

ROMAN RUINS IN THE BASEMENT OF THE INSTITUTE OF PHYSIOLOGY OF THE UNIVERSITY OF PISA

O. POMPEIANO

Dipartimento di Fisiologia e Biochimica, Università di Pisa, Via S. Zeno 31, I-56127, Pisa, Italy

The city of Pisa arose along the right bank of the river Arno at its confluence with the Serchio along the edges of a vast area of marshes and lagoons. Pisa was already known to exist in very ancient times, probably several centuries before 1000 B.C.

Its origins are shrouded in mystery, having been attributed by Greek and Roman authors to the Phocaean Greeks or to peoples of Ligurian extraction. Around 1000 B.C. Pisa was subjugated by the Etruscans for a brief time; this conquest proved to have a positive influence on the city, which absorbed much from the more evolved Etruscan civilization (1). Archaeological remains show that already in archaic times and certainly from the second half of the sixth century B.C., Pisa had already become a transit port for Greek and Phoenician goods to and from Gaul. The wealth and power of Pisa declined towards the end of the 3rd century B.C., when in order to defend themselves from attacks on land and sea by the Liguri, they appealed to Rome for help, thus entering into her expanding political sphere. It hence became a Roman military base, first against the Liguri, then against the Gauls and Carthaginians.

The first real development plan which conferred on the city its primary organic structure along orthogonal North/South and East/West axes came into being thanks to Octavian Augustus, between 31 and 27 B.C. Various descriptions testify to the vitality of Pisa in Roman times and to the splendor of her buildings, of which only a few insignificant ruins remain. These include the so-called "Bagno di Nerone" (Nero's Bath), the remains of a Roman spa from the time of Hadrian; masonry flooring from the I-III century A.D., uncovered below the Piazza of the Cathedral; kiln waste consisting of Aretine pottery shards, etc. Only general evidence remains of the forum, temples, public baths, amphitheater and theater mentioned by contemporary sources (5,6). We will see how the ruins of a Roman building of circular design came to light during excavation work for the construction of the foundation of our University Institute.

The University of Pisa was first officially recognized by Pope Clement VI from Avignon, who on September 3, 1343 emitted the bull "*In supremae dignitatis*" which officially established the teaching of Sacred Subjects, Canon Law and Medicine in the "Studi Pisano" (3). Over the centuries, the University of Pisa flourished owing to the work of many eminent persons. In the field of medicine these include the anatomist Andrea Vesalius (1542-44), Filippo Pacini, discoverer of the homonymous corpuscles, and Carlo Matteucci Professor of Physics, who, following the fundamental research of Luigi Galvani on the electricity of the nerve,

had discovered electricity in the muscle, thus becoming one of the founders of the electrophysiology. From 1950 onward the Institute of Physiology, then directed by Prof. Giuseppe Moruzzi, acquired great prestige in the fields of Neurophysiology and other Neurosciences.

I believe I am doing a welcome favor to the numerous Italian and foreign researchers who have worked in Pisa at this Institute from 1950 onward, by reporting on some archaeological discoveries in the area of Via San Zeno, where in 1908 excavations were carried out for the construction of the foundation of the Institute of Physiology of our University, now the seat of our Department. On this subject, it is interesting to point out that Bellini-Pietri reports in his guide to Pisa of 1913 (2, pp. 235-236): "In this part (Via San Zeno) of the University, in the

