

An Aulos in The Danish National Museum

By POUL ROVSING OLSEN

In 1961 the Danish National Museum purchased two pipes of sheep bone at an auction in Lucerne. The similarity of the two pipes is very great, and there can be little doubt that they constitute the connected pipes of an aulos. The instrument is well preserved. According to the information obtained from the vendor it has been excavated in Athens and must presumably belong to the first part of the fifth century BC. Both these statements may be disputed. Thus the exact provenance place of the find remains unknown, and it can only be said that probably the pipes really have been discovered in Athens. The dating cannot be sustained by archeological indications; it has been determined through a comparison with pictures on Greek pottery¹. At any rate the specimen is a rarity. As consequence of its undeniable antiquity and its good state of preservation, it will perhaps be of a certain importance for elucidation of musical conditions in pre-classical Hellas.

The Greek word "aulos" means "pipe" or "tube". Here it will be used as the name of the double-oboe or double-clarinete of Greek antiquity which is cylindrical in form and has a varying number of finger-holes. The oldest Greek literature contains no reference to the aulos, nor is any representation of it known from the oldest ceramic decorations. It is commonly thought that the instrument came to Greece from Asia Minor in the seventh or eighth century BC. In Greece it played an important part even in the period of Hellenism. Aulos-like instruments, furthermore, were known in other parts of the Mediterranean area. The Romans knew them under the name of "tibia". And double-pipes were pictured by the Egyptians long before Greece became acquainted with the aulos. It is almost certain, too, that some of the "Egyptian flutes",

1. I am indebted to professor dr. German Hafner of Mainz for the information here given concerning the place of the find and the dating of the instrument.

2. V. Loret: "Les flûtes égyptiennes antiques II" (*Journal Asiatique* 8 série XIV 1889 p. 197-237). This is probably true at least of the two pairs of similar "flutes", Loret no.s 7-8 and his no.s 30-31. In both these cases Loret believes "reconnaître deux exemplaires d'un type d'instrument bien déterminé".

described by Victor Loret² were double-pipes. As a matter of fact, the aulos was no more exclusively Greek than, for instance, the shanaï of today is exclusively Indian.

It has been a subject of controversy whether the Greek aulos had a single or a double reed, or if possibly both could have been used. Most scholars suppose that the instrument belonged to the oboe-family, but in one of the very few extensive studies of the subject Kathleen Schlesinger argues against this supposition³. The question cannot be answered directly because the reeds have since long vanished from the few remaining instruments. In this connection it ought to be stated that the descendants of the aulos or aulos-like instruments in the Mediterranean area are clarinets, as for example, the Egyptian double-clarinet, arghul, which by the way may be more closely related to the long-lived zummara than to the aulos. Also, the triple-clarinet of Sardinia, launeddas, which abstractly speaking could be looked upon as a combination of the aulos and the arghul. But decisive conclusions cannot be based on the characteristics of these contemporary instruments. An instrument can change during the course of time, just as the aulos changed during the last six centuries BC. Thus it must still be reasonable to listen to Theophrastos, who in his "History of Plants" indicates that the reeds of his epoch—that is to say: about 300 BC—were of the oboe-type⁴.

We have learnt quite a lot about the aulos from the pictures of auletes on pottery and from the ancient Greek authors; something about the making of the instrument, something about the playing of it and something about the social position of its players and the function of the instrument. One literary source which has been interesting to scholars studying the preserved examples tells us that the Greek aulos originally had relatively few finger-holes—as few as four—but that the number increased to fifteen through the centuries⁵.

As already mentioned, only a few preserved examples have been excavated to date. Some archeological finds have been made, the richest in Pompeji and Meroë⁶. These represent a late period when the instrument had many finger-holes and thus had to be equipped with refined mechanical devices. Both the Pompeji- and the Meroë-findings can be dated to the first century BC. It goes without saying that these late instruments from the marginal areas of the Greek

3. Kathleen Schlesinger: "The Greek Aulos" (London 1939).

4. Also A. Baines: "Woodwind Instruments and their History" (London 1957 pp. 194 f) "As for its reeds, it is certain, that the Greeks used the double reed. Theophrastos mentions, in his History of Plants, that a pair of aulos reeds was made from a single internode of cane ---".

5. The information has come down to us from Pollux (second century AD) and via Acro from Varro (first century BC). The worth of the information concerning the early period must thus be problematic.

6. The Pompeji-findings have been described by Albert A. Howard: "The aulos or tibia" (Harvard Studies in Classical Philology IV. Boston 1893), the Meroë-findings by N. B. Bedley: "The Auloi of Meroë" (American Journal of Archeology L. 2 1946 pp. 217 f.).

sphere of influence do not give us trustworthy information about what an aulos was in the pre-classical and classical times in Greece itself.

