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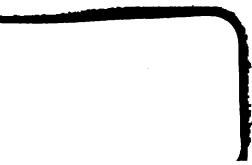
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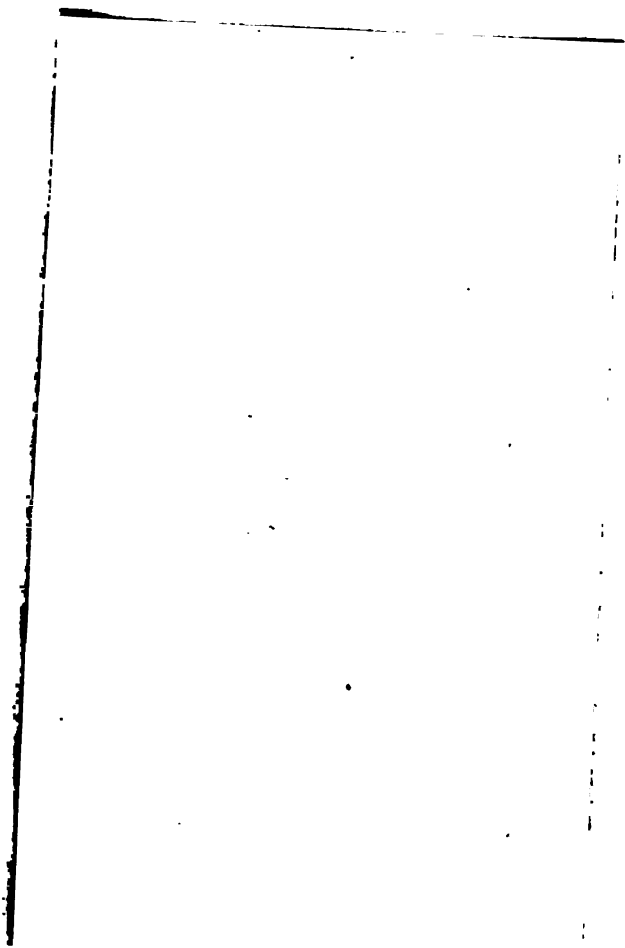
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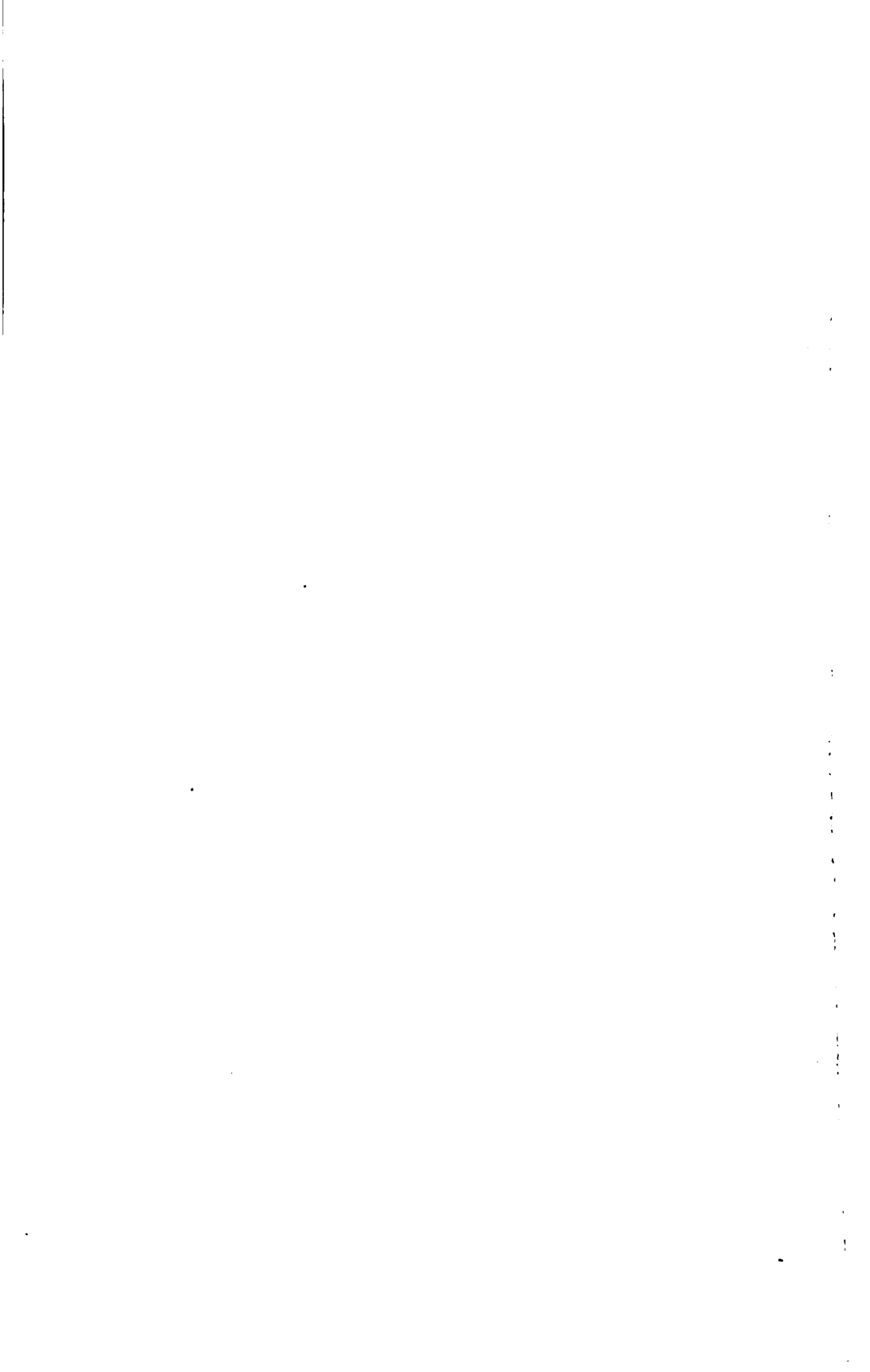
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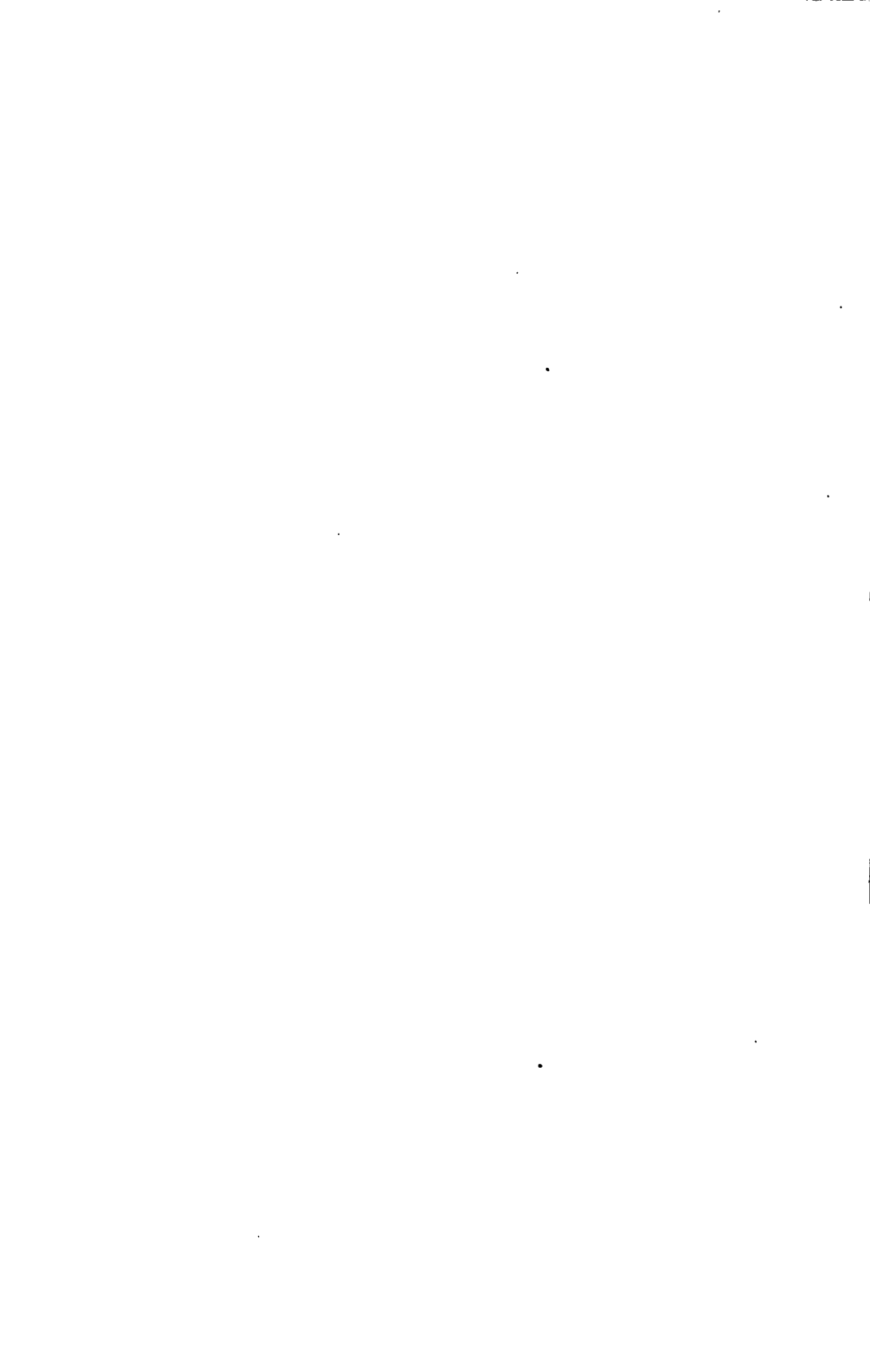


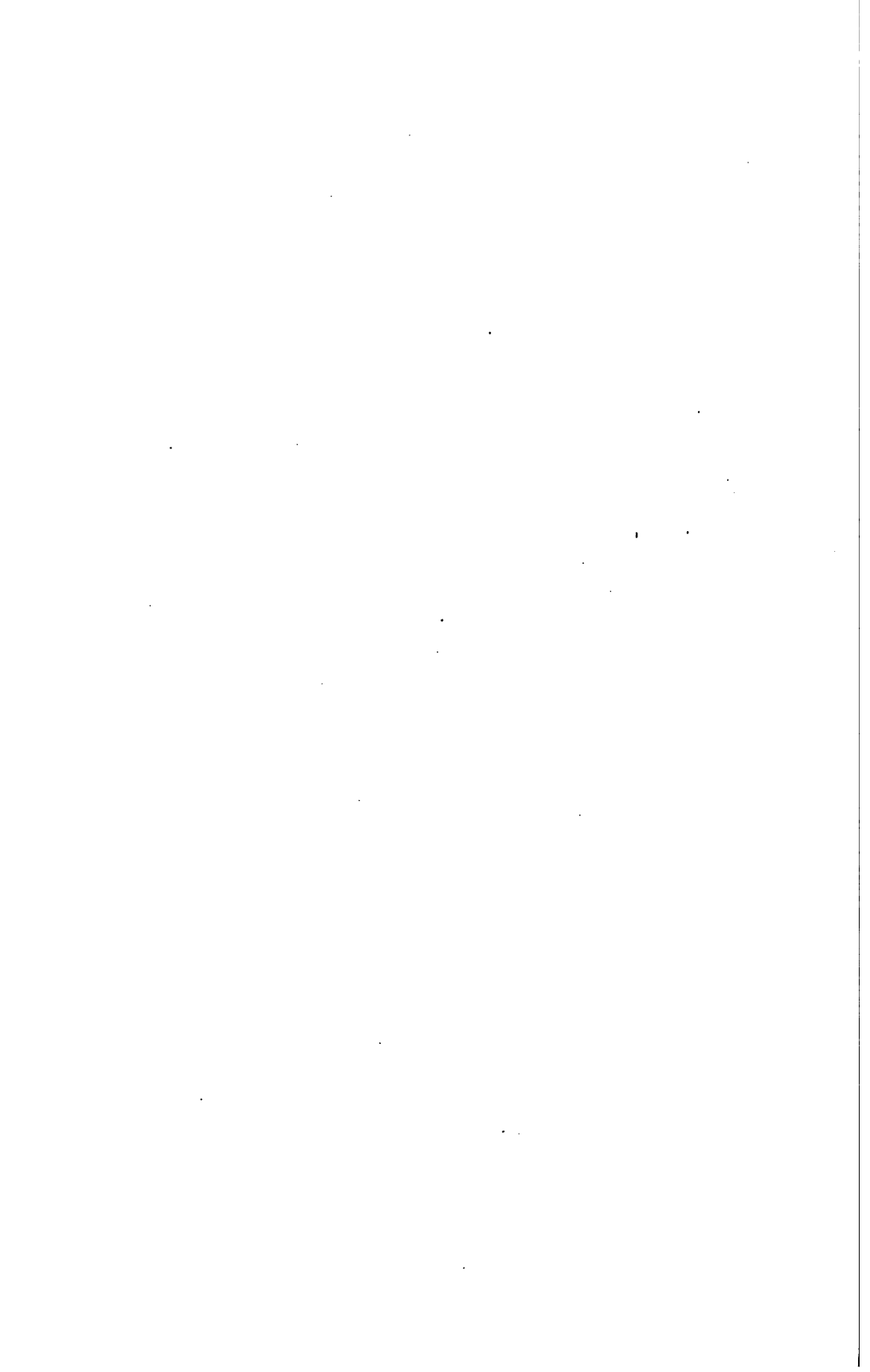
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Papers of the Archaeological Institute of America.

CLASSICAL SERIES.

II.

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REPORT ON THE INVESTIGATIONS AT  
ASSOS, 1882, 1883,

PART I.

BY JOSEPH THACHER CLARKE.

With an Appendix.

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PRINTED AT THE COST OF THE BOSTON SOCIETY OF ARCHITECTS.

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## INTRODUCTORY NOTE.

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THE Report on the Investigations made at Assos in 1881, by the expedition sent out by the Archæological Institute in charge of Mr. Joseph Thatcher Clarke, was issued in 1882. The investigations were still in progress, and it was intended that so soon as possible after their completion a final Report should be prepared and published. The work of the expedition ended in the spring of 1883. Most of the members of the party which had been engaged in it returned home, and Mr. Clarke at once began the preparation of a Report designed to give a complete and thorough account of the unexpectedly important and interesting results of the first American expedition for archæological investigation in the field of classical antiquity. Mr. Clarke's Preliminary Report had already given evidence, not only of his high qualities as an investigator, but also of his possession of learning adequate to enable him to set forth the discoveries made by the expedition in a manner fitted to meet the demands of modern scholarship.

During the next two or three years a considerable part of the work was accomplished and put into type.

The pages which now follow have been ready for publication for more than ten years. But the publication has been delayed, greatly to the disappointment of the Institute, in hope that the portion remaining to be written might be completed.

By a series of calamities, for which he was in no wise personally responsible, Mr. Clarke was compelled to give up labor

upon the Report, and to devote his whole time to other pursuits. From year to year he has hoped to be able to renew his labors on the work which it was the object of his just ambition to complete, — year after year he has been disappointed. It has finally seemed best to the Council of the Institute to issue that portion of the Report which has been lying ready so long, in order that the account which it contains of the results of the expedition, although it be but partial and imperfect, should no longer remain inaccessible. They have come to this decision with reluctance, both on Mr. Clarke's account and on account of the Institute. It is matter of serious regret that a full record of the results of the expedition should not be made by the person most competent to describe the discoveries and to exhibit their importance. The Council cannot but hope that Mr. Clarke may yet find opportunity to conclude his work.

But, unfortunate as the delay in the issue of the Report has been, the investigations to which it relates have not lost interest. The peculiar character of many of the buildings at Assos, and their remarkable preservation, making possible a complete recovery of the plan and elevation of civic structures quite unique in design and plan, give to the work accomplished there such permanent importance that ten years more or less in the date of its publication are of comparatively small concern.

Meanwhile it is proposed to publish very shortly, under the auspices of the Institute, a work edited by Mr. Francis H. Bacon, the companion of Mr. Clarke in the Assos expedition, which shall present on a large scale the plans and elevations of the more important edifices investigated, and shall give all those details and measurements which may be desired by the students of ancient art, and especially by those of architecture. The preparation of this work, in which Mr. Bacon has received the valuable assistance of Mr. Robert Koldewey, who also took part in the original investigations, will afford material for a full study of the monuments of various kinds which

specially distinguished the site of Assos, and will be a contribution to classical archæology of unusual novelty and extent.

The letters which follow this Note explain themselves; they form part of the documentary record of the expedition.

C. E. NORTON.

February, 1898.

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CHARLES ELIOT NORTON, ESQ.,

*President of the Archæological Institute of America.*

DEAR SIR,—The Boston Society of Architects has charged me with the agreeable duty of conveying to you, as President of the American Institute of Archæology, the congratulation of the profession upon the work accomplished by your expedition to Assos. We desire also, through you, to thank our brethren, Messrs. Clarke and Bacon, and the other members of the expedition, by whose skill, energy, and fine spirit of self-denial this valuable acquisition to our knowledge of Greek architecture has been rendered possible. The contribution of the Boston Society of Architects to the expenses of Mr. Clarke's first expedition in search of new evidence concerning the Doric order was intended as an expression of its desire to know more of the principles underlying the development of Greek architectural forms; for to these principles, in the midst of the complications and sophistications which inevitably beset all modern works of design, we must continually repair for correction, inspiration, and refreshment. The later and more fruitful expedition was the logical continuation of the first.

These successes, therefore, are grateful to this Society, not only because they seem in a manner to justify its first expenditure of means, but principally because this new exposition of the Greek spirit has proved far more complete than the most sanguine friends of the enterprise had anticipated. It has shown us the Greek architect experimenting with forms, and profuse in invention, yet always with self-denial and a just reserve of force; it has given us, perhaps, the best lesson yet derived from Greek antiquity in the grouping of buildings; it has thrown new light upon the divine virtue of simplicity in art; it

has given us substantially the only examples of the practice of the Greeks in domestic and civic works, and, in short, it seems to have brought nearer to our sympathies and comprehension that spirit which the conditions of modern architecture require as a corrective and purifying force. We therefore anticipate with interest the moment when the results of this expedition shall be made practically available to the profession in the forthcoming Report, which we hope may be as full and complete as possible, especially in respect to drawings.

This Society, in continuation of its policy of contributing to the extent of its limited means to the advancement of architectural knowledge, has authorized me to convey to you its offer to appropriate the sum of five hundred dollars towards defraying the expenses of printing the Report of the Expedition to Assos, and to indicate its intention to raise such additional sum, if any, as may be needed for the purpose, it being understood that the total amount is not to exceed one thousand dollars.

Respectfully yours,

EDWARD C. CABOT, *President.*

BOSTON, March 20, 1884.

---

EDWARD C. CABOT, ESQ.,

*President of the Boston Society of Architects.*

DEAR SIR,—I have had the pleasure to-day of laying before the Executive Committee of the Archæological Institute of America your letter to me of the 20th instant, and I am charged by them with the expression of the gratification which its contents have given them, and of their grateful acknowledgment to the Boston Society of Architects for the substantial and timely contribution it proposes to make toward defraying the expense of printing the second Report of the Expedition to Assos. The income of the Institute is so much narrower than its opportunities for service in its field of work, that such a contribution is especially welcome. Its chief value, however, is in the testimony it affords of the sense of your Society of the importance of the work accomplished by the expedition to Assos, of the novel character of the acquisitions made by it in the domain of Greek

architecture, and of the permanent worth of its results to students of the art.

This testimony, coming from a body so eminently qualified to speak with authority on the subject as the Society over which you preside, and expressed by you in terms at once decisive and convincing, while it is in the highest degree gratifying to the Institute, as a proof that it has succeeded thus far in accomplishing one of the chief ends of its existence, is equally stimulating to it to undertake fresh investigations upon classical soil which may make still further additions to knowledge of that ancient art which remains so full of instruction and interest to students and artists of the present time.

The Executive Committee of the Institute recognize their past debt to the Boston Society of Architects for its contribution to the original expedition of Messrs. Clarke and Bacon, and their further indirect but essential obligation to it in the fact that these gentlemen were members of the Society, — a fact which gave assurance of their character and ability. The Committee will have pleasure in transmitting a copy of your letter to each of these gentlemen. They venture to request you to bring the services of Mr. Robert Koldewey, of Hamburg, who has had charge of some of the most important investigations at Assos, to the attention of your Society, in the hope that it may think proper, upon consideration of his part in the joint labors on the site, to convey to him a distinct expression of its appreciation of the excellence of his work.

