THE BEGU ZULU VERTICAL FLUTE

by

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INTRODUCTION

In assessing the steps in the evolution in the construction of the vertical flute, the most important transition is from the flute with no whistle-head system, through the rudimentary whistle-head stage, to the whistle-head proper as manifest in the recorder and penny-whistle (Fig. 1).

Reduced to the essentials this transition stage consists of two steps:—

.1 A notch on the upper side with a sharpened edge receives an airstream directed by the lips which then splits in two, some passing over the instrument and some being diverted into the cavity of the instrument. The position of the lower lip prevents this now compressed body of air from escaping and so it has to move down the tube causing a wave of compression which is followed by a wave of rarefaction. This alternate change is periodic, the frequency determined in the case of a tube mainly by the length. The shape and the bore are of secondary importance.

.2 Some system facilitates the direction of the air-jet,
  (a) by supporting the position of the lower lip
  (b) by binding a piece of flat material such as a leaf before the sharpened edge to prevent shatter dispersal of the air-stream upwards.

The next step is the insertion of a block to form an air channel.

The concept in such an evolutionary arrangement of instruments is entirely functional. No concession is made either to time or geographical succession. A certain country can have a whistle-head vertical flute without it having been preceded by the stages enumerated above. This arrangement has been made without any geographical restriction so that it is an ideal succession from an incipient to the present most practical form. In this case only one aspect of the vertical flute has been considered. For instance, secondary consideration could be given to finger holes and, again thinking functionally, an arrangement according to finger holes must be secondary to embouchure. As the flute discussed has no finger holes, a subsidiary finger hole succession arrangement is out of place in this paper.

DISCUSSION

The pair of instruments discussed were obtained from Wilson Nulovu, a Motembu from Tugela Ferry, Natal, South Africa. (Fig. 2). The instrument is of two internodes of bamboo, cut at each end immediately before the knot. The central septum is pierced so that the resulting hole diameter is less than that of the tube. The embouchure consists of two vertically opposed notches with the edge sharpened (Fig. 3). Both these notches are of equal size so that there is no preferential front or back to the instrument. The Begu therefore represents the first transition stage from the notch to the whistle-head by providing a fixed support to the lower lip, thus forming a rudimentary fipple.

The Begu is played in pairs, a 'male' *Indota* and a 'female' *Umfazi* as in the *Amagemfe*, a Zulu instrument with a similar embouchure, differing from the Begu in construction in having an added thinner piece of reed inserted in the bottom. This represents an advance in that the Amagemfe can be tuned while the Begu relies entirely on the length of the nodes to decide the fundamental note-pitch.

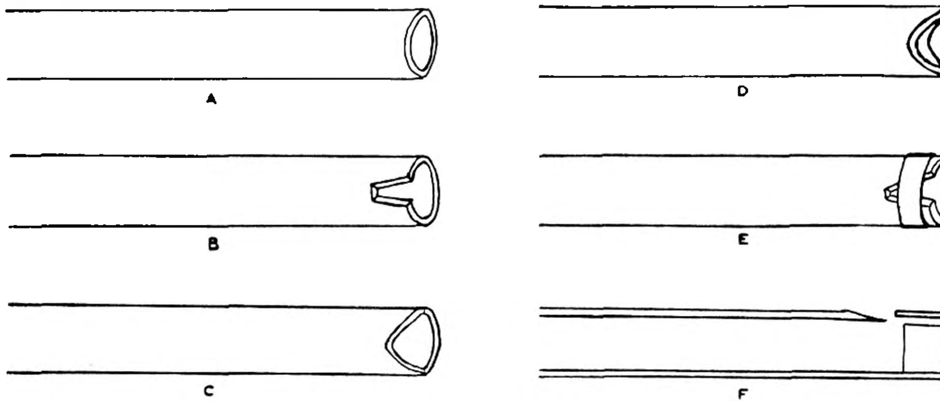


Fig. 1.

Diagram showing the steps in the evolution ot the embouchure of the vertical flute.
A. Simple and un-notched.
B. and C. Single-notched.
D. Double-notched.
E. Single-notched with flat binding.
F. The insertion of a block to form an air duct.

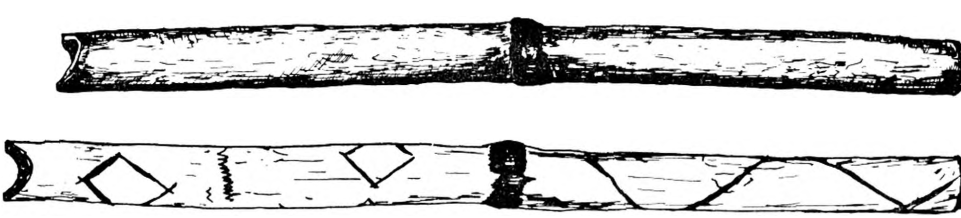


Fig. 2.