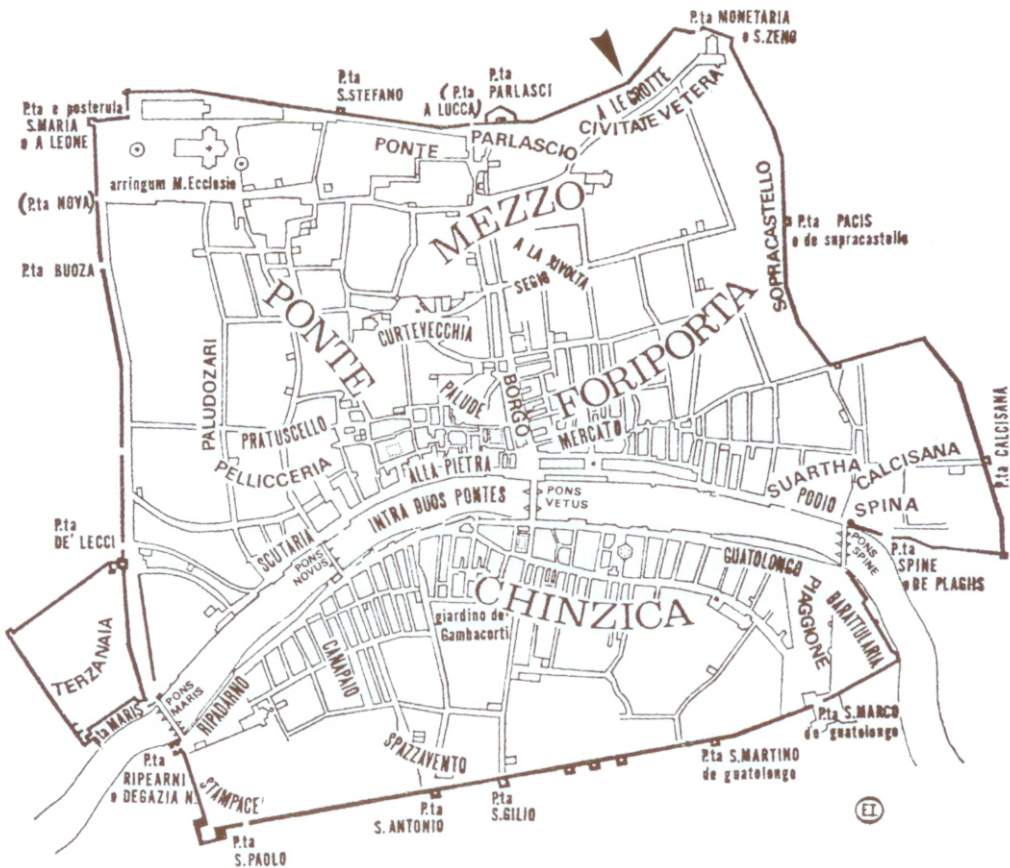


Fig.1. - Map of Pisa, delimited by the historic city walls and indicating the ancient neighborhoods of the city with those names in use in the XII-XIV centuries.

The Institute of Physiology was constructed in the locality of "the caves", ("le grotte") within the precincts of the *civitate vetera*, indicated by an arrowhead (Ref. 5, Fig.2).

excavations for the aforementioned building (the Institute of Physiology), traces of ancient foundations were discovered, which by their arrangement were assumed to pertain to a great Roman Theater or Amphitheater. It is certain that the Roman city extended from the Cathedral to this area, very close to the surviving remains of the Baths so-called "of Nero" and in medieval times called "*civitas vetera*". In the Middle Ages, in this same zone, there existed a very important suburb which later disappeared completely." On an old map of Pisa, Figure 1 illustrates the "*civitas vetera*", not far from the present-day Piazza of the Cathedral.

In a later volume published by Neppi Modona in 1953 (4, col. 15, n.31: Tracce di Teatro o di Anfiteatro in Via S. Zeno) the fact is mentioned that "during the work for the construction of the Institute of Physiology, in 1908 ... traces of ancient Roman foundations were discovered, which by reason of their arrangement were believed to belong to a theater or amphitheater, without sufficient time available for making more precise deductions."

In the Drawing and Print collection of the National Museum of San Matteo in Pisa, n. 148 of the General Register, are gathered four surveys and developments of the remains found in San Zeno during the construction of the foundation of our



Lavori di costruzione del nuovo istituto di
FISIOLOGIA

-Pianta delle fondazioni-

-Scala 1:200-

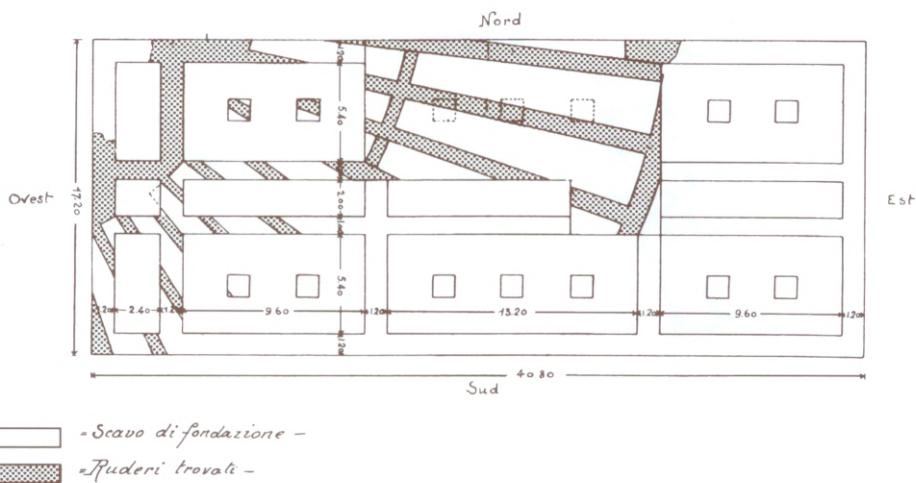


Fig. 2. - Remains of Roman walls in a radial disposition (shaded areas) belonging to an amphitheater or theater, which appeared during the excavations for the foundation of the Institute of Physiology of the University of Pisa (see also Ref. 5, Plate IVb).

