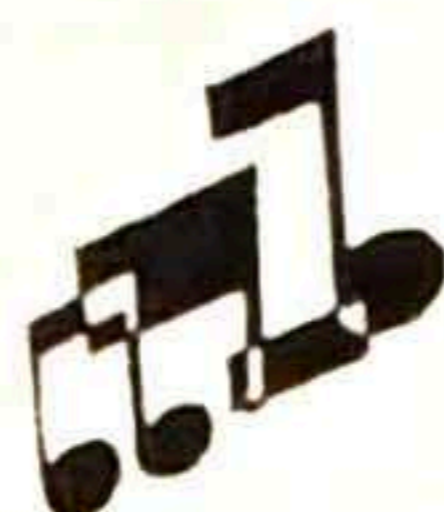

Armstrong News

W. T. ARMSTRONG COMPANY

ELKHART, INDIANA



THE MURRAY FLUTE — A CHALLENGE FOR ARMSTRONG

All employees at such well known flute shops as William S. Haynes, Verne Q. Powell and W. T. Armstrong literally owe their jobs to one man, Theobald Boehm of Munich. Boehm was a great lover of the flute and was considered a fine player in his day.

Not to be overlooked was his great ability as an inventor. These two talents led him to develop the flute that is used throughout the world, a flute that Boehm himself describes in the Dayton C. Miller book "The Flute and Flute Playing", that someday would be improved upon. Boehm took it as far as possible, sadly reflecting that a few notes were not "true" and required far too much compensation on the part of the player. This flute and

legacy was left to us with the invention of the Boehm system flute in 1847, and to this day it remains practically unchanged.

In 1948, a young flutist in the Royal Air Force Band began to question some of the scale finger combinations that Boehm had invented. Realizing that there were indeed "problems" with the basic overtone series afforded when playing upon the standard Boehm Flute, Alexander Murray set about to rectify, if possible, these problems. With the help of the English flute maker, Albert Cooper, Murray changed his flute into an open D Sharp flute. Having mastered this obstacle, he little by little added such things as a split F Sharp, open G Sharp, until finally he had accomplished seven major changes on the Boehm. By now, Alexander Murray had grown in stature as a flutist and had been elevated to the solo flute position of the famed London Symphony Orchestra. Now recognized

as one of the world's finest flutists, many other players began to look seriously upon Murray's new flute.

About a year ago, Mark Thomas received a phone call from Murray and a meeting was requested. It was at this meeting that Mark received his first look at the flute Alexander Murray had made. Impressed, but unable to play it, he called in Al Singletor and Jack Moore, along with Joe Elias, for a consultation on Murray's request. Will Armstrong, selected from all other flute makers, built the eighth and final version of the Murray system flute. With mixed emotions, the challenge was accepted, and last month, the model was presented to Murray for approval.

Delighted, Alexander Murray exclaimed, "you have achieved the impossible!" The yeoman's amount of credit in creating this flute must go to Jack Moore, who has spent countless hours thinking of how to put Murray's ideas into metal. Word has quickly spread, and now Armstrong has received many orders from leading flutists for this flute.

Early this month, Mark Thomas was invited to discuss and play upon this flute at a major national flute seminar at The University of Indiana. He accepted and took the builder, Jack Moore with him.

After much discussion with Armstrong president, Carl Burket, it has been decided to build a few of these for the top players who have ordered them and then to "wait and see what develops". As Burket says, "we owe it to the flute world to do this, and we are proud that Armstrong was selected from among many fine flute makers to build this flute."

As Armstrong vice-president Mark Thomas said, "this is a major breakthrough and improvement on the Boehm flute."

transparent tones, and for a wide dynamic range eventually caused the square piano to be made as heavy and as large as grand pianos. The action used in square pianos also became as complicated as that used in grands as public demand for virtuoso technique increased. Shortly after the Civil War the square piano was replaced by the upright as the most popular style of piano, and by the 1890's was obsolete.

—Robert W. Hobbs

VARIATIONS ON A THEME OF THE OBALD BOEHM DEMONSTRATION OF THE MURRAY FLUTE (Cover picture and abstract)

Illustrated on the front cover of this issue are three portions of the Murray flute, an interesting variation on the Boehm keywork developed by Alexander Murray and detailed in the following paper. Due to the great interest that has been expressed in this instrument the following paper is presented in unabridged form together with illustrations and charts. Acknowledgement is hereby made to the W. T. Armstrong Company of Elkhart, Indiana for the use of their photographs of the Armstrong prototype of the Murray flute.



