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Tiryns

Heinrich Schliemann (1822–90) was a businessman and self-taught archaeologist who is best known for discovering the legendary city of Troy. Inspired by his belief in the veracity of the Homeric poems, Schliemann turned his attention to uncovering other cities mentioned in the *Iliad*. This volume provides an account in English of Schliemann's excavations in 1884–5 at Tiryns, a major Bronze Age city and centre of Mycenaean civilisation. He revealed a large palace complex at the site, which was the most complete example of its kind until Evans's excavation of Knossos; examples of Minoan art found at Tiryns were the first demonstration of Mycenaean contact with the Minoan culture of Crete. The topography and history of the site and its artefacts are described, together with detailed discussion of the palace, and a description of Schliemann's controversial excavation methods. This volume remains an important source for the historiography of archaeology. The German edition of this book (1886) is also reissued in this series.

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Tiryns

*The Prehistoric Palace of the Kings of Tiryns.
The Results of the Latest Excavations*

HEINRICH SCHLIEMANN



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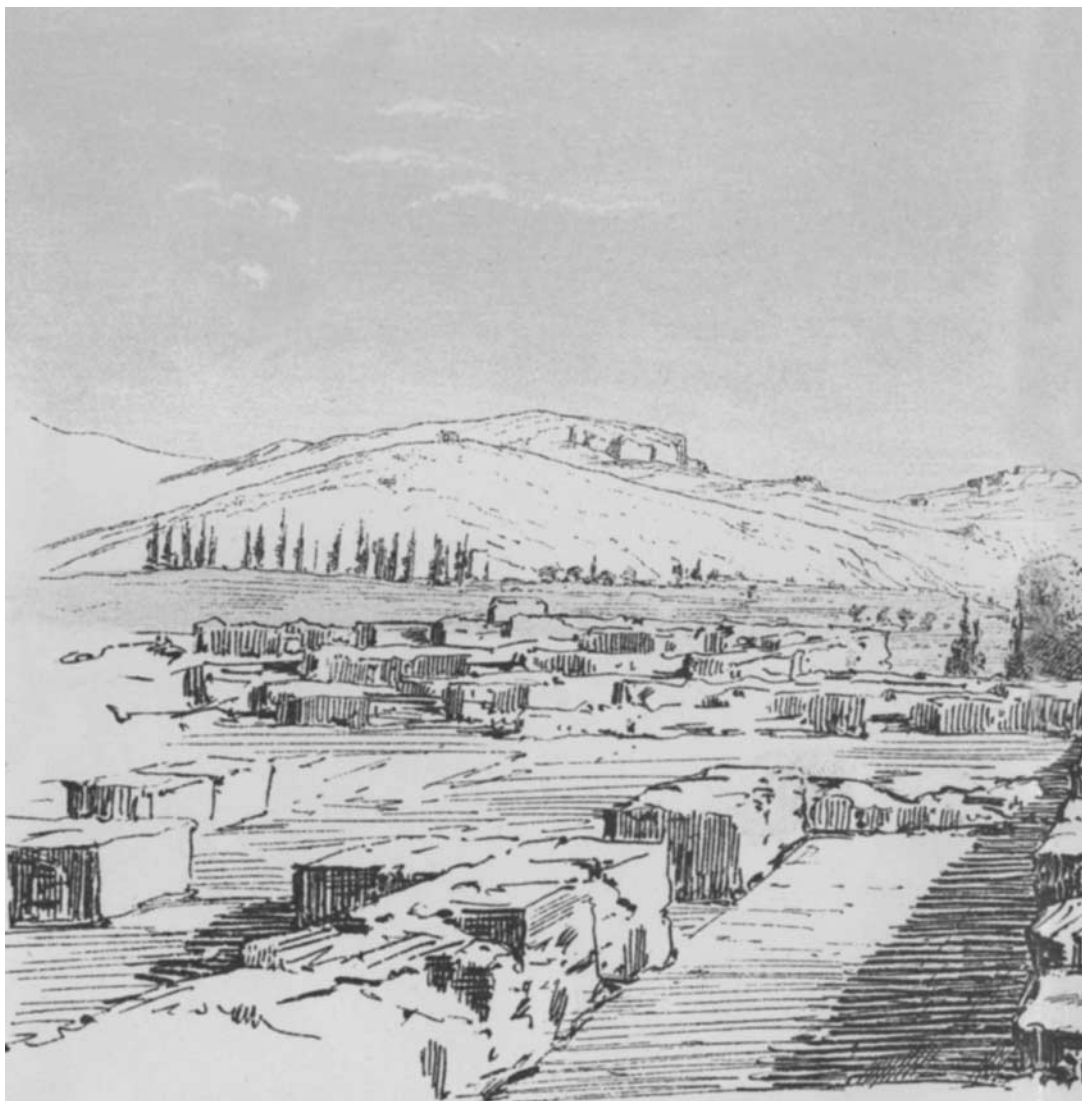
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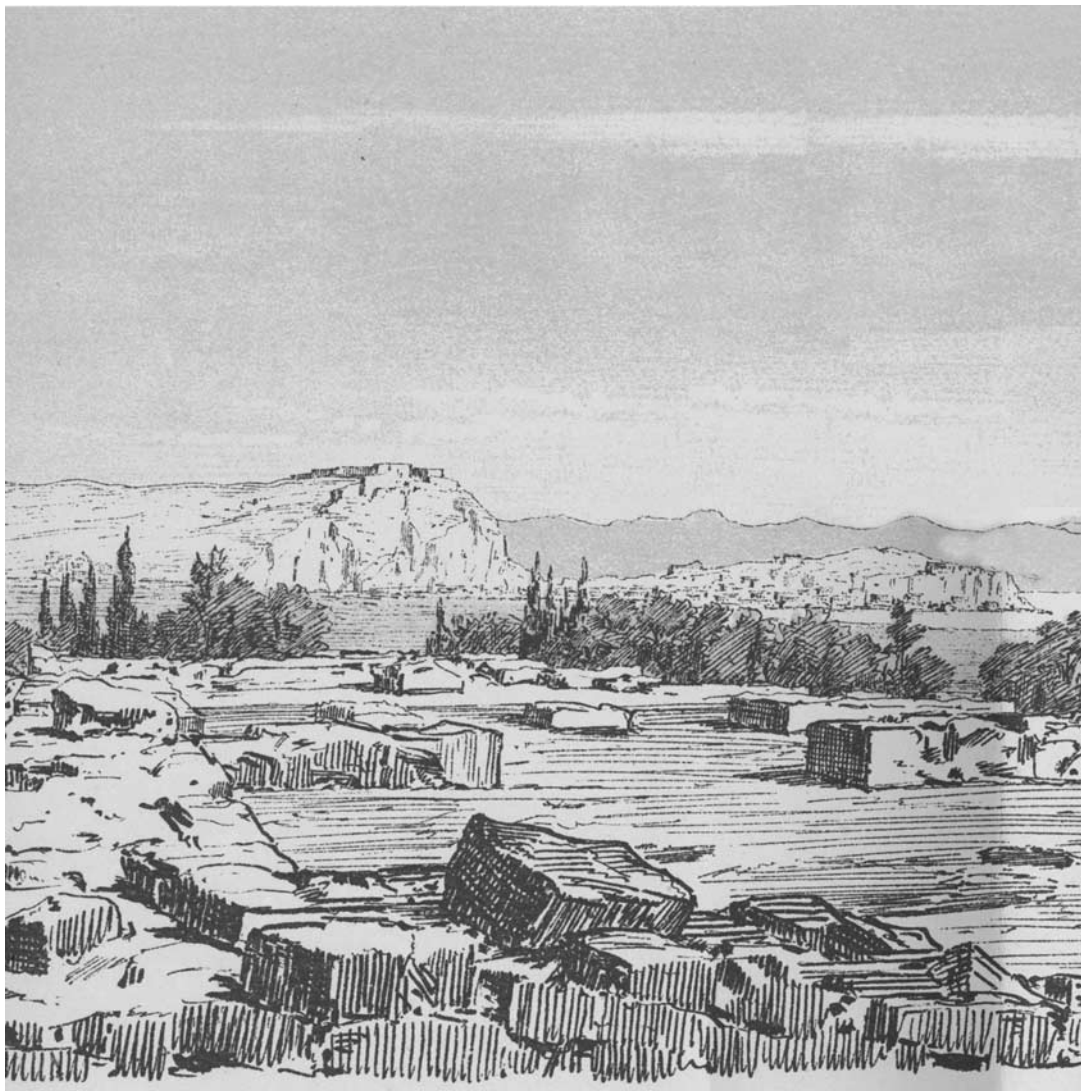
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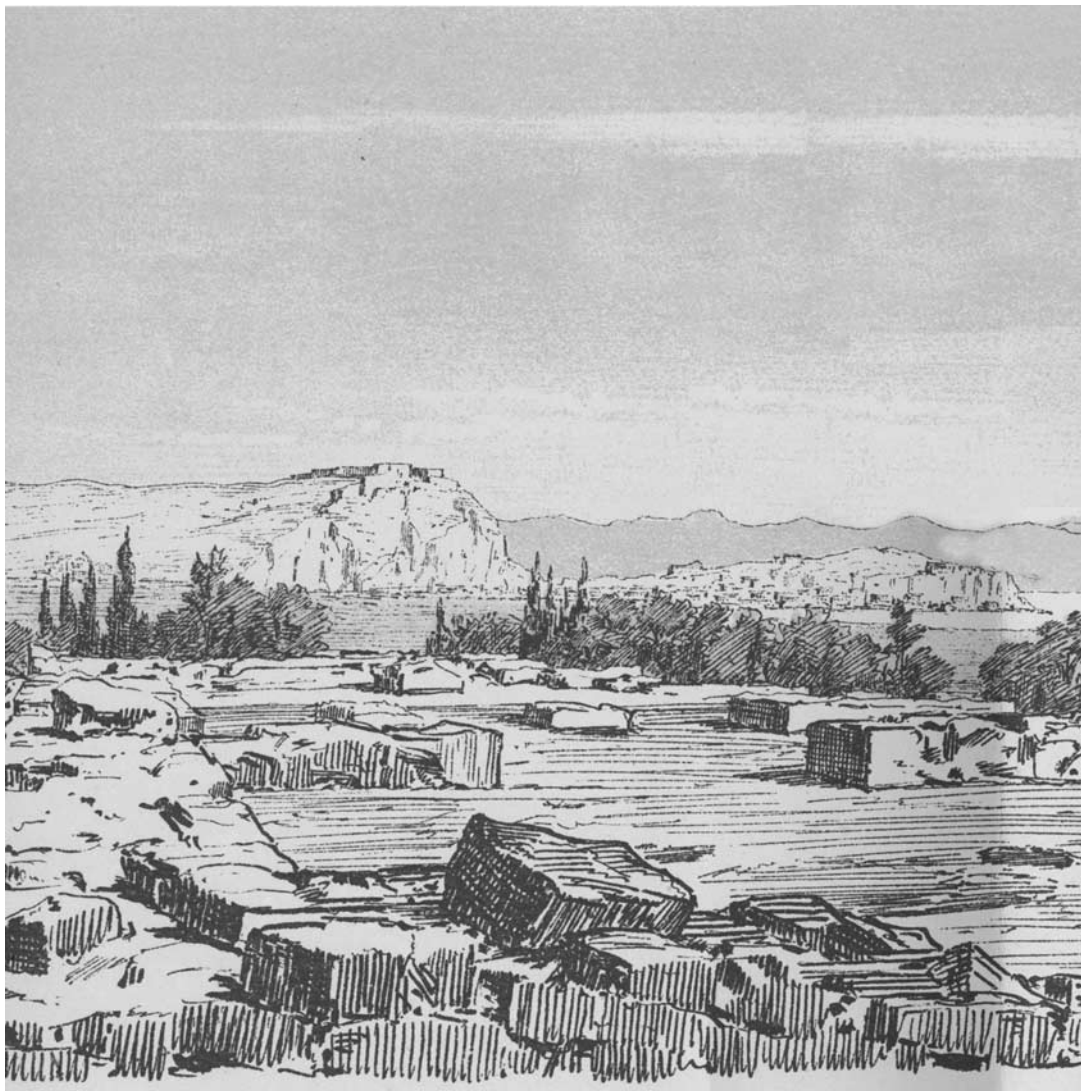


