Letters to the Editor

Dear Editor,

I was interested to read the article ‘Wood: A local option for handpump bearings’ in the October issue, but thought that it should have included one important reference: the basic ITDG text on this subject, John Collett’s ‘Oil-soaked bearings: How to make them’.

Using the ITDG approach, a World Bank research project carried out wear tests on a variety of wooden bearings in 1978. (Stemberg, Yaron, Testing of wood bearings for handpumps, World Bank P.U. Report RES 13, February 1978.) Not surprisingly, softwood and non-lubricated bearings did not perform well. Oil-impregnated hardwood (bubinga) bearings, however, running on standard 0.5-inch galvanized pipe as a pivot, worked very well, showing virtually no wear after 2 million simulated pumping cycles under a 130lb test load. The pivot showed some surface polishing, because the galvanizing was partially stripped off and formed a wood/oil/metal layer on the surface of the bearing, but this may actually have resulted in lower friction, compared to the original zinc surface. The bearings were kept dry, so the effect of dampness and swelling was not examined (a good initial fit was assured by re-reaming the pivot holes after impregnation, as recommended in the Collett paper).

The concept appeared promising, but as you know the Bank’s later VLOM research focused on improving commercial products and did not pursue the investigation of this type of locally-fabricated component.

These days, I believe that better water resistance could be achieved by, for example, impregnation using polyurethanes with highly penetrating solvents, but this might adversely affect the lubrication effect of the oil.

I believe that wooden bearings have a distinguished history, from propeller shafts on World War I battleships to crankshafts in some early Mercedes cars. I think you should encourage further exploration of their use in VLOM-type pumps (and possibly on other items of village technology), as purpose-made plastics tend to be expensive unless the production volume is extremely large.

Richard Middleton
Washington, D.C.