Harry Moskovitz, John Coltman, Alex Murray

THE MURRAY FLUTE

Since the appearance of Philip Bate's¹ book on the FLUTE with a brief reference to a non-published article in the *Instrumentalist*, I have received a number of inquiries about my instrument. To solve the problem of answering each one individually, I will try to retrace briefly the steps which led me to my present instrument, to enumerate its advantages and disadvantages, and explain in what way it differs from the standard Boehm flute.

Until 1948 when I joined the Royal Air Force Band, I played on what is the commonest form of the Boehm flute, the closed g^\sharp instrument. At this time I read Boehm's² account of his instrument with Dayton Miller's commentary and decided that the open g^\sharp was a more rational system for at least four reasons.

- i) The duplicate g^\sharp hole was unnecessary.
- ii) The spring of an open key is lighter than one required to hold the key closed.
- iii) Top e is greatly improved when correctly vented with the a hole alone, and not the a and g^\sharp holes together as on the closed g^\sharp .

IV) One finger one key (pad) on g

I consequently asked a flute repairer to alter my instrument to the open g^\sharp and after a few weeks practice I found the readjustment amply rewarded.

The asymmetrical use of the little fingers, in particular the necessity for maintaining the right little finger down much of the time struck me as undesirable and I experimented with an open d^\sharp by turning the foot-joint until the d^\sharp hole was within reach of my little finger. I unhooked the spring and maintained the key open with an elastic band. The flute became a little unstable to balance but I solved this by sticking a wedge of cork on the body above the right thumb. (I no longer require this crutch, having learned to balance the instrument without it.) I felt that the action of the key was an improvement on the closed d^\sharp .

At that time I was fortunate in meeting Albert Cooper, an artist-flute-maker, formerly of Rudall Carte who had left them to begin making flutes on his own. He agreed to construct a new foot joint which would convert my flute to open d^\sharp .

The c^\sharp , d, and d^\sharp holes were placed in line from an axle on the near-side of the flute; the d^\sharp key was closed by both of the other keys. The problem remained, how to trill c-d or c^\sharp -d. When the little finger was removed from c or c^\sharp , d^\sharp was the note that sounded. In order to circumvent this, a crescent-shaped key was built from the d key around the front of the ring-finger key. (I still use this mechanism on the piccolo) This finger could then close both keys simultaneously when required, giving d^\sharp .

Later it was found better to have two parallel rollers so that the ring finger could move easily from d to d^\sharp , in the same way as the little finger moves from c to c^\sharp on a flute with two rollers on the foot-joint.

Once above d, the little finger is only required for d an octave higher. This led to the construction of a little finger key for f^\sharp , with several advantages. When f^\sharp is fingered in this way, all holes below the f^\sharp hole are open. A good trill for e- f^\sharp is provided with no change of fingering (for f^\sharp) and by splitting the a key (so that the b hole can remain open when the b^b hole is closed) and connecting the lower key to the f^\sharp lever, the correct venting for top f^\sharp is made practicable (comparable to top e on the open g^\sharp).

The other notes which needed improvement were those using the small c^\sharp hole. The multiple functions of this hole are:

- i) a tone-hole for c^\sharp ², 3, and 4
- ii) a vent-hole for d ², 3, 4, d ² g^\sharp ³ a ³ b^b ³.

As Boehm pointed out, some compromise in its size and position is inevitable.

On many flutes the interval c^\sharp - d^\sharp ² requires careful blowing to produce a whole-tone acceptable to the ear (c^\sharp ² has to be flattened and d^\sharp ² sharpened, an unhappy juxtaposition of compensations). After several experiments a relatively simple mechanism was devised to

(Continued page 7)

¹New York, W.W. Norton and Co., 1969

²Theobald Boehm, *The Flute and Flute Playing*, 1871. Second English translation, Cleveland, Ohio, Dayton C. Miller, 1922.