The Committee desire me to state that the fact that the means for the publication of the forthcoming Report have been provided by your Society will be stated upon its titlepage, and your letter to me will be printed as prefatory to the Report itself. The great mass of material to be digested, and the large number of drawings to be prepared for the Report, will probably delay its appearance for at least a year.

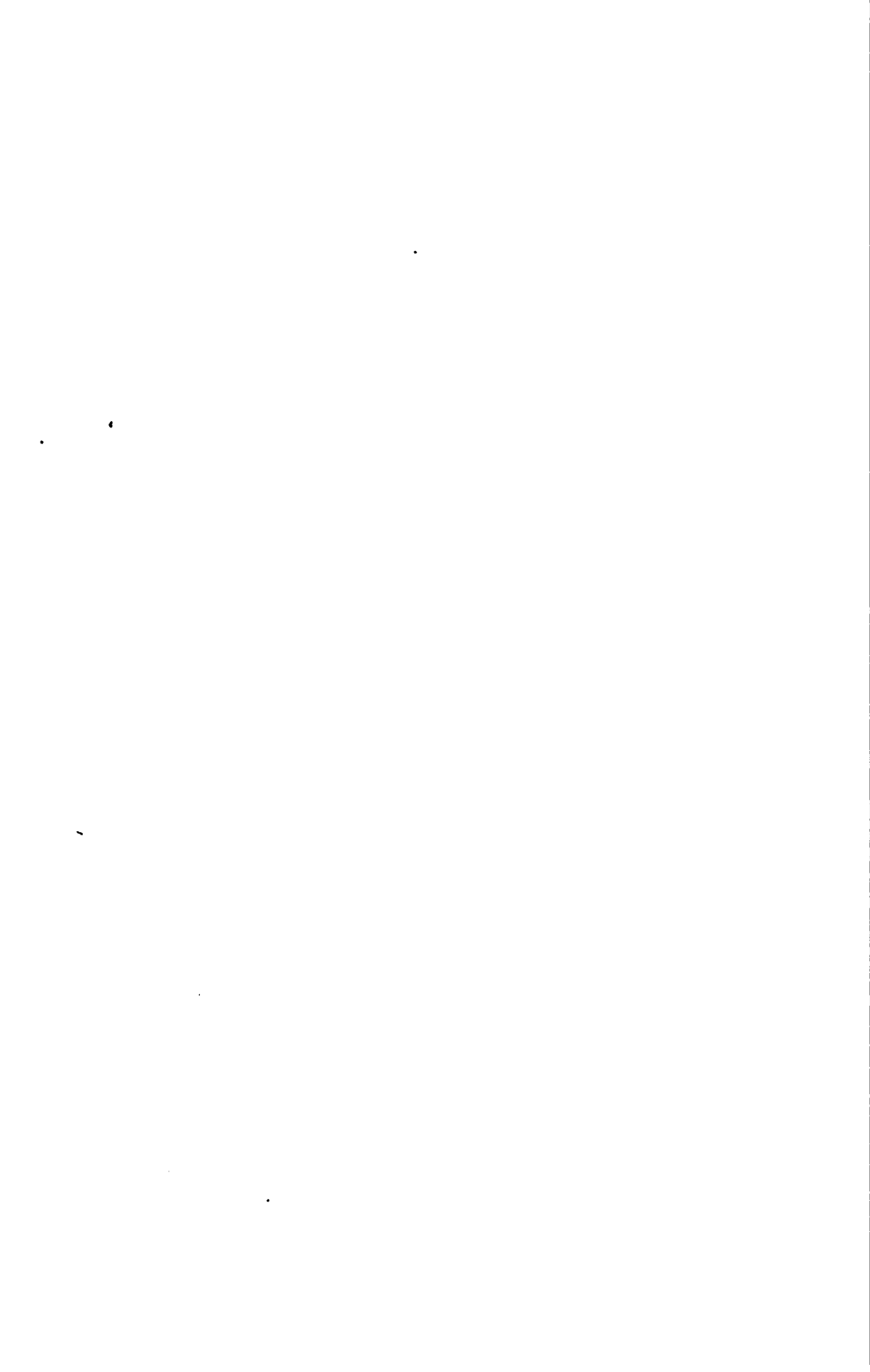
I have the honor to be, with great respect, faithfully yours,

CHARLES ELIOT NORTON,

*President of the Archaeological Institute of America.*

CAMBRIDGE, March 25, 1884.





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# INVESTIGATIONS AT ASSOS.

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## CHAPTER I.

### COURSE OF EXCAVATIONS.

IN October, 1881, the digging of the first year at Assos was brought to a close by the unwelcome official interruption to which reference has been made in the First Report.<sup>1</sup> After the retreat of the would-be commissioner, Mr. Bacon and Mr. Diller remained upon the site with the writer, until the beginning of December. By that time the winter had fairly set in. The prevalent north winds were so heavy that few of the small vessels of the country found their way to the port of Behram, while none were ready to venture from it. It was therefore necessary to leave the coast of the Troad in the *Mysethra*, the open sail-boat belonging to the expedition,<sup>2</sup> and the passage of the Gulf of Adramyttion was attended with much difficulty. The little craft, being heavily laden with chests of the specimens collected by the indefatigable geologist, shipped so much water over her low gunwale, that two Greeks, who had been admitted as passengers, gave up bailing in despair, and, wrapping themselves in their blankets, lay

<sup>1</sup> Clarke (Joseph Thacher), *Report on the Investigations at Assos*, 1881. Papers of the Archæological Institute of America, Classical Series, I., Boston, 1882, p. 44.

<sup>2</sup> *Report*, p. 131.



down in the wet. The Musconisi<sup>1</sup> and Tokmakia<sup>2</sup> Islands afforded some shelter during the latter part of the voyage, and in the harbor of Mytilene the full force of the gale was not felt.

This northern wind is one of those whose effect upon the Lesbian capital is described by Vitruvius<sup>3</sup> as most deplorable. What he says of it is, at least, true in December: when the Septentrio blows, the inhabitants do not lounge about the streets because of the biting cold. As part of the town is built upon a neck of swampy land, and as in antiquity a canal ran through its midst, Mytilene may not always have been so salubrious as the description of Cicero<sup>4</sup> and the charming account of Longos<sup>5</sup> would lead us to believe. It is possible that some unfavorable report had reached the Roman architect, which he, in his desire to exemplify the disadvantages attending an unwise orientation of streets, has curiously exaggerated and distorted. Still, the north-northwest wind, coming from the interior of this famous and pleasant island,<sup>6</sup> and the south wind, wafted across the narrow strait from the orange groves of neighboring Chios, can hardly have occasioned the coughs and distempers which Vitruvius attributed to them.

In exceptionally rough weather the regular steamers from Smyrna to Constantinople do not pass through the channel between Lesbos and the mainland, but put directly out into the open Aegean from Cape Kara Burnu.<sup>7</sup> This being the

<sup>1</sup> The ancient Hekatonnesoi, the islands of Apollo Hekatos.

<sup>2</sup> Four small and uninhabited islands lying in the Channel of Mytilene, to the southeast of Cape Argenon, the northeastern point of Lesbos.

<sup>3</sup> Vitruvius, I. 6. 1.

<sup>4</sup> Cicero *de Lege Agrar.*, II. 16.

<sup>5</sup> Longos, I. 1.

<sup>6</sup> "Insula nobilis et amoena." Tacitus, *Ann.*, VI. 3.

<sup>7</sup> The ancient Cape Melaina.

case at the time, the members of the expedition took advantage of the passage to Constantinople kindly offered them by the captain of a Turkish man-of-war, then about to leave the island.

The three winter months were spent in the preparation of the First Report, and the drawings which it contained.

The work of archæological investigation during the second and third years, 1882 and 1883, was carried on by Mr. Francis Henry Bacon, Mr. Robert Koldewey, and the writer. Particular acknowledgment is due to Mr. Koldewey, — an architect of the Prussian government and a thoroughly trained archæologist, — who, during the first year of his stay, devoted his services to the undertaking without remuneration. The surveys and restorations made at Assos were, roughly speaking, so divided that Mr. Bacon, besides general topographical work, investigated the Necropolis, the Gymnasion, and the Greek Bridge. Mr. Koldewey was occupied with the Agora and the buildings in its vicinity, including the Stoa, Bouleuterion, and Greek Bath ; while the writer, besides keeping a general chronicle of all the results obtained by the expedition, made special studies of the fortifications of the city, the Temple and the Mosque upon the Acropolis, and the Theatre and Atrium of the lower town.

Mr. Joseph Silas Diller, then holding a scholarship of Harvard University, returned to the Troad in 1882 for ten weeks, and completed his geological studies of the country. John R. S. Sterrett, Ph. D., to whose charge the editing of the inscriptions discovered at Assos had been confided, made, during May and June, 1883, a careful search for epigraphical materials upon the site, while studying also the inscribed stones previously removed to the port. Mr. John Henry Haynes, renewing his voluntary services, took nearly one

hundred and fifty photographs of the antiquities discovered, and of picturesque features of the city and its vicinity which lent themselves to this manner of representation.

During the first three weeks of the second year the excavations were under the charge of Mr. Bacon alone, the writer's return to Assos having been delayed until the end of March by the preparation of the First Report. Digging was recommenced on the 8th of March, 1882, with ten men, — a number gradually increased during the fortnight following to twenty-five. They were set to work in the Street of Tombs, where the substructure of the large ornamented sarcophagus (No. XVI.) was first freed from the earth. The coffer itself had been exposed during the excavations of the preceding year,<sup>1</sup> but the extent and the important character of the monument had not then become apparent. The summit of the pedestal had been supposed to be the pavement of the street, which was, in reality, 2.3 metres below it, so that more than one half of the structure still remained to be excavated. The altar which adjoined the pedestal was found lying directly upon the pavement, while fragments of the sculptured sides of the sarcophagus were deeply buried in the earth, showing that the ancient Greek road was kept clear from débris at the time when the sarcophagus was broken into. A further indication of the comparatively late use of the way is the fact that the stones at the base of the pedestal, before being covered by the earth washed down from the upper terraces and from the city walls, had been shattered with a heavy hammer, in order to extract the lead with which the cramps of the steps had been set: a vandalism hardly to be ascribed to a time before firearms had come into general use. The lid of the sarcophagus seems to have remained balanced upon the broken sides until

<sup>1</sup> *Report*, p. 127, figs. 33 and 34.

very recently, as the enormous stone, — one of the heaviest in Assos, — was found lying upon the surface of the earth. A Doric column, formerly standing upon the eastern inner corner of the pedestal, lay at a considerable depth, broken in two by its fall. Several of the steps adjoining the substructure of the tomb, and once leading from the paved street to the terrace above, were still in position. Two archaic Greek pithoi (Nos. 6 and 7), lying close to the native rock, had, at the time of the erection of the tomb, been cut through in digging trenches for the foundation walls of the pedestal and for those of the terrace behind it. The Greek builders, however, evidently disturbed these archaic jars as little as possible; the remaining bones, although covered with earth and stones, not having been moved.

In the first year the excavations in the Necropolis, carried on for little more than a week, had been almost entirely restricted to the imposing monuments near the main gateway. Few sarcophagi were buried in that vicinity after the erection of the vaulted receiving-tombs, — the foundations of which had necessitated the removal of all earlier remains. Hence no discoveries of note had been made in the cemetery during 1881. The first of the one hundred and twenty-four unopened sarcophagi unearthed in 1882 and 1883, were found at the north of the large ornamented sarcophagus. The objects in one of these monolithic coffers (No. 2), notably three vessels of fine transparent glass, were among the most valuable discoveries of the kind made by the expedition.

Towards the end of March a number of trenches were opened on the lowest — the western — side of the Necropolis, and were subsequently carried across all the terraces in a northeasterly direction. The original levels of the street, and the position of the larger burial enclosures, were thus determined. This digging brought to light many ostothe kai,

containing the crumbling fragments of burnt bones. These remarkable urns, of great age, were found only within a limited area, and always rested directly upon the native rock. So closely together did they lie, and so delicate and fragile was the pottery of which they were made, that it was necessary to use knives for the removal of the earth around them, after the two specimens first found had been shattered by the heavy picks.

In the mean while, plaster casts of those temple sculptures which had been discovered during the first year were made by a marble worker from the island of Tinos, Jani Laludis, who had been with Dr. Humann at Pergamon.<sup>1</sup> Three sets of these casts were prepared, and forwarded respectively to the Boston Museum of Fine Arts, the Louvre, and the Museum of Berlin. But as the only plaster to be procured was of inferior quality, and the inadequate appliances at hand could not prevent the warping of the glue moulds, the results were far from satisfactory. This is the more to be regretted, as it is now impossible to obtain new moulds from those reliefs which, in the official division, fell to the share of the Turkish government.

Several days in March were so cold that work had to be suspended. On the 15th of the month a storm of snow and hail drove the workmen from the trenches, and even as late as the 8th of April the temperature was so low that standing water in the lowlands of the Troad was covered with ice. The want of comfortable quarters at Behram during this inclement season, together with the attractions of the Easter festival upon the island of Mytilene, caused the Greek laborers to desert the site in a body, and excavations could not be recommenced until their return on the 17th of April. Dur-

<sup>1</sup> Humann (Carl), *Die Ergebnisse der Ausgrabungen zu Pergamon. Geschichte der Unternehmung*, Berlin, 1880, p. 20.

ing this interval the surveys and measurements were diligently carried on. The entire field of ruins was searched foot by foot, and the writer had the pleasure of finding the third block of the sphinxes from the western front of the temple, lying half buried in the earth, face downwards, upon the slope of the Acropolis. New wheelbarrows were made by carpenters in Molivo, and the blunted pickaxes were sharpened by a gypsy blacksmith who had encamped in the neighboring village of Pasha-Kieui.

After the Easter holidays so many men were engaged that it was often found impossible to collect enough small money to make out the weekly wages. A great part of the business of this primitive country is carried on by barter, and all the small coins of silver and copper obtainable from the bakhals of Behram and the neighboring villages were not sufficient for the needs of the expedition, — obliged on every pay-day to disburse from one hundred to one hundred and fifty medjids in small sums. As the expedient of paying several men together with a gold piece proved unsatisfactory, the example of the parochial churches of Mytilene was followed, and a quantity of paper money, of small denominations, was issued by the expedition. The bits of green cardboard, signed and stamped, were readily accepted, and circulated so widely throughout the southern Troad that some difficulty was experienced, at the close of the work, in calling in the outstanding amount.

When the digging was recommenced, the entire force was employed upon the terrace before the Stoa. The temple at the western end of the Agora was thoroughly examined, and the position of the neighboring streets and pavements determined sufficiently to enable Mr. Koldewey to begin his detailed survey of the Stoa and the adjoining buildings. The marble pedestal of a statue with an inscription to the Emperor

Constantine (II. A. D. 337-340) was found, during these investigations, lying buried beneath the débris accumulated in the street upon the north of the temple. A new road was made from the eastern side of the Acropolis to the port, and the sphinx relief was dragged down upon the sledge.

Awaiting the advance of the survey, the men were again removed to the Necropolis, where the so-called Larichos enclosure was thoroughly excavated. The work here resulted in the discovery of numerous sarcophagi and cinerary urns, the former containing pottery, glass, strigils, coins, and some few ornaments of gold and silver. Together with these were the two best preserved and most ancient skulls found at Assos, — discoveries of far greater value to science than could have been the richest treasures of precious metal. The one, antedating the Persian war, was in a large pithos (No. 5); the other, referable to the second century B. C., in a monolithic sarcophagus (No. 32) of the Larichos enclosure. Several inscribed stones were also unearthed. On the 22d of April, thirteen, and on the 24th, no less than seventeen previously unopened sarcophagi were brought to light.

In the following week excavations were resumed upon the Acropolis, where was found the largest of the epistyle reliefs of the temple, — the four centaurs with horses' fore-legs. The workmen remained upon the Acropolis until the 13th of May, the digging being further rewarded by a second block of the centaur relief, the paw of the acroterion griffin, an important fragment of the ornamented terra-cotta gutter of the temple, and an inscription containing an inventory of the chattels of the building itself.

Greek festivals occurring during the first part of May interrupted the work for several days. This opportunity was taken by Mr. Koldewey and by the writer to make a journey through a previously unvisited tract in the interior of the

Troad, lying between Assos and Lecton on the south, and Alexandria Troas and Neandreia on the north. Besides the ruins of the three towns last mentioned, those of Sminthe, Tragasa, and Larissa, were explored, as well as those of several ancient villages the names of which are not known,— especial attention being devoted to their bearing upon the remains at Assos. The most important discovery was that of the site of Polymedion, on the coast, opposite Methymna. A month later instruments were brought to this interesting locality, which was carefully surveyed, some digging being necessary in order to follow the circuit of the fortifications, and to ascertain the extent of the sacred grove which occupied the summit of the Acropolis in place of the customary temple. Eight days were devoted to these investigations at Polymedion, the results of which will be given in a separate publication of the Archæological Institute.

On the 17th of May excavations were begun at the eastern end of the Agora, the foundations of the Bouleuterion being laid bare, while the stairways at the south and west were cleared. A mass of débris was removed from the Greek cistern on a lower terrace, the existence of which had become known during the first year.<sup>1</sup> Within this subterranean vault were discovered, in a fine state of preservation, the marble head of a heroic statue, and several additional fragments of the inscribed stele published as No. 3 in the First Report.<sup>2</sup> The accumulated earth was found to be mixed with many sherds of water vessels of the Byzantine period, and with the bones of domestic animals. It was removed through the narrow orifice by means of baskets and ropes, and was carefully sifted in the open air.

<sup>1</sup> *Report*, p. 37.

<sup>2</sup> *Report*, Appendix, No. 3. Also, Sterrett (John Robert Sitlington), *Inscriptions of Assos*; Archæological Institute of America, Boston, 1885, No. XXVIII.



The Bouleuterion proved to be a construction of much interest and importance. Upon its plan were discovered several inscribed stones, some of which had been built into the diagonal walls of a late restoration. All of the men could not be employed upon this spot, and a part of the gang was removed to the front of the Stoa and to the terraces below its retaining walls. The detailed examination of the long colonnade, the place of assemblage before the bema, and the ramps and steps leading to the upper town, was a work of great extent, which thenceforth received uninterrupted attention for more than a year, two or three men being always here employed to clear the pavements, stairways, pedestals, and water-courses, and to aid in the surveys and measurements. The intimate acquaintance thus obtained with the closely connected group of structures surrounding the market-place has proved to be one of the most important results of the investigations.

During the latter days of May and the first week of June the greater part of the force was engaged at the theatre, the thorough investigation of which occupied twenty men for three weeks. The marble columns which supported the stage, the water-works for cooling and draining the enclosure, and both the vomitoria, were thus discovered, while a considerable extent of the seats and passages of the auditorium, and of the encircling stairs and streets outside the structure, were freed from earth. On the completion of this task most of the laborers were again set to work in the Necropolis. Only a few remained within the town, where, on the 10th of June, they had the good fortune to bring to light the longest inscription found at Assos, buried beneath the pavement of a Christian apse built into the small temple at the western end of the Agora.

While excavating those monumental tombs and burial en-

closures which were situated at some distance from the principal gate, thirty unopened sarcophagi (Nos. 52 to 82) were found. The number of cinerary urns was by this time nineteen; of pithoi, seven. The coffers contained the usual quantity of small articles; the figurini, the coins of Assos, and the neckband, ring, and beads of gold, belonging to this series, all being of especial value.

Notwithstanding the heat and stifling dust of July and August, the excavations were actively carried on, the number of men being gradually increased to forty-one. The outfit of the expedition did not furnish picks and wheelbarrows for more. After the 27th of June this force was directed to the most extensive task of the undertaking, namely, the thorough examination of the enormous mass of earth and stones which had accumulated beneath the terrace of the Agora, between its retaining wall and the upper seats of the theatre. For nearly ten weeks, until the 9th of September, the whole attention of the expedition was directed to this locality, from which much had been expected. There was, indeed, every probability that many antique remains would be found in this enormous heap of rubbish, where all the public records and works of art which must once have stood upon the Agora and in the adjoining buildings would naturally have been cast by pillagers of the city. The experience of all previous investigators upon ancient sites had shown that considerable deposits of antiques, especially fragments of sculpture and inscriptions, existed in the chutes formed by the overthrow of the smaller monuments adorning such centres of civic life. In so far as the earth beneath the Agora of Assos had been examined during the first year, the results had borne out this presumption. Almost all the inscriptions published in the first Report, among them the valuable bronze tablet with the oath taken by the Assians on the accession of Caligula, were

found in the ruins of Byzantine buildings, situated just below the Bouleuterion. But, however well grounded, these expectations were almost entirely disappointed, during the long work of the second year. The movable objects discovered, marble carvings, inscriptions, and the like, were few, — in themselves not sufficient to repay the expense of the work.

