



PHOTOGRAPHS OF INSTRUMENTS BUILT BY HARRY PARTCH AND HEARD IN HIS RECORDED MUSIC

It is inherent in the being of the creative art worker to know and understand the materials he needs, and to create them where they do not exist, to the best of his ability. In music, this characteristic must go far beyond the mere competence to compose and analyze a score. Indeed, it *is* more difficult for the composer to create the colors of needed sound than it is for the painter to create the colors of needed light, but it is no less important that he find it possible to do so. The usual musical traditions are against him in the effort; in our time they are recognizable as traditions only when they have reached the comfortable plateau of academic security. But the rebelliously creative act is also a tradition, and if our art of music is to be anything more than a shadow of its past, the traditions in question must periodically shake off dormant habits and excite themselves into palpable growth.

If one must have the solid feeling of historical respectability beneath him in order to function, our world provides it in myriad variety, beyond the immediate locale, before the immediate past. He does not need to become an archeologist to realize that there is hardly an exotic line he could write, a variant article he could create, or a singular idea he could brew, that would not be felicitous in some tradition, at some point on the globe, at some conjectured time in the cultured past. My instruments belong to many traditions, especially including the present ones: affirmation of parentage provides the primary substance of rebellion.

Their tuning is based on a 43-tone-to-the-octave system of acoustic — not equal — intonation, which is explained in my book, *Genesis of a Music*, published by the University of Wisconsin Press in 1949. A new range of melodic resources, a new series of tonality relationships, and a new perspective on consonance and dissonance are all implicit in the system. Beyond these severely definable ideas is the music itself, elusive to words. I call it *corporeal*, because it roots itself with other arts necessary to civilization, in a unity that is important to the whole being — mind and body. Even the visual element of seeing the instruments played is a vital one.

I began designing and building instruments twenty-nine years ago. Five of those represented here are explained in my book. The others have been built since the time of that publication. All have been built and rebuilt — one of them seven times — to improve quality. No two are exactly alike. I am not an instrument-builder, but a philosophic music-man seduced into carpentry. H. P. — September, 1957

PERCUSSION

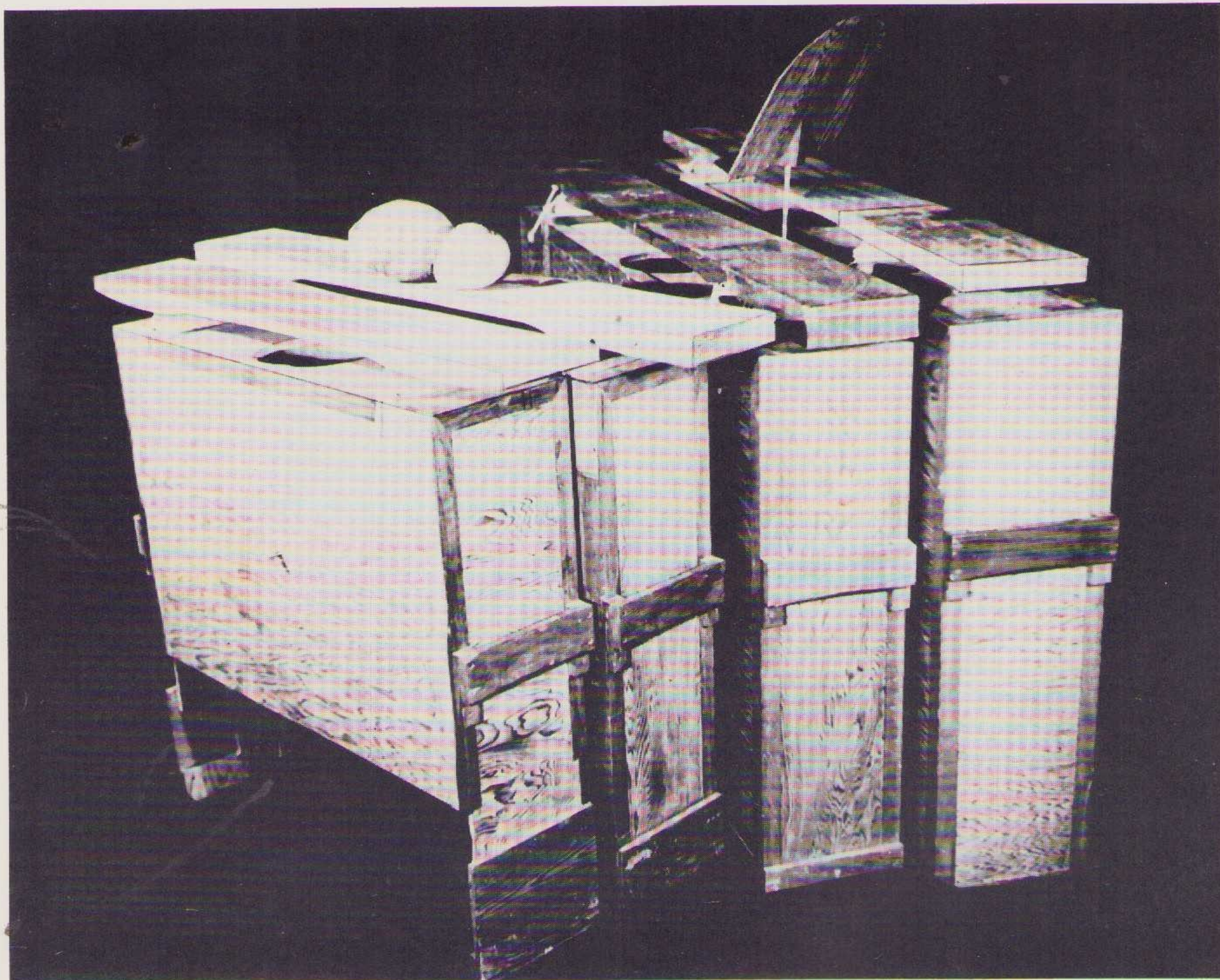


Photo by Vince Streff

MARIMBA EROICA

- BUILT:** 1951-1955, at Mills College and at Gate 5, Sausalito, California.
- SIZE:** The largest resonator is 8 feet long, 4 feet high, and 14 inches wide. The plank above this is close to 8 feet long. All planks are mounted at the nodes on foam rubber. The player stands on a riser 14 inches high.
- MATERIALS:** Resonators are of five-ply $\frac{3}{4}$ -inch redwood veneer, with steel rods for holding the sides rigid. Three of the tone-producing planks are of vertical-grain Sitka spruce; one is vertical-grain redwood.
- TONES:** The lowest gives an approximate F below the lowest piano A. Above this are (approximately) the lowest piano C, the lowest E, and the octave above the lowest A. The instrument is played with heavy padded mallets, and with hands in padded gloves.

The resonators were designed and built by Bill Loughborough and Gerd Stern.