The ink drawing with additions in pencil, which do not appear in our photograph, corresponds to Exhibit n. 436, Inv.1363 (cm 21.7 x 34.1), to be found in the Collection of Drawings and Prints of the National Museum of San Matteo in Pisa (*Photocopy Soprintendenza Pisa*).

Institute, indicated as exhibits n.433, 434, 435, 436 (Inventory n. 1360, 1361, 1362, 1363, respectively). According to Tolaini (5, p. 43) all four drawings belonged to the "Associazione Pisana per l'Arte", two of which (exhibits 435 and 436), however, came from the Surveyor's Department, Section V, as indicated by the stamps affixed.

The most important exhibit is n. 436 (Inv. n. 1363), illustrating the remains of Roman walls arranged in a radial disposition which appeared during the digging of the foundation of the Institute of Physiology of the University of Pisa (Fig. 2); this plan was apparently carried out by Chief Engineer A. Biglieri of the office of the Surveyor's Department of Pisa, October 8, 1908 (2, p. 235 and Ref. 5, Plate IVb). Rough elliptical signs were later sketched in pencil on this drawing. As Tolaini points out (5, pp. 43-44), the remains of the Roman foundations were

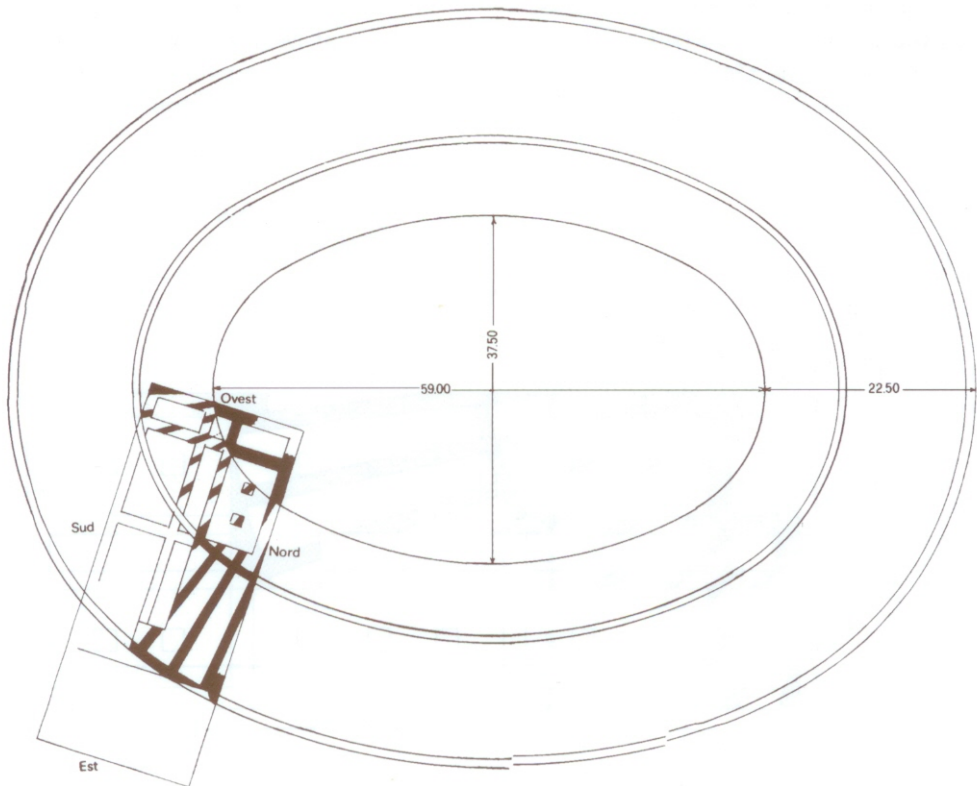


Fig. 3. - Possible reconstruction of the Roman structure to which the aforementioned remains originally belonged (indicated in black on the plan of the Institute).