In architectural respects, on the other hand, this field was eminently productive. At the east were found two rooms, paved with exceptionally fine and early mosaics, the one representing the coat of arms of the city, two crouching griffins, the other a vender of Cupids, with Nikes and tripods at either side. The monumental flight of steps leading from the street below to the middle of the Agora, the Heröon, and, above all, the unique Greek Bath, with its three stories surmounted by a broad colonnade, must be considered among the most striking results of the expedition.

Five of the nine weeks were devoted to this edifice. The greater part of the cisterns, and three of the lower chambers were thoroughly excavated. This was a work of considerable difficulty, as the heavy stones of the superstructure entirely covered the plan. Near the northwestern corner, on the level of the Agora, was found the remarkable standard of roofing tiles, but no objects of interest were brought to light within the building itself.

On the south of the adjoining street the remains of a Roman bath were discovered. These had been too much injured by their continued employment during Byzantine ages, and especially by the reconstruction of the chief halls as a Christian church, to warrant the expenditure of much time and labor in their exploration. Still, four chambers were excavated which appeared to have been buried at an earlier epoch than the rest. In them were found the fragments of two inscriptions, dedicating the bath and its belongings to Julia Aphro-

dite, and thus giving an accurate date for the construction. The workmen highly approved of researches in this vicinity, as they were allowed to carry off such of the large coarse paving tiles and drain pipes as were of no value in the investigation. At the end of the day each of the Greeks went down to the port laden with as much of this earthenware as he could carry upon his shoulders. The tiles were used to pave bakers' ovens; the pipes, as gutters for roofs. When the writer passed along the northern coast of the island of Mytilene, some months afterwards, every village seemed to be thus provided.

In the caldarium of the bath the space between the suspensuræ, beneath the floor, was found to be still filled with fine wood ashes, which, being whirled into the air by the high winds, covered everything in the neighborhood with a thick white coat. It was a picturesque sight, at nightfall after work in this locality, to see the men standing in a long row on the large stones of the ancient mole which still project above the water. Here they washed before their evening meal, which, like the laborers of classic antiquity, they not unfrequently ate in the dark.

On the 4th of September, as the funds at the disposal of the expedition ran low, it was necessary to dismiss a great number of the men. A week later, those remaining were transferred to the Gymnasion and its vicinity; but on the 18th, many of these had also to be sent away. During October only seven men were employed, chiefly in removing small banks of earth, and in aiding the surveys and detailed measurements. In an undertaking directed merely towards treasure-trove, such a diminution in the number of laborers would have been equivalent to an entire cessation of work. This was not the case at Assos. The delay rendered it possible for the explorers, released from the superintendence of the dig-

ging, to carry on the investigations necessary for determining the character of the most recent discoveries. The members of the expedition were at no time more busily or more profitably employed than during these weeks, when the results previously obtained were collected and systematized.

Assos in this respect presented peculiar difficulties. The degree of demolition was such as to make it seem, at first sight, that architectural investigations were here altogether hopeless. The walls within the city had everywhere been levelled to the present surface of the earth, and in those cases where the buildings were elevated upon artificial terraces the foundations themselves had been washed away by torrents of winter rain. Throughout the entire city, less than half a dozen columns were still erect, and even these were without entablatures and capitals. Not one stone remained in position above the steps of the great temple. Retaining walls and ramparts, sufficiently heavy to withstand the wanton destruction of man, had been thrown out of position by the many severe earthquakes which Assos has experienced. An enormous mass of masonry, for instance, bordering the Agora upon the south, overhung the bath by more than half a metre; while the bed-joints of a fortification wall three metres thick, forming part of the eastern enclosure, were lifted to an angle of not less than fifteen degrees.

The vestiges which had survived this terrible demolition were buried beneath stones fallen from the upper part of the buildings, and generally also beneath some accumulation of earth. This had been overgrown by dwarf oak bushes, intertwined with briars, and as these are the only forms of vegetation spared by the browsing goats and camels, they had covered the heaps of *débris* with low, impenetrable thickets. Such was the aspect of the entire site on the writer's first visit to Assos in 1879.

The work of recovery was begun by burning the bushes. In the dry season the tangled mass took fire readily, and the roaring and crackling flame quickly swept away the patches of green which covered the heaps of moss-grown ruins. The formless rubbish was then removed, and, when the position of the ancient walls became recognizable, trenches were dug on either side to determine their character and extent. Every block still retaining its original shape, whether belonging or not to the edifice upon whose plan it was found, was measured and drawn to a uniform scale, generally 1 : 20. It was wonderful how this "order gave each thing view." While the plan of a building could be followed by the foundation walls, if not by marks upon the pavement, the elevations were recomposed upon paper, bit by bit, from the fragments brought to light. The height of the columns, and consequently also that of the stories in which they were employed, became evident from a comparison of the proportional diminution of all the drums with the diameter traced upon the stylobate, and with that of the necking of the capitals. The holes for dowels and cramps of metal provided the most absolute proof of contiguity; and even the position of the separate stones in courses long overthrown could be determined from the shift holes which it was customary throughout Greek antiquity to cut upon the beds beneath them. In short, it is not too much to say that one intimately acquainted with the architectural methods and details of the ancients can reconstruct their edifices with absolute certainty through a close study of overthrown and widely scattered stones,—just as a naturalist, from a handful of fossil bones, can present the image and describe the very habits of an animal which for thousands of years has had no living representative.

The task of tracing the connection between the architec-

tural members was complicated, in this case, through their having been scattered over the entire site by later Byzantine and Turkish builders. Stones of the upper story of the Stoa had been used for the Christian church on the terrace below the Agora; a capital, an entablature, and the lintel and jambs of a door from the lower town, together with many blocks from the summit of the Acropolis, had been built into the mosque; beams of the coffered ceiling of the great temple had been employed in late structures that stood at the east of the Bouleuterion, and at the south of the Gymnasion. The fitting together of such *disjecta membra* in some cases involved more than a thousand measurements. The homogeneous character of the material was the source of even greater difficulty. Without a single exception, the buildings of Assos, from the archaic Greek temple to the most recent hovels of Behram village, were built of the second andesite. Thus, while in the investigations among other ruins — for instance, those of the neighboring Pergamon — the color and grain of the various limestones were among the most readily recognizable and trustworthy indications, at Assos all was indistinguishable. To this may be added the fact that the andesite, although in general suffering but little from weathering, is easily chipped and split, so that projecting mouldings were frequently broken off altogether.

During the second and third weeks of September, the writer profited by the presence of Mr. Diller to visit with him a large part of the western and southern Troad, the Theban plain to the south of Adramyttion, and the tract between this and Kisthene known as Aphrodisias. The route included all the coasts of the mainland bordering the gulf. A rapid survey was made of the ruins on Qozlou-dagh, referred to in the first Report as Lamponcia, and a remarkable fastness was discovered upon the very summit of Mount

Ida, enclosing a spring which rises but a few steps from the highest peaks. These explorations, interesting alike in geological and topographical respects, were continued beyond the head-waters of the Aisepos, to an ancient site where various fragments of marble sculptures in relief were found, and subsequently removed to Assos.

On the 26th and 27th of September, while the digging was being carried on with but few workmen, a number of most welcome guests were entertained at Assos: Prof. W. W. Goodwin, of Harvard University, then on his way to Athens as first director of the American School, Prof. R. C. Jebb, of the University of Glasgow, Frank Calvert, Esq., and three ladies. Professor Jebb has published an interesting account of his journey through the Troad on this occasion, making also some comment upon the work at Assos.<sup>1</sup>

This opportunity may not pass without mention of the obligations under which the expedition stands to Mr. Calvert. His friendly assistance was given on all possible occasions, — to the undertaking itself, as well as to every member of the exploring party who was so fortunate as to visit the well-known farm at Thymbra, or the hospitable house at the Dardanelles. A familiarity with all parts of the Troad, combined with exceptional interest and information in various branches of scientific research, rendered his aid of the greatest value. To say this is but to repeat the testimony of every scholar of our generation who has worked in this part of Asia Minor.<sup>2</sup>

<sup>1</sup> Jebb (Richard Claverhouse), *A Tour in the Troad*. Fortnightly Review, No. CXCVI., London, 1883.

<sup>2</sup> Stark (Carl Bernhard), *Jenaer Literaturzeitung*, Jena, 1877, No. XLIV. "Jeder der seit Jahrzehnten . . . Gelegenheit gehabt hat an den Dardanellen und in der troischen Ebene zu weilen, kennt den Namen der Familie Calvert, und weiss dankbar zu rühmen was besonders Frank Calvert durch immer neue Untersuchungen und durch uneigennützigte Unterstützung und Berathungen der Reisenden der Erforschung jener Gegend und ihrer Alterthümer genützt



Assos is so far aside from the more frequented highways that visitors were rare. The next were two very humble German *Handwerksburschen*, brewers by trade, who were pursuing a somewhat devious course homeward from Smyrna. In default of the wonted *Zehrpfennige* of their native villages, they had supported themselves on the road by peddling small packages of polishing-powder of their own manufacture. One had walked all the way from Persia, across Asia Minor. They were glad to work for a time in the survey, and made themselves exceedingly useful.

After the 6th of November, funds having been received, the full force was again engaged, and the digging at the Gymnasium was at last completed. Towards the close of the month the men were divided into small gangs, and were employed upon the Agora, in the Street of Tombs, and upon several parts of the fortifications. As it was then thought it might be necessary to end all excavations at Assos with the season of 1882, every exertion was made to complete the most important investigations before the advent of that midwinter month of Lenaion, the cold of which is as terrible to the modern as to the ancient laborer.<sup>1</sup> The men dug on Sundays, feast-days, and even on Christmas, for, great as the superstition of the Greeks certainly is, it yields to their ambition and their love of money. It was not even found necessary to increase the wages on these days, as had been done

hat." Compare also the same writer in his *Nach dem griechischen Orient*, Heidelberg, 1874.

Prof. Dr. Ascherson, director of the Botanical Museum of Prussia, says, in his *Beitrag zur Flora des nordwestlichen Kleinasiens* (*Jahresbücher des Botanischen Museums*, Berlin, 1883): "Calvert, dessen vielseitiger wissenschaftlicher Bildung und lebhaftem Interesse Naturwissenschaften und Archäologie schon manchen dankenswerthen Beitrag verdanken. . . ."

<sup>1</sup> See Hesiod's fine description of the rigors of Lenaion in the *Works and Days*, 504-563.

by Dr. Schliemann at the neighboring Hissarlik ;<sup>1</sup> the Christians at Assos were unable to demand such a discrimination, as the Mohammedans had, from the first, worked for the usual pay on Fridays.

The orthodox Greeks had, indeed, far greater objections to working on the many saints' days than on Sundays, always declaring that, if they should fail in honoring him, the saint in question would do them some evil. Their convictions in this respect were very decided. It happened that on such a *πανάριον*, earlier in the year, the writer was helping a number of Turkish workmen to move one of the inscribed epistyle blocks of the Bath, when it fell upon his foot, which was so crushed as to prevent his walking for three weeks. The accident was regarded by the Greeks as a clear evidence that the offended saint had interceded, not for good, but for ill. It proved of but little moment, since, by following a roundabout ascent, the field of ruins could be visited on horseback.

That the greatest care was taken in laying out and superintending the work will be evident from the fact that, in spite of the danger of digging in deep pits and trenches, from the sides of which enormous beams of stone often projected, no serious accident occurred during the three years. One Greek laborer was knocked down by a slide of earth beneath the retaining wall of the Agora, and, as his complaints were so pitiful that internal injuries were feared, he was at once taken across the strait to the village doctor of Skamnia. But he returned in a fortnight, asking to be employed again. Even apart from the relatively greater risk of the excavations, this compares favorably with the general statistics of earthwork and railroad building. The official records of France, for in-

<sup>1</sup> Schliemann (Heinrich), *Ilios, City and Country of the Trojans*, London, 1880, p. 661 ; and *Troja*, London, 1884, p. 11.

stance, show an average of one individual maimed in the expenditure of each \$40,000.

The Greeks were light-spirited, and even somewhat foolhardy, in the work ; but the Turks, while of greater strength and bravery, were more quiet and careful. The latter were always chosen for posts requiring especial steadiness and endurance, such as the tottering upper courses of the towers and walls, and the narrow pits sunk between overthrown blocks in order to examine the sills of the great gateways. After the trustworthiness of Omer, the head workman of the Turks, had become known, he was permitted to carry the heavy and extremely delicate transit instrument from place to place, over heaps of rocks and up steep ascents. His strength and fineness of touch in this responsible task were remarkable.

Notwithstanding all the efforts made to hasten the work after the arrival of funds, it was still found impossible to bring the investigations to an entirely satisfactory conclusion by the end of the second season. The removal of the deep earth accumulated beneath the Agora had occupied the busiest months of the year, and had required more time than could have been foreseen in laying out the work. As has been explained, the small force of men employed during September and October had been able to accomplish but little. And yet it was the intention of the promoters of the undertaking, as well as the great desire of those intrusted with its execution, to leave nothing henceforth to be done upon the site of Assos, — even by the most careful gleaner.

Therefore, in a letter addressed to the committee of the Archæological Institute shortly before the suspension of the excavations in December, 1882, it was recommended that the work should be prosecuted during a third season, — as long as was permitted by the *iradé*, which had been granted

in May, 1881, for a term of two years. The responsibility of this proposal was seriously felt. It threw a great burden upon the members of the committee, who, with limited means, were then, in addition to the work at Assos, carrying on extensive researches in the field of American archæology.

The considerations upon which the recommendation was founded were, however, of decisive weight. Much remained to be freed from earth before the investigations could be regarded as absolutely thorough, and the recovery of the ancient city as complete as it could be made. Upon the Agora it was necessary to remove a mass of débris accumulated between the Stoa and the Bouleuterion, south of the great flight of stairs, in order to determine the character of the monument there existing, — which subsequently proved to be the chief bema of the town. The ends of the reservoir, also, and the juncture between it and the Stoa, were yet to be examined. The unique importance of the market-place at Assos rendered the thorough investigation of all points in its vicinity a matter of the greatest moment. As it had already proved to be the most complete and interesting Greek Agora known, no stone should be left unturned which could throw further light upon the arrangement and appearance of the buildings surrounding it. Equal in importance and extent was the work still to be done upon the fortifications of the city. No digging had hitherto been attempted at several of the gates of the ancient enclosure. They were constantly used by the Turkish inhabitants of Behram, and it was thought advisable to defer the trouble which must arise from any interference with these thoroughfares until towards the close of the undertaking. At the Gymnasion, work remained sufficient to occupy a large body of men for two or three weeks; the same was the case with the main street of the city, between the great eastern gate and the Agora. The

exceptionally well preserved ruins of a structure in the lower town, called, upon the map of the first year, a Roman portico, had not been examined at all. And, finally, the investigations at the Necropolis were incomplete, there still remaining, at some distance from the city walls, a mausoleum, which subsequently proved to be among the most interesting structures of its kind. To this it must be added, that no photographs fit for publication had been taken during the past summer, as the gelatine was frilled by the great heat; and also, that no professional epigraphist had visited the site to examine those inscriptions which could not be carried away at the close of the work.

Circumstances of recent occurrence, not immediately connected with the undertaking, gave exceptional emphasis to this recommendation. The Turkish Ministry of Public Instruction had, a short time before, annulled the existing laws concerning excavations within the limits of the Ottoman Empire, and had resolved thenceforth to grant no further permission to excavate, and even to forbid the sale and exportation of all antiques discovered in the Turkish dominions. It thus appeared more than probable that the Archæological Institute was engaged in its last, as well as its first undertaking upon classic soil, from which the acquisition of ancient remains could be hoped; the laws of Greece having long restricted freedom of archæological investigation, and forbidden the export of antiquities. This made it especially desirable that the explorations at Assos should be completed with the utmost thoroughness, — even though the resources of the Institute should be taken up for some years to come.

The recommendation was adopted by the committee, and the requisite funds were promptly subscribed by a number of gentlemen interested in the progress of the work. It was soon learned by telegraph from Boston to Assos that ample

means had been provided for the continuation of the excavations during a third season.

During the first three weeks and a half of December, the staff of men, gradually decreasing in number from twenty-three to twelve, was employed in the Street of Tombs. But the progress was not rapid, as many rainy days interfered with the work, and water stood deep in the pits and trenches. On the 26th of the month Mr. Koldewey and the writer left the site for Athens. Digging and sledging went on for ten days longer, under the superintendence of Mr. Bacon, after which time the investigations were suspended. Even six weeks before, the streets of the little village and the landing at its port had ceased to be a place of assemblage for the country people. The patrons of the various cafés sat in the smoky interiors, huddled together over basins of burning charcoal. The doors of the windowless hovels, always open during the warm season, were now tightly closed; within hibernated the women and children, wrapped in the gaily colored rugs which they had woven during the long rain-storms of the early winter. The very dogs had hidden themselves away, seeking shelter in corners of the many unoccupied houses which attest the greater extent of Behram in former ages. To one riding into the squalid village during this bitterly cold season, the place seemed uninhabited, — the settlement of the Turkish conquerors itself a ruin.

The writer returned to the Troad alone, on the 28th of January, 1883. The beginning of the digging was delayed for more than a week by the slowness of the Kaimaqam of Alvadjyq in appointing a successor to the official supervisor of the work, who was prevented by illness from resuming his functions. The post was ultimately assigned to Hadji Christos, the Greek merchant living at the port, whose friendly

service to the members of the expedition, on their first arrival at the site, has been referred to.<sup>1</sup>

With eighteen men, all that could be brought together at this time of the year, work was commenced at that structure of the lower town designated upon the plan of the first Report as a Roman portico. As the excavations advanced, this proved to be the atrium of a large palace-like dwelling. With exception of the Christian churches and the Turkish mosque, it was the building of latest date examined at Assos ; but it was well constructed, and, in design, proved of interest as exemplifying the persistent retention of Hellenic forms late into the ages of Roman rule. It furnished an additional example of the civic architecture of the Greeks, the development and adaptability of which is so well shown by the monuments of Assos.

During February the work was carried forward under great difficulties. The 10th of the month was the coldest day of the year, and a fortnight later there were long-continued storms of hail and snow, which put a stop to all digging. Nevertheless, it was found possible to advance the excavation of the Atrium so rapidly as to allow a part of the gang to be transferred to the Stoa, and to the small aediculas at the west of that building,—thus preparing the way for the further surveys of Mr. Koldewey, who arrived at Assos on the 1st of March. The digging at the Atrium being by that time entirely completed, all the men, now over forty in number, were employed in the vicinity of the market-place and among the tombs. In both of these fields the work was richly rewarded: at the Stoa, Heroön, and Greek Bath, by finding inscriptions and architectural fragments which went far towards solving the various problems of arrangement and construction presented by these edifices ; in the Necropolis, by

<sup>1</sup> *Report*, p. 20.

the discovery of the finest figurini, vases, and coins obtained during the entire course of the excavations. The 24th of March was a day of good fortune. Several sarcophagi of great age were found, among them No. 87, containing a number of archaic figures. Six hours digging on that day resulted in more valuable discoveries than had been made in this locality for half a year.

Mr. Bacon having returned to the site early in April, all the workmen were, during this last month of the undertaking, engaged in the Street of Tombs. The number of laborers was maintained at the maximum of forty-five until the 24th of April, when the Easter holidays caused the usual break in the ranks of the Greeks. The minor Greek festivals were not permitted to interfere with the work, which was prosecuted with the utmost diligence, all the men being employed on Sundays whenever showers had caused any considerable interruption during the week.