PERCUSSION

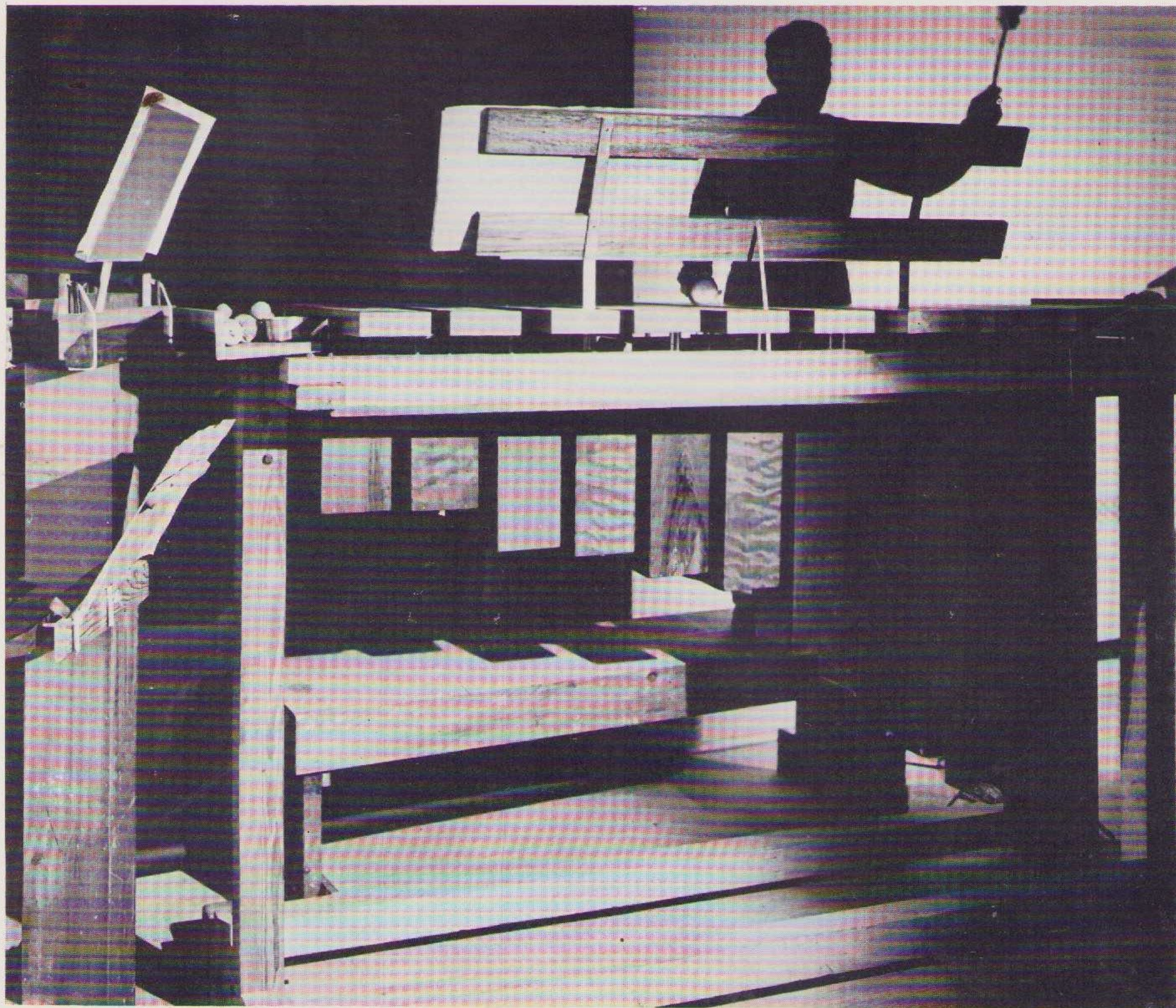


Photo by Fred Lyon

BASS MARIMBA

BUILT: 1950, near Gualala, California.

SIZE: 5 feet high (to the block level – not including the music rack); 7½ feet long. The longest block is 52 inches; the shortest 27 inches. The player stands on a riser 22 inches high.

MATERIALS: Resonators and frame are of redwood. The blocks are vertical-grain Sitka spruce, mounted on foam rubber.

TONES: Eleven blocks ranging from the low cello C to the Bb a minor tenth above (approximately). Played with a variety of heavy and light mallets, bare hands (as in bongo drumming), felted sticks on the edges of the ends, and wire cream whippers.

PERCUSSION



Photo by Paul McAdams

BOO(Bamboo Marimba)

BUILT: 1955-1956, at Gate 5, Sausalito, California.

SIZE: 6 feet broad at the floor, decreasing to 4 feet at the top; close to 4 feet high.

MATERIALS: Philippine bamboo, ranging from $4\frac{1}{4}$ to $2\frac{3}{4}$ inches outside diameter, mounted on foam rubber. The frame is of oak, and gum plywood.

TONES: 64 sections of bamboo, each with one closed end, and a tongue cut in the open end for the same natural frequency as its air column. A dry percussive sound, with one prominent inharmonic overtone. The range is approximately from the Bb below middle C to the second F above. Played with felted sticks and small mallets on the edges of the tongues.

The instrument is based upon experiments made by Bill Loughborough.

