

Reed All About It

The simple vibrating reed gives voice to a whole array of musical instruments.



Soprano saxophone player Laurent Wolf (above) with the StraSax ensemble.

Ever blow into a blade of grass between your thumbs? In a simple way, you're playing a reed instrument: The air from your breath makes the grass vibrate and produce sound. This same principle applies to the more complex musical instruments of the reed family, from woodwinds like the clarinet, oboe, and saxophone to free reeds like the accordion, harmonica, and even the bagpipes.

A reed is a thin, elongated piece of material—usually cane (the thin, woody stem of a plant) or metal, but sometimes plastic—that's fixed in place on one end, and free to vibrate on the other. Woodwind instruments usually use cane reeds, often made from special grass grown in the South of France called *Arundo donax*.

Reeds come in many variations in thickness and stiffness, and for many players, the choice of the reed is a crucial component in creating their tone. Cane reeds are known as heterophonic, which means that one reed can produce many pitches.

Heterophonic reed instruments can be of the single- or double-reed variety. A single reed is slightly wider than the opening of the instrument's mouthpiece. When the player applies air and lip pressure, the reed beats against the mouthpiece, which sets a column of air into motion. Opening and closing finger holes changes the effective vibrating length of the air column, and thus the pitch. Double-reed instruments work the same way, but instead of beating against the mouthpiece, the reeds beat against each other.

Metal reeds—also known as idiophonic reeds—can produce only one pitch. Therefore, the instrument has one reed per pitch.

The single-reed Chinese *sheng* is one of the earliest known reed instruments. Simple reed instruments made their way west along the Silk Road of trade, from the Far East to Europe, where they influenced the development of the entire reed family. Early double-reed instruments were created by the ancient Egyptians out of barley straws pressed flat and placed in a small pipe. Holes were later added to allow the pipes to produce different pitches.