Finally, on the 1st of May, the excavations were brought to a close. Throughout the ancient city, every point which it had seemed advisable to expose had been freed from earth,—excepting only one small corner, about seven by five meters, at the western end of the Stoa, beneath the ramp which ascends to the terrace above. So closely had the work been calculated that forty-eight hours more would have sufficed to clear this spot. But the fear of giving the Turkish officials even the slightest pretext for delaying the division of the objects discovered, or perhaps even for refusing the grant of those to which the promoters of the undertaking were entitled by the terms of the agreement, prevented any removal of the earth after the expiration of the *iradé*,—although for some time there had been no attempt whatever on the part of the Turkish government to keep track of the movements of the explorers. Thus it is not known, and in all probability never



will be known, what treasures may lie concealed beneath that heap of débris near the entrance to the ancient market-place, left for the last because of its comparative unimportance.

Early in the year the Turkish Ministry of Public Instruction had been formally requested to send an agent who should make the prescribed division and allotment of the antiquities discovered by the expedition.<sup>1</sup> The delay of a decision in this matter for some six weeks after the close of the excavations was more than compensated for by the excellence of the official appointment. Demetrios Bey Baltazzi, a gentleman who has rendered many services to classical archæology in the Levant, was named as commissioner, and, during two visits to Assos,—from the 16th to the 21st of June, and from the 27th of June to the 2d of July,—effected a settlement entirely just and satisfactory to both parties.

The *iradé* under which the excavations had been undertaken was framed in accordance with the laws concerning antiquities promulgated by the Porte in 1874.<sup>2</sup> In regard to the final division these laws determined that one third of the objects discovered should be granted to the owner of the land where they are found, and one third to the finder, while the remaining third should become the property of the Turkish government.<sup>3</sup> At Assos the entire extent of the ancient city,

<sup>1</sup> Article XXIX. of the Turkish laws relative to antiquities, referred to in the following note, determines that the excavators and the Ministry of Public Instruction shall each appoint an expert to estimate the value of the indivisible objects discovered, and to effect a division of them,—provision being made that a third shall be called as umpire in case of disagreement.

<sup>2</sup> The laws on antiquities, promulgated Sefer 20, 1291, are given by Aristarchi Bey, *Legislation Ottomane*, vol. iii., troisième division, Constantinople, 1875, pp. 161-167.

<sup>3</sup> "Article III. Toute antiquité non découverte (gisant sous sol), dans quelque endroit qu'elle se trouve, appartient au gouvernement. Quant aux antiquités trouvées par ceux qui effectueraient des fouilles par autorisation, un tiers appartiendra au gouvernement, un autre tiers au trouveur et le reste au propriétaire du terrain où les antiquités ont été trouvées. Si le trouveur a

within the walls, is *vakouf*,<sup>1</sup> — a domain set apart for the maintenance of the mosques, — and hence, in so far as the point in question is concerned, a domain of the state. Two thirds of all the objects discovered were therefore exacted by the Ministry of Public Instruction. The only private enclosure where excavations had been made was the level field lying to the west of the Street of Tombs, the site of the ancient Stadion, which had been recently reclaimed and sown with wheat. The owner of this ground had sold to the expedition, for the sum of three Turkish pounds, the right to dig in certain parts of the field, ceding also that portion of the antique objects which would by law fall to his share. But the discoveries here, apart from the important mausoleum with the barrel-vaulted ceiling, were only some half-dozen vessels of coarse pottery, not of sufficient value to render it advisable to enter a protest against a general division on the terms before mentioned.

Attention was first devoted to the coins, — of which nearly three thousand had been discovered. Those of gold were at once set aside for consideration with the ornaments of precious metal. Sixty of the coins of silver and bronze were of especial interest on account of the positions in which they had been discovered: in sarcophagi, the ages of which were thereby determined; under walls and pavements, thus referable to subsequent dates; and in accumulations of Byzantine and mediæval débris, attesting the overthrow and desertion of the various sites. As these coins were of greater impor-

trouvé ses antiquités dans sa propriété, les deux tiers seront a lui et le reste au gouvernement.”

<sup>1</sup> The laws governing *vakouf* property are given in the *Legislation Ottomane*, before quoted, vol. i., section deuxième, Constantinople, 1873, pp. 241-249. There is still no better popular explanation of this peculiar institution of the Turks than that given by Mouradja d'Ohsson (Ignace de), *Tableau général de l'Empire Othoman*, Paris, 1788-1824.

tance to the expedition than to the Turkish Museum, the bulk of them was kindly granted to the investigators by Baltazzi Bey, who chose as an equivalent one hundred and twenty of the best preserved specimens remaining. He did not think it worth while to sort and count the oxidized and defaced coins, but weighed out the twenty-five pounds or more with scales borrowed from the village bakhal, allotting alternately one oke to the American, and two to the Turkish share. This method of division was, it is true, somewhat crude ; but, as the pieces were well mixed together, it was impossible to complain of it as unjust. Nine hundred and eight coins thus became the property of the expedition, two hundred and fifty-seven of which were of numismatical interest, and had been identified without the aid of a specialist. Among these were no less than one hundred and twenty-two coins of Assos itself, many of them of silver : the finest specimens, and all the imperial types minted by the city, being obtained in exchange for certain coins of the Diadochi and Byzantines, of greater intrinsic, but of less scientific value.

On the 28th of Junę a division was made of the temple reliefs. In this important matter it was more difficult to reach a satisfactory conclusion, and it was only after much persuasion, and by giving up to the Porte all the fragments of bronze sculptures discovered during the excavations, that the expedition secured the two finest blocks of the epistyle, — namely, the Herakles with the human-legged centaurs, and the two heraldic sphinxes from the eastern front of the building, superior to all the others in workmanship and of better preservation.

An especial arrangement was made in regard to the inscriptions. The commissioner considered the value of the bronze tablet, with the oath of the Assians to Caligula, as equal to twice that of all the inscribed stones together, and

could not be prevailed upon to make any allotment by which the Porte would be obliged to relinquish this treasure. The possession of the tablet was, indeed, greatly to be desired, as it is one of the largest and best preserved among the few bronze inscriptions remaining from Greek antiquity. Although its patina of brilliant green and blue had been almost entirely lost through its two years' exposure to the air in the Turkish custom-house, where it had been placed under seal by the first Maimouri, its appearance was still so striking as to make it in this respect also an acquisition to be prized in any museum of antiques. Nevertheless, it was felt that, in the division of all the seventy-four inscriptions discovered at Assos, those cut in stone which it was possible to remove from the site formed, in essential value, decidedly more than one third. In historical interest, for instance, the bronze tablet is certainly not equal to either the inventory of the great temple, the dedicatory inscriptions of the Bath, or the epitaph of Hellanikos and Arlegilla. The proposed division of the inscriptions, by which the bronze alone was taken by the Porte, was therefore accepted without demur.

The marble sculptures, figurini, pottery, glass, and miscellaneous objects were divided, class by class, by Baltazzi Bey, each into three approximately equal lots, the choice of one of these being allowed to the investigators. This was fair, and indeed favorable to the choosers. It would certainly have been much more trying if the commissioner had required the finders to make the division, and leave to him the selection of two of the thirds. Baltazzi Bey, however, arranged his lots with surprising equality, so that the advantage of the first choice was not so great as might have been expected. He was uniformly obliging in putting into the same share objects which in any wise belonged together, whenever this was possible without disturbing the relative values.

The attention of the explorers was invariably directed towards the acquirement, in so far as was possible in this small fraction of the whole, of representative types, — of scientific rather than material value. Thus, of the minor antiques, as of the coins and reliefs, the Americans secured the most interesting specimens, — although not quite one third of them in number. This will become evident by a comparison of the objects which have been removed to America with those remaining in the possession of the Turks. Both will be described in detail in the subsequent pages, and the former will be referred to according to the numbers attached to them in the Boston Museum of Fine Arts.

The division could not be otherwise than a painful task to the explorers. Series of figurini, glass, vessels of terra-cotta, and many minor objects illustrative of the industries of the city during various ages, — even the trifling memorials buried together within one grave, — had often to be separated, notwithstanding the obliging readiness of Baltazzi Bey to comply with our wishes. It was with sadness that two thirds of the antiques which had been acquired by such long and hard labor, and had come to be viewed almost with a feeling of personal attachment, through the familiarity of close study, were given up to the unheeded corners of a Levantine museum.

It is but just that attention should be called to the fact, — exceptional, if not unparalleled in dealings of this kind with the Turks, — that not the smallest object, not a single coin or sherd of pottery, was kept back from the division by the explorers. The instructions given in this respect by the executive committee of the Archæological Institute had been explicit, and were carried out by their agents with scrupulous exactness.<sup>1</sup>

<sup>1</sup> It should be stated that these instructions were in conformity to the obligations entered into by the Institute in the acceptance of the *iraddé*; the executive committee being bound in honor, no less than in morals, to issue them.

The only antique removed from the site during the progress of the work—a gold coin found during the first year, and submitted to an eminent American numismatist for determination—was returned by mail before the division, and ultimately fell to the share of the Turks, who have it now in possession. Only those experienced in Oriental methods of dealing can fully understand what this means. An entirely different procedure would have been quite in accordance with the accepted laws of human intercourse in the Levant; and this being naturally taken for granted by the authorities, it was utterly impossible to convince them that the usual protestations of fair dealing were in this case literally true. A certain license of appropriation enters into the calculations of all Turkish business; and, as in most instances of individual deviation from established usages, the consciousness of absolute rectitude was here purchased at the expense of great disadvantages. In itself, this position may be regarded with pride by those who planned, as by those who carried out, the work; but, as a moral lesson to the Turkish official, the *fiat justitia* of the Archæological Institute was certainly futile.

On the other hand, it is certain that some few antiques were stolen from the excavations by the Greek workmen, in spite of all precautions. The men were narrowly watched during the work, and received, in addition to their regular wages, gratuities for such small objects as they brought to the explorers. The obliterated and less valuable coins were collected every Saturday night, when the pay-roll was called, and were bought in at a fixed scale of prices,—incommensurate, it is true, to their worth for the purposes of investigation, but still rather more than they would have fetched if sold to the *bakhals*, or to the travelling Jews, who usually carry on a modest speculation in ancient gems, coins, and fragments of figurini. No instance of an antique being secreted by

a Turkish workman was detected during the three years ; but the Greeks were often tale-bearers, as well as petty thieves, and exposed various acts of dishonesty on the part of their fellows.

The lower classes of Mytilene, from which the greater number of the Greek laborers were recruited, are notorious throughout the East for their sharp practices, as attested by the well-known rhyme :

'Αθηναῖοι καὶ Θηβαῖοι  
Καὶ κακοὶ Μυτιληναῖοι,  
"Αλλα λέγουν τὸ βραδὺ  
Κι' ἄλλα κάμνουν τὸ ταχύ.

Indeed, the inhabitants of this island have often been stigmatized as among the most unprincipled of the modern,<sup>1</sup> as their ancestors were among the most depraved of the ancient Greeks. Hence it could be no surprise that pilfering was attempted, notwithstanding every incentive to fair dealing, and that some small thefts passed without detection, despite the strictest surveillance. Whether any of the objects taken were of real importance cannot, of course, be known. It was at least impossible to steal from the trenches anything which could not have been concealed upon the person during the day's work, and the most important investigations—those concerning the architecture, sculpture, and epigraphy of the ancient city—cannot have suffered in the slightest. Some fragments of terra-cotta figurini, said to have been brought from Assos, were in the hand of a dealer at Smyrna, in May, 1883, and were offered for sale at an exorbitant price. But Professor Ramsay, from whom this information is derived, states that these were of little value, and certainly

<sup>1</sup> Compare the remarks of Finlay (George), *A History of Greece from its Conquest by the Romans to . . . A. D. 1864*. (New Edition.) Oxford, 1877, etc., vol. v. p. 60.

much inferior to the specimens which he had seen at Assos itself. Even should it prove — and this is a mere hypothesis — that any of the better images, which have since come into European and American collections of antiques by way of Smyrna, were originally stolen from the excavations at Assos, it will in that case also be borne in mind that the science of archæology is not the less, because indirectly, indebted for these contributions to the promoters of the undertaking.

The only unauthorized attempt to dig upon the site, during the two years designated by the *iradé*, was made by one of the Greek valonea merchants, in a spot where nothing but sherds of pottery and broken terra-cotta figures could be found: a terrace adjoining the lower fortifications, filled in with débris during antiquity. Some few basketfuls of earth were here removed. This should not be considered as any intentional infringement of the rights of the expedition, but rather as a continuation of the desultory digging which had been carried on upon the ancient site for many years. In this instance the objects discovered, ultimately handed over to the expedition, were of no great value; but before the commencement of the systematic excavations the treasure-seekers had often been more successful. In 1878 a Turk of Behram, while digging among the ruins, discovered twelve silver spoons of curious shape. These he carried across to the island of Mytilene, and sold in Skamnia. An attempt was made to find them, but they had passed from hand to hand and had finally been melted up for the manufacture of the hideous images of sheet silver suspended as votive offerings at the shrines of popular Greek saints, — just as certain of the prehistoric gold ornaments stolen from Hissarlik were transformed into modern jewelry.

So firmly did the inhabitants of Behram believe an endless



wealth of precious metals to be hidden among the foundations of the ancient city, that every now and then one of the old men of the village would come to tell the explorers how he had seen in a dream a treasure, generally a pot of money, buried beneath a certain spot, — offering to indicate the locality if, when the prize was found, he might be allowed a share.

This belief in hidden treasure was not without its ludicrous aspects. One of the subordinate officials sent by the government as Maimouri long entertained the most extravagant hopes. He would jump into the trenches whenever a sarcophagus was unearthed, in order to seize the gold which he confidently expected it to contain. This became troublesome to the workmen, who could hardly be seriously reproved for causing him the transient delight once excited by the pretended discovery of a heavy and shining bowl of yellow metal.

No damage was done by the excavations to any property, public or private, for which the expedition could have been held responsible according to the fifteenth and sixteenth articles of the Turkish code. And in no case was there conflict or disagreement with owners of fields or sheep-folds, — jealous as the villagers naturally were concerning any disturbance of their enclosures.

By the night of the 30th of June, Baltazzi Bey had packed up all the movable antiques which had fallen to the share of the government, and had deposited them under seal in the magazine of the customs official of the port.

It had been hoped that the Turks would be readily induced, after the division, to sell the greater part of the antiquities which had thus become their property, — more especially the remaining blocks of the temple epistyle. The Boston Museum of Fine Arts had set aside the sum of \$2,000 for this

purpose. But it soon appeared that the Ministry of Public Instruction, in extreme pursuance of the principles adopted shortly before, had determined to forbid the sale of antiques to foreigners, as well as to prohibit the exportation of all works of ancient art from the Ottoman Empire. No proposals relative to the purchase of the Turkish share of the objects discovered at Assos would be entertained; and, as the government had exercised the option allowed by the fifth article of the code then in force,<sup>1</sup> and had divided all the antiques *en nature*, and not *en valeur*, no further claims could be made. The sum voted by the Boston Museum of Fine Arts was therefore unused.

An anonymous writer in the *New York Nation*<sup>2</sup> has since urged the Archæological Institute to undertake legal proceedings against the Turkish Ministry of Public Instruction, on the ground that, as he asserts, the law of 1874 "enacts that indivisible sculptures shall not be divided, but valued and given up to the finder in exchange for their estimated value." Unfortunately, there is nothing in the law in question to bear out this assertion. The finders were by no means thus favored with the certainty of ultimate possession, the decision as to any proposed purchase being left wholly to the option of the government. The code of 1874 had been repealed before the division was made at Assos, and the laws at present in force, although not promulgated until February, 1884, had already been determined upon. This of course altered nothing in regard to the terms and privileges of the *iradé*; but the commissioner had been instructed to negotiate no sale, and to allow the exportation of no antiques excepting those which the government was pledged to give up according

<sup>1</sup> "Article V. La répartition des antiques se fera, selon la demande du gouvernement, en nature ou en valeur."

<sup>2</sup> *The Nation*, New York, Nov. 13, 1884.

to the original agreement. It was in conformity with this policy that Baltazzi Bey had made out all the lots in kind. Even if the law of 1874 had actually contained any such clause as that upon which the well-meaning critic in the Nation would have based a legal claim, it would, under these circumstances, have been impossible to persuade the Turks that the sculptures from the epistyle of the temple were to be considered as indivisible, — they being well aware that at that very time a considerable part of this disconnected series of representations was in Paris.

In conformity with the thirty-second article of the code, detailed lists of the antiques belonging to the American share were made out and submitted to the customs officials of Behram and of the Dardanelles, — the chief station of the Vilayet. Export duties are levied by the Turks even upon fragments of ancient works of art, eight per cent being assessed on the assumed value, the determination of which is, of course, in such a case, altogether arbitrary.

While awaiting a decision in this matter, and the issue of the teskeré which should permit the removal of the antiques belonging to the expedition, all the objects were packed in wooden cases: the inscriptions and smaller stones being wrapped in hay, the vases and figurini in a fine dried seaweed. The greatest care was required in preparing the glass vessels for the long transit, as many of these had become exceedingly fragile through the flaky oxidization of two thousand years, the iridescent material being in some places almost as thin as paper. Indeed the side of one delicate glass pitcher, now in Boston, was found to have fallen in from its own weight while still in the sarcophagus, so that this exceptionally fine specimen was excluded from the division by the commissioner, on the ground that it could not possibly be removed from the site. In packing things of this kind an

expedient was adopted which proved entirely successful, and may be recommended for similar cases. Fleeces of cotton were lightly held over the object while a spray of thin mucilage was blown upon them through an atomizer. After this had been allowed to dry, further layers of cotton were wrapped about the whole, which was then wound around with thread and dipped into thick glue. The firm shell thus formed proved a perfect protection, especially as each ball was packed in a separate box that it might not be exposed to pressure. In opening, the outer layers were cut off with shears and the innermost fleeces slightly moistened. Three ancient skulls, which seemed so ready to crumble into dust that even their removal from the Necropolis to the magazine at the port was at first thought hardly possible, were also thus prepared, and when placed in the hands of that eminent specialist, Dr. Virchow of Berlin, they were in precisely the same state as when taken from the tombs. In all the long voyages and many transshipments between Behram and Boston the only one of the antiques injured was a vase which separated in the lines of an old crack.

Every article belonging to the American share being packed, the export duties paid, and the permission to remove the cases having been received by telegraph from the customs officials of the Dardanelles, the writer left the site on the 14th of July, 1883. Mr. Bacon and Mr. Koldeway remained for some time longer, in order to complete the detailed surveys of the Necropolis and Agora.

Difficulties were subsequently raised by the Turkish officials in regard to the removal of the architectural fragments. These consisted of a complete order from the great temple of the Acropolis, the stump of an archaic column, and specimens of various mouldings from the Street of Tombs, capitals from the Stoa and Bath, and portions of the two chief mosaics of

the lower town. They had not been included in the division, but had all been left to the Americans, as Baltazzi Bey did not consider them of sufficient value to the Imperial Museum to warrant the expense of carrying them to Constantinople. After the local officers of the customs had permitted the shipment of the other objects, they found a pretext for interference, and stubbornly refused to allow the removal of those blocks, because they had not been specified in the division lists. These stones had been admitted to be of no value to the Turks, and their retention by the customs officials was simply an act of obstructiveness, — an *abus de pouvoir*, as the before-mentioned writer in the Nation has justly characterized it. The commissioner could not again be summoned to the site; and, in spite of the repeated efforts of the Archæological Institute through the American Legation at Constantinople, nothing has since been obtained but promises from the Director of the Imperial Museum, and from the Minister of Public Instruction, to whom the ultimate decision is referable.

The total cost of the investigations at Assos, including every expenditure at all connected with the undertaking, from November, 1880, until May, 1884, was \$19,121.16. Of this sum \$3,344.53 was directly spent in earth-work, — no small proportion of the whole, in view of the remoteness of the site from the home of the explorers, and the fact that attention was at all times directed rather to a scientific investigation of the monuments of the ancient city, than to a mere sifting of great mounds of rubbish in the hope of discovering antiques. The remainder was devoted to the purchase of the household and excavating outfit, to the maintenance of the party of explorers upon the site, to the transportation of the chattels of the expedition and the antiques discovered by it, to the travelling expenses and the salaries of the agents of the Institute, and, finally, to the expensive official relations

inseparably connected with all work carried on under Turkish jurisdiction. The entire outlay, although a heavy tax upon the resources of a newly formed society of private individuals cannot be thought excessive, considering the extended and complex nature of the task :

Ἐκατὸν δέ τε δούραθ' ἀμάξης.<sup>1</sup>

It has pleased the executive committee of the Institute to express its entire satisfaction with the detailed accounts rendered by the agents employed in this work, and to praise their constant economy, upon the exercise of which the success of the expedition was in great measure dependent.<sup>2</sup>

<sup>1</sup> Used proverbially by Hesiod, *Works and Days*, 456, and quoted by Plato, *Theaitetos*, XLII. 17.

