

cut off the inch of wood with the holes in it when you set the entering ferrules and reel-seat. After getting down the wood in the *square* to the proper size, allowing for the final scraping, plane the corners off and bring it to a true *octagon*, then file and scrape to a perfect *round*—the handle to a size that will allow the reel-seat to be slipped on when ready to glue, and the ferrule end to a diameter that will permit of the ferrule being set in place flush with the wood. You can make a good scraper by taking a bit of broken saw or other flat piece of steel, and, with a rat-tail file, filing on its straight edge three half-circles corresponding to the diameters of the rod at the juncture of the handle, the large ends of the middle joint, and the tips, respectively. These three sizes will give you all you want to use on the rod, and if filed true and held at the proper scraping angle, you have a most useful and handy tool. After scraping down to a perfect round (which may be facilitated in the final stages by imparting a rotary motion to the joint held in one hand while scraping with the other), of the proper size to fit the reel-seat, the winding check, and the ferrules, set these in place, cutting off the surplus inch with the holes in the butt, and fitting with glue. Use care and patience in filing the shoulders on the rod equally all round, so that the ferrule will set true and straight, and placing it no further on the wood than will allow of the ferrule of the second joint to enter to its full extent without striking the end of the butt piece.



Proceed now to plane down the second joint, *from* you, by using the pin instead of butting it against any thing, in a true dimin-



ishing taper in the *square*, from the diameter of the entering ferrule at the large end, to that of the receiving ferrule at the other, then bring it to a perfect *octagon* and scrape to the *round*. Cut off the surplus inch with the holes, fit and glue the ferrules true and flush with the wood, carefully setting them so that they will lie straight with the line of the joint, the receiving ferrule in proper position to admit the entering ferrule of the tip without striking the wood of the second joint, nor yet leaving a space between. Treat the tips in the same way, tapering them from the diameter of the entering ferrule down to the insignificant diameter of the top rings, which are not to set in place yet. The tips being so light will require most delicate handling, using your small 3-inch plane adjusted to the finest possible tissue paper shaving. Should the joints in planing take a warp or twist, heat the part over a gas jet or lamp, and work it back to the true, where it will likely remain.

Your rod is now ready to joint and put to the crucial test, from which, if you have done your work carefully, examining every step of the way, planing your joints and setting your ferrules true, you have every reason to believe it will emerge to your entire satisfaction. Jointed together, it should spring from the centre of the handle at a diameter of fifteen-thirty-two seconds ( $\frac{3}{32}$ ) of an inch and diminish in a perfect taper to the tip, each ferrule in place in a perfect line with the rod. Held in the hand at the grasp and tested with a swaying motion, the action should be even, free and elastic, and comprise the whole length of the rod down to the handle, and when fastened by a line at the tip and bent its curve should sweep in a graceful, circular bow. If your rod does all this you may complacently shake hands with yourself and proceed to the next stage of sand-papering and varnishing.

Sand-paper each joint in turn with the coarser paper till all unevennesses are removed, and rub to a high finish with the very fine, taking care not to scratch the polished metal of the ferrules, then rub down with a soft cloth and you are ready for varnishing.

This is the point where your patience will be tried in waiting for the slow-drying coach varnish to do its work; you could expedite matters by using the quicker-drying hard *shellac*, but at the expense of permanent excellence and superior finish; *don't do it*.

Pour out a small quantity of varnish in a saucer, and thin with a few drops of turpentine till it drops freely from the brush, then apply it evenly in as *thin a coat as you can*, just enough to allow of its "flowing" quality to show itself and obliterate quickly all traces of the passing brush marks.

Note this point in varnishing: *thin coats, evenly applied, and plenty of them*, allowing one to dry hard before applying another on top. Observe this rule and you will go along swimmingly, if slowly; neglect it and you may have your work to do all over again.

Now tie a string to the metal parts of the joints, fasten this to a hook and hang them up on a line in a room free from dust, out of the way of careless handling, and with plenty of room to allow of free circulation of air about them. Treated in this way, with good varnish, you ought to be able to apply a fresh coat every twenty-four hours, but don't do it till the one is *perfectly dry*. Apply four or five coats in this way, and then allow the joints to hang for two or three days before proceeding to "rub down," which you will do, first, with pumice stone and water, and then wipe dry and clean; next with rotten stone and water, to be afterwards washed off and dried; next with *dry* rotten stone, and then polish with a soft linen or silk handkerchief till it reflects your satisfied smiles as you finish this stage of your work.

Allow the pieces to hang for a day or two to thoroughly harden the polish, so as to avoid all danger of "smudging" in the twisting of the joints in the next process of "winding."

Now joint your rod and test its working, twisting the ferrules till you find the proper adjustment that will give the best action and take the truest set, then lay it on the floor with the ring side uppermost, and make a scratch on the varnish where each is to be placed. Put *three* on the butt piece—one at the junction of the ferrule with the wood, and the others equi-distant between that and the handle; *seven* on the middle joint—one at each ferrule, and the others equi-distant between; *eight* on the tips—one at the ferrule, and the others at an *evenly diminishing* distance apart between that point and the ring top. By placing the rings in this manner on the tip you better distribute the strain on its delicate structure, and by placing a ring close to each ferrule you greatly ease the strain and lessen the chance of breakage at a point where the danger is always greatest.

Having marked the places for your rings in a straight line from reel-seat to tip, proceed with the winding, beginning with the hand-grasp.

It is assumed that you have learnt that essential to an angler's training—the "wind" with "invisible fastening"—if not, don't delay, but get hold of it at once; it is invaluable in neat repairing of broken rods, splicing and ring winding, and, while readily learnt from practical demonstration, is not so easily explained in the space at command.

Trim 'own the wood of the handle at the "check," so as to make a shoulder to prevent the cord from slipping. Wax the cord you have procured for the hand-grasp with bee's-wax, and proceed to wind it evenly and closely round the "grasp" from the check to the reel-