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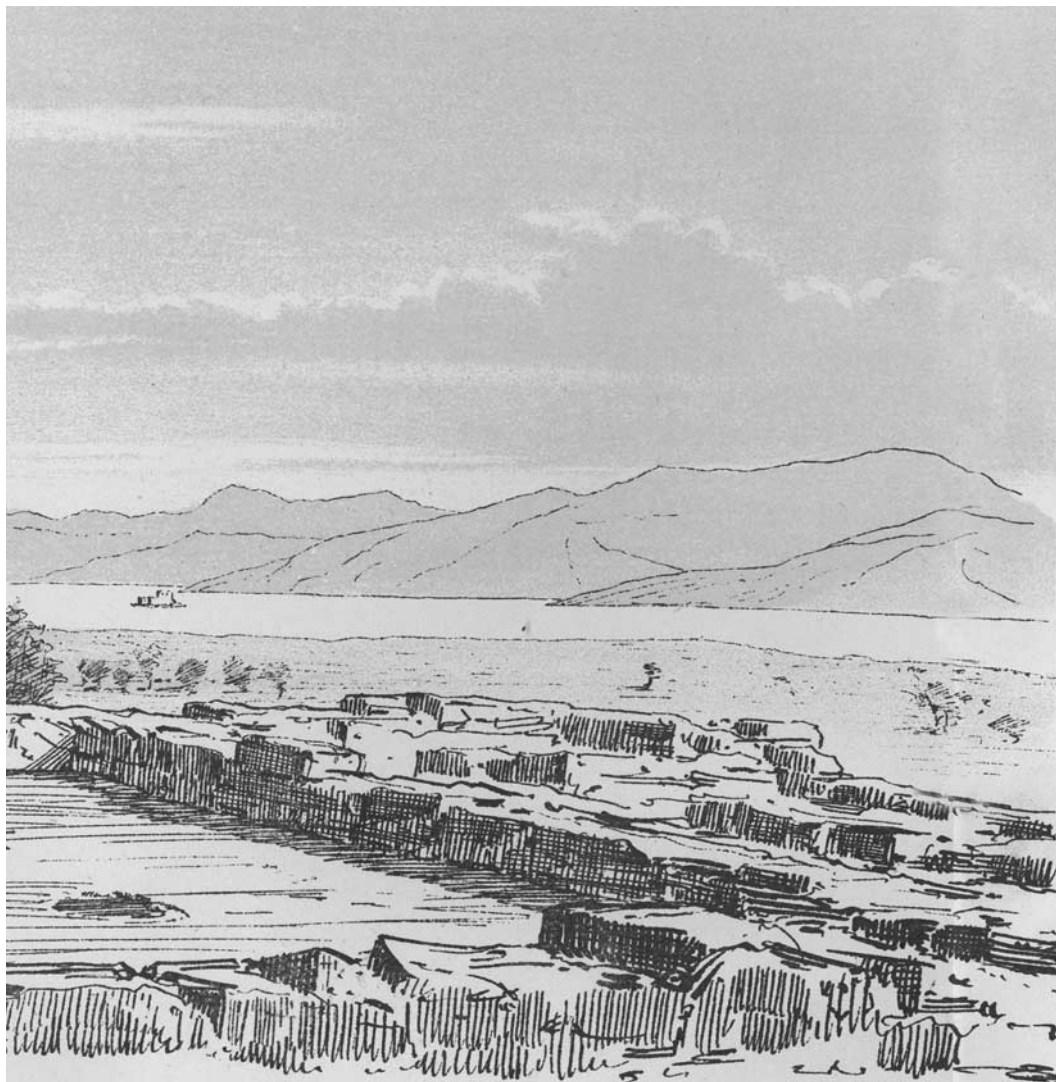


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TIRYNS.

THE PREHISTORIC PALACE
OF THE
KINGS OF TIRYNS.

THE RESULTS OF THE LATEST EXCAVATIONS.

BY
DR. HENRY SCHLIEMANN,
HON. D.C.L. OXON., AND HON. FELLOW OF QUEEN'S COLLEGE, OXFORD;
F.S.A.; HON. CORRESP. MEMBER AND GOLD MEDALLIST OF THE ROY. INSTITUTE
OF BRIT. ARCHITECTS;
AUTHOR OF "TROY AND ITS REMAINS," "MYCENÆ," "ILIOS,"
"TROJA," AND "ORCHOMENOS."

THE PREFACE BY PROFESSOR F. ADLER, AND CONTRIBUTIONS
BY DR. WM. DÖRPFELD.

WITH 188 WOODCUTS, 24 PLATES IN CHROMOLITHOGRAPHY,
ONE MAP, AND FOUR PLANS.

LONDON:
JOHN MURRAY, ALBEMARLE STREET.
1886.

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TO

JAMES FERGUSSON, Esq.,

C.I.E., D.C.L., LL.D., F.R.S., F.R.I.B.A., M.R.A.S.,
HON. MEM. R.S.L., &c.,

THE HISTORIAN OF ARCHITECTURE,

EMINENT ALIKE FOR HIS KNOWLEDGE OF THE ART, AND FOR THE
ORIGINAL GENIUS WHICH HE HAS APPLIED TO THE SOLUTION
OF SOME OF ITS MOST INTERESTING PROBLEMS;

This Work is Dedicated,

IN GRATEFUL ACKNOWLEDGMENT OF HIS INTEREST IN MY LABOURS
AND THE HELP DERIVED FROM HIS SCHOLARSHIP AND
PROFOUND ARCHAEOLOGICAL LEARNING
SINCE THE BEGINNING OF THE DISCOVERIES AT TROY.

