

## Oiling Recorders

Is it really necessary to oil recorders, and if so, why? If you were to ask a dozen recorder makers that question, you might get nine or ten different answers, but most makers would probably agree that bore surfaces must be made reasonably resistant to moisture penetration if the instrument is to remain dimensionally stable and free of cracks under varying circumstances of use. Moreover, most would also agree that a smooth, nonporous, and acoustically reflective surface enhances the acoustic efficiency of any given instrument.

There are two likely reasons for agreement on point one above. First, the more hygroscopic, or absorbent of water, the instrument is in general, the more severely it will shrink and swell in response to seasonal changes and heavy use, thus creating assorted tuning and "burble" problems. Second, when the instrument is played, the bore usually becomes wet. If this surface moisture is absorbed into the wood fibres, they will swell greatly and exude a small amount of dissolved vegetable matter, which is then swabbed away. When these fibres dry out, they are slightly smaller than before, and minute fissures appear between the fibres. As this process is repeated, the fissures increase in depth, and within them absorbency is greatly increased. This produces a powerful force that acts as if to enlarge the inside circumference of the bore—while, of course, the outside surface is completely unyielding. This process can eventually precipitate a gaping crack on the outer surface if it is not arrested by some means.

Digressing slightly, it should be pointed out that most such cracks open and close in response to climate and use, but seldom go through into the bore unless an attempt is made to "fill" them with some rigid material such as epoxy. When this is done while the crack is gaping, forces begin to work to pull the crack closed as the inner surfaces dry, and the filler material acts as a wedge to rip apart the fibres nearer to the bore. The result is a through-crack that will probably impair the playing characteristics of the instrument. Cracks on the outer surface are best left untouched, or at most, packed with beeswax, which will be pushed harmlessly out when the crack closes. Such cracks are nearly impossible to glue satisfactorily because of the great pressures involved. They are usually repaired by alternative methods.

Getting back to the point, oiling the bore correctly and with an appropriate oil can arrest the process of fissuring by replacing lost material between the fibres, and the elimination of this porosity will also improve the acoustic quality of the surface.

Virtually all competently made recorders are built utilizing one of four practical deterrents to this deterioration process:

- 1) The instrument can be made of a wood that is extremely resinous and naturally impervious to moisture.
- 2) The bore, or the entire instrument, can be impregnated with linseed oil.
- 3) The bore can be coated with an impervious epoxy or varnish film.
- 4) The entire instrument can be impregnated with paraffin wax.

Of these approaches, the last, impregnation with paraffin, is applied only to "soft" woods such as maple and fruitwoods, because only they are absorbent enough to take up a suitable quantity of the wax. If this treatment is administered properly, it appears that no further measures are required for the life of the instrument, since it is, for all practical purposes, a wax instrument. The wax process, incidentally, takes place while the recorder-to-be is just a billet of wood. After fabrication, no further impregnation is possible. Attempts to oil waxed instruments usually result in a messy sludge of partially dissolved wax and eternally undrying oil!

The third approach, that of applying a synthetic film, is also an attempt to produce a maintenance-free bore. Esthetic considerations aside, many fine makers such as Friedrich von Huene and his followers have had great success with this system. Their instruments are truly crack-free and require little attention. This treatment has been used primarily with resinous woods such as palisander and grenadilla, but is used occasionally with softer woods. Makers using this process usually provide a bore oil which is of only cosmetic significance, since it does not penetrate the film at all or affect it in any way. At most, it removes finger dirt from the exterior surfaces of the instrument.

With the first and second systems, regular oiling with raw linseed oil is a safe and effective method of arresting the fissuring process, and in the case of maple, preserving the acoustical opacity of the bore surface. Raw linseed oil, unlike boiled linseed oil, does not have drying chemicals added, and remains liquid for about forty-eight hours. This allows time for the oil to penetrate deep into the fibres before "polymerizing" or hardening, rather than solidifying into a film on the surface and eventually altering the dimensions and acoustics of the bore. Other "bore oils" may consist of almond oil or even petrolatum or mineral oil. In my judgement, and illustrious authorities notwithstanding, these are useless since they never polymerize, and may even serve to dissolve original oils and resins

and thus render the instrument more susceptible to moisture damage. I do not know of a maker of instruments in the first or second categories who uses other than raw linseed oil, sometimes with a little turpentine added. This is not to say that one does not exist—I just haven't met him yet.

To oil your recorders, follow these directions carefully. Read them through before beginning.

- 1) Oil only exotic or hardwood instruments that have not been wax-impregnated. If in doubt, seek advice.
- 2) Do not play the recorder for twenty-four hours before or after oiling.
- 3) Use only raw linseed oil. Although some makers add turpentine to their preparations, this is not necessary for your purposes.
- 4) Prepare a 1/4-inch wood dowel with an elongated hole near one end, or use the little plastic swab that comes with a plastic recorder. Using a strip of paper towel threaded through the hole, saturate the entire inside bore of each section with oil, BUT do not run the swab closer than one inch to the plug. DO NOT get oil on the plug or into the voicing area. DO NOT get oil onto the corks. Be sure that the sockets are thoroughly dry before the instrument is reassembled. Wipe the remainder of the outside of the instrument with oil and stand each piece on its end. Allow the pieces to stand for two or three hours if possible, but not overnight. Then wipe each piece COMPLETELY dry, starting with the outside. The fingerholes should be dried VERY carefully with a soft pipe cleaner so that any tuning material that may be in the holes is not disturbed.
- 5) After drying, allow the pieces to stand on end for twenty-four hours before reassembling the instrument.

**REMEMBER:** The instrument may be damaged by a) allowing oil to remain on the corks for more than a moment if smeared there accidentally, b) failing to dry the instrument thoroughly as directed above, c) smearing oil closer to the plug than one inch, onto the plug, or onto the labium, or d) attempting to oil a wax-impregnated instrument.

Failure to oil an instrument will not usually damage it, although performance and feel will be substantially improved by oiling. Only the most heavily used hardwood instruments will benefit by oiling more than twice annually, but unsealed maple instruments may require oiling as much as monthly, especially when new.

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