Q.A. HOW WOULD YOU GO ABOUT TURNING A TWIN HELIX LIKE THIS?

Some time ago I issued this challenge and it has been answered at last by David Swanson who has adapted his lathe to do ornamental work. David has made a second lathe bed from iron plates and angle iron welded together and mounted it on the back of the lathe. He has made a sliding carriage and a full length lead-screw and mounted a drill on the carriage so he can drill holes or flutes in any position on a cylindrical workpiece. For this challenge David's solution is to lay out the pitch of the spiral with pencil lines and drill out with a point drill just over half way through, so that, when the opposite spiral holes are drilled they will break through at the centre. He would then remove the webbing between the spirals, clean them up and shape them with carving tools, files and abrasives, leaving connected, the end which is to be open, until the last minute when the bines may be carefully cut free

This sounds to be a possible method although David does not state that he has made a test piece nor did he include a photograph of the finished project.

I myself have not attempted this challenge but, if I did, I would follow a technique similar to that described in Bergeron Volume 2 for 'A Distaff with Twisted Form'. I also consulted Master Turner, Jean Claude Charpignon, who suggested some additional tips and the combined technique I now suggest is as follows:

1). Firmly grip in a chuck a cylinder of very hard, close-grained wood, support with the tailstock, and turn to the shape of a 'Distaff' (Wool Spindle); if you have a Curvilinear apparatus (copying facility) make a template of the desired shape.

2).Drill a hole through the axis of the piece; open out the hole at the tailstockend sufficiently to insert a cutting tool and then hollow to constant wallthickness using handtools (alternatively, it should be possible to use anunder-cutting tool following a curvilinear template).With a small cylinder of the same wood, make a plug to fit into the open end; then drill it and t apa screw thread into the holes at each end of the piece; do this in one operation sothe piece may be screwed straight onto a screw-threaded rod without strainingit. Makethe rod slightly longer than the piece, centre the ends and cut a matchingscrew-thread along its entire length.Fix it in position with alock-nut.Now the piece is mounted on the rod the outer shape may not runcompletely true, so re-cut it using the curvilinear template.

3). Ifyou have a Spiral Apparatus set the gear-train to the desired helix angle andwith a pencil mark a circle at 0.600" from each end and divide these circles into a number of equal parts, then mark out the helices. If you don't have a Spiral Apparatus, wind a clock spring around the swelling form of the piece and mark out a helix between each of the divisions.

4). Cut away the spaces between the helices with a drill, making sure to start the drill near to the tailstock end of each flute (leaving a small un-cut ring for support) and cut to the same depth (leaving a thin web of material sufficient to support the bines). If you use a quarter-bead drill you can give the tops of the bines a rounded form. Then carefully undercut each bine to complete its round form; this should be done a little at a time, starting from the tailstock end, as when removing the thin web between the bines, they are un-supported. If there is any danger of damaging the bines through vibration, simply support the finished sections temporarily with adhesive tape. Finish the bines and polish them with fine abrasive paper.

5). If the tailstock end of the piece is to be opened (as in the picture above) and the bines unsupported, the plug should not have been glued into the open end, but with its support it is now possible to saw off the bines very carefully, and then remove the plug. The sawn off ends of the bines should be rounded and finished with fine abrasive, taking great care not to break them. The screw-threaded end of the rod may be turned down or a feature screwed onto it; or the rod may be removed from the piece altogether.