Among the finds of the early period—from Hellas—at least three should be named. First the so-called Elgin auloi from a tomb near Athens⁷. The two pipes are of sycamore and have six finger-holes each, one of which is situated on the underside of the pipe. It must be supposed that the pipes belong together. It has been suggested that this aulos belongs to the fourth century BC, but it may be considerably younger, possibly even from the first century BC. Another find has given us an aulos-pipe in such a poor state of preservation that many essential details of its form must remain unknown. It has been excavated from Artemis Orthia in Sparta and is supposed to belong to the seventh century BC⁸. On the basis of the remaining parts of the instrument one scholar has concluded that this Sparta-aulos probably has had five finger-holes, one of them on the underside “so dass den fünf Fingern einer Hand natürlich und sinnvoll vier Löcher an der Oberseite des Rohres und ein fünftes an der Gegenseite für den Daumen entsprachen, was als die Regel anzusehen ist”⁹. Finally two pieces of an aulos made of bone have been found in 1961 at Braron on the East coast of Attica¹⁰. One of these pieces has four finger-holes, one of which is underneath. The other has two holes. This aulos can with certainty be dated to the late sixth century or early fifth century BC¹¹.

Now the example belonging to the Danish National Museum can be added to our sparse knowledge of early Greek auloi. This specimen was purchased at an *Ars Antiqua*-auction in Lucerne in 1961 and come from the estate of Mr. J. Hirsch¹². The two pipes have many traits in common. Both of them are made of sheep-bone. Both of them consist of a bulb (*holmos*) and a tube (*bombyx*). Each pipe has five finger-holes, two of which are on the underside. The distribution of the finger-holes is also nearly identical on the two pipes—one of the under-holes is found on the last section of the pipe, while all the other holes are found on the first section. On the middle section no holes are found. On both pipes the finger-holes are almost circular; the edges are quite sharp, but in a few instances the edges have been rounded, an effect which is probably due to use rather than intent.

Measurements of the two pipes are as follows:

7. A. Baines: “Aulos” in *Grove’s Dictionary I* (1954 pp. 262 f) and K. Schlesinger: “The Greek Aulos” pp. 411 f. I am indebted to Mrs. Jean Jenkins for additional information about these Elgin-auloi.
8. R. M. Dawkins: “Artemis Orthia” (London 1929 pp. 236 f).
9. M. Wegener: “Griechenland” in *MGG 5*. (1956. pp. 866 f).
10. D. G. Landels: “The Brauron Aulos” (*The Annual of the British School of Athens* no. 58. London 1963. p. 116–19).
11. Two minor finds of pieces of auloi are described by C. R. Davidson in “Corinth. Result of Excavations” XII pp. 196 f. and by C. Blinkenberg: “Lindos, Fouilles de l’Acropole 1902–1914” p. 154 (Berlin 1931).
12. *Ars Antiqua Auktion III* am 29. April 1961 in Luzern. (*Ars Antiqua A. G. Varia* 144).

PIPE I: (Nat. Mus. nr. 14.411)

Total length:	33,4 cm
Length of holmos:	6,5 –
Length of first section:	12,6 –
Length of second section:	4,4 –
Length of third section:	9,9 –
Diameter at the mouth-piece opening:	1,2 –
Diameter at the end of the pipe:	1,1 –

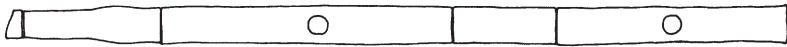
Near the mouth-piece opening the holmos shows a ring-cut, which divides it in two parts, respectively 0,6 cm and 5,9 cm.



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Distance from the mouth-piece opening to the fingerholes:

	Far edge of hole.	Near edge of hole.	Center of hole.	Distance to preceding hole.
First hole:	8,1 cm	7,3 cm	7,7 cm	– cm
Second hole:	10,9 –	10,1 –	10,5 –	2,8 –
Third hole (u):	13,7 –	12,9 –	13,3 –	2,8 –
Fourth hole:	16,6 –	15,9 –	16,25 –	2,95 –
Fifth hole (u):	28,8 –	28,0 –	28,4 –	12,2 –

As can be seen here, the diameter of the finger-holes is consistently about 0,8 cm.

PIPE II: (Nat. Mus. nr. 14.412)

Total length:	35,4 cm
Length of holmos:	6,6 –
Length of first section:	11,1 –
Length of second section:	7,6 –
Length of third section:	10,1 –
Diameter at the mouth-piece opening:	1,1 –
Diameter at the end of the pipe:	0,9 –

This pipe has a double ring-cut near the mouth-piece opening. It divides the holmos in two parts, respectively 0,5 cm and 6,0 cm. To this must be added the distance between the two ring-cuts: 0,1 cm.