Yamaha clarinet under construction

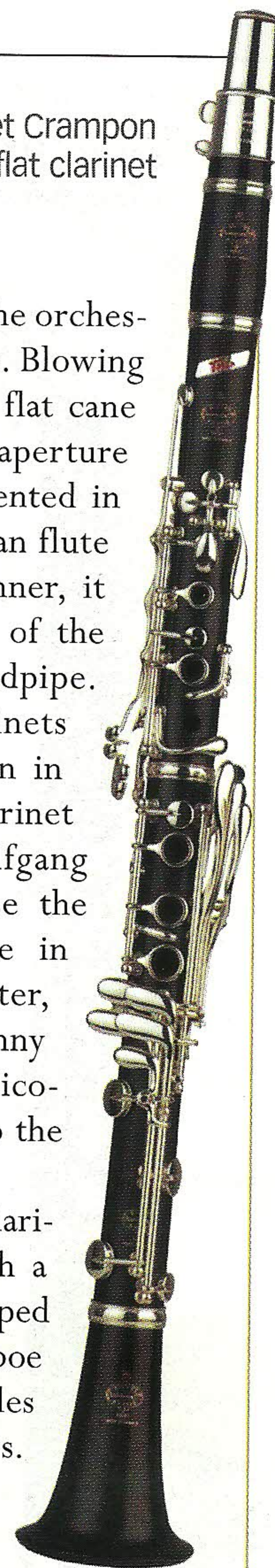


The making of a Hohner accordion reed



Reed being made at the Rico factory

A Buffet Crampon 1150L B-flat clarinet



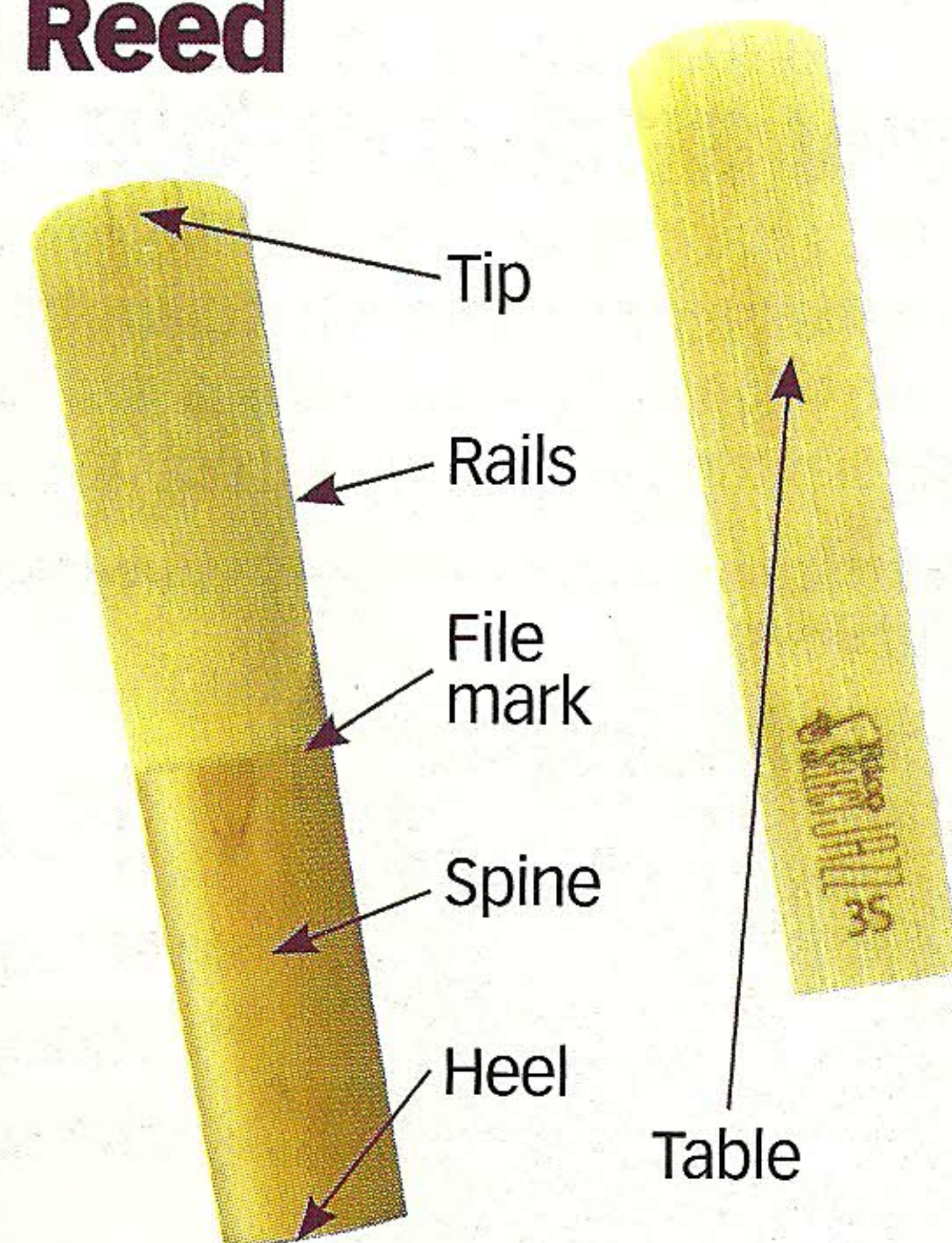
THE CLARINET

The clarinet is the oldest of the orchestral beating reed instruments. Blowing on the mouthpiece causes a flat cane reed to strike the edges of the aperture (opening) while vibrating. Invented in the early 18th century by German flute maker Johann Christoph Denner, it started as a modification of the *chalumeau*, a folk reedpipe. By the 1780s, clarinets had become common in orchestras. The clarinet concerto by Wolfgang Mozart helped raise the instrument's profile in classical music. Later, swing jazz great Benny Goodman made the "licorice stick" well known to the public.