PERCUSSION

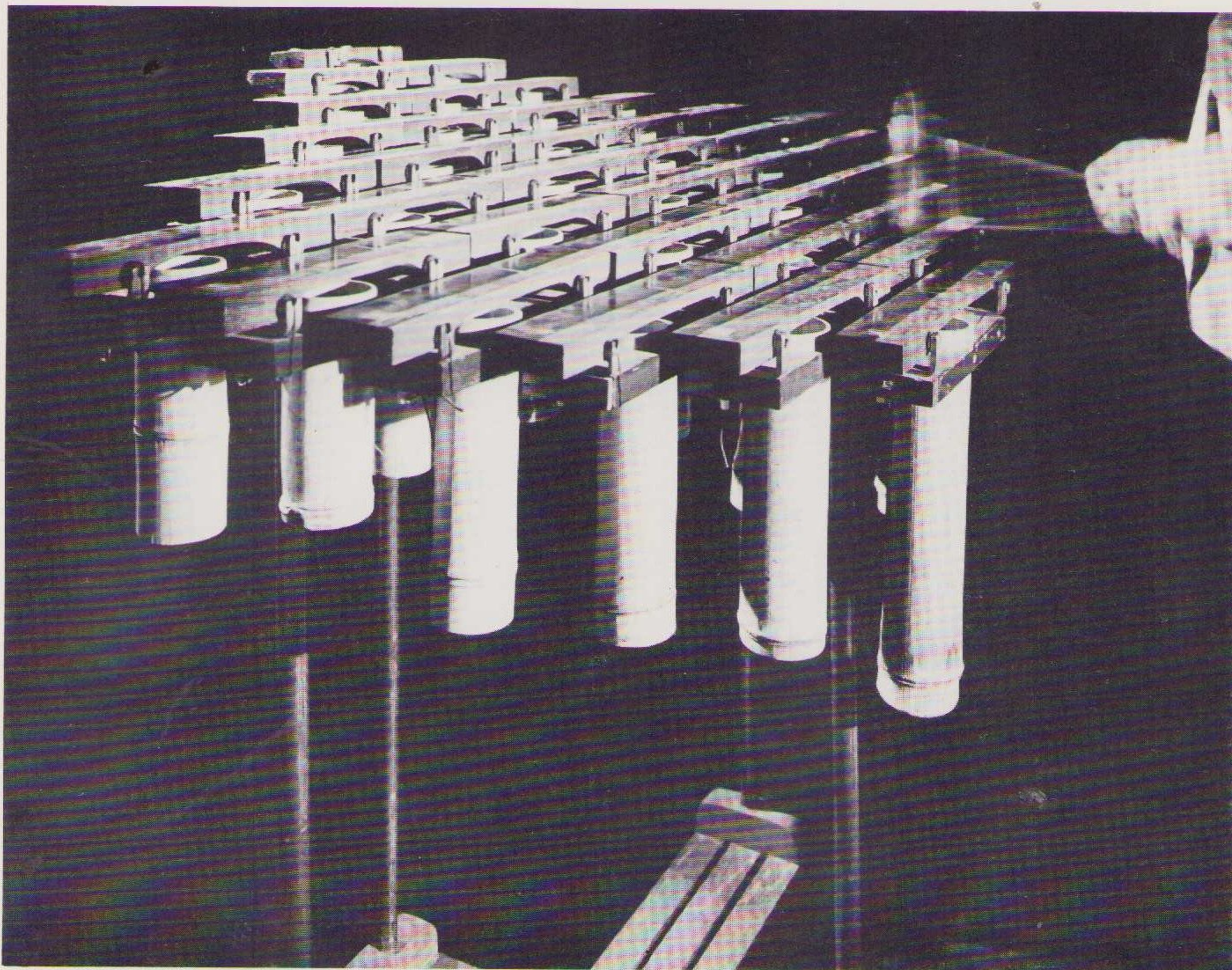


Photo by Fred Lyon

DIAMOND MARIMBA

BUILT: 1946, at Madison, Wisconsin.

SIZE: 40 inches high at the back, 33 at the front, 36 inches across the top.

MATERIALS: The blocks are Brazilian rosewood and Pernambuco, mounted on thin foam rubber; the resonators are Brazilian bamboo.

TONES: The 36 blocks are arranged in diagonal rows, so that one sweep of the mallet will sound an arpeggio-like chord. Strokes with the right hand are major; those with the left hand are minor (from top to bottom). The range is almost three octaves, beginning with the approximate C# above middle C.

PERCUSSION

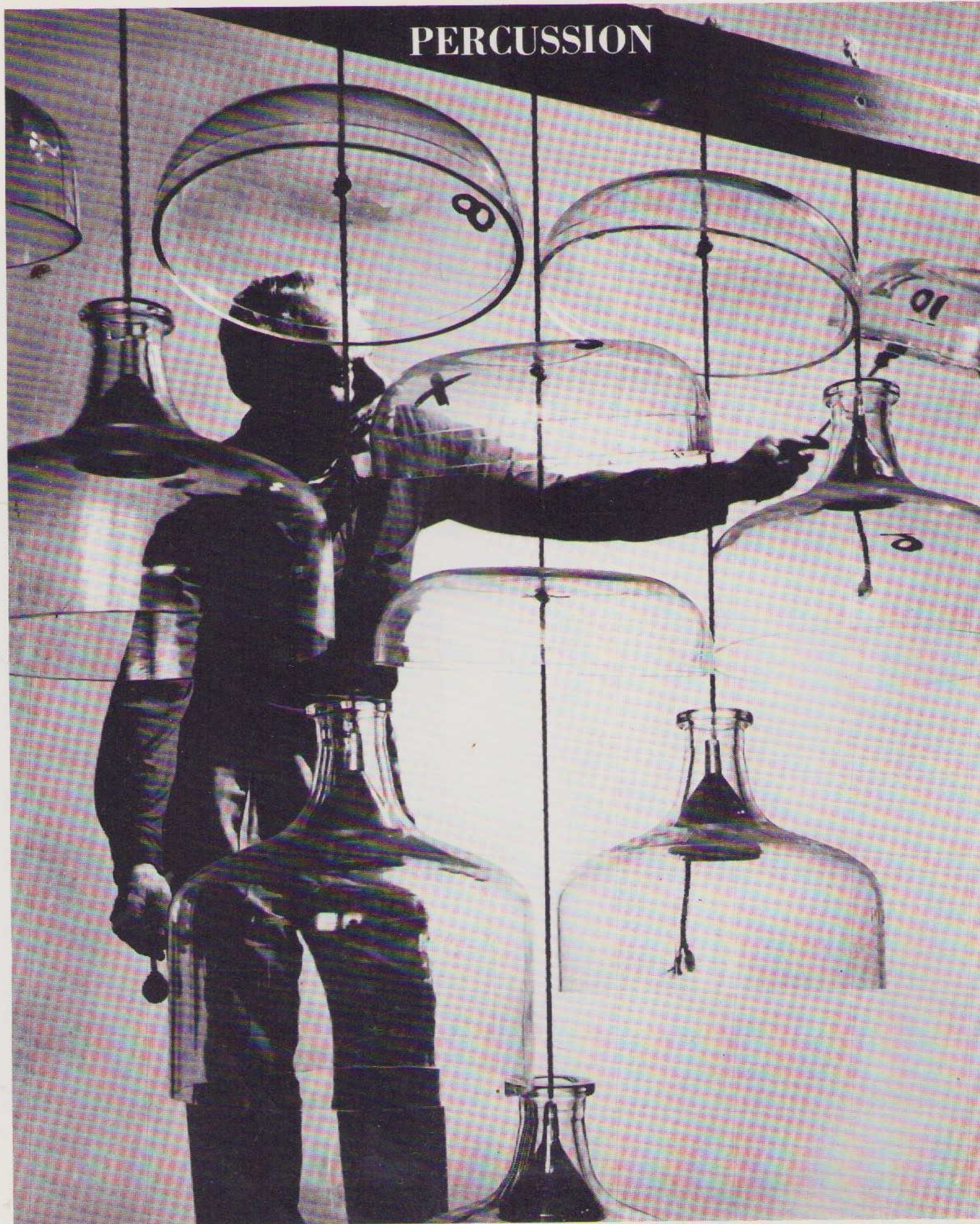


Photo by Fred Lyon

CLOUD-CHAMBER BOWLS

BUILT: 1950-1951, near Gualala, and at Mills College, California.

SIZE: The rack is 7 feet long, 6 feet high.

MATERIALS: Redwood frame, glass carboys, rope, and funnels for suspension purposes.