HENRY SCHLIEMANN.

P R E F A C E.



WHEN the Author invited me to write a Preface to his work on Tiryns, I declared my readiness to do so without hesitation; for he thus afforded me a welcome opportunity of adding my personal thanks—for the substantial advantages that had accrued to my own studies in the history of architecture—to the universal tribute offered so justly from every side to the indefatigable explorer of the oldest civilisation of Greece and Asia Minor.

I hope to express this feeling most practically by an attempt to gather the results—as regards the technical and artistic aspect of architecture—which follow from Dr. Schliemann's excavations in Troy, Mycenæ, Orchomenos, and Tiryns, and, as far as this is possible to-day, to shape them into a picture of the oldest art of building in Greece and in Asia Minor.

No doubt, there are still great gaps, owing to various causes, and it is certain that our present materials will sooner or later be substantially supplemented. Yet I would justify this essay as a necessary preliminary, which only an architect can supply, to further inquiries as to the development of art in one of the most attractive, though one of the most obscure, regions of classical antiquity. If I have reached beyond Dr. Schliemann's personal work, by utilising the architectural harvest of the latest discoveries in Attica and Argolis, I plead my desire to make my sketch as complete as possible.

Three kinds of architecture have been materially illus-

trated by the successful work of the spade: (1) Fortresses, (2) Palaces, (3) Tombs. The important branch of Temples is still missing from the list.

True, MM. Schliemann and Dörpfeld had taken two large ruins, lying parallel on the Pergamos (of Priam), to be temples, and supported this view even in *Troja* (pp. 76–86, *seq.*), which appeared in 1884. But they forthwith abandoned this view, when analogous but better-preserved architectural remains at Tiryns proved to be parts of a great palace, plainly discernible as such in its main features. As here, so in Troy, these rooms, superior to the rest in proportion, plan, and strength of walls, were certainly the chief halls of the kingly residence. Hence the fact is to be noted, that no trace has hitherto been found, in any of the three citadels, of buildings for the purpose of worship, dating from the ancient period. The very slight architectural fragments, of Doric style, found at Mycenæ and Tiryns, which may be the remnants of stone temples, are certainly far more recent than the ancient royal palaces, and hence offer no material for the solution of this important problem.

As regards FORTRESSES, the fortifications of Troy, Mycenæ, and Tiryns can alone be considered, since the Acropolis of Orchomenos has not yet been subjected to an accurate investigation. All three are built on an almost identical plan, and show a similarity of situation. For the site, there was always chosen a rocky eminence of more or less height. Tiryns (26 m. over the sea) is the lowest; then comes Troy (40 m.), while Mycenæ lies ten times as high as Tiryns: its summit rises to 277 m. The former are strongholds in the plain. The latter is a proud mountain-fastness.

The scanty room enclosed by the surrounding walls proves that, in the first foundation, only the security of the chieftain was the object aimed at—not the protection of a town-like settlement, or the erection of a great depot

for war. Even as in the Middle Ages, huts and houses may somewhat later have sprung up round the citadel. When the increase of population, and the growing wealth, necessitated an enlargement of the existing bulwarks, this extended fortification, even when rationally and skilfully laid out, did not always increase the defensive power of the fortress; nay, it often impaired it.

In the case of Mycenæ, such a combination of town and fortress is certain from the name, from literary evidences, and from architectural remains. The same may be assumed at an early period in the case of Troy, even if we do not regard the evidence of Homer as decisive, because the wells lying to the S.W. were indispensable for a prolonged defence of the fortress, and must therefore soon have been embraced in the fortifications. The town therefore lay certainly S. of the Pergamos. From later times we have also evidence of a town-like settlement beside Tiryns; but its origin is as obscure as the course of its surrounding walls. Probably the town lay not to the west near the sea, but to the east in the plain, protected from pirates by the citadel. This situation seems to be indicated also by a find of coins.

Two citadels, Pergamos and Tiryns, were meant to watch both sea and land. The former commanded the most extensive view, and lay, moreover, on a great high-road of the world's traffic. Mycenæ, on the contrary, is a stronghold thrown forward as an outpost into the mountains, to dominate important passes; hence its natural strength is greatest. Then follows Tiryns; and last of all, Troy. This last only had, at least on its E., W., and S. sides, a dry moat, which was not needed by the others, built, as they were, on steep rocks.

The other indispensable conditions for defence are fulfilled by all alike: with economy of circuit, a minimum of gates and posterns; then, walls of sufficient height and strength, with easily blocked approaches; and finally, a

suitable utilising of the inner enclosed ground with a view to dominating the lower parts, *i.e.* a terrace formation of higher and lower citadel. At all times, strongholds have been narrowly girdled, for a small circuit of wall is more quickly built; it diminishes the cost of construction and maintenance, and permanently facilitates the defence. But sometimes the first narrow girdle of defence did not long suffice for the fast growing requirements of the place. Then, on one or more sides, extensions were undertaken. The still existing remains prove this fact in the case of Troy, to the E. and S., as well as at Mycenæ along the S. side. Tiryns, on the other hand, has always preserved the line of its old bounds, and seems certainly a building of uniform plan, though the citadel is not the first, but the second structure on the same site.

The second condition—a minimum of gates and posterns—is obvious in rationally planned fortifications, seeing that every gate, however small, constitutes a weak point, and that every useless postern diminishes the primary intention of safety by enhancing the danger of treason. Hence Tiryns, in addition to two very small apertures in the walls for the purposes of patrolling and getting information, always possessed only one main gate and one postern. The same is the case at Mycenæ; besides the Lions' Gate, there is here only, at the N.E., a postern which, in addition to military purposes, served for getting water from a neighbouring well (Perseia?). So also for the citadel of Troy, two gates sufficed from the beginning—namely, the central gate at the S., and the one leading to the wells, S.W. This number has never been exceeded; for when the extension of the fort made it necessary to plan a new (third) gate S.E., the old central gate was permanently walled up, and the traffic between town and citadel again confined to two gates.