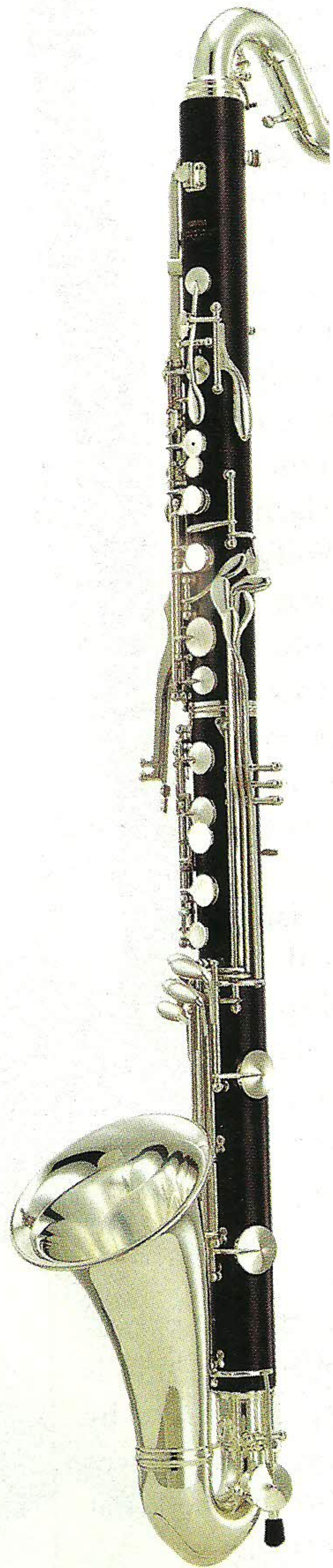
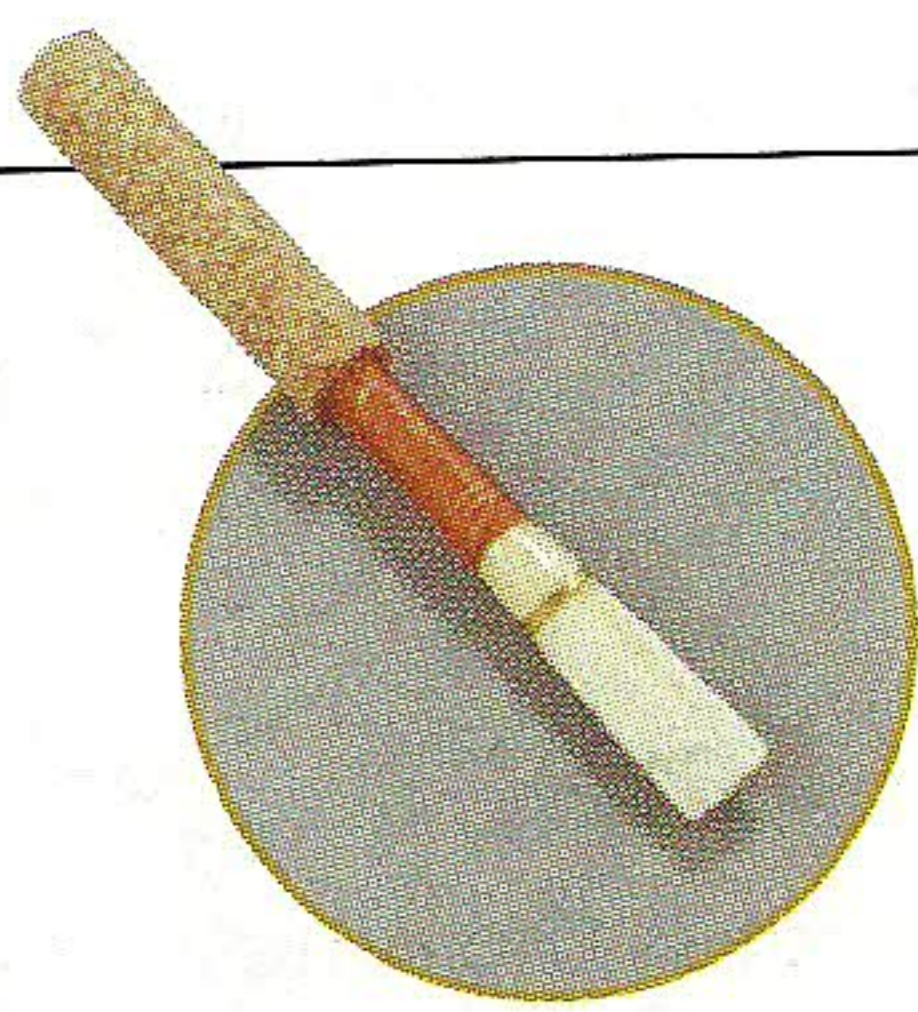
Usually made of wood, the clarinet is comprised of a long tube with a mouthpiece at one end and a bell-shaped opening at the other. Like the oboe and bassoon, the clarinet's tone holes are covered by small metal levers. Clarinets come in different keys: The B-flat and A clarinets are the usual orchestral instruments; the higher E-flat clarinet is a band instrument that is occasionally used in the orchestra. The B-flat bass clarinet is the most common of the larger clarinets. Constructed by Gresner of Dresden in 1793, it is much longer and curves up at the end like a saxophone. The E-flat alto and the E-flat contrabass clarinets are mainly band instruments.

