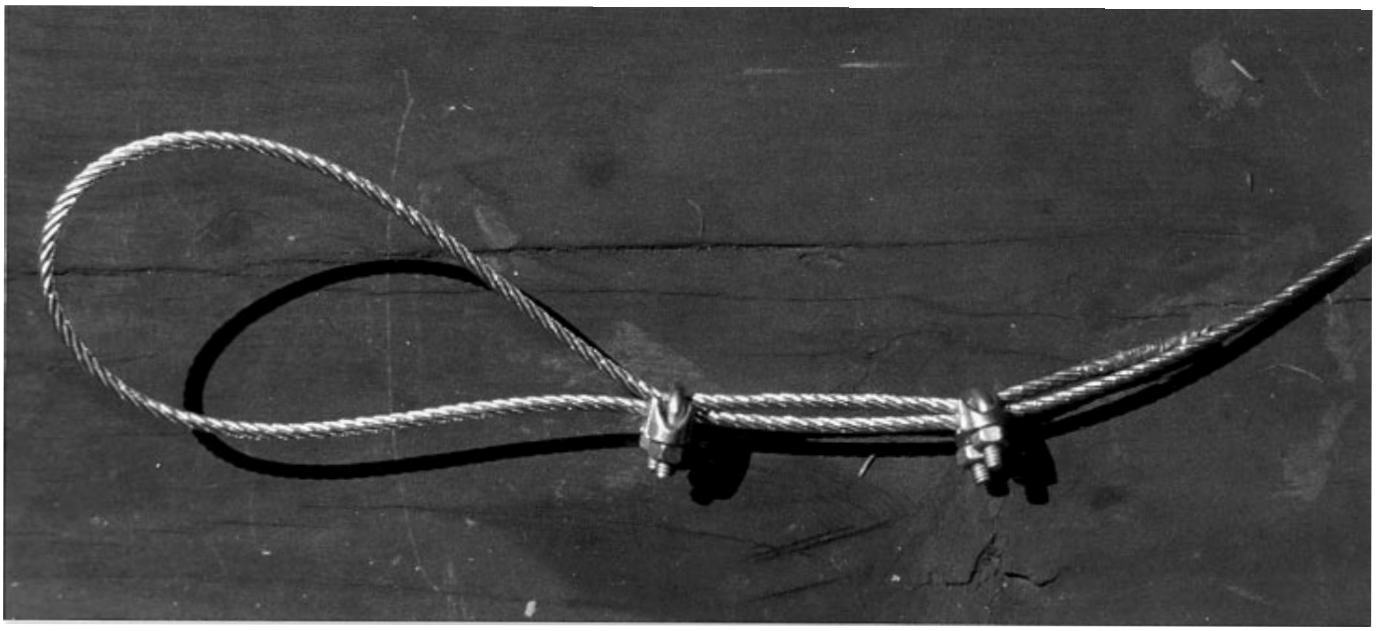

Figure 2.—Wire rope with clamps properly attached.

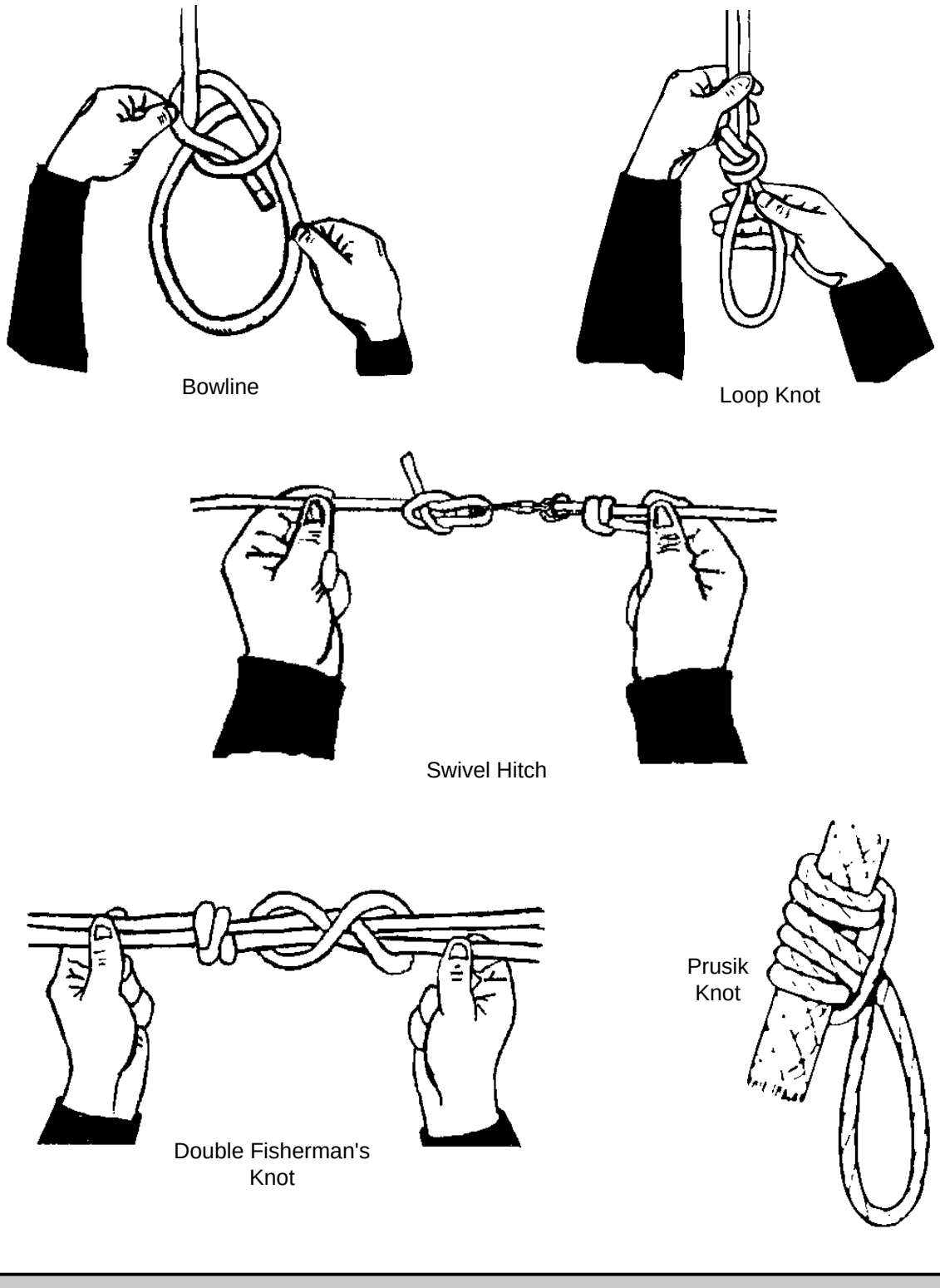

Figure 3.—Useful knots.