Besides these fundamental points of agreement in ancient fort-building, there are also points of variance, which must

not be overlooked. They concern the arrangement of the walls in ground-plan and in section (*tracé* and *profile*).

If we turn first to the ground-plan, we find already in the Pergamos that the ancient walls were flanked by salient, massive, tower-like bastions recurring at pretty regular intervals, from which the intervening wall-sections could be watched and laterally swept by the missiles thrown from the beleaguered stronghold.

This is specially shown in the old central gate—a colossal, massive structure with a narrow, tunnel-like gateway, which in the first instance was intended to defend the causeway crossing the moat, but which also served to flank the S. side, and therefore assuredly stood out like a great tower over the walls. From the fact that, in the later extension of the fortress, the flanking position of this tower was almost wholly abandoned, we may be certain that its construction must belong to the time of the *second* citadel, the method of fortification in the earliest settlement being unknown. At all events, this structure represents, in its conception, a combination of gate-tower and of salient outwork, which is architecturally of great value.

The flanking system, the application of which, in the heroic age, was even recently still so strangely denied, is absent neither from Mycenæ nor from Tiryns; but, on account of the varying conditions of the ground, it has in neither of these citadels been so thoroughly carried out as at Troy. In the former two cases it was confined to a few very important points. At Troy, it was most fully developed.

To the circuit wall belongs the entrance way into the fort. The final ascent for pedestrians and horsemen was provided for by inclines, which were either simply formed of earth, or paved, and had a moderate incline ($20-25^\circ$) of varying breadth (5–8 m.). At Tiryns and Mycenæ (I speak here of the first foundation of the citadel, before the southern extension was undertaken and

x TROJAN WALLS OF SUN-DRIED BRICKS.

the Lions' Gate built) these ramps lay (and still lie) close along the walls, in such a manner that the assailant was forced to expose his unshielded right side to the defenders. In Troy, on the contrary, where a dry moat had to be crossed, the dam-like ramps lead direct to the gates, and are consequently at right angles with the line of the wall. Both the ground-plans and the sections of the circuit walls show marked differences. The variety of the building materials and of the site accounts for that.

The walls of the Pergamos show the simplest structure, because lime quarry-stones of middling size have been used for the substructures, while sun-dried bricks were used for the upper part. The limestones are laid horizontally in layers without any sort of cement; but the wall is escarped from without (the angle of inclination is at first 45° , then 60°), while the inner side rises vertically. The scarp, or batter, fulfils a twofold object; it makes the undermining of the wall more difficult, and also diminishes the absolute heights for the upper structure. This latter, built of sun-dried bricks with clay mortar, had an average thickness of $3\frac{1}{2}$ –4 m., and within, a similar height. Its strength was increased by means of inserted beams of wood, which recur at fixed levels and are placed longitudinally in the wall as well as across it—a structure often repeated in stone building. There must have been a rampart way along the top of the wall with a protecting parapet. We can also infer from the existing remains an average elevation of 9–10 m.; and thus the wall was externally secure from escalade. The weakest front was the south side; it was therefore provided with a dry moat, the width of which can be inferred from the flank measurements of the gateway, and may be fixed at 16–17 m. Its depth cannot have been less than 3 m.

Quite different are the fortifications of Tiryns and Mycenæ. The escarped substruction of free-stone was omitted, being replaced by the rising rock which could

easily, where necessary, be made inaccessible by subsequent chiselling. Then, as good free-stone was to be found quite close by, the use of sun-dried bricks could be considerably limited, or entirely dispensed with.

The greater part of the walls of Tiryns consists of limestone blocks of large, even colossal size, the interstices being filled up with smaller stones. Throughout, a horizontal jointing is attempted, as far as possible, with the stones already split in the quarry to obtain an under-surface, and rudely worked with heavy hammers on the other surfaces. There is no trace of ashlar masonry, or real polygonal bonding; but it is obvious, from mathematical considerations, that at the numerous salient and inverted angles the rude, longish, polyedra must have been wrought into clumsy parallelopipeda to construct these angles. Hence, upon careful examination, there is clearly to be seen in many places an approach to a horizontal jointing, though rising and falling in crooked lines.

I conjecture that in the construction of all so-called Cyclopean walls a strong mortar of loam, or potter's clay, was used as bedding material, which facilitated the laying, joining, and further piling up of the stones, but dried up afterwards, and, by being gradually washed away, finally disappeared. Hence there resulted, in many places, both vertical and horizontal joints sufficiently large to make the scaling of the wall possible to experienced climbers, especially if the wall itself was slightly escarped. As close fitting with oblong or polygonal blocks was not yet usual, this danger was obviated by choosing, for the lowest and middle courses, blocks so large that they could not be surmounted either by upward or oblique climbing. This view is supported, first, by the circumstance that some stones in the interstices lie there loosely now, because they are no longer held together by pressure, and chiefly by the fact, that the largest blocks are only found in the lower and middle courses on the outside. Hence I am disposed to

xii EARLIEST AND LATER SETTLEMENT AT TIRYNS.

attribute the use of the colossal quarry-stones at Tiryns at least as much to this practical reason as to the ambition of the founder of the stronghold. He has indeed, in this latter respect, raised for himself a monument of the first rank. I have myself measured in many instances on the upper citadel, blocks of 2·90–3·20 m. in length, by 1·10–1·50 in height. Their depth was not measurable, but may be taken at 1·20–1·50 m. We thus obtain a weight of from 12–13,000 kgs. for a rudely-prepared block, the transport of which, to its exact place on a high and narrow site, was only possible with the aid of many technical devices—inclined planes and scaffolding—and a host of workmen. Even middle-sized stones, easily measurable in their chief dimensions, weigh 3700–4000 kgs. These figures are important, as proving that the citadel we see before us, and whose gigantic blocks even in antiquity excited astonishment and admiration, cannot have been built in a hurry, in the sight of the enemy, or as the first stronghold of an invasion based on maritime supremacy. If, indeed, the country was here suddenly invaded from the seaside, the first fortress must have consisted of wood and sun-dried bricks; for the colossal walls tell every one able to read the language of stones, that their erection can only have been effected in a long period of peace, by a ruler with unusual resources of power, and who had trained workmen under his permanent control.