Anatomy of a Reed

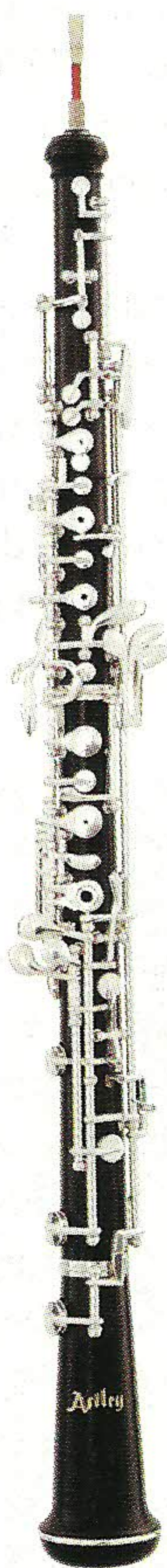
Cane reeds like the Rico Select Jazz 3S pictured here are generally handmade from a grass called *Arundo donax*. Reeds come in various strengths, which affect tone and playing ease, from soft (1.0) to hard (5.0). Free-reed instruments use metal reeds, each fixed to a single pitch.



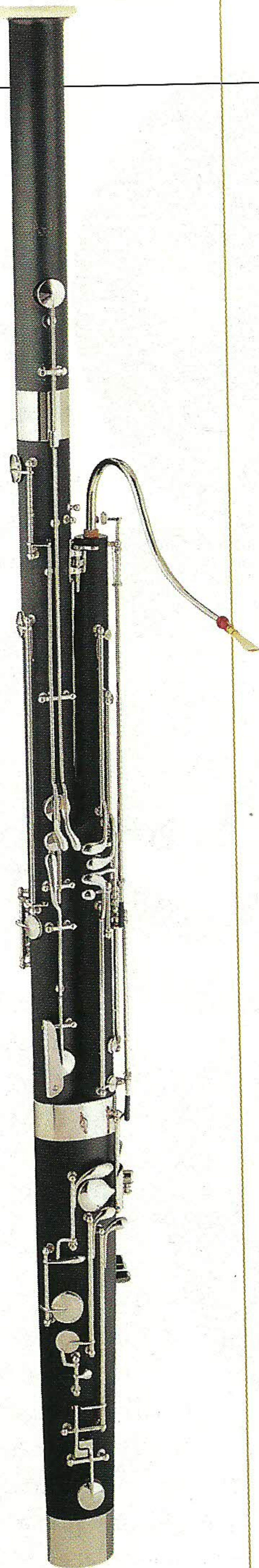
Selmer 508
Oboe Reed



▲Yamaha YCL621II
bass clarinet



▲Artley
R25QC oboe



▲Artley R18
bassoon

Low and Double Reeds

The bass clarinet, with its sax-like bell, has range an octave lower than the standard B-flat clarinet. Double-reed instruments like the oboe and bassoon came into being earlier than single reeds like the clarinet and saxophone.