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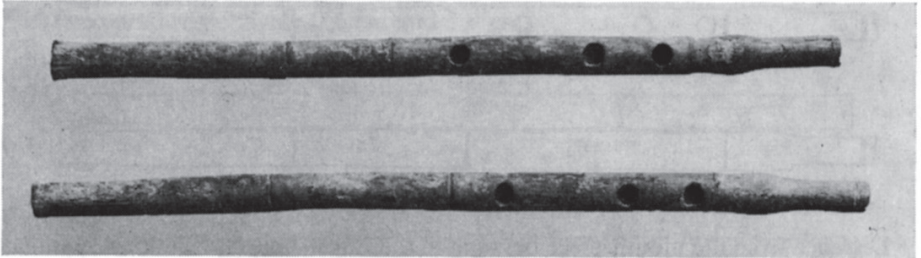
Distance from the mouth-piece opening to the finger-holes:

	Far edge of hole.	Near edge of hole.	Center of hole	Distance to preceding hole.
First hole:	7,7 cm	6,9 cm	7,3 cm	— cm
Second hole:	10,5 —	9,7 —	10,1 —	2,8 —
Third hole (u):	13,2 —	12,4 —	12,8 —	2,7 —
Fourth hole:	15,6 —	14,9 —	15,25 —	2,45 —
Fifth hole (u):	27,5 —	26,7 —	27,1 —	11,8 —

On the second pipe, too, the diameter of the finger-holes is consistently about 0,8 cm.

The measurements show that the distance between the holes is almost equal on both pipes, being c. 2,85 cm. on pipe I and c. 2,65 cm. on pipe II. Both of the pipes contain a hole which could not be covered by the fingers during the playing as it is too far away from the other holes. These holes have probably served as vent-holes and thus given a necessary correction to the scales of the pipes. In this connection it is interesting to note that pipe II, which presents the shortest distance between the play-holes, has the shortest distance to the vent-hole, and it should be mentioned that the distance to the vent-holes on both pipes is approximatively ten times the average distance between the finger-holes. The immediate consequence of this is not that the two pipes would produce the same tones. Even if several facts must be considered as influencing the pitches (such as the length of the original mouth-pieces), one should nevertheless be permitted to think that the two isolated holes effectuated a certain coordination of the scales playable on the two pipes.

An aulete has thus had two sets of four finger-holes at his disposal on this instrument. This corresponds with the information from hellenistic times about the ancient Greek aulos, and would tend to place our aulos in the period between the fourth and the seventh centuries BC. This evidence is further supported by the fact that the pipes are made of sheep-bone. Taken separately none of these pieces of circumstantial evidence is decisive, but taken together they have considerable weight. The aulos belongs certainly to a pre-classical period and the fifth century should indeed be a reasonable suggestion.



The two pipes in The National Museum.

We know very little about the playing technique which was used. But we may consider it probable that the aulete of antiquity, using the four finger-holes, produced the tones of a scale which filled a tetrachord—the basic scale-concept of the Near East.

It would be surprising if the aulos had ever been used to produce a real two-part polyphony. This would have been considered undesirable or even unnatural by musicians with modal ideas. Furthermore an ancient two-part playing would unquestionably have left its traces in later music from the Near East—and a real two-part polyphony has apparently no tradition in this area. Two-part polyphony plus a drone is, on the other hand, a characteristic of the Sardinian *launeddas*-music; but until the contrary has been proved we should be allowed to think that this kind of polyphonic playing has been inspired directly or indirectly by western art-music.

Let us return to the Copenhagen aulos. We must then admit that the most natural explanation of the similar distribution of finger-holes on the two pipes is that they have produced the same tones at the same time. The small deviations from the absolute identity in the distribution of the holes have not necessary had the consequence of producing different pitches, but it is quite believable that there really were small differences between the scales of the two pipes. We must remember that the sharp sonority, which in this case could be the result of a simultaneous blowing of the two pipes, might have been the effect that was sought, just as it is even to-day in the case of, for instance, the double-clarinet, *zummará*.

The possibility should not be overlooked that one of the two aulos-pipes occasionally may have served as a drone-pipe—in that case with closed holes. The drone—which does not create a real two-part polyphony—has been used in the area since ancient times and both arghul and launeddas use a drone-pipe. But the similarity of the two pipes makes the drone idea improbable in this case, and we cannot forget that the pictures of the ancient auletes normally seem to represent a parallel use of the two pipes.

My intention has been to give a first and in many ways preliminary presentation of the aulos in the possession of the Danish National Museum. As yet it has not been possible to make copies of the two pipes for research work, but I admit frankly that I look upon the possibilities of obtaining important information through this procedure with some scepticism. More regrettable is the fact that it has not been possible to obtain precise information about the excavation of the instrument. Perhaps others will be more lucky than I have been. At any rate, it is my hope that some specialist in the history of musical instruments may be inspired to make a thorough investigation of this Copenhagen-aulos and bring to light further information, which will elucidate this area of scholarship.