In support of the idea, that we have in Tiryns not the first, but the second structure on that site, many additional reasons may be adduced. In the first place, under the foundations of the palace on the upper citadel, occur undoubted traces of older buildings; among them, the substructure of a huge gate-tower, over which the outer Propylæum was afterwards erected. But if the inner part of the citadel was made a good stronghold, the outer must have been so *à fortiori*. This confirms my second observation, that in the wall of the nether citadel there are,

in many places, vertical joints coming down, sometimes, to the rock, which show clearly that this part was not built at one and the same time, but in several divisions. Probably the older and cheaper defence of wood and sun-dried bricks was retained here till it could be replaced gradually by a more solid stone structure.

The section of the wall is not uniform, but is generally massive in the nether citadel. Here the depth varies from 7 to 9 m.; the outer height, no longer measurable, may have also been 9 m. The broad rampart way along the top of the wall was contracted closely by massive towers in several places, perhaps even blocked, so that it might be defended in sections. There are deep niches in the wall, covered by rude corbelling out of the blocks, not so much to save material as to gain room. In the upper citadel the thickness of the wall increases to 13, 15, even 17 m., but no longer represents a massive block of wall—*e.g.* in the S.E. corner and along the S. front—but a systematically connected cluster of rooms (stairs, galleries, magazines, cisterns, and casemates), which are all built of large blocks, and are all covered on a system of corbelling, so as to be fireproof. The whole, though partially fallen in, is an astonishing specimen of fortification and construction dating back to hoary antiquity. A huge double tower, with cellars, which perhaps contained prisons, flanked the south part of the W. wall. A second, still greater, in the E. wall, commanded the main entrance. Smaller solid towers were probably here distributed along the wall, as well as in the lower citadel.

The walls of Mycenæ do not possess the general uniformity which marks those at Tiryns; one recognises there various kinds of work, done at periods the succession of which cannot now be determined. The construction of the nucleus is, no doubt, almost everywhere the same: it consists of roughly-shaped limestone blocks piled up one upon the other, and bonded by small stones and clay.

But there also appear, outside, large stretches of perfectly horizontal ashlar-masonry; in some spots even the best close-fitting polygonal bonding. It is known from the history of Greek architecture that this last kind of building belongs everywhere to a comparatively late period, and has no connection with the so-called Cyclopean constructions. At Mycenæ this best, but most costly, kind of wall seems to have been applied only where damaged places (breaches, slips) had to be subsequently repaired permanently, or completely renewed.

Considerably older than this patchwork with polygonal blocks is the ashlar masonry, which first occurs here, and which consists of layers of oblong rectangles, with studied variation in the vertical joints. That this does not belong to the earliest building of the fort, is at once clear from the fact, that the northern wall of the approach to the Lions' Gate consists of two parts separated vertically: first, of a thick core of limestone piled up in Cyclopean fashion; and then, of a relatively thin coating of oblong blocks of breccia, in the lower strata of which no bond-stones are to be found. The southern wall of the same approach shows the same oblong ashlar masonry of breccia, not laid on, however, as a mere coating without binding-stones, but joined thoroughly with the core-structure. From both observations it follows with absolute certainty that the oblong ashlar masonry must be more recent than the old Cyclopean limestone building, and is only connected with the extension of the fortress towards the south, and with the erection of the Lions' Gate.

The oldest outer wall of Mycenæ is all of the same stamp; it is built in Cyclopean fashion, like that of Tiryns, but throughout with smaller blocks of stone. It closely surrounded a triangular hill, which is in places very steep, and which could only be terraced with the help of numerous supporting walls, and thereby made fit to bear an upper fortress in the middle, and two lower ones; the

latter lying to the east and west respectively. The old ascent with its incline was probably at the S. side, above the well-known pit-graves discovered by Dr. Schliemann; and the last part of the ascent went from E. to W., so that the unshielded side of the assailant was here again exposed. From the first there were two gates here. Besides the chief gate—in the middle of the old south front—the position of which cannot be determined without further excavations, there was the above-mentioned water-gate on the N.E., which, like the central gate at Troy, had a tower as a superstructure. The circuit-wall is, generally speaking, much thinner than that of Tiryns; its average thickness is 5 m. However, in the N. and S.E. there are portions increasing to the thickness of 14 m. The occurrence, in one place in the N. wall, of remains of a gallery leads to the conjecture that, later on, a careful examination of the masses of ruins which have tumbled down, will bring to light similar arrangements of stairs, galleries, store-rooms, and casemates, to those at Tiryns.

At a later period the fortress was enlarged southward; evidently to gain more room for the increased requirements of kingly power. Then, not only was a new gate—the well-known Lions' Gate—added; but the whole N.W. corner, in order to give it a grander appearance, was dressed with the above-mentioned thin coat of oblong square blocks of breccia. Better than this strengthening, which was only for show, was the erection of the strong oblong tower of the same material, jutting out at the S. side like a mole, and destined to defend the approach to the new gate, and make the western finish to the new extension wall on the S. It was a very necessary advanced work for the security of the weak gate. Then, also, the old ascent to the fort, which came from the S.W. and swept round, loop-like, towards the W., was given up; and, as a further consequence, the Castle ramp was carried up from another direction. It now went straight up from the

Lions' Gate, hence in a favourable position for the assailant ; but the builder could afford to make this apparent error, because the ramp lay now no longer outside, but inside the circuit-wall, and was therefore amply protected.

The gates show differences not less significant than those of the walls. The oldest kind of construction is exhibited in the S. central gate of the Pergamos of Troy, that primitive and massive solid structure of sun-dried bricks, cut through by the narrow gateway. Its roof was constructed, as in the gallery of a mine, by side posts with close timbering above, and it had an upper storey with a platform and breast-work. This rude and simple structure shows that the very old Oriental method of vaulting with sun-dried bricks was unknown at Troy, and that they strove to solve the problem before them in a not very monumental fashion. The covering of the S.W. gate leading to the wells was probably similar ; but trustworthy indications are wanting in the excavated remains.