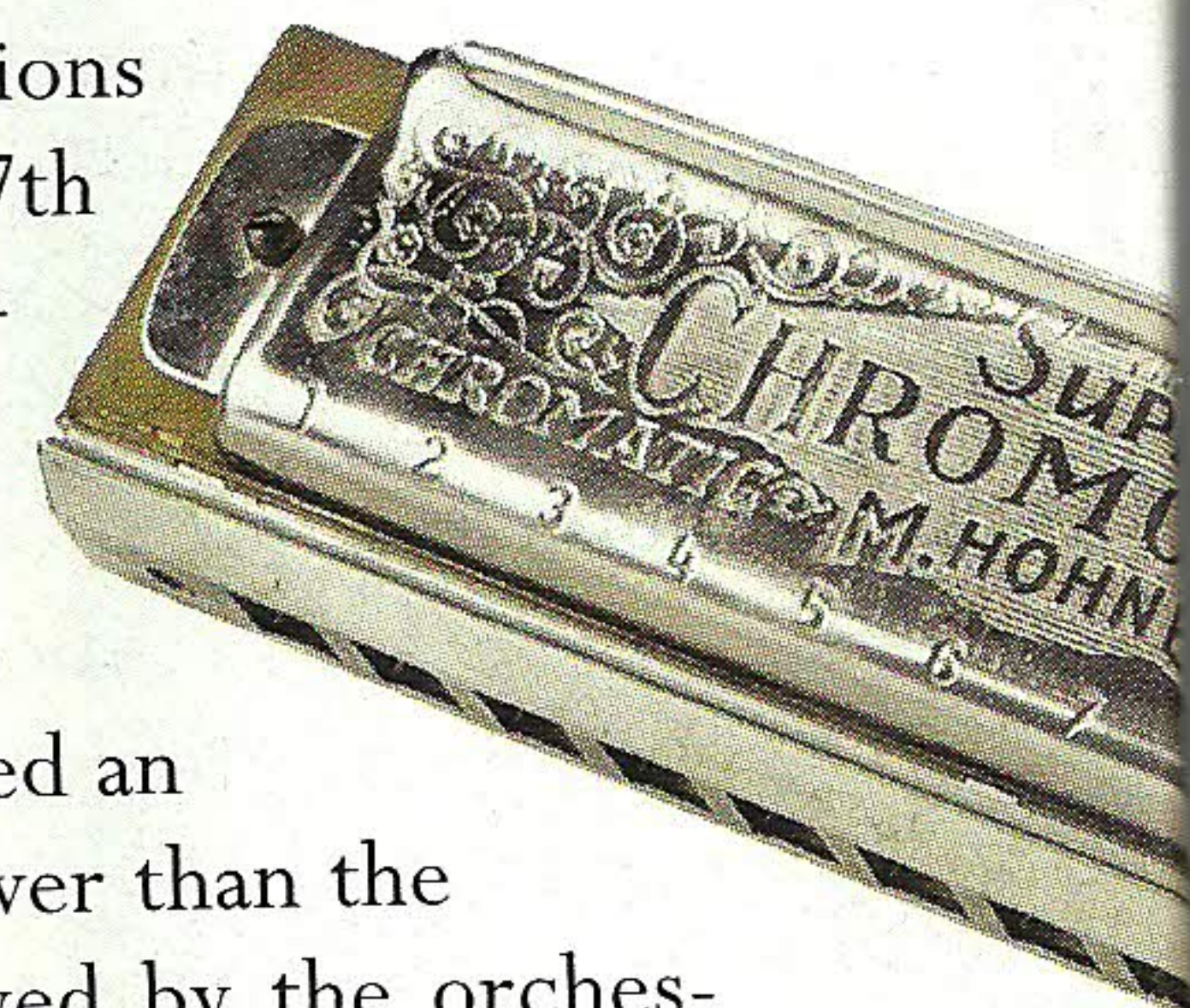
THE OBOE

The oboe dates back even further than the clarinet. By the 12th century, a short double-reed instrument with a conical bore and a wide bell named the *shawm* was brought to Europe from the East. In the 17th century two French musicians, Jacques Hotteterre and Michel Philidor, modified the loud shawm into the softer hautbois, with a narrower body split into three sections. This became the evocative instrument we recognize today as the oboe. By the 18th century, the oboe was in wide use in orchestral ensembles. Almost two feet long, it is still made of three sections with key-covered holes. By pushing the keys to close and open the tone holes on the instrument, the pitches can be changed. The oboe is extremely difficult to play; the oboist must learn proper breathing techniques to produce the massive amount of air required to make the double reed vibrate in proper pitch. The *oboe d'amore* is pitched a minor third lower than the standard oboe and has a softer tone. It was popular in the Baroque era, especially with J.S. Bach. It then fell out of fashion, but was revived in the 20th century. Another variation on the instrument is the slightly longer *oboe di caccia*, the ancestor of the English horn.