<sup>2</sup> *Archæological Institute of America. Fifth Annual Report of the Executive Committee*, p. 26. Cambridge, 1884.

## CHAPTER II.

### ACROPOLIS AND TEMPLE.

THE volcanic crater which forms the Acropolis of Assos is one of the most striking natural features of the Troad. Rising precipitously on a narrow strip of land between the sea and the river valley, it is the highest point between the mountain of Qozlou-dagh (Gargara), ten kilometers to the east, and the great plateau above Polymedion, an equal distance to the west. Its topographical isolation is hence very marked. To repeat the words of the First Report: in all the wonderfully picturesque lands inhabited by the Greeks, no site was more majestic or more beautiful than that of Assos. The cliffs upon the seaward side are so steep, that, standing on the Acropolis, one can look down into the holds of the vessels moored in the little port beneath,—and so high, that the summit is at times in or above the clouds. On a morning in early spring, while drops of rain were falling at the port, the writer has climbed through a thick bank of vapor, hanging between the Agora and the Acropolis, and has found the sky blue overhead, and the ruins of the temple lighted up by the first rays of the sun.

The finest views of the Acropolis are to be had from the southeast and the southwest, a mile or more out to sea. It was, without doubt, partly on this account that the temple which crowned the height was placed close to the southern edge of the summit. The building must have formed a landmark from every part of the Gulf of Adramyttion and the

Strait of Mytilene; the sailor nearing the port could gradually distinguish the quiet lines of its columns and entablature, thrown into relief by their dark shadows upon the cella wall. The low, mediæval towers now surmounting the Acropolis can be distinctly seen from the fortress of Molivo, twenty kilometers away, although at this distance the hill of Assos is not outlined against the sky. But its full grandeur, dependent in great measure upon its isolation, is felt when the observer stands upon the heights separating the river valley from the sea, — for instance, at the village of Bourgas, upon the west-northwest, or on the road to Sonoba, to the east of the Acropolis.

On the north, the slope is more gradual, but even here the cliffs are often twenty meters high. Towards the sea, the grade is almost one in two; towards the river plain, it is one in four. While, on the one side, the crater and its surrounding dikes have been scarped by the action of the waves, on the other the great ravine between the two ranges has been filled in with the detritus brought by the Satnioeis from the heights of Ida since the close of the tertiary period, so that the stream now flows at an elevation of one hundred meters above the level of the sea.

The earliest inhabitants of the land cannot have failed to take advantage of the protection afforded by this great natural stronghold. Geological revolutions, which in one epoch plunged the entire range beneath the sea, had truncated the cone of the crater. The level summit thus formed could easily be rendered impregnable by the erection of walls at those few points where the foot of man could make the ascent. The limited circuit could be defended by a small number of besieged against the attacks of an army; and yet the enclosed area was of sufficient extent to accommodate a considerable garrison.



As if to give every possible advantage, nature not only surrounded the rocky heights with the most fertile fields, but created, within the very confines of the citadel, an inexhaustible reservoir of water.<sup>1</sup> A large cavity in the rock which forms the northern terrace of the Acropolis retains a provision of water until midsummer, without the slightest effort on the part of man to increase its supply. At the present day, when no buildings stand upon the Acropolis from whose roofs the rainfall could be collected,—when no furrows, even, are made along the earth to carry the winter torrents into the well, and no care is taken to keep it undefiled,—the inhabitants of Behram can fetch their drinking water from this cistern as late in the season as July.

It is not possible to say at what period this cavern was first enlarged and rendered accessible. The masonry now remaining upon its sides, the revetement of the deep fissure at the bottom, and the flight of steps by which the Turkish women descend to the water with their jars, all date from the Middle Ages. The total width of the cistern is 6.8 m., its length 8 m., and its depth, measured from the floor of the eastern chamber to the spring of the vault, 7.5 m. A longitudinal division wall has been built, and the two subterranean chambers thus formed have been covered with rude barrel-vaults, the impostes of which are nearly on a level with the ground. These enormous reservoirs, once filled, would contain enough water to supply, for an entire year, the needs of a garrison of more than six hundred men. Replenished by every rain, they must have been capable of providing drinking water for all the twelve or fifteen thousand inhabitants of ancient Assos, at the time of its greatest extent.

It is plain that the walls of defence erected upon the

<sup>1</sup> Shown on the plan of the Acropolis, given in the First Report, Plate 2, as "Cisterns."

Acropolis were in great part razed to the ground after every successful attack. Their stones have gone to increase the great slopes of rubbish which have accumulated at the foot of the cliffs. Nowhere, throughout their entire extent, have the fortifications of the town been so thoroughly demolished as upon this height. The investigations concerning the military architecture of ancient Assos — of which the surrounding walls supply so many examples in perfect preservation — derive no materials whatever from this strongest retreat. Only here and there are vestiges of polygonal masonry to be seen, these generally forming low retaining walls in clefts of the native rock. The only courses of accurately squared stones in position are those beneath the huge tower of rubble, erected in the Middle Ages, which, with the other mediæval fortifications of the Acropolis, will be described in a subsequent chapter. Even the latest and rudest ramparts, consisting of small stones set in thick mortar, have, with few exceptions, been levelled to the ground by the Turks, who, of the successive inhabitants of the place, seem to be the only ones that have done nothing to increase its defensive strength.

Evidences of the attacks made upon the fortress are seen in a number of human skeletons, found buried in the rubbish which had accumulated around the foundations of the enclosing wall upon the southeast. These must be the remains of besiegers who had fallen in assault, and whose bodies, covered with the stones and earth thrown over the brink, had not received the rites of sepulture. Fragments of at least three skulls were here brought to light, but the bones crumbled at a touch, and could not be removed from the site for osteological study. The period at which one of these warriors had perished was, however, determined, with some degree of certainty, by the character of the weapons found

near the bones, to be that of the conquest of Assos by the Persians in the sixth century before Christ. In the well-defined stratum in which these remains were buried, three bronze arrow-heads were discovered, one in particular lying

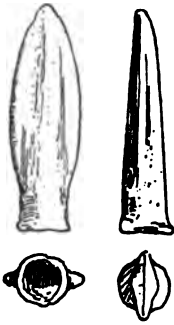


FIG. 1.  
ARCHAIC BRONZE  
ARROW-HEAD.  
From the Acropolis.

close to the skull. The arrow-heads found at this depth were all of precisely the same type, and of a shape exemplified by the specimen last referred to, now preserved in Boston (Museum, No. A. 50, Fig. 1). They resemble in every particular the arrow-heads found by Ouseley among remains referable to the age of the Achæmenidae,<sup>1</sup> and those picked up by Gell upon the field of Marathon.<sup>2</sup>

Bronze arrow-heads continued, it is true, to be employed until a much later period of antiquity. This is proved by their presence in the tombs of Greek warriors at Kertsch, in Southern Russia, dating from the age of Alexander the Great,<sup>3</sup> as well as among the remains brought to light at Naukratis<sup>4</sup> and in the Altis of Olympia. But the arrow-heads in use subsequent to the Persian wars are readily to be distinguished from such archaic ones as those found in the lower stratum.

Specimens of a three-bladed variety were also found upon the slopes of the Acropolis of Assos. One is now in Boston (Museum, No. A. 49, Fig. 2). Its form illustrates the term

<sup>1</sup> Ouseley (Sir William), *Travels in various Countries of the East, more especially Persia*, London, 1819-23, vol. ii. Pl. 39.

<sup>2</sup> Gell is quoted, and the arrow-head in question is engraved in the work referred to in the preceding note.

<sup>3</sup> Académie de St. Pétersbourg, *Compte-rendu de la Commission Impériale*, St. Pétersbourg, 1876, Plate II.

<sup>4</sup> The objects in question were examined by the writer at the exhibition of antiques from Naukratis, held in the Oxford Mansions, London, 1885.

τριγλώχης, applied to an arrow by Homer.<sup>1</sup> These heads of triangular section seem, like the ones before mentioned, to have been imitated from a Persian type.<sup>2</sup> Indeed, the Greeks appear to have derived much of their knowledge of the fittings of archery from the well-equipped bowmen who made up the main force of an Oriental army.<sup>3</sup> Witness their "Parthian" and "Scythian" bows.

Among the weapons found around the walls of the citadel are also an iron spear-head with a long and thin blade of fine workmanship, now much corroded (Museum, No. M. 598, *a*, *b*), and a heavy double-headed axe or mattock, excellently preserved, which, notwithstanding its modern appearance, was found in a situation and at a depth proving

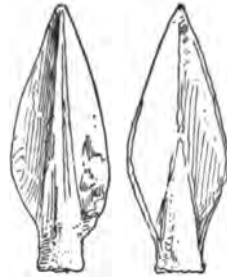


FIG. 2.  
BRONZE ARROW-HEAD.  
From the Acropolis.



FIG. 3. IRON MATTOCK.  
From the Acropolis.

it, at all events, to have antedated the Middle Ages (Museum, No. M. 603, Fig. 3).

<sup>1</sup> *Iliad*, V. 393, XI. 507. Elsewhere in the *Iliad* the fittings of arrows are especially referred to as of bronze (e. g. XIII. 650, 662).

<sup>2</sup> Compare the ancient Persian arrow-heads given by James P. Morier, *A Second Journey through Persia, Armenia, and Asia Minor*, etc., London, 1818.

<sup>3</sup> Almost all the troops which formed the army of Xerxes were armed with the bow. Compare Herodotos, VII. 61-80. Bronze arrow-heads of this three-bladed kind are, however, said to be found in Greece upon every spot where a battle is known to have been fought. See Dodwell, *A Classical and Topographical Tour through Greece*, London, 1819, vol. ii. p. 160.

Within the enclosure of the Acropolis no such arms or implements were found, and the only human remains were the crumbling bones of one individual, contained in a cist neatly constructed of large tiles, which had been buried in the deep earth at the north of the temple, 80 cm. above the native rock.

The coins picked up in the trenches furnished specimens of the mintage of every age, from the time when coined money was first employed in the Troad until the advent of the Ottoman Turks. Remarkable among these were a fine electron of Michael VIII., Palaiologos,<sup>1</sup> and a silver coin of the Venetian Dandolo, one of the few memorials of the occupation of Assos by the Latins after the fifth Crusade.

It appears that no buildings have ever been erected by the Turks within the walls of the Acropolis. On the other hand, there can be little doubt that many small dwellings and store-houses did stand within the enclosure during the two centuries which intervened between the first Seldjukian conquest and the Ottoman occupation. The southern terrace of the citadel was covered at this period by a pavement of cement, in which were embedded small stones and bits of pottery. This pavement was on a level with the stylobate of the temple, the massive blocks of which served as the foundations for a confused group of hovels and magazines. At the northeast, similar structures of rubble walls without mortar were built directly upon the native rock; and near the highest peak were discovered the lower courses of an apse, — part of a small sanctuary, such as the Byzantine Christians erected upon many of the neighboring eminences. All these structures were enclosed by rude ramparts, consisting, on the west, almost entirely of blocks of the entablature of the

<sup>1</sup> Compare First Report, p. 32. In the official division this coin fell to the share of the Turks.

temple, and, on the south, of a long array of its capitals, placed on the sides of their abaci. At the east, ample defence had been provided by somewhat earlier mediæval walls, the stones of which were set in mortar; and, at the north, the precipitous cliffs rising from the lowest to the highest terrace of the Acropolis were crowned only by a low parapet. The entrance to this enclosure, at the west,<sup>1</sup> was flanked by upright beams of the inner epistyle of the temple. Most of the reliefs discovered by the expedition had been built into these walls: the lion and boar, the lion and hind, and the entire metope, standing at the west, the sphinxes from the eastern front of the temple at the east, and the Herakles and Centaurs at the south.

The cemetery of the Byzantine garrison was just outside the Acropolis at the northeast. Here the bodies of the defenders were buried in the shallow earth, without being enclosed in coffers of any kind. A number of these graves were opened, but in them were found no coins or weapons by which their age could be determined. Still, we may venture to suppose that the most recent and hasty ramparts were erected at the beginning of the fourteenth century, under Machrames, the last defender of the Greek town, whose pathetic history will be recounted in a subsequent chapter.

How completely the temple had by this time been destroyed, even the pavement of the temenos being torn up and washed away, became evident from the position of one of the capitals, which was found lying with its abacus nearly half a meter below the rise of the lower step.

It is now impossible to determine the original plan, or even the extent, of the upper terrace; but it is evident, from the size of the boulders which have fallen upon the floor of the

<sup>1</sup> First Report, Plan of Acropolis, Plate 2, "Gate."

temple, that the bank of earth must have been of considerable height. So large were several of these stones, that the most recent occupants of the citadel, in building upon the plan of the edifice, did not even roll them away, but piled up the wretched masonry of their dwellings around and against them. It seems improbable that the upper terrace was ever the site of any important monument, as some vestiges of it would certainly have been found. It was probably overgrown with verdure in ancient times, and served as the peribolos of the fane. Here must have stood the inscribed stones relating to the temple, one of which, containing an inventory of chattels, was brought to light by the excavations in the vicinity.<sup>1</sup> The pedestal of another inscription was also found upon the Acropolis, and, as its projecting mouldings rendered it useless as a building stone, it can scarcely be supposed to have been carried up the steep in later times.

The stylobate of the temple is fully three meters lower than the highest point of the rock, and must consequently have been at least so much below the level of the upper terrace. From the sea, the whole structure was visible; but from the river valley, at the north, little more than the roof could have been seen.

In view of the ample space provided by the level bed-rock of the southern terrace, it may be conjectured that the orientation of the temple, with its longitudinal axis deviating from the east, was due to the consideration that this position of the building permitted the gable of the front, as well as the long horizontal lines of the side entablature, to be seen from the chief places of the lower town, — the agora, the theatre, and the direct ascent from the port. There can at least be no doubt that this exceptional relation of the plan to the

<sup>1</sup> *Inscriptions of Assos*, No. III.

points of the compass should be ascribed either to this intention of exhibiting the foreshortened front, or to a similar motive of artistic composition; namely, the desire to place the building near the seaward brink of the Acropolis, in order that as much as possible of the superstructure should be visible from below. Foundations considerably deeper would have been necessary beneath the southwest corner, if the front had faced due east, and had not been set eight and a half meters back upon the summit.

This was, in truth, a fitting site for the temple of the protecting goddess, the Virgin Patroness of the town. For the fane was not only visible from afar, but was so placed that the Assians, while offering sacrifices for the welfare of their state within the sacred enclosure, could look far beyond the fortification walls, the fertile fields of the suburbs, and the port beneath the cliff, to the most distant approaches by land and by sea. On one side, the view commanded the rugged paths winding across the ranges of the interior, whence, in the evil days preceding the establishment of the supremacy of Pergamon, came devastating hordes of Gauls; on the other, the deep blue waters of the Lesbian Straits, the great high-road of Aeolic commerce. Even the tiny islets of the Arginousai can be distinguished from the Acropolis of Assos; and if, on the day of that victory so disastrous to the best interests of Greek culture, the horizon was not veiled by the rack of the storm which delayed the Spartan attack, and served as an excuse for the inhumanity of the Athenian admirals, a sharp-sighted observer, standing on the steps of the temple, might have followed the movements of the rival fleets, exulting over the victory of that power with which his Demos was then allied.

From stereobate to corona, the stone of which the temple was built was the same as the native rock upon which it



stood. The only other stone employed in connection with the edifice was a light volcanic tufa, of the same geological formation, from which were carved the gargoyles and acroteria of the roof. The mosaic of later date, in the interior of the naos, formed of small cubes of black and white marble, is rather to be regarded as a furnishing, than as an integral part of the structure.

Before entering into a detailed consideration of the plan and elevation of the temple, it will be well to give some account of the rock of the Acropolis, the peculiarities of which exercised a decisive influence upon the architectural style of Assos, as well as upon the topographical character of the site, inasmuch as this material was exclusively employed in the construction, not only of the most ancient and most important monument, but of almost all the other edifices of the Greek town. This stone, the second in point of age among the three formations of the kind in the Southern Troad, and the product of the most recent eruption of the volcano of Assos, figures in Mr. Diller's geological notes<sup>1</sup> as a trachyte. His subsequent examination of thin sections of the rock, under a microscope, has shown, however, that it is more correctly to be described as an andesite. The groundmass, which commonly forms but a small portion of the whole, is of a fine granular and porous structure, and of a gray or occasionally purplish-gray color, the general appearance being rendered lighter in tone by the presence of innumerable porphyritic crystals of an opaque or glassy white. These crystals, which at times attain a length of eight or ten millimeters, give the stone a superficial resemblance to granite, — for which, indeed, the formation at Assos has been taken by nearly all the earlier visitors to the site, and even by those who have examined the reliefs removed from Assos to the

<sup>1</sup> *The Geology of Assos*, by J. S. Diller; Appendix to the First Report.

Louvre.<sup>1</sup> This resemblance is increased by a quantity of small crystals of mica and other iron-bearing minerals, the alteration of which often produces small pits and stains.

In topographical and architectural respects, the most important characteristic of this andesite is the conformity of its cleavage to two distinctly marked joint planes, the one nearly horizontal, the other nearly vertical. Mr. Diller has observed that the longer axes of the larger crystals, and in particular

<sup>1</sup> Hunt, Leake, Richter, Prokesch von Osten, Poujoulat, Texier, and Welcker (in the works cited in the chapter on the Archæological History of Assos) all term the stone a granite; the last mentioned, in a very vivid and humorous account of the ruins, characterizing the material as "der hässliche . . . traurige, rauhe, graue Granit von Assos." The earliest traveller who has left us any account of the site (Manuscript Journal of John Covel, 1677) speaks of the stone as "a sort of gray marble." Among all those who visited the site previous to the American investigations, the only ones to recognize the all-important volcanic character of the Acropolis, and to designate the stone as a trachyte, are Webb, Tchihatcheff, and Purearitis. Abbot approaches the truth in calling the formation a basalt, and in describing the walls as built of granite *or* trachyte. He is followed in this respect, as in many others, by Schliemann.

It may be pardonable that travellers who could devote but few hours to the examination of such extensive remains should thus entirely mistake the nature of the stone of which they are built. But what can be said in excuse of the Comte de Clarac (*Musée de Sculpture, Antique et Moderne*, vol. ii. part ii., Paris, 1841), who, writing as the keeper of the Louvre at the time when the Assos reliefs were removed thither, and describing the sawing asunder of the blocks by lapidaries under his personal supervision, asserts the stone to be a granite, — even basing upon this statement an argument in respect to the age of the temple. This statement has been accepted by many writers upon Greek sculpture for half a century, and, notwithstanding the fact that the reliefs have during this period been exposed to public inspection in the most frequently visited capital of Europe, Overbeck (*Geschichte der Plastik*, 2d edition, Leipzig, 1869, vol. i p. 98) says the material of these important monuments is "Granit nach den Einen, grober aschgrauer Kalkstein nach den Andern"; while Lübke, in his *History of Sculpture*, simply calls it "an ash-gray, coarse-grained limestone."

Fully to appreciate these errors, it must be borne in mind that — while the difference between andesite and trachyte is so slight as to render a definite determination possible only after microscopical examination, the distinction being based upon the percentage of certain of the constituent minerals — the volcanic Assos stone differs fundamentally alike from a primary crystalline rock, such as granite, and from a metamorphic rock like limestone.

those of feldspar, are not only approximately parallel to one another, but are parallel also to these joint planes. This arrangement is, indeed, sufficiently marked to suggest a connection between the jointing and the direction in which this volcanic product flowed at the time of its extrusion from the crater.

The horizontal plane divides the rock into layers, which at times closely resemble the stratification of rocks of sedimentary origin. The terraces of the Acropolis owe their existence to this peculiarity, while in like manner the upright surfaces of the cliffs, and of the pinnacles of rock which rise in the midst of the modern village, were determined by the vertical cleavage. So variable is the resistance of the layers to the disintegrating action of water, that the surface of the cliffs is often deeply furrowed, and in building stones quarried from this formation a series of parallel depressions is developed, resembling those of a weathered sandstone composed of strata of different degrees of durability.

The influence of this andesite upon the architecture of ancient Assos is noticeable chiefly in two ways, determined on the one hand by the natural cleavage planes, on the other by the extreme hardness and grittiness of the stone.