TONES: From 10 to 12 tops and bottoms of 12-gallon Pyrex carboys (the bottoms are inverted). At the University of California Radiation Laboratory, at one time, centers were cut from such carboys for use in "cloud-chamber" experiments. Played on the edges with small soft mallets, also on the flat tops. The bowls give a bell-like tone, and each has at least one inharmonic overtone. When one of them breaks it is virtually impossible to find an exact duplicate.

PERCUSSION

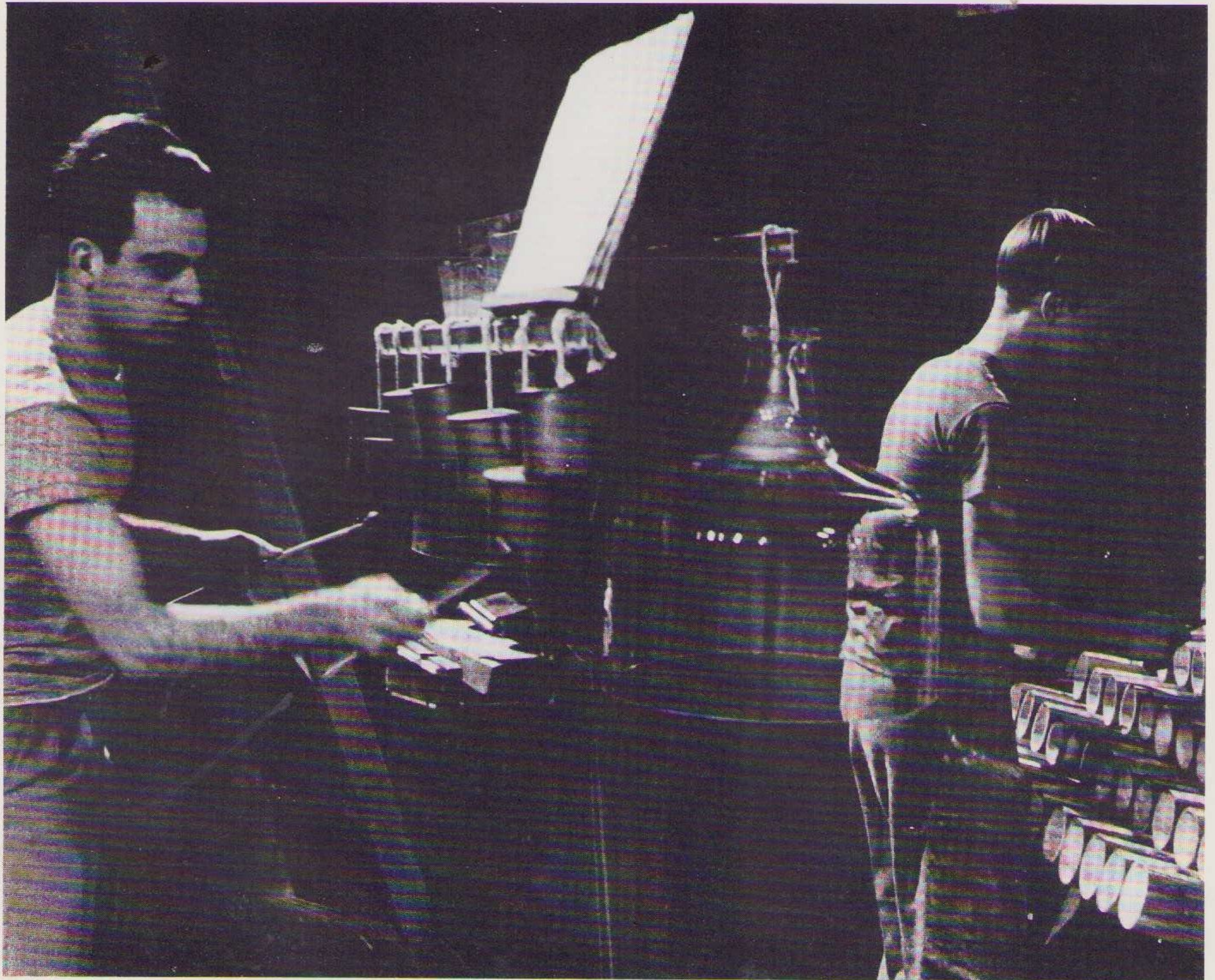


Photo by Robert Kostka

SPOILS OF WAR

- BUILT:** 1950-1955, near Gualala, and at Gate 5, Sausalito, California.
- SIZE:** The single resonator is 5 feet high.
- FACTORS:** The 27-inch Pernambuco block above the resonator gives an A, one octave above the piano's lowest A. The small redwood block in front gives an approximate C#, third above middle C. The seven brass artillery casings give a microtonal sequence from a flat C#, third above middle C, to the next D. The two cloud-chamber bowls are separated by about a semitone – A - Ab. The whang-gun, on the right, is a piece of spring steel controlled by a pedal, and makes a "whang" sound. Played with a variety of mallets.