When the central gate was abandoned in consequence of the enlargement of the fort, the S.W. gate was rebuilt on another plan, suggested by the S.E. gate—viz. in the form of a sluice-chamber with two portals, and with short vestibules bounded by side-walls. This form of gate is also characteristic of Troy, and deserves all the more attention, as we here have the fundamental idea of the later *propugnaculum*. Tiryns and Mycenæ do not, it is true, possess this form of gate ; but in the Propylæa of the palace of Tiryns a similar architectural principle has been applied, and indeed in a more advanced form.

If in the gates of Troy we still find wood largely used, the gates of the other two fortresses show, on the contrary, a perfectly monumental shape. The cases necessary for the doors consist here of great and hard stones (breccia), and the lintel is relieved of the superincumbent weight by obliquely corbelled layers of stone, which close above in triangular form. Thin slabs—one or two,

according to the depth—fill this triangular opening, in order to prevent climbing over the closed gate. Such a structure with two slabs is still preserved in the little N.E. gate at Mycenæ, while the Lions' Gate probably always possessed but the one with the famous relief. The proximity in situation, as well as the historical connection expressed in the legends, explain the many points of similarity in the two fortresses, not only in structure but in detail—to wit: the identical measurements in the clear, and other technical aids to fortification, such as the construction of the threshold, the arrangement of the bolting-bar for the gate wings, &c. This is also true of the little side gates, posterns with their modest triangular structures of corbelled layers, to which, as there were no framing stones, a closing apparatus could only be applied in a very incomplete manner. The most interesting postern is found in the western semi-circular structure of the wall of Tiryns. It is connected by a flight of sixty-five steps, first, with the middle fortress, but also by a second flight of steps and by a narrow zigzag passage with the interior of the palace, as well as with the upper circuit-wall. Accordingly, messengers might come and go—particularly in the direction of the sea—by this secret way, without using the main entrance; and during a siege the semicircular structure could at the same time be used to collect troops for a sortie. Moreover, the remains of a chamber, found at a considerable height above it, show that at this important point a look-out was established.

Next to the outer shell of walls and gates comes naturally the examination of the core, which was the dwelling-place of the ruler. Unfortunately, there is far less material extant for this *second kind of architecture* than for the first. The citadel Pergamos gave but few results, because the separation of the strata of building was here very difficult, because in the earlier years of the excavations much had been inadvertently destroyed. Nevertheless, some comparisons are possible. It is even more to be

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deplored that the extensive ruins on the acropolis of Mycenæ continue to be a book with seven seals, which every scholar must long to have soon opened by systematic researches. For even now a surface of 50–60 m., which fairly corresponds, as the site for a palace, to that at Tiryns, can be recognised on the highest top. From the graduated formation of the ground we may conclude that the acropolis of Mycenæ, with its palace, must have made outwardly a far more imposing impression than the princely dwelling at Tiryns, which was half hidden behind its gigantic walls.

Under these circumstances, the results which we owe to the closer examination of the fortress at Tiryns, are of all the greater value. This is, so far, the only source from which we can draw a direct and clear idea of the architecture of an ancient Greek royal palace.

What first strikes us in examining the ground-plan, is the orientation, towards the S., of the rooms most used. This arrangement seems due to two causes. First, the palace was to be made habitable at all seasons; for the warmth of the sun was required in winter, the summer heat being kept off by the national method of building with thick walls of sun-dried bricks and roofs of wood, covered with clay. Secondly, it was desirable to keep an eye always on the neighbouring Nauplia and the broad entrance of the gulf. An architect's eye is next attracted by the very skilful distribution of all the portions of the building on the space afforded by nature and much limited by art. If, as was obvious, the principal room of the palace—the Men's Hall—was to occupy the highest place, and, on account of the outlook on Nauplia, had to be moved as near as possible to the S. side, then these two requirements could only be satisfied by making the eastern approach start from the N., ascend in a great sweep, and end at a suitable distance from that main room. This was done, and indeed so as to make the first greater section of the way everywhere still capable of defence. It is only with

the great Propylæum that the huge rampart whose only aim and object, at first, was security, makes way for a style of building intended for the purposes of comfortable human occupation. The form and grouping of its rooms had to satisfy the various demands which a princely household has made for itself at all times, both in a real and an ideal sense. Proud seclusion towards without; suitable accommodation for guards and domestics about roomy courts; dignified approaches up to the reception room; finally, convenient connection of the dwelling-rooms proper, both one with another and with the outer rooms—and all this well lighted, and yet shady and cool: these are the requirements of a palace in the South. If with this basis to go upon we add the aids given us by Homer in his characteristic descriptions of princely life, we are able, in spite of sundry gaps, to explain correctly the wonderfully well-preserved ground-plan in its main features.

There can be no doubt about the central part of the plan. The large Men's Hall, distinguished by a stately ante-room, and the very much smaller Women's Hall, each lying contiguous to an inner court surrounded with colonnades, are conspicuous at once; next, the remarkable bath-room, close to the larger Megaron. Considering the custom of the Heroic Age of giving strangers a bath soon after their arrival, the position of the guest-chambers, as well as of the servants' rooms, must be sought near the bath-room—that is, at the W. side of the principal court, where now, by the fall of the circuit-wall, there is a great gap. In the same way, we may set down the small inner court, lying close beside the Women's Court (XXX on Plan II.), as a yard devoted to the domestic economy, and the adjoining rooms to the S. as housewifery rooms; for it is worthy of remark that this court is not concreted, and, doubtless, on account of the continual intercourse with the outside, was in direct communication with the first great Propylæum. Finally we have here, and

here only, two separate conduits within the domestic rooms, which carry off water southward, and point to a large use of water. The rooms in the N.E. corner, closely connected with the women's apartment, were at once, and I think rightly, designated as the bed-chamber of the married pair, and the armoury and treasure rooms of the ruler.