The first of these peculiarities affected the general design and the constructive framework. It was possible to quarry huge parallelepipedons of the material by the simplest methods of wedging. From this fact resulted the massiveness of all the edifices, the perfection of the city walls,—due also to the comparatively early adoption of accurately squared blocks for their escarps,—and hence, in particular, the frequency of monolithic sarcophagi in the Street of Tombs. It appears very probable that the inhabitants of Assos were the first among the Greeks systematically to employ such enormous coffer, at once receptacles of the bodies and mon-

uments to the memory of the dead. Indeed, the sarcophagus seems to have received this name from the famous *flesh-devouring* stone, found in the vicinity of Assos; this material, as will be shown in a subsequent chapter, being used to hasten the decomposition of corpses thus elevated above the surface of the earth. Be this as it may, monolithic sarcophagi were of greater prominence in the cemetery of Assos than in that of any other Greek town. The size of the blocks obtainable permitted the builders of the temple to ceil the pronaos — a space having a clear span of nearly three meters — with beams and coffers of stone. In the lower town the columns of the Bouleuterion and Palace Atrium were monolithic. There was thus little need to resort to vaulting; all the gates of the town were trabeate, or terminated by the false arch; and even subterranean passages, such as that upon the southwest of the Agora, were covered by lintels. An inexhaustible supply of the stone was to be had just outside the walls. The ancient fortifications alone must have contained at least one hundred thousand cubic meters of this material.

The second peculiarity of the andesite was of influence chiefly in the carved details of architectural decoration. A series of experiments which have lately been made upon this stone by a lapidary, under the supervision of the writer, have shown it to be one of the most intractable materials ever chosen for architectural purposes. While the granular and porous structure of the groundmass gives to smaller blocks a rough and angular fracture, the great number and variety of crystals embedded in it make the stone excessively gritty. To give a homely illustration, it was often remarked that one day's walking among the volcanic rocks of the Southwestern Troad, or over the ruins of Assos, would wear the soles of shoes more than a week's excursion among the limestone formations on the southern slope of Ida. Even with the sharp-

est tools, it is a difficult task to cut the andesite to exact surfaces or to delicate forms, and without emery wheels it is impossible to render it smooth. The effects of this characteristic are evident alike in the choice of the architectural style, and in the design and proportion of subordinate features. It would have been altogether out of the question to adopt Ionic forms for edifices constructed of such a material, and in no instance is this more ornate style — sufficiently common on the island of Lesbos and in the Northern Troad — known to have been adopted at Assos. From the same cause, the primitive stone-cutters of this temple found it necessary altogether to omit certain features of the entablature, notably the trunnels of the regulas and mutules and the terminal plinths of the triglyphs, and to adopt, in all small members, forms of greater thickness and less projection than those which, at the time of building, had come to be regarded as normal. Thus the arrises of the shaft were blunt, the tainia and regulas excessively flat; the drip of the corona was not undercut, and its kyma was much larger and simpler than in other examples of the style. Similar peculiarities are to be observed in all the edifices of Assos.

The resistance of the andesite to weathering depends greatly upon the stratum from which it is quarried, and the position in which it is placed. Thus, some of the stones of the lower wall of the great eastern gate, having been exposed to the action of percolating water for the last five hundred years, may readily be crumbled with the finger-nail. This softening of the andesite is plainly due to the degeneration of the feldspar which enters so largely into its composition. Being unprotected by crystals of quartz, the feldspar is hydrated by long exposure to the atmosphere, and thus transformed into kaolin clay. On the other hand, those carved stones which have been buried in dry earth, or which, remain-

ing above ground, have been sheltered from the storms of dust that among the volcanic formations near Assos exercise the well-known action of the sand-blast, display forms nearly as sharp and firm as they can have been when newly cut. In regard to the temple itself, many of the arrises of the columns, and the rings of the capitals, are still perfectly sharp. It may even be doubted whether the outlines of the sphinxes from the eastern front, or of the lion and hind, have been appreciably blunted during the twenty-three centuries or more which have elapsed since they received the last strokes from the chisel of the provincial sculptor.

The following account of the arrangement and of the constructive details of the temple supplements and corrects the description given in the First Report.<sup>1</sup> So far as possible, repetition will be avoided; still, the minute investigations made during the two years subsequent to the publication of those preliminary notes have afforded so much further information concerning the design and execution of this monument, that it will be necessary to touch upon several points treated in the previous volume.

The aberration of the magnetic needle, especially noticeable in the vicinity of the Acropolis, proved to be so great, that no process of reversion could warrant entire dependence upon its indications. The true pole was hence determined at the moment when the north star passed the meridian, on the night of November 28, 1881. The angle thus obtained proved the

<sup>1</sup> First Report, pp. 80-121. Compare the reservations which were there made: "The following account . . . must be prefaced by a reminder that the time has not come for a thorough and conclusive publication. It is evident the descriptions of monuments but recently discovered, and in part still hidden beneath the earth, will be extended, and possibly corrected as the studies upon the site advance. Indeed, many points are touched upon in this report only to indicate the direction and scope of the work."

deviation of the main axis of the temple, south of east, to be  $15^{\circ} 14' 40''$ .

The right angles at the corners of the plan were laid out by the Greek architect with an accuracy surprising even when examined by modern instruments of precision. A deviation of but six minutes could be detected, the corners of the northeast and southwest being this much too small. This deviation in the length of the temple stylobate amounts to an error of only 54 mm., or about two inches, in the length of one hundred feet.

The foundations of the walls and columns were, without exception, placed directly upon the native rock, which was not more than half a meter beneath the pavement of the naos, and at its greatest depth, not more than 1.15 m. beneath the lowest step. At the point last mentioned, namely, the southwest corner of the building, a massive substructure was provided by four courses of squared stones, measuring respectively 35, 30, 25, and 25 cm. in thickness, each of which projected about 3 cm. beyond that resting upon it. Elsewhere the long blocks forming the first step were placed directly on the rock, a level bed being cut to receive them. This was the case along the greater extent of the northern and western sides; indeed, throughout exactly one half of its length, the juncture between the pavement of the temenos and the steps of the temple was a juncture between the tooled surface of the native rock and accurately squared blocks quarried from it.

The plan of the building, in its present condition (Fig. 4), exhibits some points which were omitted from the drawing of the floor published as Plate 7 in the First Report;—notably the important pry and dog holes, the remains of the concrete foundation of the mosaic extending beyond the cubes of colored stone, the weathered standpoints of various bases,

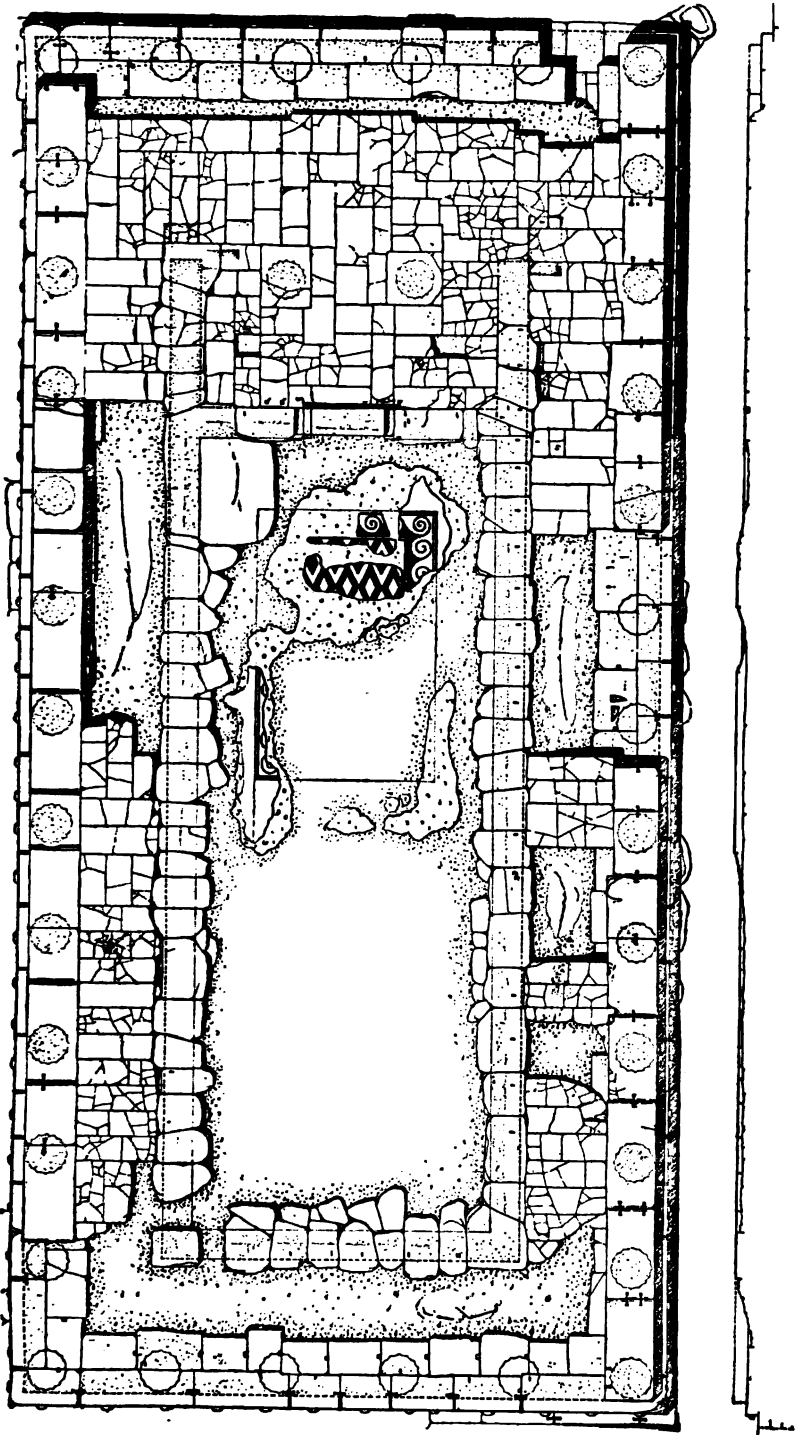


FIG. 4. PLAN OF THE TEMPLE OF ASSOS. — PRESENT CONDITION.



which probably supported votive statues or inscriptions, the bed lines of the inner course of the cella wall, and, finally, the fractures of the paving slabs.

The stones of the steps vary in length from one to somewhat over three meters. In width the dimensions are more regular, seldom being less than 0.9 or more than 1.1 m. In the case of the stylobate blocks, the upper surface, forming part of the pteroma floor, was planned to have a regular width of 1.1 m., and upon the northern side, which was evi-

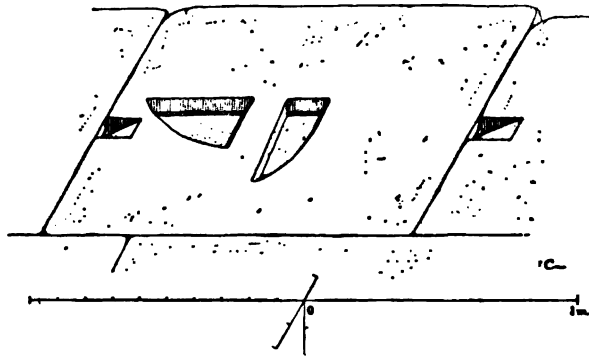


FIG. 5. STONE IN FOUNDATIONS OF TEMPLE, WITH BED-MOULDS FOR METAL CASTINGS. — ISOMETRIC.

dently laid first, no deviation from this measurement is to be observed. The supply of accurately quarried stones seems to have given out, however, as the work advanced, and upon the southern side there is much irregularity in the shapes and sizes. Some of the inner blocks of the lower step bear a bordering fillet, which proves them to have been originally intended for the outside, and to have been rejected on account of some defect. Instances of this are the fifth stone upon the eastern, and the fifth stone upon the western side, counting from the north.

A most interesting case of the employment of older mate-

rials — in default of the regularly hewn stones which had, without doubt, been prepared in the quarry — is presented by one of the inner blocks of the southern lower step, exposed by the displacement of the superposed stylobate during the excavations. In the stone in question are cut two bed-moulds for the casting of primitive sledge-hammers or battle-axes (Fig. 5). These moulds are in shape almost exactly alike, but they differ in size; the larger being 40 cm. long, and 20 cm. on the heft, the smaller being 32 cm. long. The depth, 5 cm., in both cases, must have given the full thickness of the object; there were no ducts by which the molten metal could be run into the hollows, and consequently there can have been no corresponding upper mould. The process of casting must have been of the rudest kind. The beds, after having been filled, can have been covered only with a flat stone, so as to render the upper side of the hammer-heads as even as possible; and the newly cast implements, after having cooled, must have been so loose in the stone that they could easily be pried out. It was, of course, impossible to heat so large a block in the manner usually employed by the bronze-founders of primitive times.

A mould of the same kind, for a battle-axe of much smaller size, was unearthed by Dr. Schliemann at Hissarlik;<sup>1</sup> others are reported to have been found in the lacustrine settlements of Switzerland,<sup>2</sup> and among the prehistoric remains of Hungary,<sup>3</sup> and of Sardinia.<sup>4</sup> There are no definite indications

<sup>1</sup> Schliemann (Heinrich), *Ilios, the City and Country of the Trojans*, London, 1880, Fig. 601.

<sup>2</sup> Gross (Victor), *Résultats des Recherches dans les Lacs de la Suisse occidentale*, Zurich, 1876, Plate 17; and a later publication of the same author, *Les dernières Trouvailles dans les Habitations Lacustres du Lac de Biemme*, Porrentruy, 1879, Plate 1.

<sup>3</sup> Hampel (Joseph), *Antiquités Préhistoriques de la Hongrie*, Esztercom, 1877, Plate 14.

<sup>4</sup> Crespi (Vincenzo), *Il Museo d' Antichità di Cagliari*, Cagliari, without date.

to prove the age of the mould thus curiously preserved among the foundation stones of the temple of Assos; but the fact that the block, although regarded as unfit for its original use at the time of the Persian wars, was nevertheless thus ready at the builder's hand, gives some ground for the belief that it had been employed by the primitive Greeks themselves, rather than by any prehistoric race. If this supposition be deemed inadmissible, it must be assumed that the squared stone containing the moulds had been found by the Greeks of the fifth century before Christ, while digging for the foundations of the temple.

It is interesting to observe, that, although the block was enclosed upon all sides, (not even its outer edge having been used as a step,) the hollows were accurately filled in with pieces of stone cut to the exact shape of the objects once cast,—in the true antique spirit of admitting no imperfect member in the construction of the sacred edifice.

The stylobate blocks were invariably so tooled that the lateral surface of juncture did not comprise the entire side of the stone, but was restricted to narrow bands adjoining the edges. To effect this, a slightly depressed middle field was cut upon the end of the block with a brush hammer, this rougher plane being bordered by fillets, varying in width from five to ten centimeters, which were tried and smoothed until an accurate joint was obtained. This eminently rational method of jointing was universally, and in every age, employed by the architects of Greece. As we learn from the celebrated inscription of Lebadeia,<sup>1</sup> which relates to the stone-cutting and laying of a like pteroma

<sup>1</sup> First published by Koumanoudes (Stephen A.) in the *'Αθήραιον*, vol. iv. (Athens, 1876); more readily accessible in Fabricius (Ernestus), *De Architectura Graeca Commentationes Epigraphicae*, Berolini, 1881; and in Choisy (Auguste), *Études Épigraphiques sur l'Architecture Grecque*, Paris, 1884. All the details of the stone-work of Greek pavements are fully described in this most

pavement, joints thus cut were designated by the term *anathyrosis*, — evidently on account of a fanciful resemblance of the central field to a door-opening, framed by its lintel

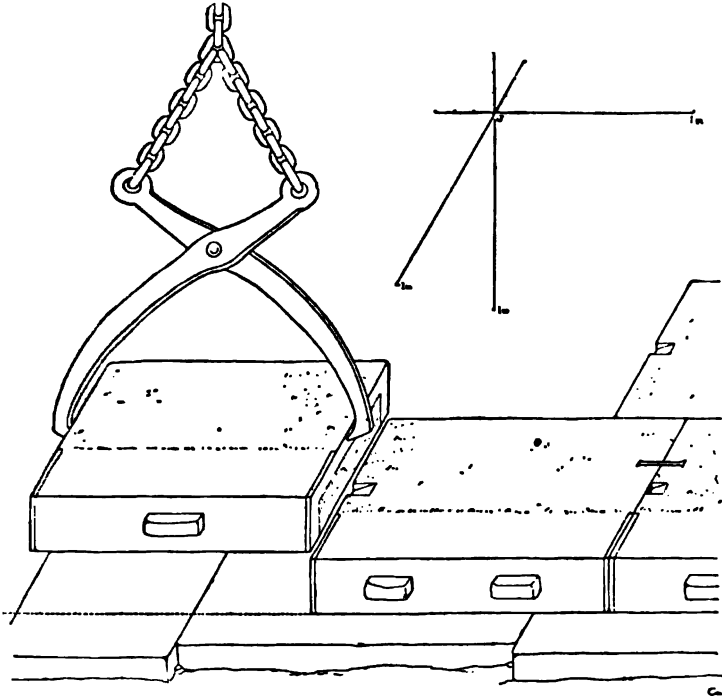


FIG. 6. EMPLOYMENT OF LIFTING DOG IN LAYING THE LOWER STEPS.  
ISOMETRIC.

and jambs. Surfaces of contact thus tooled may be seen in the illustrations of the step construction (Figs. 6 and 7), and in those showing blocks of the inner epistyle (Fig. 13) and corona (Fig. 15). The last touch was given by grinding the

interesting antique specification, from the dimensions and forms of the stones, the tools for cutting them, and the rulers and redde for testing the accuracy of their surfaces, to the methods of casting the metallic cramps and washing the joints with a solution of nitre. The verb *ἀναθροῦν* occurs in lines 121 and 142 of the inscription.

fillets with a flat stone, or by cutting into the joints with a sand-saw.<sup>1</sup> The process of adjustment was the more easy, as the face of the stone which it was necessary thus to re-

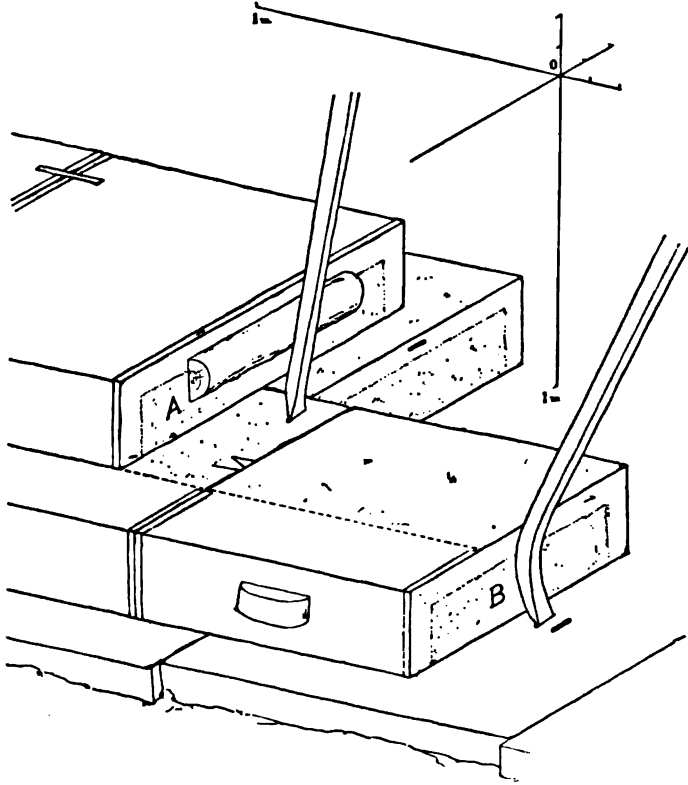


FIG. 7. PRY-HOLES AND LEVERS EMPLOYED IN LAYING THE STEPS.  
ISOMETRIC.

move had been greatly decreased in extent by the sinking of the middle field. Notwithstanding the coarseness of the material used at Assos, it was possible by these means to

<sup>1</sup> In the Lebadeia inscription the terms employed for these processes are *τριμματολογεῖν* (line 162) and *ἀποξέω* (line 125).

abut the stones so closely that not even a needle can to-day be inserted between them.

The blocks of the stylobate were lifted, and set as nearly as possible in place, by powerful derricks. This is proved by the presence upon the end surfaces of deep, square holes, which were cut to receive the hooks of the tackling, and were so placed that the stone would swing with its bed in a horizontal plane. In exceptional cases, two of these holes appear upon either side.