PLUCKED STRINGS

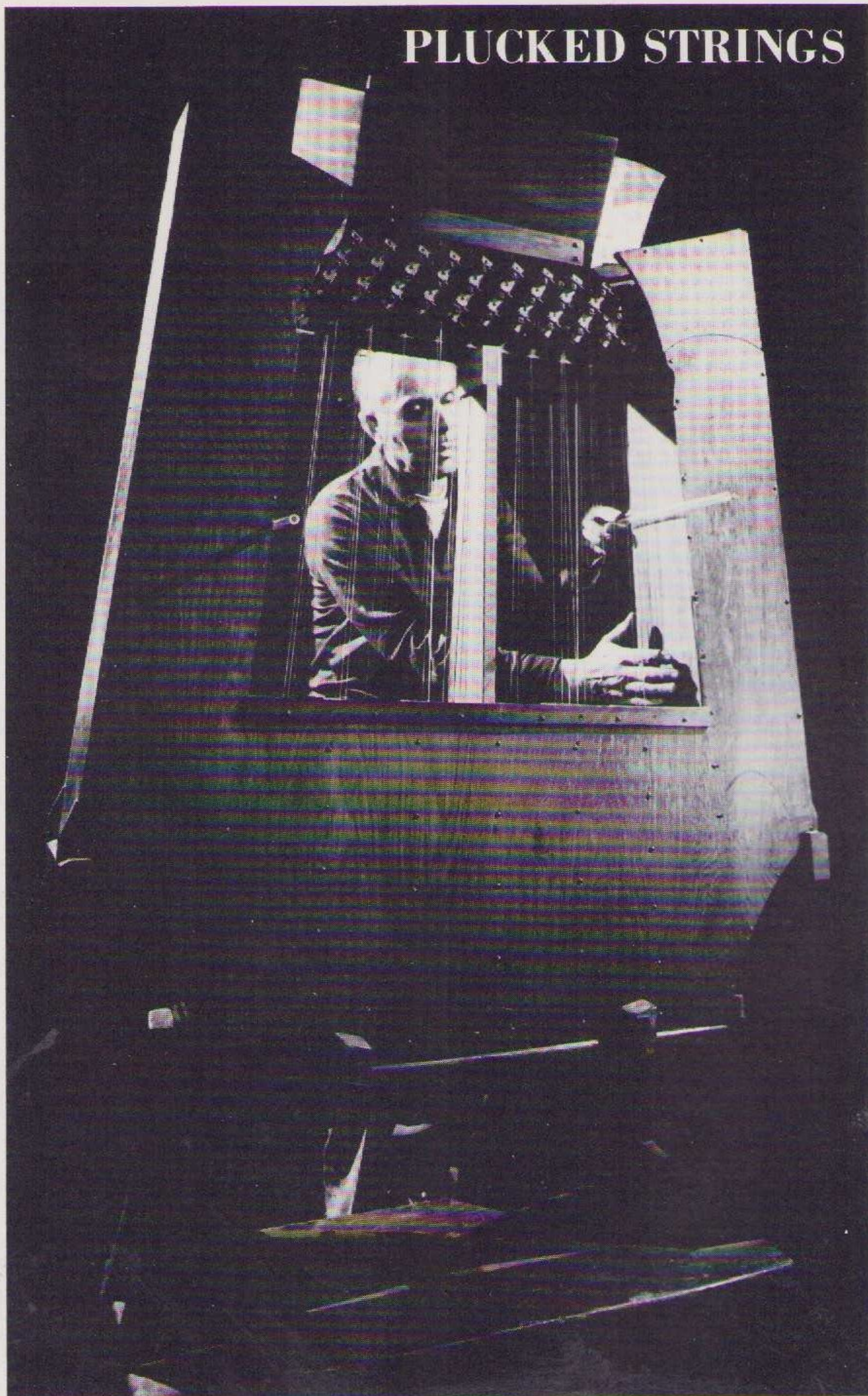


Photo by Fred Lyon

KITHARA I

- BUILT:** 1938-1943. Begun in Los Angeles, and finished in Ithaca, New York.
- SIZE:** Close to 6 feet high, to the top of the music rack; 3½ feet across at the broad center; tapering in width from 9 inches at the bottom of the instrument proper to 4 inches at the tops of the two arms.
- MATERIALS:** The base is solid redwood. The two large sides are ¼-inch redwood ply; the seven soundboards (five of them not visible) are vertical-grain redwood. The 72 strings are mando-cello, guitar, tenor guitar, and banjo. Guitar tuning heads.
- TONES:** They are arranged in twelve hexads, each containing four to six identities of a tonality. Glass rods (½-inch) stop the two outside hexads for higher chords and gliding tones or chords. The instrument belongs to the lyre type, hollow arms and base; it is an elaboration of the ancient Greek kithara.

PLUCKED STRINGS

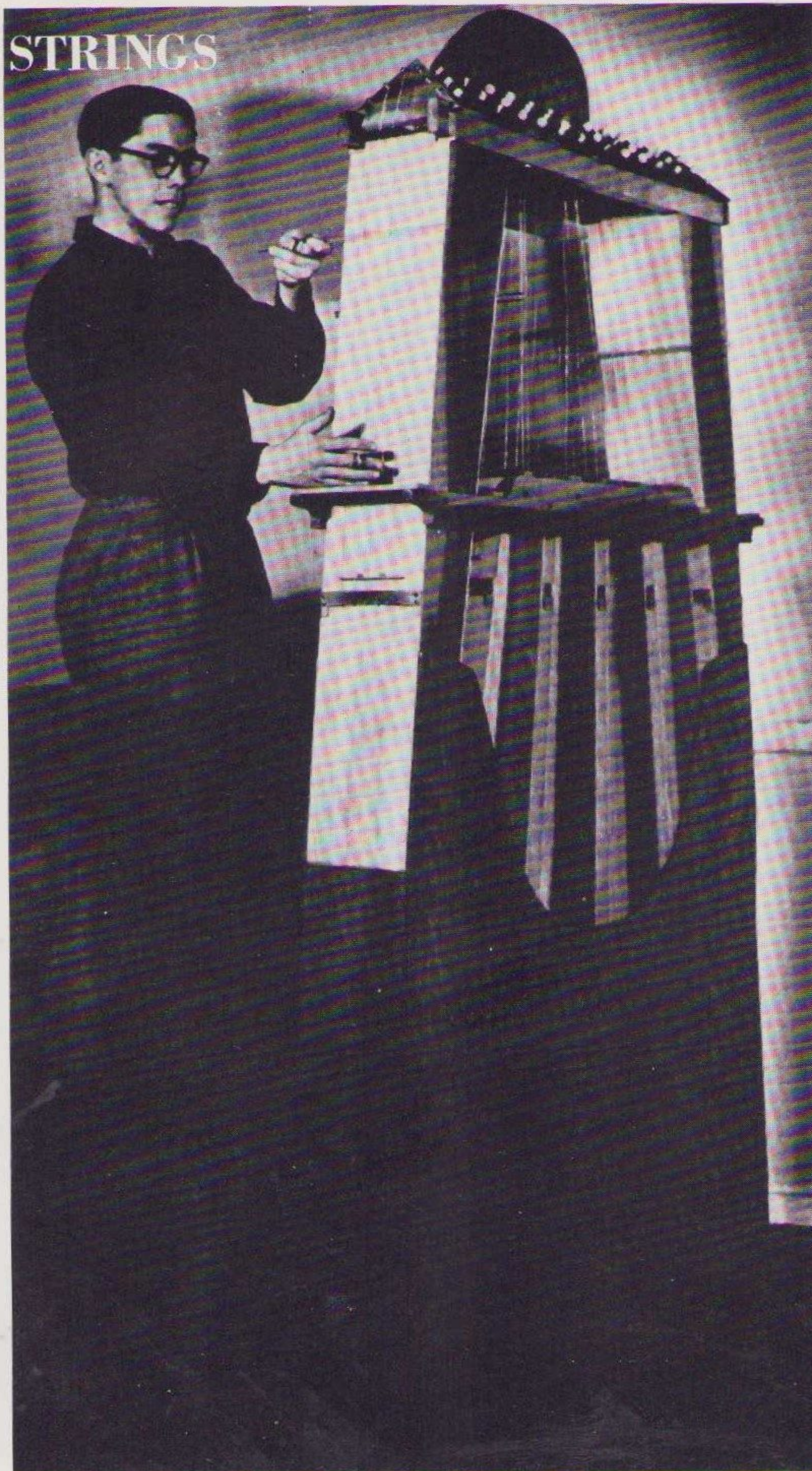
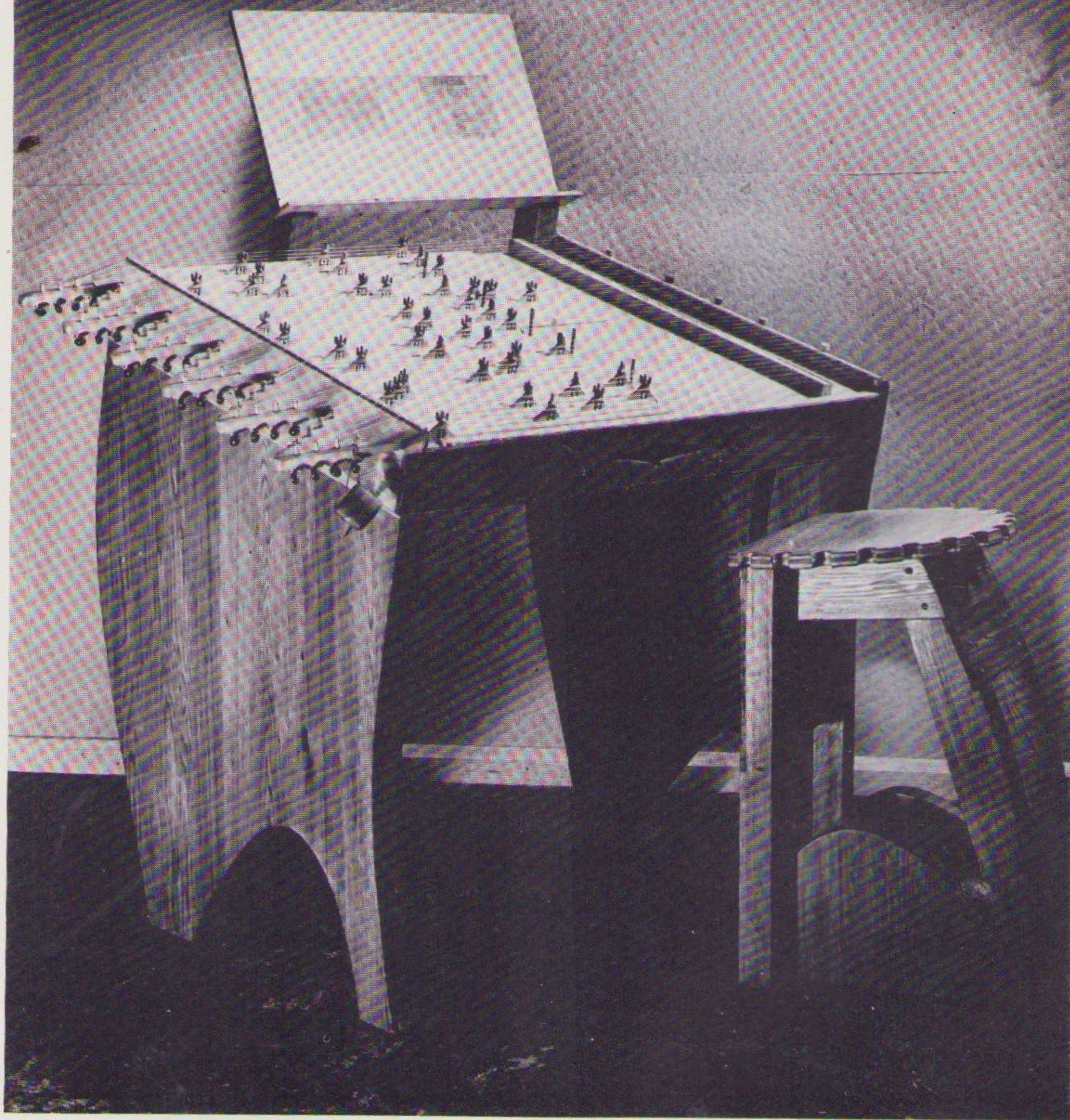