Verification of the hypothesis of the existence of an amphitheater (see also Ref. 5, Plate Va). The remains of the Roman foundation are inserted in an elliptical structure, attributable to an amphitheater in correspondence to its wider diameter. The external diameters, greater and lesser, of this structure appear to equal 104 and 82.50 meters, respectively. The ink drawing corresponds to Exhibit n.433, Inv.1360 (cm 84 x 70.8) to be found in the Drawing and Print Collection of the National Museum of San Matteo in Pisa. (*Photocopy Soprintendenza Pisa*).

inserted here in correspondence with the lesser diameter of these ellipses, which moreover appeared to be of much smaller dimensions with respect to exhibit 433 (Fig.3). Unfortunately it has not been possible to clarify whether these remains belonged to a theater or amphitheater.

Exhibits n. 433 and 434 (Inv. n. 1360 and 1361), illustrated in Figures 3 and 4 respectively, are of great interest in this respect, in that they do not represent actual remains but are verification studies of two possible reconstructions of the Roman structure to which the remains originally belonged. In particular, it has been hypothesized that the said structure could have delimited either an elliptical arena, presumably belonging to an amphitheater (Fig. 3), or a circular arena that could be attributable to a theater (Fig. 4). These studies were carried out under the auspices of the "Associazione Pisana per l'Arte" around 1908, starting from the report produced by the Surveyor's Department, Section V, which was limited to the perimeter of the Institute and to the masonry remains discovered in its foundation

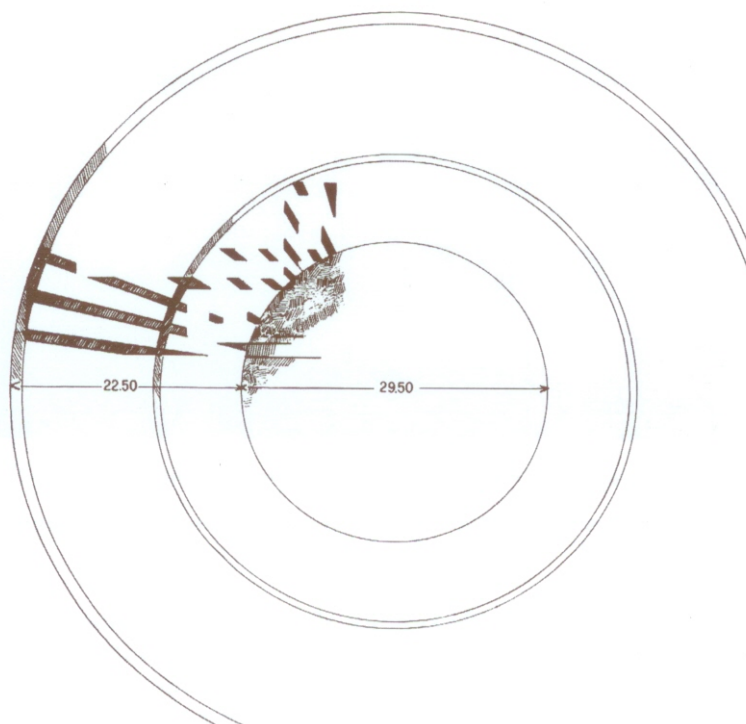


Fig. 4. - Alternative reconstruction of the Roman structure to which the aforementioned remains belonged (indicated by shaded areas).

Verification of the hypothesis of the existence of a theater (see also Ref. 5, Plate Vb). The remains of the Roman foundations are inserted into a circular structure, with an external diameter of 74.5 meters, attributable to a theater; the foundations of the Institute are not indicated. The ink drawing corresponds to Exhibit n. 434, Inv. 1361 (cm 39.2 x 50.1) to be found in the Drawing and Print Collection of the National Museum of San Matteo in Pisa. (Photocopy Soprintendenza Pisa)

trenches, as sketched. The reason why it has not been possible to clarify whether these remains of Roman walls pertain to a theater or to an amphitheater is found in the guidebook of Bellini-Pietri of 1913 (2), in which the author reports that “Unfortunately the hurry with which they wished to cover up these traces (and it was a government office which directed the works!) did not permit us to verify the hypothesis” (l.c., p. 235). This affirmation acquires credibility by the fact that Bellini-Pietri was an authority, President of the “Associazione Pisana per l’Arte” and Curator of the then Civic Museum.