The case was different with the blocks of the lower step, and of the foundations upon the same level with them. The upper surfaces of these not being exposed to view, it was possible to chisel upon them an oblique slot,—about in the middle of the upper edge of the stone, on that side against which the next was to abut,—and through this to disengage the inner arm of the iron dog by which the adjoining block was lifted and set. This will be made clear by Fig. 6. Where the stones of the stylobate, or of the pteroma pavement, are removed, the greater number of those beneath them are seen to have cut upon the upper side one of these slanting notches of rectangular section, about 4 cm. deep, from 5 to 6 cm. broad, and 7 to 10 cm. long. A small portion of the lateral joint surface of the adjoining stone is hereby exposed, and across the lower half of this is seen a sinking of sufficient depth to receive and firmly hold one of the sharply pointed arms of the lifting tongs employed in connection with the derrick tackle. To the notches and sinkings cut upon the stones for this purpose the name *dog-holes* may be given.

Although they appear to have hitherto escaped the attention of inquirers into the details of antique architecture, these marks are of importance, inasmuch as they indicate the direction from which the process of laying the courses was carried on. In the temple of Assos, for instance, it may thus be seen

that the masons commenced work upon the northwestern corner of the building, where the native rock was highest, and continued from this point, in one direction along the northern side and eastern front, in the other along the western front. The courses met not far from the middle of the southern side, where the last stone laid may be recognized in the eleventh from the southeastern corner. This last stone was accurately fitted in between those adjoining it, and was hence provided on both ends with sinkings to receive the claws of the dog-iron, but with no oblique slots for their release. It is further evident, upon the eastern front at least, that the blocks which served as the lower step were laid earlier than the inner ones of the same course ; this being the natural consequence of the outer stones following an alignment determined by the architect.

When a shifting of the blocks to their final position was necessary, this was effected by means of a heavy crowbar, the purchase for which was provided by cutting a groove, one or one and a half centimeters deep, upon the upper surface of the subjacent stone, at a distance of ten or fifteen centimeters from the edge of the block to be moved. By the leverage thus exerted, the largest stone could be slid along upon the level bed provided by the course beneath, from the position in which it had been set by the derrick to the closest contact with the adjoining block. It cannot be determined, from the marks left upon the stone, whether the crowbar was straight, and employed with a block of wood or metal to transmit the power, or whether it was curved, so as to exercise its pressure directly upon the stone. The former method, shown at A in the illustration (Fig. 7), would seem to be the more natural and easy ; but the presence of two grooves in exceptional cases, when the stone may have had to be moved a greater distance, would, on the other hand, indicate the adoption of a lever of

peculiar shape, such as that shown at B. An instance of two grooves, cut for a single leverage, is to be observed upon a stone in the foundations of the cella wall, on the western side, and next but one to the southwest corner. See Plan, Fig. 4.

Like the anathyrosis, the grooves cut for the purpose of thus shifting the separate stones of a course appear upon the remains of Greek buildings of every province and of every age. They may be observed upon all the varieties of rectangular masonry which form the city walls of Assos, and belong to periods widely remote, — to centuries anterior to Alexander, and subsequent to Constantine the Great. The indications of this method of prying stones were first noticed by Dörpfeld,<sup>1</sup> by whom they have been termed “Stemmlöcher.” So far as the present writer is aware, they have not been referred to by any English writer upon the details of antique architecture, and the name *pry-holes* may be proposed as the technical name of these grooves. Their great importance to the investigator of Greek remains will be evident from the fact that it is possible to ascertain, from a comparison of the spacing, the position of blocks once resting upon the course in which such marks appear. In the temple of Assos, for instance, although the stylobate of the eastern and western fronts has entirely disappeared, it may thus be determined that the one was composed of six, the other of seven stones, of greater length than the average of those upon the sides; while the shortness of the blocks which are in like manner seen to have formed the lower course of the cella wall indicates this to have begun with a plinth of considerable height, as was the case with the cella wall of the Parthenon.

<sup>1</sup> Dörpfeld (Wilhelm), *Untersuchungen am Parthenon*, in the *Mittheilungen des deutschen archäologischen Institutes in Athen*, vol. vi., Athen, 1881.



•In the case of both the steps, the joints were bordered upon the exposed face by fillets, averaging 5 cm. in width, and often rising not less than 5 mm. These projections were cut upon the tread of the lower step to within about 35 mm. of the following riser ; and on the stylobate, when not under a column, they were continued across the entire stone. Their purpose was evidently to obviate, in so far as possible, the chipping and defacement of the edges during the construction of the building. And, as was the case with the similar makeshifts observable upon the pavements of the Propylæia of Athens and the great temple of Paestum, their subsequent obliteration does not seem to have been considered necessary to the completion of the edifice.

The blocks of the stylobate, and some of the outer stones of the lower step, and those of the foundation course beneath them, were bonded together by cramps of wrought iron. These cramps, averaging 21 cm. in length, were thin and light, seldom exceeding 12 by 16 mm. in section. Their ends were bent over to more than a right angle, so that, when once set, they could not possibly be loosened from the stone. The ends of the slots cut for their reception were often curved and pointed, as shown in Fig. 6. Although the floor of the temple was trodden under foot and exposed to weathering for wellnigh two thousand years before being covered by the earth, the majority of these irons are still in position, and have suffered little from rust. On the other hand, the lead in which they were set has been in great part transformed into a white oxide, through the action of the carbonic acid of the atmosphere. One cramp, in an exceptionally fine state of preservation, was taken from the southern side of the stylobate, and is now in the Boston Museum (No. M. 581). The only stylobate blocks not thus bonded together upon either end were four in the middle of the northern

side. As these were among the first to be laid, it would appear that the precaution came to be regarded as more necessary the further the work advanced. At the corners of the plan two cramps are attached to each end of the first one or two stones. Such a joining of the steps by bars of metal was of course a disfigurement of the finely tooled surface of the pavement, and the temple of Assos is in this respect entirely exceptional among the constructions of the Greeks. It is to be remarked, however, that the dark color of the stone rendered the contrast between the materials less apparent than it would have been in the case of buildings of marble or poros.

The third stone upon the southern side of the stylobate, counting from the west, was cracked in setting, and was provided upon its vertical face with a cramp

of iron of the same shape as those employed upon the upper surface. So well did this repair answer its purpose, that the fissure would not have been detected but for the presence of the iron.

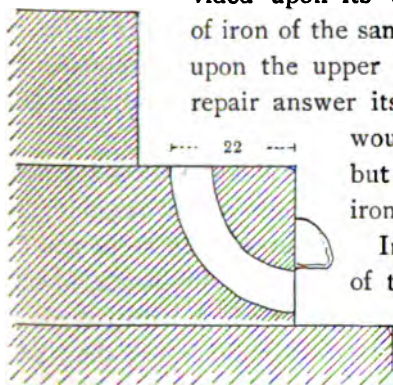


FIG. 8. PERFORATION OF THE LOWER STEP.  
EASTERN FRONT.

In the case of the fifth block of the lower step on the main front, counting from the north, a hole is cut through the stone in an oblique line, or, to speak more correctly, in the arc of a circle (Fig. 8). This hole, opening upon both the riser and the tread at a distance of 20 cm. from the edge, is of oval section, the axes measuring 9 and 12 cm. Its position corresponded to the side of the column next to the central intercolumniation. There can be little doubt that the purpose of the eyelet thus carefully chiselled was to provide a

hold for the rope by which the animals intended for sacrifice before the fane were tethered. Holes of the same kind were cut through the lower step of the Heraion at Olympia,<sup>1</sup> before the columns, and the scholars who have called attention to this fact give for it this explanation.

The stylobate blocks of the front and of the rear of the building had all been displaced, and, as but two of them could be found throughout the entire city, appear to have been recut for building purposes, or deeply imbedded in late fortification walls. Of the two brought to light upon the slopes of the Acropolis, one, measuring 0.93 by 2.245 m., was from the east, and by the aid of the shift-holes could be identified as the third block from the north; the other, measuring 1.15 by 1.72 m., was from the west, and adjoined the southwest corner. On neither were the traces of the columns sufficiently distinct to indicate the width of the front intercolumniations more accurately than had been possible by a calculation based on analogy.

The most careful levellings, repeated and reversed, failed to show the slightest trace of an intentional and regular curvature of the horizontals. On the contrary, the steps and floor were found to be surprisingly even, and the displacement of the blocks by the many earthquakes which have overthrown the cities of this part of Asia Minor much less than might have been expected. This immunity is to be ascribed to the fact that the pavement of the building rested, in great part, directly upon the native rock, without the intervention of deep foundations.

In regard to the construction of the pteroma floor, and the laying of the bed of chips beneath it, little need be added to

<sup>1</sup> *Die Ausgrabungen zu Olympia.* Vol. III. *Uebersicht der Arbeiten und Funde vom Winter und Frühjahr 1877-78.* Herausgegeben von E. Curtius, F. Adler, und G. Treu. Berlin, 1879.

the account given in the First Report. On more mature consideration, however, it appears questionable whether the original intention was to cover the stone pavement by a layer of cement, as was customary in the Doric monuments of Sicily. The irregularity of the jointing in the pteroma floor of the temple of Assos is not greater than that noticeable throughout the building; and the slight differences in level between the upper surfaces of the inner blocks and that of the stylobate, as well as the interstices next to the cella wall, now so plainly seen, are, at least in part, to be ascribed to the settling of those stones which did not rest immediately upon the native rock, or upon massive foundations. At Assos, as at Lebadeia, that portion of the lower surface of the pavement blocks which was above the bed of chips was somewhat more roughly tooled than the band next to the outer edge and in contact with the inner stones of the lower step; but this difference in treatment was much less marked in the archaic than in the later construction. At Lebadeia the stones of the pavement were not allowed to rest upon the filling at all, a space "not wider than a little finger"<sup>1</sup> intervening. At Assos this precaution was impossible, inasmuch as no solid bearing was provided for the inner ends of the blocks, even in those cases where they extended across the entire width of the pteroma.

The stone sill of the naos door is upon exactly the same level as the upper surface of the stylobate. The mosaic pavement in the interior is 13 cm. above this,—the difference in height having, without doubt, been equalized by a revetting sill of bronze or of marble.

The pattern of the mosaic has already been described; a detailed drawing of the corner which remains may, however, be given to show the shape of each small stone (Fig. 9).

<sup>1</sup> Lebadeia Inscription, line 115.

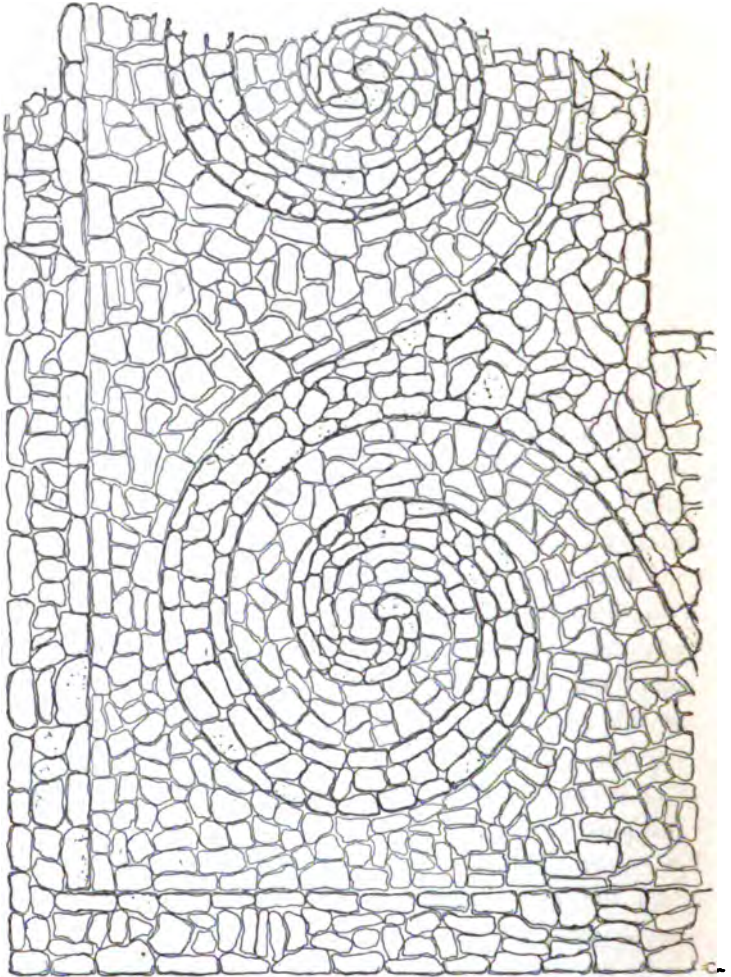


FIG. 9. DETAIL OF MOSAIC PAVEMENT, SOUTHEASTERN CORNER.

These separate pieces of black and white marble, embedded in a thick layer of cement, were about 5 cm. in depth, and were originally flushed over with a fine stucco, which com-

pletely filled the joints between them. Cubes of a bright yellow stone and of a hard-burnt red brick were also found in the vicinity. Their place in the composition cannot now be determined; it is only certain that the narrow band which separated the wave ornament from the field of diamond pattern was of one of these colors.

The arrangement of this flooring of the naos has already been made to figure in the controversy carried on by the advocates of various modes of illuminating the interior of Greek temples. It has even been held to indicate the form of the imaginary hypaithron, or other opening in the roof for the admission of daylight. In the latest contribution to this subject, Fergusson<sup>1</sup> remarks concerning the pavement of the temple of Assos: "The ornamental part of it is 13 feet wide, and the space between the outer face of the cella walls and the pavement is between 6 feet 6 inches and 6 feet 9 inches, or as nearly as may be the distance between the outside of the walls and the inner lines of the cella at Bassae. From this I gather that there were internal pillars or pilasters, which thickened the external walls of the cella to the extent of 7 feet at least, which could only have been done if it were wanted to support an opaion or some contrivance for lighting the cella." To this it must be replied, that, as was shown upon the plan of the temple given in the First Report (Plate 7), the remains of the mosaic itself extend so far beyond the ornamental field, on both sides, as to preclude the possibility of pilasters or other supports having stood where Mr. Fergusson supposes. Moreover, the layer of cement, in which the separate pieces of marble were imbedded, remains, as was explicitly stated in the text (p. 83), to a considerably greater extent than the pattern shown upon the plan; reaching quite to the inner side of the

<sup>1</sup> Fergusson (James), *The Parthenon; an Essay on the Mode by which Light was introduced into Greek and Roman Temples*, London, 1883, p. 90.

enclosing wall. That such supports as Fergusson is obliged by his theory to assume can never have existed at Assos is also proved beyond a doubt by the entire lack of substructures for them. The foundations for all the masonry are invariably placed upon the native rock ; while, as was likewise stated, the entire area of the naos was found to be covered beneath the ancient floor with fine earth, which is plainly the original bedding of the pavement. In other words, it is certain that the ceiling and roof of the naos extended from wall to wall in a single span, and that such a clerestory as Fergusson imagines was impossible.

The suggestion made in the First Report, that the mosaic floor is of a period later than the building itself, was fully confirmed by the investigations of the second year. At several points the filling of earthen chips beneath the cement bedding of the mosaic was removed and sifted, and the objects taken therefrom were compared with those which were, in like manner, found immediately under the stone pavement of the pteroma. From the latter deposit, which had remained undisturbed since the construction of the temple, were taken a number of rude sherds of pottery. These were all unglazed, several being of the lustrous, rubbed variety met with in the two oldest "cities" of Hissarlik. On the other hand, the majority of the sherds from under the mosaic were glazed. Among them were fragments of a moulded vessel, representing a tragic mask, and the handle of a delicately painted vase, evidently of the fourth century before Christ. Also a piece of one of the original black roofing tiles of the building itself.

A further and most fortunate discovery in this connection even renders it possible to assign an approximate date to the repaving of the interior. This was a bronze coin of Gargara, struck during the first half of the fourth century before

Christ,—so excellently preserved that we may suppose the mosaic above it to have been laid within one generation, at most, after the date of its emission. This coin is now preserved in the Museum of Boston (No. A. C. 64). From these indications the restoration of the temple, which provided new tiling for the roof as well as a new floor for the naos, seems to have taken place at the time of the greatest political eminence of Assos, — when Aristotle was living as the guest of its ruler, the wealthy Hermeias.

The foundations of the temple are destined to a speedy destruction, its squared stones being much in demand among the Greek masons of the Southern Troad. But the greatest care was taken by the explorers to remove as little as possible of the structure found still in position. The pits mentioned in the previous Report were dug only under those parts of the bed of cement where the mosaic itself had been destroyed, and only two of the paving slabs of the pteroma were lifted for the purpose of these examinations. It was ascertained that the cement had been cast upon a thick layer of stone chips and large pieces of pottery ; between this and the native rock there still remained the fine earth which must have covered the summit of the Acropolis in prehistoric ages. From the pteroma, as well as from the interior, several hundred sherds were collected ; yet nothing was brought to light which tended to contradict the opinion advanced by the writer in regard to the date of the original construction.

Two dowel-holes on a block of the pavement immediately in front of the northern door-jambs show a narrow stone of square plan — without doubt a stele — to have occupied this prominent position. The holes are cut with runs for a lead casting ; these show the dimensions of the base to have been 28 by 55 cm.

A detailed description of the foundations of the cella wall



has been given in the First Report. The superimposed masonry was two stones thick, and it is noticeable that the bed for the outer course was much more carefully tooled than that for the inner, the former surface being thus sunk a few millimeters below the latter. Pry-holes appear only beneath the outer stones, those within not having been accurately jointed by means of this expedient. Both of these indications make it probable that the inside of the wall was covered with stucco. On the southern side the foundations of the wall are fully 6 cm. below the level of the stylobate.

From the width of the stone sill of the naos door, namely, 60 cm., it was at first wrongly concluded that this was also the thickness of the division between naos and pronaos, and of the enclosing walls of the sides. It has since been ascertained that the stone in question was cut of this width in order to provide space for the lip of the revetting sill placed upon it, and that the jambs on either side were rebated for the same reason. All the walls of the temple were, in fact, of a uniform thickness of 66 cm., agreeing in this respect with the antæ. At one or two points on the northern side, the line of juncture between the inner surface of the wall and the foundation stones could be seen at night-time by the light of a lamp so held as to send its rays in almost the same plane with the tooled beds.

The masonry of the wall itself was, as before said, two courses in thickness, the ashlar being consequently only about 33 cm. in depth. The length of the outer stones of the lowest course is seen, from the pry-holes upon the foundations, to have varied between 0.6 and 1.1 m., averaging about 84 cm. The walls of the temple must have been demolished at a comparatively early period. The blocks of which they were formed, being of a convenient size and squared on all faces, provided a most excellent material for the Christian and Mos-

lem builders upon the ruins of the ancient town. So thoroughly had the Acropolis been cleared of these stones, that only four specimens were found which could be identified with certainty. They belonged to different courses, the measurements of the exposed faces being, respectively, 0.82 by 1.58, 0.81 by 1.48, 0.79 by 1.25, and 0.76 by 0.97 m. The thickness of each was within a few millimeters of 33 cm. The blocks were thus from three to five times as high as thick, and often twice as high as broad. Pry-holes appeared in all the stones, but there were no indications of dowelling or cramping.

It is plain that a wall thus composed must have been frequently bonded by headers; but, notwithstanding this, it can never have been really secure, in this land of earthquakes. The mass of masonry, it is true, was not weakened by apertures, was but 6.38 m. high, and was anchored to the entablature upon all sides by the stone beams of the pteroma ceiling. On the other hand, the ratio of its thickness to its height — namely, 1 : 9 $\frac{2}{3}$  — is rather below than above the average of that obtaining in Doric constructions, which, however large, are in this respect seldom less than 1 : 10, and often as much as 1 : 9. Moreover, in regard to the length of the wall between transverse supports, the height being taken as the unit, we have at Assos a ratio of more than 2 $\frac{3}{4}$ ; whereas in the Doric temples of Greece, Sicily, and Magna Grecia we find the corresponding figures to be not larger than from 2 to 2 $\frac{1}{2}$ , and the strength of the structure consequently much greater. Calculated according to the formulas in practical use to-day, we find the stability of a wall such as that of the temple of Assos scarcely equal to the requirements of the case.