Photo by Emmett E. Smith

KITHARA II

- BUILT:** 1954, at Gate 5, Sausalito, California.
- SIZE:** More than 7½ feet high, to the top of the music rack; 5 feet broad at the base, tapering to 38 inches at the tops of the arms; the same width throughout, 7¼ inches. The player (or players – one on each side) stands on a riser 16 inches high.
- MATERIALS:** The soundboards (string sides of each of the six resonators) are thin vertical-grain Sitka spruce. The other sides are ¾-inch redwood. The two sides, at the bottom, are ¼-inch redwood ply. The strings are mando-cello, guitar, tenor guitar, and banjo. Guitar tuning heads.
- TONES:** Twelve hexads, as in Kithara I, but with different tunings. Here, four hexads are used with ½-inch glass rods for stopping purposes. Played with fingers, and with celluloid and felt picks attached to the fingers at right angles.

PLUCKED STRINGS



HARMONIC CANON I

- BUILT:** 1945, at the University of Wisconsin.
- SIZE:** 30 inches high in front, 36 at the rear; 36 inches broad, and 28 deep; 4 inches separate the top and bottom of the resonating box.
- MATERIALS:** The base is 1½-inch redwood. The top and bottom of the resonating box are ¼-inch oak ply. Strips glued on the top provide grooves in which the bridges can be moved. Bolts and wing-nuts for stopping the strings make possible a flat playing surface. Mandolin tuning heads.
- TONES:** 44 guitar second strings, sounding a unison when all bridges are lined up at the left nut. Any pattern of tones can be created that is desired, within the limitations of the movable bridges: chords, scales, intricate passages. Played with celluloid and felt picks; occasionally with fingers. The instrument was intended for use with a microphone pick-up, when played in a hall, since the oak-ply and glued strips prevent any large natural resonance.