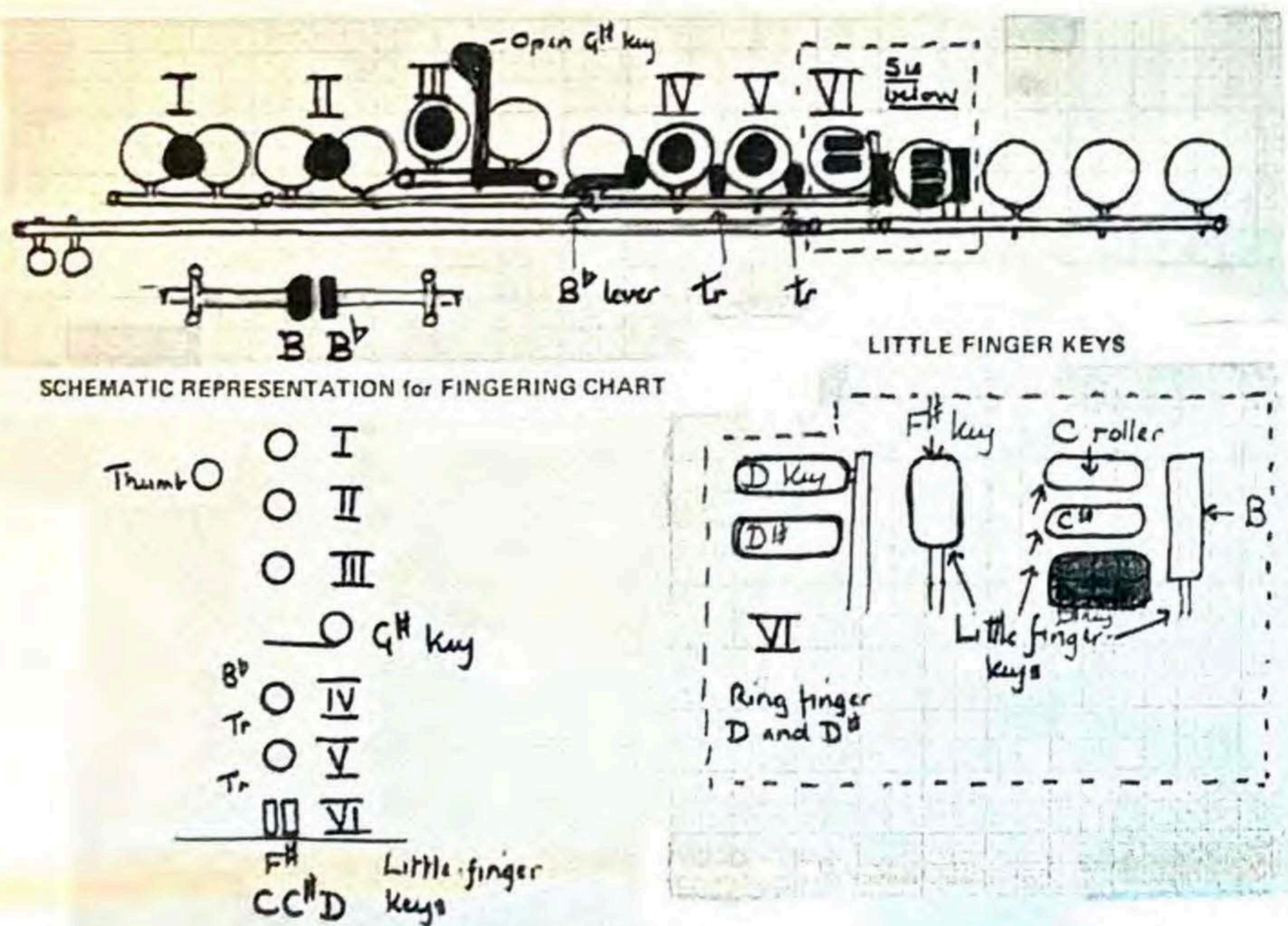
divide the functions between two holes — a large c# tone hole and a small d vent. This entailed no change in fingering apart from a reversal of the Briccialdi thumb keys and a return to the more rational order originally used by Boehm (b# nearer the head joint).

The necessity in the top octave of putting down the right little finger for top b was obviated by linking the lower trill key to the d key. This automatically closes the d# hole when b is fingered normally. The effect on the trills is unnoticeable.

With these slight mechanical and fingering changes it has become possible to construct instruments with the hole placing correctly determined by the use of Boehm's schema, without compensatory shifts of hole position to humor "bad" notes.

Without the skill, patience and insight of Albert Cooper, this flute would not be in existence. Inevitably he has been inundated with work and has a seven-year waiting list for his instruments. I have been most fortunate in meeting those responsible for manufacturing Armstrong flutes. The foreman, Jack Moore of the Heritage division, accepted the challenge of making a similar flute with certain slight mechanical improvements over my present one (my eighth) which I hope will embody the final form of the Murray flute.

The following is an exact reproduction (in reduced form) of the Schema and fingering chart; also follows his data regarding the above story.



To compare the quality of notes in the top octave.

Ex. 1

Finger high d#; blow with insufficient speed to sound d#, try to sound g# (low) as fully as possible. Retaining the same fingering, alternate between the two notes slowly at first, then as rapidly as possible. Keep breath and lip-movements down to the minimum. Repeat with the other notes of Ex. 1.

