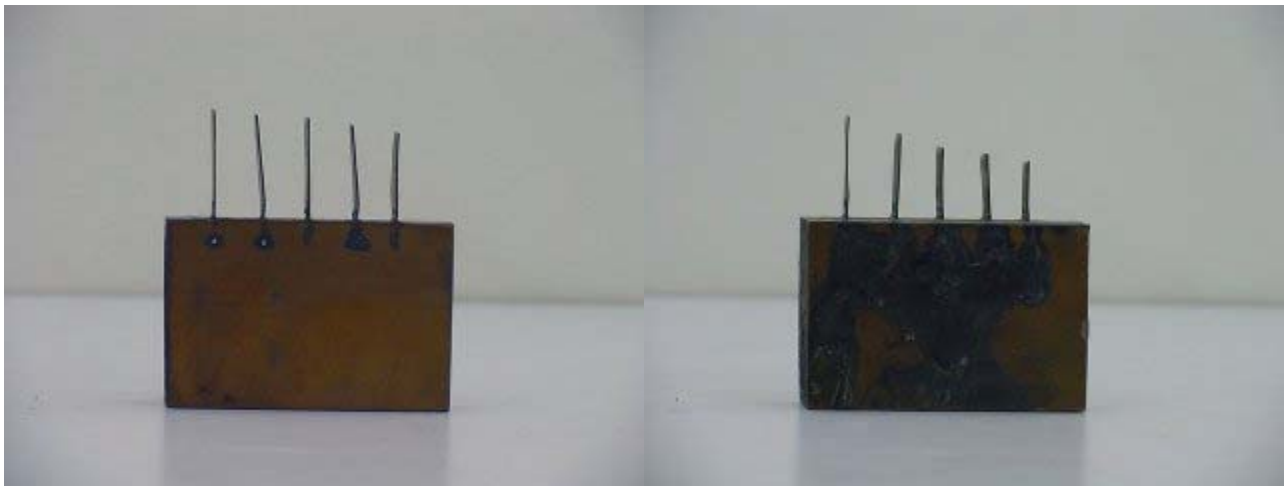
Question #324

Shown in the photographs at the left and the center below are two musical instruments in a family that we call the "shuntophone." They consist of large chunks of copper into which several strips of thinner copper ribbon have been brazed.



When I pluck one of the ribbons sticking out of the copper base it makes a pleasant musical tone, as can be heard by clicking your mouse on the photographs above.

The photograph below shows why they are called shuntophones. They were trimmed from a device in which the thinner copper ribbons were continuous between the two larger copper chunks, forming a resistive shunt. The large electrical current supplying the magnet coils of the University of Maryland Sector Focused Cyclotron (R.I.P.) passed through these ribbons, creating a small voltage drop across the shunt. This voltage was compared electronically with a standard voltage, providing a feedback system that was used to stabilize the current in the coil to less than one part in 100,000. But I digress.

The two shuntophones look different, so here is the question. Do they make different sets of notes, and if so how.

- (a) The two sets of notes are very nearly the same.

- (b) The two sets of notes are both scales, but one set is in a lower key because it has longer ribbons.
- (c) The two sets of notes are both chords, but one set is in a lower key because it has longer ribbons.
- (d) The one at the left is a scale and the one at the right is a major chord.
- (e) The one at the left is a major chord and the one at the right is a scale.
- (f) They may be different, but there is no way to tell how.

Click here for Answer #324 after October 20, 2008.

Question of the Week

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For questions and comments regarding the *Question of the Week* contact Dr. Richard E. Berg by e-mail or using phone number or regular mail address given on the Lecture-Demonstration Home Page.