PLUCKED STRINGS

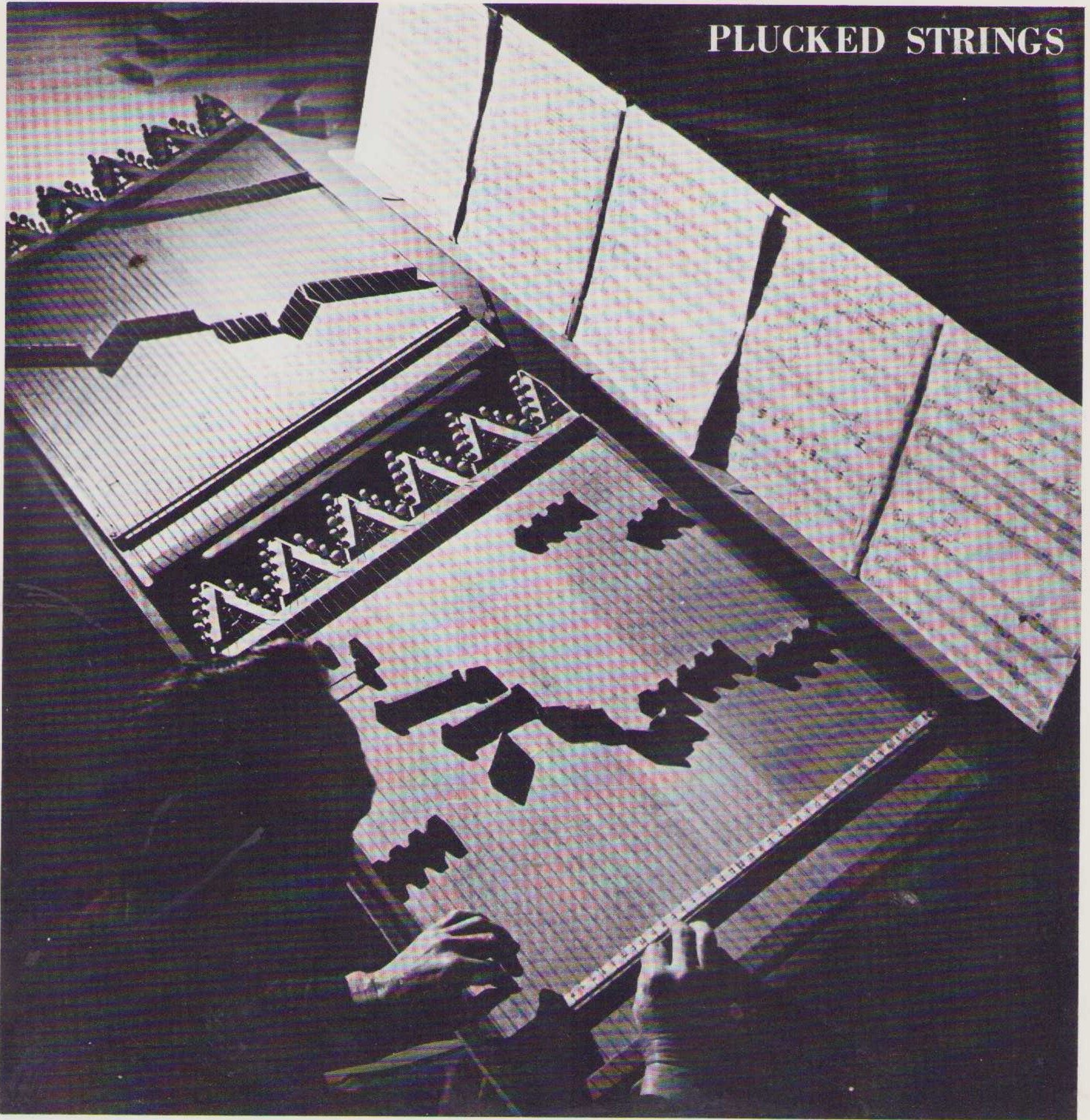


Photo by Fred Lyon

HARMONIC II (Castor and Pollux)

- BUILT** 1953, at Gate 5, Sausalito, California.
- SIZE:** 30 inches high in front, 36 at the back (not including the music rack); slightly more than 6 feet long. The resonating chambers are each $30\frac{1}{2}$ by $22\frac{1}{2}$ by $5\frac{1}{2}$ inches, outside.
- MATERIALS:** Redwood frame; thin vertical-grain Sitka spruce soundboards, oak ends on the resonating chambers, spruce bridges, mandolin tuning heads fixed on strap brass. Guitar second strings on Pollux (right); guitar second and fifth strings on Castor.
- TONES:** As with Harmonic Canon I, any pattern that is desired. Here, the bridges are made especially for each composition. There are 44 strings on each; without bridges those on Pollux would sound a unison G, approximately the G below middle C, while the upper 22 of Castor would sound the same unison, and the lower 22 would sound the G an octave below.

PLUCKED and PERCUSSIVE STRINGS

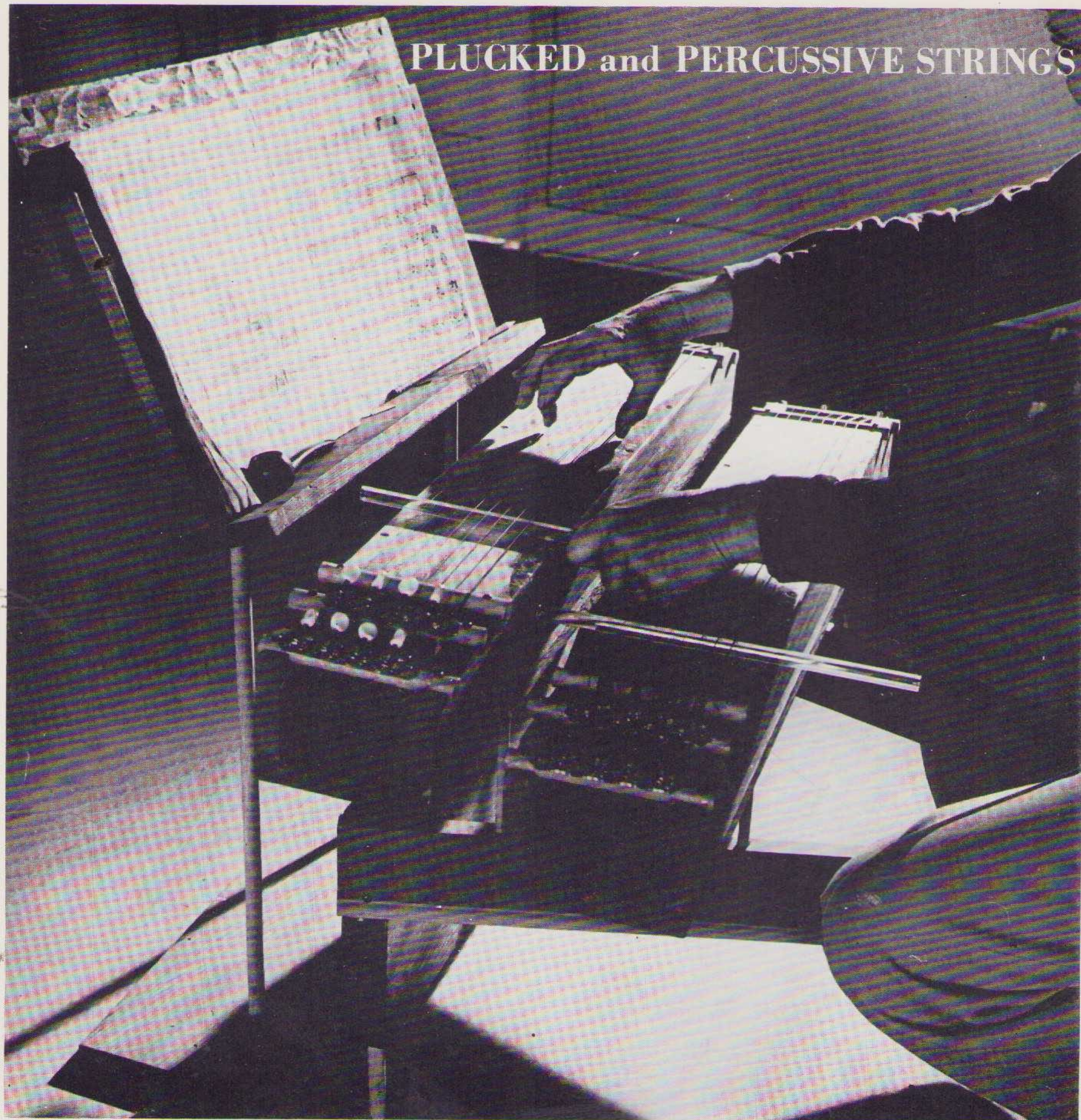


Photo by Fred Lyon

SURROGATE KITHARA

- BUILT:** 1953, at Gate 5, Sausalito, California.
- SIZE:** Roughly a triangle, 40 by 40 by 36 inches. Each resonator is 36 by 5½ by 4½ inches, outside. The attached seat for the player is 14 inches above the floor, and the upper resonator 22½ inches above.
- MATERIALS:** Redwood base, and redwood resonators except for thin vertical-grain Sitka spruce for soundboards. Mandolin tuning heads.
- TONES:** Each resonator has eight strings. The higher is composed of identities of a major tonality, the lower of identities of a minor tonality. As with the Kitharas, ½-inch glass rods stop the strings for higher tones and chords. Played with picks, fingers, mallets, and felted sticks.

