DIAGRAMS AND SLIDES
ON THE
ACOUSTICS OF VARIOUS CLARINETS

PRESENTED AT THE NATIONAL CLARINET CLINIC
UNIVERSITY OF DENVER. AUGUST 1968

A.H. BENADE. CASE WESTERN RESERVE UNIVERSITY
UNIVERSITY CIRCLE, CLEVELAND OHIO 44106
Fig 1

SUPPLY

 VALVE, \( q(t) \), CONTROLLED FLOW

AIR COLUMN

\( e(t) \)

\( p(t) \), SIGNAL TO REED

REED DYNAMICS

D
AMPLIFICATION ONLY

OSCILLATION POSSIBLE

OSCILLATION EASY

Fig 2
A reed-sustained system runs at frequencies which make the pressure variations maximum at the reed end. The situation at the lower end varies, but it approximates zero pressure.

Pressure node at open end of ideal pipe.

Open tone-hole length-correction

Pressure fall-off with open holes
HARMONIC LYING BELOW THE CRITICAL FREQUENCY

STRONGLY RESONANT

HARMONIC LYING ABOVE THE CRITICAL FREQUENCY

WEAKLY RESONANT
ANGULAR DISTRIBUTION OF RADIATION

LOW-FREQ COMPONENTS ~ ISOTROPIC

HIGH-FREQ COMPONENTS ~ "CONICAL"
Enlargement where pressure is large → flattening.
FRENCH BOEHM SYSTEM

- ○ - WITH CYL. ENLARGEMENT OF UPPER BORE
- ○○ - WITHOUT ENLARGEMENT

REGISTER KEY (1.0)

CLOSED TONE HOLES
1
(1) + REED EFFECT
2
(2) + OPEN HOLES
3
(1) + BELL EFFECT
4
GERMAN Oehler SYSTEM

+ + + + - without enlargement of upper bore
- - - - CYLINDRICAL BORE with enlargement of upper bore

REGISTER KEY
(1,4)

CENTS NARROW
(TWELFTHS)

1. CLOSED TONE HOLES
2. (1) + REED EFFECT
A POSSIBLE DESIGN

CYLINDRICAL BORE WITH
CYL. ENLARGEMENT OF
UPPER BORE

UPPER REGISTER KEY (O.S)

LOWER KEY (O.S)


1

2

1 CLOSED TONE HOLES
2 (1) + REED EFFECT
LOST GAME PLAY

"Take my tip," you say to him, "and study this little book by Z. It's worth a dozen practice games. Don't take another practice shot till you've mastered the first twelve chapters. Then make up your mind to put into execution what you've learnt. Even if it means losing a game or two."

*Use of Bookmanism in Opponent's Putt-Play.*

I am supposed to be something of a fanatic in the use of Bookmanism where Golf is concerned. I have collected a small library of books on the different aspects of the game. The book I select for lending is determined when I have decided which aspect of my winning opponent's play it is most advisable to undermine. But, in general, all "golfgamesers" are agreed that "the putt is the thing to go for". "**Analyze your opponent's putting**" is the Golden Rule. Ask him what muscles he brings into play, and from what part of the body the "sequence of muscular response" begins. To deal with opponents who say that they "aren't aware of using any muscles in particular", O.G.A. are issuing the accompanying diagram-leaflet, with instructions on how to present it. (See opposite.)