THE ENGLISH HORN

The *cor anglais*, or English horn, is neither English nor a horn. Early versions that appeared before the end of the 17th century were curved and leather-covered, with the tone holes often bored at an angle to accommodate finger stretches. The two-foot, seven-and-a-half-inch-long English horn is also called an alto oboe because it is tuned a fifth lower than the standard instrument. It is usually played by the orchestra's third oboe player, and is often used in compositions to imitate a shepherd's pipe.

Hohner chromatic
harmonica



THE BASSOON

Another double-reed instrument, the bassoon is the tenor of the oboe family. Constructed using approximately eight feet of cylindrical wood tubing, it has four joints: bass, tenor, double, and the bell. The mouthpiece is attached to a crook in the tenor joint. The instrument's keys are linked together allowing the player to control up to thirteen keys with the thumbs alone. The bassoon handles the low mournful tones in the woodwind section. It is often used in chamber music but rarely as a solo instrument. Played staccato, it has a potentially humorous effect enjoyed by some composers. For

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the deepest tones there is the contrabassoon—the bass of the oboe family. If straightened out, its 16 feet of tubing would be almost as tall as a two-story building!

THE SAXOPHONE

Technically a member of the clarinet family, the saxophone was invented around 1840 by a Belgian instrument maker named Adolph Sax, and by 1844 was first appearing in symphonic orchestras. Few pieces were written to include saxophones, however. It wasn't until the 20th century in America that the instrument became popular through its association with jazz.

Also a beating reed instrument, the saxophone's mouth-piece is very similar to that of the clarinet. The saxophone has a metal body instead of a wooden one, and a widened version of the oboe's conical bore. Most saxophones are curved at the bottom, but the soprano saxophone is straight and looks similar to a clarinet. The saxophone body contains twenty openings covered by keys that can be opened or closed in groups by depressing and releasing six studs, or fingerplates. An additional two holes on the body of the instrument cause those fingerings to produce notes an octave above or below the normal range of the instrument. Saxophones commonly come in soprano, alto, tenor, and baritone varieties and have a range of about two and a half octaves. **T**



◀ Yamaha YTS-82ZSM tenor saxophone

▶ Buffet Crampon BC8401 alto saxophone

◀ Selmer BS500 baritone saxophone

Saxophones are the newest members of the woodwind family, having been invented in the 19th century by Adolphe Sax. They come in a range of sizes, from contrabass to soprano, but the most popular types are the baritone, tenor, and alto.

The Free-Reeds

You might not know it, but the clarinet, oboe, saxophone, and bassoon have a lot in common with the harmonica and accordion. The harmonica is a free-reed instrument, as are the reed organ, accordion, concertina ("squeeze-box"), harmonium, and bagpipes. A free-reed is a small strip of material (usually metal, but sometimes plastic or cane) set in or over a slot that is slightly wider than the reed. When air

pressure (or suction) is applied, the reed swings freely through the slot to set up a vibrating column of air that produces a tone.