Moreover, this handsomely and practically arranged building was not wanting in an ideal centre-point, where the ruler, surrounded by his people, thankfully offered sacrifices to the gods or sought their will; and this was the altar of Zeus Herkeios, built under the open sky, in the shape of a circular sacrificial pit. Like a guardian of the threshold, it stands in the main court, close to the inner vestibule; forming, at the same time, the end of the main axis of the Men's Hall. It was an admirably chosen spot for setting up a structure the importance of which needed no enhancement from art, which was to remind one of peace, to afford protection, and to hallow the going in and the coming out.

But although the plan of the inner palace is intelligible in its main features, it is less easy to tell with certainty the destination of the buildings about the great fore-court. In position and form, it is true, the two pillared vestibules are at once distinguishable. Their object, too, is plain; they were to separate, practically, the inner and the outer parts, and combine them artistically. In addition, we may also regard the rooms between the two gates as very well suited for guards and servants. But everything else to the W. and S. remains doubtful; the fall of the western wall, and the erection of the Byzantine Church to the S., have destroyed all useful indications. Yet this loss must not be over-estimated. To the W., not much more than a portico can have stood, as the course of the upper circuit-wall leaves but little room; and to the S., the almost immediate vicinity of the gigantic fortification, with its stairs, galleries, and magazines, suggests, that with the exception of some

buildings for outer husbandry uses, the majority of rooms once here situated must also have served for defensive purposes.

N. of the palace extends a somewhat lower terrace, with an average breadth of 30 m.—the so-called middle citadel—the excavation of which has scarcely led to any satisfactory results. Neither its connection with the lower citadel, nor its immediate connection with the approach to the Castle, has been established. Yet we may conjecture that here, too, a part of the garrison was posted, because the important way to the W. postern and sally-gate passed through here, and the not less important back-stairs to the palace began here. So momentous a point of the citadel must have been under permanent military guard. Hence it results that the house of the prince was shut in, and carefully guarded on all sides, by gates, walled approaches, watch-posts, and barracks. This main feature in the plan seems to point to Oriental influences.

What kind of buildings the lower citadel once enclosed, is as unknown as their order, form, and size, the spade having only felt its way here, instead of excavating; so that, excepting some graves, nothing important has been as yet discovered. Perhaps the first town settlement stood here.

The ground-plan of the palace shows, in my opinion, a distinct uniformity of design, in spite of some later additions and alterations, and gives us a very favourable idea of the talent and experience of its architect. The principal rooms are arranged in clear order about courts admitting full light and air; they are suitably disposed and easily accessible. They have no want of good and often twofold connection. Particular facility is afforded for the separate home work of serving-men and maids; and the urgent need of secret exit and intercourse with the outside is not forgotten.

We obtain valuable hints also as regards the technical capabilities of the builder. The walls, constructed of sun-

xxii ALL Pillars and Pilasters of Wood.

dried bricks with tie-beams, rest on foundations of free-stone bonded with clay. The thresholds consist partly of wood, mostly of stone; they show us the dimension, arrangement, and method of fixing of the thick wooden doors. Astonishment is created by the monolith floor of the bath-room, weighing 20,000 kg. What mechanical efforts must its transport and placing at this elevation have cost! Its site, when once chosen, must have been decisive for the arrangement of all the chief rooms, and so we may infer that essential changes of the first plan never took place. Elsewhere, too, the laying of the floors in most of the rooms and chief courts is carefully considered, and, in connection therewith, the important question of draining systematically treated—a sure proof of an advanced state of culture.

The structure shows much variety in the formation of its rooms: large and small courts; pillared and unpillared vestibules; even a three-aisled state-room, with ante-room. Like the roofs, all the supports, pillars, pilasters, and door-posts were of wood. That the visible wooden surfaces were even coated with sheet-metal is not impossible, but scarcely probable, or else some remains of the metal sheets would have been found in the ruins. As to the form of the pillars, nothing certain could be discovered. But the still measurable traces of their standing-places, of various dimensions—together with the heights, which we are taught by experience can be deduced from the thickness of the walls—lead us to the sure inference, that the pillars were of slender proportions: namely, 1 : 7 or 1 : 8; sometimes even 1 : 10. If, for example, we assume for the side-walls of the Men's Hall, which are 1.32 m. thick, five times this height—which is rather too little than too much—we obtain a height of 6.60 m. up to the lower surface of the two thick girders which carried the roof, and so with the now measurable lower diameter of the pillars (0.66 m.), a proportion of 1 : 9.91. A similar result—viz. 1 : 9—is obtained by a comparison of the corresponding measurements of the great

Prothyron. These are also the minimum proportions commonly employed in wooden structures for supports.

The rotting, dry or wet, of the shafts was obviated by a moderate elevation of the base on flat stone supports. We do not know, however, how the mischief of settlement and splitting of the wooden pillars, caused by their drying, was technically counterbalanced; yet, this point, so important practically for any southern climate, has been well considered in the construction of the pilasters. Both in Troy, and in Tiryns it was preferred to make the *antæ*, throughout, of a number of thin posts rather than of one beam.

As to the construction of the wooden roofs, as well as the form, division, and connection of the roof-beams, we are left to conjecture in the absence of certain indications. From the fact that the widest span does not exceed 5·64 m., we may indeed infer roofs of great weight; but we cannot determine whether they were made in the primæval, simple fashion of a close row of unhewn round beams, such as the Lycian rock-tombs represent, and the Lions' Gate relief and the façade of one of the beehive-tombs at Mycenæ suggest; or of hewn beams set at fixed intervals, with a cover of boards and a coating of clay. Probably both methods were used side by side, the first for the subordinate chambers, the latter for the chief rooms. In no case can we assume an artistic formation of overhanging roofs with architectural members of terra-cotta.

The lighting of separate rooms was certainly, according to southern habits, through the door; the majority, however, probably obtained their light by elevated lateral apertures. I suppose that the triple-naved Men's Hall was also lighted only by an uninterrupted row of side windows treated after the manner of a frieze, between the beam-ends close under the roof. Lighting on the clerestory principle, immediately over the hearth, is too objectionable practically, especially for winter weather, to make it, in my opinion,