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COMMUNICATION

Professor Frederick Crane, The University of Iowa, sends the following communication:

With regard to the article "Han Dynasty Musicians and Instruments" by Fong Chow in *Journal of the American Musical Instrument Society*, vol. 1 (1975), 113–125, I would like to correct a group of errors that somehow crept in, and to suggest a reinterpretation of part of the data. My comments refer to the very interesting set of pitch pipes designated as tuned to the twelve *lü* of the ancient Chinese scale system (pp. 122, 124–125).

In Table II, the sharps have been left off several of the pitches in the last column, headed "Equivalent." In the common system, where middle C is represented by c′′, these should read, from top to bottom:

   a♯′ b′ a♯′ c′′ c♯′′ d′′ d♯′′ e′′ e′′ f♯′′ g′′.

The differences from the equally tempered values, given in cents, are correct.

Table III, which compares the actual measurements of the pitch pipes with the values they should have according to theory, is misleading. The *Huang-chung* pipe has been used as a basis for judging the frequency and length of all the other pipes, presumably because this pipe is the starting point for the derivation of the other pipes' pitches, according to theory. (The tuning is in perfect fifths, as in the Pythagorean system; thus, the *Lin-chung* pipe has a frequency $^3/_2$ that of the *Huang-chung*, the *T'ai-ts'ou* $^3/_4$ that of the *Lin-chung*, etc.) However, in this case, the *Huang-chung* pipe is particularly out of tune with most of the rest. If the *Ying-chung* pipe is taken as standard, the following results are obtained:

| | Frequency | | Relation to Prescribed | Nominal |
Pipe	Measured	Prescribed	Frequency (cents)	Pitch
Huang-chung	455.78	412.25	+173.8	ab'
Ta-lü	491.89	440.23	+192.1	a'
T'ai-ts'ou	[broken]	463.78	—	bb'
Chia-chung	459.22	495.26	−130.8	b'
Ku-hsien	540.77	521.75	+62.0	c''
Chung-lü	563.40	557.17	+19.3	c#''
Jui-pin	591.76	586.97	+14.1	d''
Lin-chung	616.89	618.37	−4.1	eb''
I-tsê	655.08	660.34	−13.8	e''
Nan-lü	659.64	695.67	−92.1	f''
Wu-i	744.71	742.89	+4.2	f#''
Ying-chung	782.63	782.63	±0.0	g''

Here, six of the eleven intact pipes are quite close to the ideal. Similar results would obtain for the length of the pipes.

The article states that "some of the pitch names were written incorrectly" on the pipes, but does not tell what name was actually written on each pipe. Lacking this information, I would like to suggest that the first four pipes appear in the wrong order in Table III. If the broken pipe is placed first, and the others are placed in order of ascending frequency, the beginning of the table would be as follows:

Huang-chung	[broken]	412.25	—	ab'
Ta-lü	455.78	440.23	+60.1	a'
T'ai-ts'ou	459.22	463.78	−17.1	bb'
Chia-chung	491.89	495.26	−11.8	b'

In this case, only three of the eleven intact pipes would be more than 19.3 cents away from their prescribed frequencies, and no pipe would be as much as a full semitone away. The errors, then, could easily be accounted for by the condition of the pipes. It is very possible that the pipes were a working set, and tuned quite accurately.

Incidentally, fine color photographs of all the instruments and the instrument-playing figurines appear in *National Geographic*, May 1974, pp. 668–669.