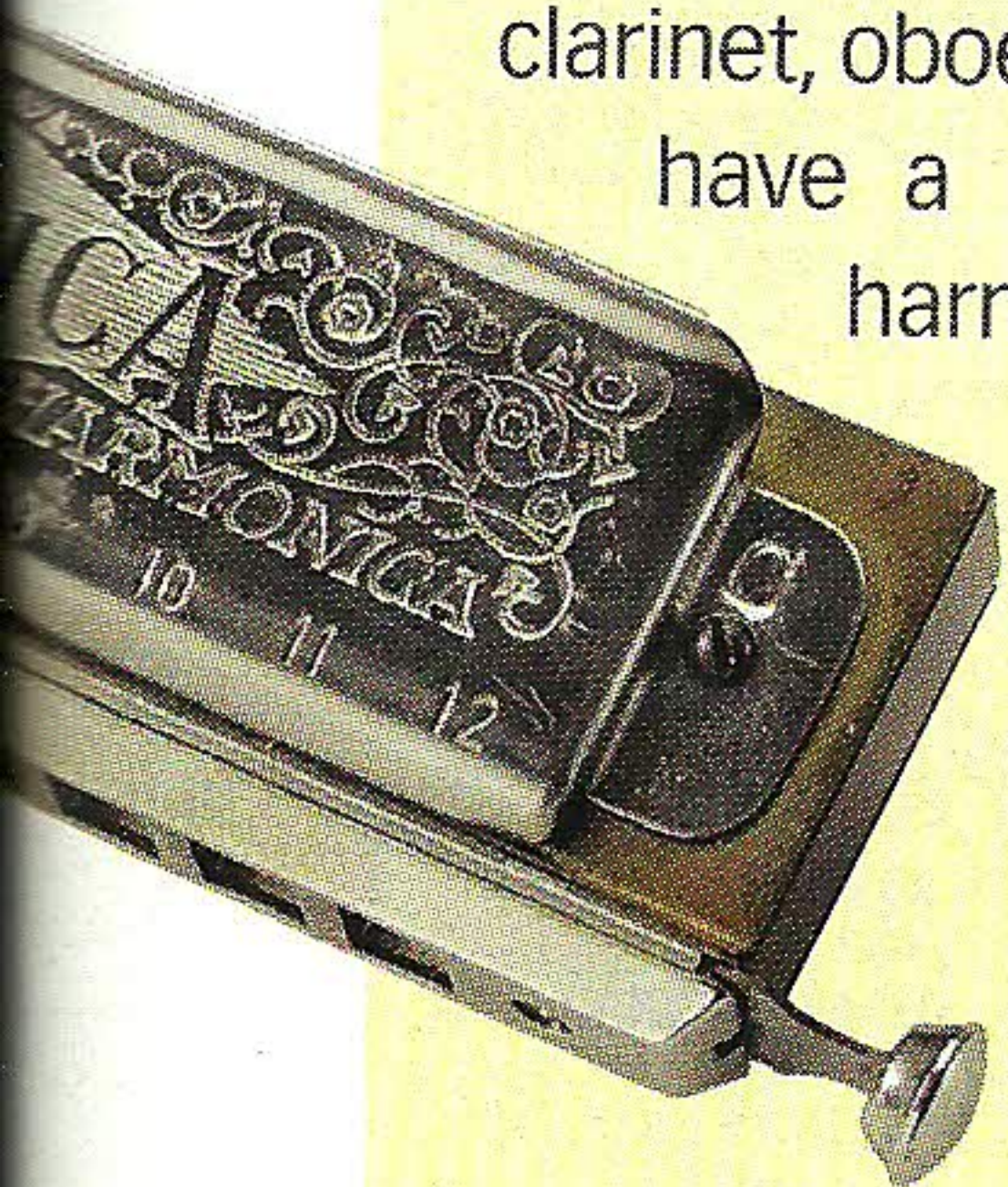
A very early and still common use of the mouth-blown free-reed is the pitch pipe. The 19th century *Pandean aeolian* is an instrument made by putting several pitch pipes together for a range of over an octave. The modern harmonica (also known as the mouth organ or blues harp) is a descendant of these pipes. When air is blown in or drawn out of holes called reed chambers, the reeds inside vibrate to create sound. Each chamber has multiple, differently tuned reeds, which are secured at one end and loose at the other. Pitch is determined by the size of reed—long reeds for low sounds and short reeds for higher sounds. Players can bend a note to another, lower note by blowing or drawing with extra force.

Another variation of the mouth-blown free-reed instrument uses a piano-like keyboard to select pitches. The Melodica—a trademark of the

Hohner company—became the generic term for all versions of these instruments.

Accordion-style instruments consist of a body in two parts, separated by a bellows that drives the free-reeds. Each body part features a keyboard containing buttons or piano-style keys that can produce single notes or chords. Versions of the accordion are employed in an astonishing variety of music including polka through Europe and the Americas; merengue in the Dominican Republic; musette in France; tango in Argentina; Norteño in Mexico; in the Zydeco and Cajun music of U.S., and more.

Bagpipes offer an interesting twist on the free-reed concept. Instead of activating the reeds directly, the player uses breath to fill a bladder. Pressing this bladder with the forearm forces air through the reed chambers to produce sound.



An accordion, disassembled