The Begu. 'Female' above and the larger decorated 'Male' below.

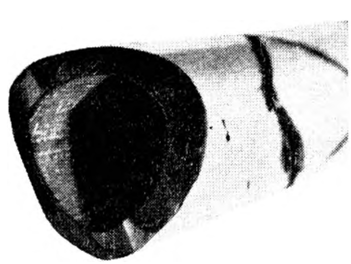


Fig. 3.

A close-up view of the embouchure.

The custom of the 'male' and 'female' is found in other societies as for instance in some New Guinea tribes where huge vertical and transverse flutes, associated with ritual, are played together in pairs, the 'male' again being the larger. (Baines 1957).

PLAYING

The flute is held vertically by either hand with the lower lip resting in either of the notches. The free hand is used to convert the open pipe to a stopped pipe and so two notes are obtained. Only two are used though with skilled blowing a substantial number of the harmonics can be sounded.

Before playing the instrument is well soaked in water as is the *Umtshingo* or *Ivenge*, a Zulu cattle-herd flute. This soaking swells the wood, fills the cracks and makes both the sounding and the notes smoother. The old box-wood military flutes and fifes were also so soaked and this may account for the expression "to wet one's whistle" for what more natural than for the players to avail themselves of the opportunity, while their instruments were drinking, also to drink in anticipation of an afternoon's hard blowing—which after all is thirsty work!

Next a small pebble is dropped into the cavity of the instrument and this rests on the thickened wall of the pierced septum. This pebble is singular and deserves some attention as I have not seen any mention of anything similar in literature. Its first main function is to aid the sounding of the most difficult note which is the fundamental of the open pipe. The pebble, being somewhere near the centre, encourages the formation of a node. The pebble also makes the sounding of the third harmonic (1/5) easy, but this note is never used. However, the third harmonic of the stopped pipe *is* used and here again the pebble helps as it tends to form a place of rest and as the septum is never quite in the centre, this node formation results in the sounding of the third harmonic (4/5). It may be coincidence, but both instruments have the septum slightly nearer the base, making tne upper portion of the instrument slightly longer than the lower.

The pipe is by no means symmetrical and without applying end correction or being in any way accurate, the ratio between the upper and lower sounding notes is approximately:—

$$\text{Frequency of open pipe} = \frac{\text{Sound Velocity}}{2 \times \text{Tube Length} \quad \text{(Fundamental)}.}$$

$$\text{Frequency of closed pipe} = \frac{\text{Sound Velocity}}{4/5 \times \text{Tube Length (Third Harmonic)}.}$$

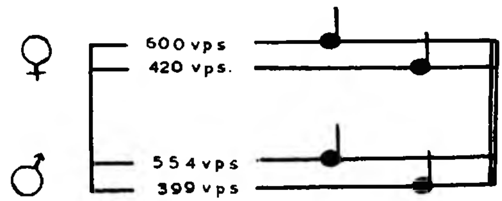
As the sound velocity and the tube length are the same in both equations:
Frequency of open pipe = $1/2 \times 5/4$.
Frequency of closed pipe = 5 : 8 (814 cents) a pure minor sixth.

If we apply end correction this ratio will be a little larger resulting in an interval nearer some forth of fifth.

In the Begu the difficulty of predicting the interval is further increased by the influence of the stone.

Kirby (1934) gives the following intervals for the *Amagemfe:*

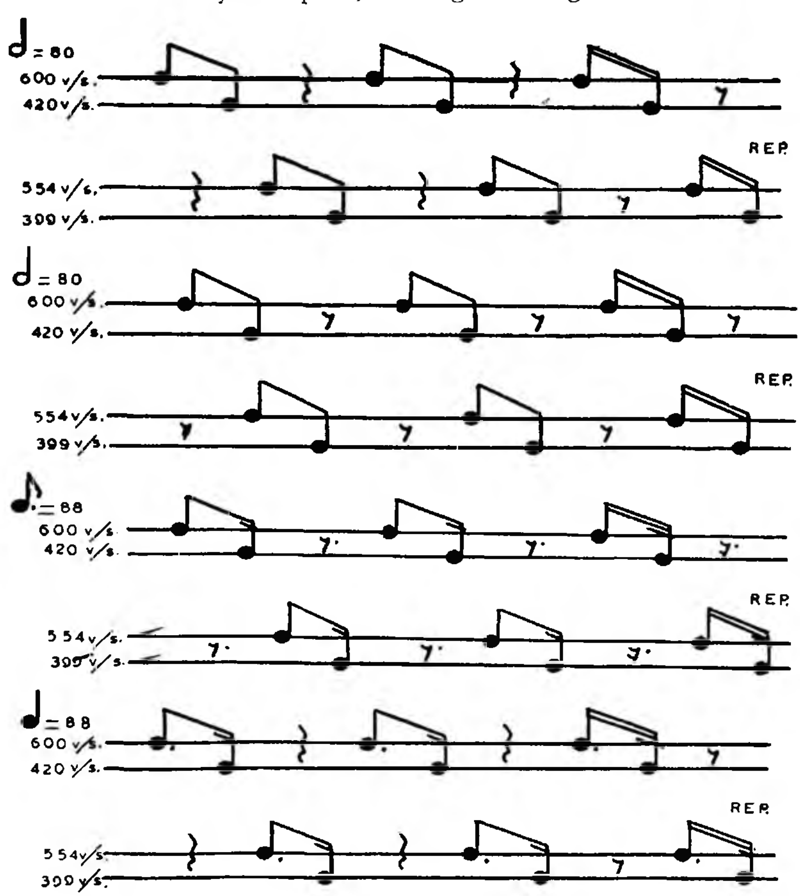
My pair of Begus yielded the following intervals:



The Begu intervals were determined by an oscilloscope after the instrusment had been warmed by breathing into them.

PERFORMANCE

The Begu is played mainly by cattle-herd boys. The 'female' takes the lead and the 'male' accompanies, the phrase is repeated and repeated, the 'female' keeping a fairly constant rhythm, the 'male' imitating the same rhythm. A great amount of latitude is allowed in the playing. At first I though this was allowed me for courtesy's sake when I was playing the '*Indota*', but later as an observer, I noted that performance is by no means constant. Especially do the rhythms vary with the rate of playing. I give here some typical variances of one rhythmic piece, showing the changes with rate increase.



DIVERSION AND EXPLANATION OF NOTATION USED

In transcribing sounding notes to the conventional eleven line stave with the a' pitched at the 440 vibrations per second as decided by the International Federation of Standardising Associations, it is impossible to expect people not brought up to this Western standard to produce notes and intervals that we can conveniently jot down on our traditional stave so that they conform to the lines and spaces decided for Western musicians and the Union International de Radio Diffusion. After all, even Western musicians, brought up to the tradition of this standard and having instruments made under standard conditions and carefully tuned before leaving the factory, are at variance quite often. To avoid repercussion, I am in no way intimating that Western people only tend towards a common pitch. The Chinese musicians have a common pitch, the Huang-tchong of 366 vibrations per second, and it may well be that on systematic investigation it is found that other communities also tend towards a common pitch.

I feel that one's approach in this matter of sight transcription must be entirely functional. The traditional eleven line Western stave is the result of a necessity to have a record written of music *to be performed.* At first a simple indication of whether the next note was to rise or fall was all that was required. This sight-performance correlation evolved with the evolution of one particular type of music and is still evolving with the demands of new music. In recording music *already in existence* the problem is quite different. The final written result should be as accurate as possible. Ease of reading must take a second place. Keeping with the principle of our stave, a time-pitch graph with fixed positions and time duration of tones, a fraction of one of known duration, the system here adopted is accurate and practicable.

All objections that it is not possible to summon a note of any required pitch without the use of expensive electronic devices are overruled. There is an excellent old physics laboratory instrument called a monochord or sonometer. Despite its name it can have as many chords as needed and it is well within the means of anyone to construct of limited materials and little cost. Using the formula:

$$\text{Frequency} \qquad \frac{\dfrac{\text{Tension}}{\text{Mass per Unit Length}}}{\text{Length}}$$

a string can be made to sound any required pitch.

This system of notation is of course limited to certain performances. Vocal music sight transcription poses a number of difficult problems and probably the only way to make an accurate record is to use a dual-beam oscillograph. By photographic means a graph is obtained giving pitch, time and intensity, dispensing with the use of the abused and obtuse bar-line.

To conclude this diversion on technique, may I add a plea to those making recordings in the field, a plea becoming all the more urgent with the increasing use of L.P. and their terrible pitch variances. Please take with you some device to give a fixed pitch and sound it before each recording. Should the chosen device's pitch vary with temperature, for example a tuning fork, then take the temperature and note it. This is not asking too much and then it will be possible to adjust the play-back speed so that one is sure that the pitch accords with the original. This is no cavilling. Listen to different recordings from one master tape: look at different sight transcriptions and note the discrepancy. If one made a statistical study of for example the basic pitch tendency of a chosen district with the appropriate recordings, the result would be quite misleading, inaccurate and worthless.

It would be no waste of time if workers in the field of ethnomusicology gave more thought to scientific method. Concentrating a little more on the external world of sound will help solve problems which will make the understanding of the internal world of sound more within our grasp. A shame it would be if the magnificent field of ethno-musicology were relegated to obscurity by being swamped by a nebulous mass of irrelevance. It's the subject I'm enthusing over, not the noun.

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