REED ORGANS



Photo by Paul McAdams

CHROMELODEON I

ADAPTED: 1945, at the University of Wisconsin.

SIZE: Six keyboard octaves (not acoustic octaves).

TONES: Reeds are inserted for a 43-tone-to-the-octave scale. Thus, an acoustic octave covers that many keys and reeds, successively, and measures some three and a half keyboard octaves. The scale is in just intonation, and each tone is a frequency ratio to a fundamental, shown on the keyboard by colors. With the thirteen sub-bass reeds, and the stops for higher and lower tones in the second cell row, the total range of the instrument is from the lowest piano C to the third C# above middle C, slightly more than five acoustic octaves. All the other instruments are tuned to the Chromelodeon.

CHROMELODEON II, begun in 1946 and involving an unusual keyboard, remains unfinished, and **CHROMELODEON III** was used in *Oedipus* only. A previous reed organ, involving a keyboard somewhat like a typewriter, was built in 1935, but never used in music.

BOWED STRINGS (and Others)



Photo by Fred Lyon

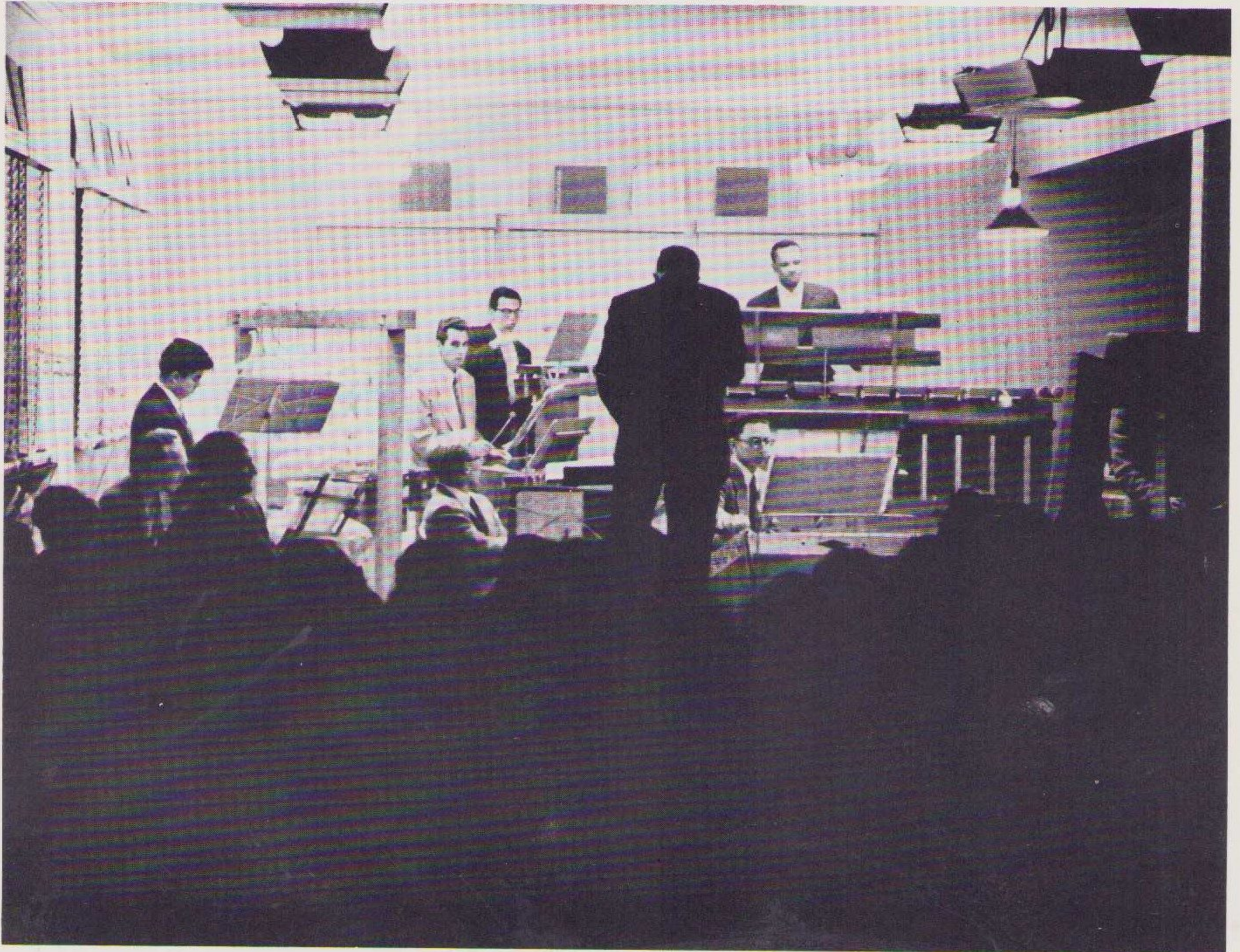
ADAPTED VIOLA

The fingerboard was made in California in 1928, and attached to a viola body in New Orleans in 1930. The string length is 20 inches, from bridge to nut. Tuning: G-D-A-E, an octave below the violin. Brads are inserted in the fingerboard to show 37 stops to the octave.

Three *guitars* were adapted, between 1935 and 1953. One has ten strings tuned on a tonality basis, the second six strings tuned in unison, and the third — no longer in use — a smooth fingerboard. All three were designed for electronic pick-up.

A Japanese *koto* was used in *The Bewitched*. This is the traditional instrument with a few minor changes.

FULL ENSEMBLE



A Performance of *Plectra and Percussion Dances* at Gate 5, Sausalito.

Photo by Fred Lyon

NOTATION

Each instrument has its own characteristic notation, and in order to read a full score with any competence, one must first examine the tuning instructions for the composition in question, and then know the instrument and its part intimately. When current instruments, such as cello and woodwinds, are employed, they are notated by means of a color analogy. There are, for example, four C#'s, distinguished by colored lines above or below the notes: purple, blue, orange, red.