Fig.5. - *The Institute of Physiology of the University of Pisa photographed in the 1950's.*

The historic city walls can be seen and in the distance rise the Pisan hills separating Pisa from Lucca.

Figure 5 shows the Institute of Physiology after its construction took place on land next to the historic city walls, with a view of the Pisan hills which separate Pisa from Lucca, to the north of the city. It is interesting to report that other Roman materials such as pottery shards and bronze objects have been discovered in San Zeno area as well as various inscriptions and sarcophagi, listed in the volume by Neppi Modona (4, col. 16, n. 33-35).

On one hand one regrets that these Roman vestiges of such great importance did not lead in the past to systematic excavations in order to expand our knowledge of the city's archaeological zone. On the other hand, it must be emphasized that the construction of the Institute of Physiology allowed, from 1950 onward, the creation of a modern research center in the field of basic Neurosciences.

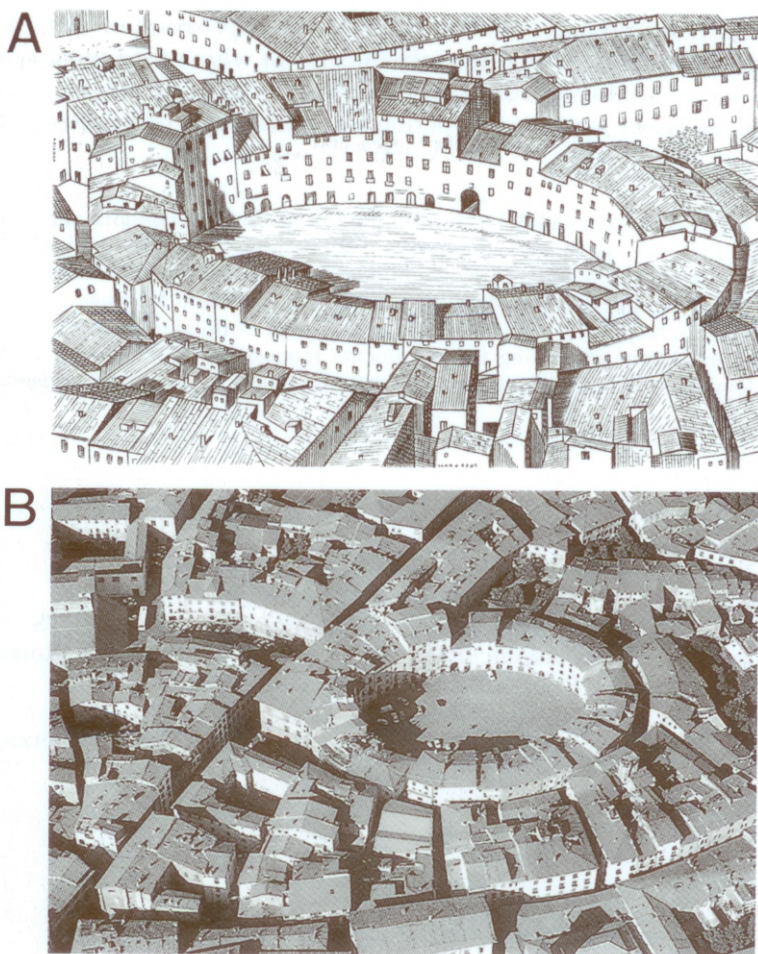


Fig.6. - Roman amphitheater of Lucca (I-II century A.D.) in a schematic representation (A) and in an aerial view of the city (B).

Houses were built on tiers of the amphitheater in succeeding centuries.

In writing this brief note I remember that it was often suggested to the numerous Italian and foreign researchers arriving to work in our laboratories, to include in their week-end tourist itinerary a short visit to Lucca, an ancient Tuscan city about 20 km from Pisa and almost completely preserved over the course of centuries. Like Pisa, Lucca also knew the splendor of ancient Rome, as witnessed by the remains of a Roman amphitheater from the I-II century A.D., today delimiting the "Piazza of the market" but conserving the form of the arena of the amphitheater. The remains of this structure were later used for the construction of houses. Figure 6A represents the appearance today of the amphitheater of Lucca in a drawing, while Figure 6B represents a photographic image of the same structure in an aerial

view of the city. It would surely have made a great impression on our Italian and foreign collaborators to know that the laboratories in which they were conducting researches on the regulatory mechanisms of sleep, posture and balance rested on the solid foundations of a theater or perhaps amphitheater of the Roman era.

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