Ex. 2

Ex. 3

(Reproductions continued next column & page 8)

See what "undertones" can be produced from the notes of Ex. 1 in the middle octave. They will probably correspond with the additional notes in Ex. 2 and 3. The ease of sounding of the second octave note detracts from the facility of the top octave causing such combinations as the following to be unduly difficult with normal fingerings. (Compare the same sequences a semi-tone lower).

Ex. 4

Ex. 5

To note the improvement made by the proper venting, place a small wedge of cardboard over the g# hole in Ex. 4, the b^b hole in Ex. 5.

These notes are vented by the large c# hole

Those by the small d vent

There is no difference in fingering for use of c#²-d#² mechanism. The following trills are properly vented.

Fingering differences

F# is fingered with the little finger right hand except

when the normal Boehm fingering is employed.

The little finger is free of the d# key except

For top c, c# and d, the foot keys are employed as on the Boehm flute.

The ring finger d key is employed in F, C, G, D and A major (compare the use of the Briccialdi in flat keys) and in d, a, b and f# minor (harmonic).

In the chromatic scale from low c, the c and c# are played in the conventional way with the little finger; d and d# are played with the ring-finger.

FINGERING CHART for MURRAY FLUTE

As for lower octave

Example of advantages conferred by Murray System.

Tuning D^b-E^b

Piano Concerto No. 1 Tchaikovsky

D - E fingering Vieux Saint-Saens

SCHEMA to SHOW VENTING of TOP OCTAVE

Tone holes	MURRAY						Closed G ^m BOEHM		
	1	2	3	4	5	6	7	8	9
C ^b	○	●	●	●	●	●	○	●	●
C	●	○	●	●	●	●	○	●	●
B	●	●	○	●	●	●	●	○	●
B ^b	●	●	●	○	●	●	●	○	●
A	●	●	●	●	○	●	●	○	●
A [#]	○	●	●	●	●	○	○	●	○
G [#]	○	○	●	●	●	●	○	●	●
G	○	○	○	○	○	○	○	○	○
F [#]	○	○	○	○	○	○	○	○	○
F	○	○	○	○	○	○	○	○	○
E	○	○	○	○	○	○	○	○	○
D [#]	○	○	○	○	○	○	○	○	○
D	○	○	○	○	○	○	○	○	○
C [#]	○	○	○	○	○	○	○	○	○

E-F[#] trill Mozart D Maj. Flute Concerto

A-B 8^m Wagner: Ride of the Valkyries Alt. A fingering and B without trill key

A-F 8^m Bishop: Let Here the Gentle Lark Alt. A fingering

G-A 8^m Danish New World Finger A: trill index fingers R* to alternate

COLLECTION DATA

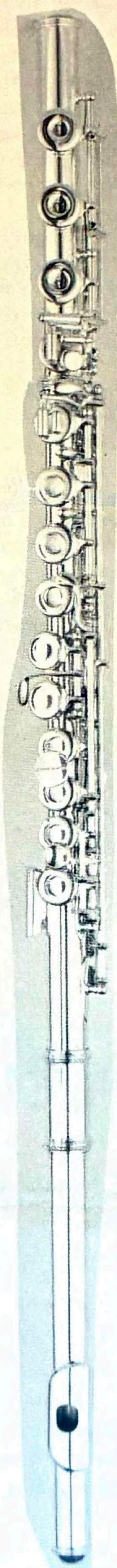
William Lichtenwanger, Reference Department, Music Division, Library of Congress, Washington, D.C. 20560, would like up-to-date information concerning collections of musical instruments. Bill has a large list of collections but the list is not complete, may not be current (collections do tend to increase or decrease in size), collectors may have moved to an unknown address, etc. It is urged that members of this Society who are willing to be listed, please contact Bill at the above address. If your collection has changed significantly since you last wrote to Bill, let him hear from you again. He is also interested in hearing from our Canadian friends in the collector world.

FLUTE WANTED
 Harry Moskovitz, P.O. Box 222, Forest Hills, N. Y. would like information from anyone who owns a Clinton Equisonant silver flute. Harry has the body of one of these but would like to have details concerning the construction and appearance of the foot joint. Anyone having this knowledge, please contact Harry.

PHOTOGRAPHS

Photographs taken at the Annual Meeting in this issue of the Newsletter are due to indefatigable Linda Tauber and her omnipresent Polaroid camera.

The W T Armstrong Prototype of the Murray flute



The W T Armstrong Prototype of the Murray system piccolo