A renewed scrutiny of the marks of the columns upon the weathered upper surface of the stylobate furnished some ad-

ditional indications in regard to the position of the shafts. The last block of the upper step upon the southern side, next to the southeastern corner, is now displaced, but it still shows traces of the drums which so long stood upon it. The outer intercolumniation, thus ascertained, was found to be wider than the average of the others upon the sides, its clear opening being 1.568 m. There was undoubtedly considerable irregularity in the spacing of the columns, the width of the third opening from the southeastern corner not having exceeded 1.5 m. Otherwise those intercolumniations which could be measured with accuracy did not deviate appreciably from the normal width of 1.532 m., or 2.447 m. from centre to centre, determined by calculation.

The drums unearthed in the vicinity of the temple, during the digging of the second and third years, were of the same general proportions as those which had been found before the preparation of the First Report. They lend additional weight to the conclusions in regard to the height of the shaft, and its entire lack of entasis, which have been set forth in that publication. It is needless to adduce in detail the several hundred measurements upon which these conclusions are based, as these would merely give a list of the accidental and unessential lengths of the separate drums, and of the upper and lower diameters dependent thereupon. Suffice it to say, that the diminution was found to average as nearly as possible 67 mm. in the meter, or 1 : 15, — this factor being precisely the same in the upper as in the lower drums.

The total height of the column, calculated from these data, is found to have been within a few centimeters of 4.78 m. The maximum of this dimension cannot have been more than one third of the width of the lower step, while the minimum cannot have been less than one third of the width of the stylobate. We thus recognize in the temple

of Assos that ratio which Pliny,<sup>1</sup> following Greek traditions, asserts to have been observed in ancient times between the height of the Doric column and the width of the temple plan. So far as the present writer is aware, attention has not hitherto been called to any instance in which the adoption of this archaic canon is demonstrable.

The lower diameter of the column, with an average of 91.5 cm., varied from 90.8 to 92 cm.; the upper, averaging 62.8 cm., from 60 to 63.8 cm.

In so far as regards its significance in the history of architectural development, the exceptional relation of the channelling to the axes of the plan and of the abacus will be considered, in a subsequent chapter, in connection with the proto-Doric shaft found in the Necropolis of Assos.

While the beds of the drums were invariably tooled to an anathyrosis, the lower surfaces of the capitals were, with a single exception to be mentioned hereafter, perfectly plane. This was, without doubt, due to the fact that the joint was in this case not ground down to an almost imperceptible line; but was, on the contrary, emphasized by the characteristic Doric incision which marked the commencement of the slightly concave necking. This single incision, which increased the opening of the joint to an even width of six or eight millimeters, was formed by bevelling the edge of the bed surface of the capital; the slant following the outline of the channels, and having a width in plan of from 4 to 7 cm.

As regards methods of workmanship, no detail of the temple is of greater interest than the capital. The question as to whether this most characteristic member of the Doric edifice was turned upon a lathe, as has been assumed by Bötticher,<sup>2</sup>

<sup>1</sup> Pliny, *N. H.*, XXXVI. 23 (56).

<sup>2</sup> "Das mächtige Echinuskyma des Capitelles, ist wohl durch Axendrehung

or was cut entirely by hand, is one of much importance, in regard to which the evidence, material and literary, seems not to be fully conclusive. On the one hand, the mark of some centring is visible upon the bed surface of every one of the capitals; and the most accurate measurements of the echinos, made with a cymograph and with strips of lead bent to the shape, proved the curve in every case to be absolutely identical upon all sides of the capital; a result which it would have been exceedingly difficult to obtain by hand-chiselling. Moreover, a passage of Pliny, which seems to have escaped the attention of writers upon the constructive methods of the ancients, shows the Greeks of the sixth century before Christ to have possessed lathes which were capable of turning, not only capitals as heavy as those of Assos, but even entire columns. The one hundred and fifty shafts of the labyrinth upon the neighboring island of Lemnos were turned by a machine of such perfect construction, that, as the author tells us, almost in the words of a modern advertisement, "a child could work it."<sup>1</sup>

But, on the other hand, there is not a trace upon any one of the echinoi of such concentric markings as would have resulted from a turning of the stone upon a lathe. The groove between the greatest projection of the echinos and the under surface of the abacus even shows lines cut by the chisel in a contrary direction; so that, if the capital was turned, at least this quirk of the profile was subsequently cut by free-hand. In view of the difficulty which must have been experienced in turning so sharply marked a groove against the square of the

auf dem Bauplatz gearbeitet." Bötticher (Karl), *Die Tektonik der Hellenen*, 2d edition, Berlin, 1874, etc., vol. i.

<sup>1</sup> Pliny, *N. H.*, XXXVI. 19. 3. The words of the author are: "Lemnius, (labyrinthus). . . . columnis tantum centum quinquaginta mirabilior fuit: quarum in officina turbines ita librati pependerunt, ut puero circumagente tornarentur." This was probably effected by means of a vertical mandrel.

abacus, this would not, indeed, seem to be an unnatural way of executing the work. And the same considerations would account for the chisel marks which, on some of the capitals, are to be seen upon the portion of the echinos immediately adjoining the upper annulet. As for the mark of a centring upon the bed surface, it is to be borne in mind that the determination of this point was quite as necessary in the free-hand cutting of the necking as in the fitting of the entire block upon a lathe. The sinking itself cannot be supposed to have served for the reception of so gigantic a back-centre as would have been necessary to support these ponderous masses. In fact, stones of this size cannot well be turned without the employment of chucks upon both ends. Thus it must reluctantly be admitted that the capitals of the temple of Assos do not furnish a proof for either view. While the marks upon the stones still admit of the assumption that the echinos was turned from the rough, and the quirk adjoining the abacus, with the zone contiguous to the annulets, retouched by hand, they present no decisive indication of the use of the lathe.

Owing to irregularities in the upper diameter of the shafts, and in the width of the abaci, the echinoi projected at very different angles. Indeed, scarcely two examples were alike in this respect, and the capitals consequently differed greatly in general appearance. Yet it was found, on graphical comparison, that, with a single exception presently to be mentioned, the curves of the echinoi were absolutely identical. This may be seen from Figure 10. By drawing the outline of the first echinos upon a slip of tracing-paper, and laying it over the second, the lines will be found to coincide exactly. The third echinos, belonging to a capital of unusual projection, was lengthened at its base by a straight line, 22 mm. long; but between the points indicated by asterisks the curve will be found to agree entirely with the first two. Among all the

capitals of the temple of Assos, the only one whose echinos did not conform to this curve is that shown as the fourth in Figure 10. As may readily be seen, it differs from all the others, not only in the outline of the echinos, but in the formation of the annulets, and the extreme shortness of the necking.

An explanation of these deviations from the general rule will readily suggest itself to those familiar with the methods of modern architects and their workmen. Each of the stone-cutters intrusted with the making of the capitals must have been furnished, by the designer with a templet, in all probability of sheet-metal, by which the curves were tested. The abaci must have been previously hewn upon the blocks of stone by the quarrymen, who delivered them to the masons in the shape of slabs, somewhat more than 43 cm. in thickness, the plan of which averaged 1.193 m. in length and in breadth. These latter dimensions, however, like those of all the details of the temple, which may be supposed to have been tooled by masons in the quarry, varied considerably in different cases; the minimum observed being 1.18 m., the maximum 1.238 m. Thus the templet, when applied to the stone, had to be inclined from the axis, not only so as to adapt itself to the given width of the abacus, but so as to make the base of the necking, bevelled for the incision, of exactly the same diameter as that of the uppermost drum of the shaft for which the capital was intended. These drums, as has been stated, were themselves subject to a variation amounting to not less than 38 mm. The angle which the spring of the echinos formed with the horizontal plane was hence in the first capital shown in Fig. 10 as large as  $22^\circ$ , in the second as small as  $15^\circ$ . Beyond twenty-five degrees the mason did not venture to go, and when the middle of the abacus projected more than 28 cm. beyond the upper

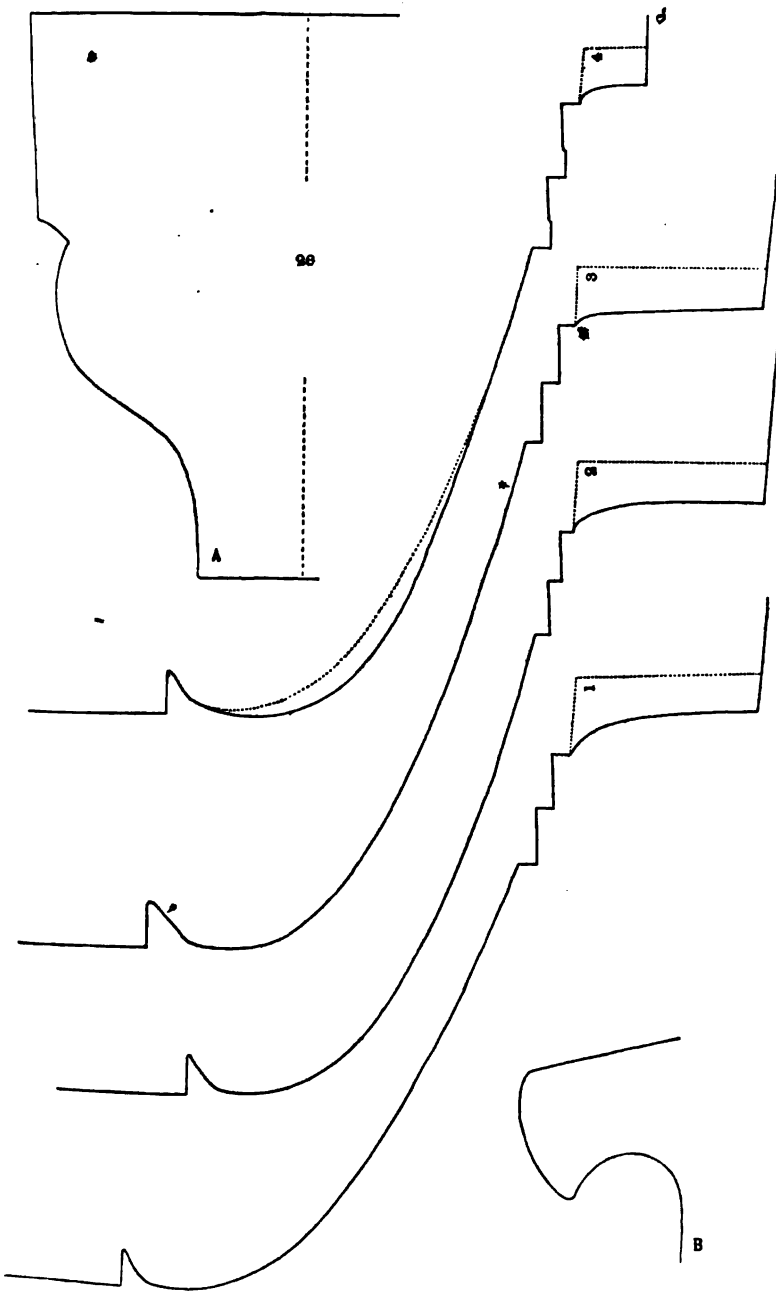


FIG. 10. OUTLINES OF ECHINUS CURVES, ANTA CAPITAL, AND HAWK'S-BILL  
 MOULDING OF CORONA.



diameter of the shaft, as in the case of the third capital (Fig. 10), he was obliged to cut an echinos with an outline considerably longer than that indicated by the templet with which he was provided. A share of this equalization was borne also by the projection of the necking curve, and by the width of the annulets; the former varying from 10 to 25 mm., the latter from 50 to 55 mm. In the case of the exceptional capital (shown as the fourth in Fig. 10), it is evident that the stone-cutter was without such a templet as that according to which every other echinos throughout the building was shaped. The curve was here determined only by the workman's eye. That this was not particularly accurate can be seen from a comparison between the actual form, shown by the continuous line, and the normal curve, indicated by dots. The annulets, too, are of a different design; and it is to be remarked that in this capital alone is the bed surface tooled, uselessly, to an anathyrosis.

It further resulted from this method of adjustment, that, while the height of the necking is one of the most constant dimensions of the structure, the height of the abacus varies exceedingly; namely, from 185 to 216 mm. In one instance, where the abacus was felt to be altogether too high, and yet could not be cut down on account of the impossibility of shortening the altitude of the column, the vertical faces were diminished by so tooling the upper surface that the epistyle beams rested only upon a scamillus, about 80 cm. square, left in the middle of the field, by which they were raised fully 25 mm. above the upper outer edge of the abacus. A broad crevice between the sides of the capital and the superincumbent lintels was thought to be less offensive, when seen from below, than too great a height of the abacus, which could readily be perceived on account of its projection.

The upper surfaces of all the abaci were bevelled upon

those sides which were placed at right angles to the entablature, in order to obviate a chipping of the edges by the heavy beams laid upon them. This slant had a width of 6 or 8 cm., and a fall of 8 or 10 mm. Compare the drawing of the top of an abacus, Figure 11.

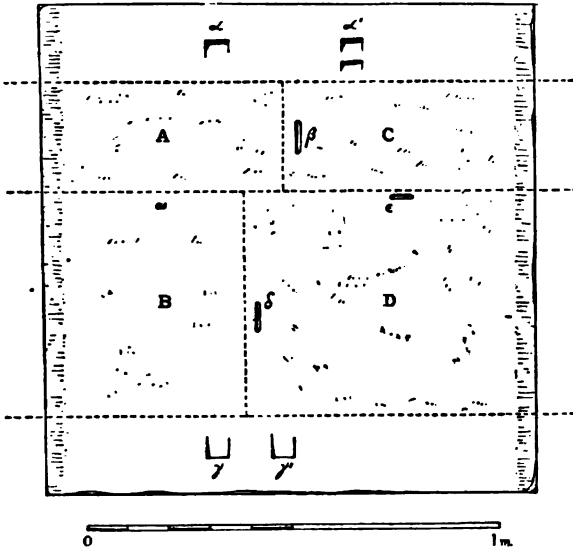


FIG. 11. UPPER SURFACE OF AN ABACUS.

On the annulets of the three best-preserved capitals distinct traces of a deep vermilion pigment were to be seen. This tint did not extend beyond the vertical faces of the annulets, neither to the necking nor to the echinos. It may be taken as an indication that at least all the smaller mouldings of the building were colored. It proves also, and this is a point of much importance, that the surface of the andesite was not thickly primed with stucco, but that the body pigments were applied directly upon the tooled surfaces of the stone. The temple of Assos, though built of so hard and

gritty a material, is in this respect to be compared with the Attic monuments of the perfected style, rather than with the archaic structures of the Peloponnesos and of Sicily. The andesite was treated like the marble of Pentelikos, rather than like the poros, which its grain more resembles. The accurate jointing, effected throughout by means of the anathyrosis, pointed indeed to the same conclusion; but the lack of trunnels, and of delicate details in the sculptures of the epistyle, might otherwise have permitted the assumption that the minor members were supplied, and the plane surfaces coated and smoothed with the aid of some plastic composition. The blocks of the entablature are so weathered that it is not possible to affirm the employment of pigments upon them. Still, the traces upon the capitals suffice to furnish proof that in the temple of Assos, as in all other Doric monuments, the architectural forms were modified and perfected by a polychromatic treatment.<sup>1</sup>

That decorative objects of some light material were affixed to the columns is evident from the rust marks of iron pins, once inserted in the groove between echinos and abacus, and in the joint between the upper surface of the capital and the epistyle beams. It is not possible to determine whether these objects were of metal, and fixtures,—like the shields which once were fastened upon the entablatures of the Parthenon and the temples of Apollo at Delphi and Zeus at Olympia,—or were merely garlands of leaves and flowers with which the building was adorned on festival days.

Among the most interesting discoveries of the second year relative to the temple is a corner of one of the antæ capitals (Fig. 10 A). This differs from all other members of the kind, hitherto known, in having the curve of an Ionic, not

<sup>1</sup> The most careful examination of the capitals of the temple of Assos failed to show traces of any painted pattern upon the echinos.

a Doric kyma. The fact that it was not undercut to a beak-moulding can scarcely be attributed to the difficulty of tooling the stone to this more delicate profile, inasmuch as the Doric kyma appears in full perfection upon the upper edge of the corona. It is plain that we have here to deal, either with a provincial confusion of the normal details of the two great styles, or with a deliberate retention of archaic forms.<sup>1</sup> In either case we may suppose the characteristic leaves of the Doric anta capital to have been painted upon the member. Viewed at a height of some five meters above the eye, in the dim and diffused light of the pronaos, this capital must have been of good effect: its well-rounded curves and the inclined and projecting face of the abacus<sup>2</sup> bear witness to the intelligent care of the designer. The small fragment shows no traces of dowelling, or of other metallic attachment.

The epistyle beams were somewhat less finely tooled upon their bed surfaces than upon their exposed soffits. From this difference in workmanship it is possible to determine, with a certain degree of accuracy, the position of the end joints, as relative to the axes of the column. It is thus found that the lintels were by no means so planned as to extend exactly from centre to centre of the supports, — the deviation in this respect amounting in some cases to not less than 15 cm., or one quarter of the upper diameter of the shaft. On the other hand, it is evident that the triglyphs directly above the col-

<sup>1</sup> That the form of the anta capital was among the last details of the Doric style to be definitely established by architectural custom, is indicated by the singularly clumsy and archaic moulding with which it is ornamented in the otherwise fully developed Great Temple of Paestum.

<sup>2</sup> This treatment of the face of the abacus of the antæ as a slightly inclined and projecting surface is a refinement scarcely to have been expected in an archaic monument. Although adopted in the Parthenon and Propylæia, and exaggerated in the archaistic temple of Bassai, it does not appear in the Theseion or in the temple of Aigina.



urns did not vary from the normal axes in the same manner as did those above the intercolumniations,—a fact which will be referred to in the description of the frieze. The height of the epistyle is, naturally enough, almost constant; irregularity in this respect would have entailed serious constructive difficulties. But in all other dimensions, and in the form of every detail, the variations observable in the epistyle, and indeed throughout the entablature, are so great that it is impossible to believe that scaled drawings were prepared by the architect. Nor can the masons have worked according to an accurately determined system of measurement. The final shape must evidently have been given to the blocks after they had been placed in position. The width of the tainia, for instance, while averaging 95 mm., varies from 85 to 100 mm. So great an irregularity in this simple fillet is only explicable by the assumption that the total height of the stones was altered after the projecting members had been carved upon them; that is to say, their tops were cut down to a uniform level.

The epistyle beams, after having been placed upon the columns and released from the tackling of the derrick, were shifted to an exact position and to a close juncture with the adjoining stone by means of a lever purchasing in pry-holes cut upon the top of the abacus. To facilitate this process the beam was slightly uplifted, or rather tilted, by a crowbar, the sharp point of which was inserted between the epistyle and the abacus, in slots, or *shift-holes*, cut for the purpose upon the bed surface of the former. These shallow sinkings, of rectangular profile, generally  $3\frac{1}{2}$  by  $4\frac{1}{2}$  cm. in plan, and from 1 to  $1\frac{1}{2}$  cm. deep, are disposed at a distance of from 24 to 50 cm. from the ends of the epistyle beams. They may be observed, either in Paris or Boston, upon the sculptured epistyle blocks removed from Assos. The same method of

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shifting will be noticed in connection with the stone beams of the coffered ceiling.

Those blocks of the epistyle which were ornamented with reliefs are bordered along the lower edge of their face by a narrow fillet corresponding to the tainia upon the upper edge, and of about the same dimensions. This fillet forms an architectural framework for the sculptured composition, and, inasmuch as reliefs do not elsewhere appear upon the epistyle of Greek buildings, is not to be found in any other Doric monument. The unsculptured lintels of the temple of Assos were cut, conformably to the principles of the style, without such a lower fillet. It is evident that, in its ideal form, the epistyle, like the wall of which it is the representative, should have no architectural divisions, — no memberment upon the face beneath the tainia, or wall-plate.

The regulas did not have the trapeze shape assigned to them by Texier.<sup>1</sup> Their ends were straight and vertical.

As has been stated in the First Report,<sup>2</sup> the outer blocks of the epistyle were provided, along the upper half of their inner side, with a rough boss, occupying nearly one half of the total height of the beam, and projecting from 5 to 20 cm. This peculiar formation at first led to the supposition that the epistyle beams were three in number, as in the Parthenon, — a view which was set forth in the preliminary description of the building. The investigations of the second year have, however, given proof of the contrary. In the entablature of the temple of Assos a constructive system is now recognizable which is without a parallel in similar fab-

<sup>1</sup> Texier (Charles Félix Marie), *Description de l'Asie Mineure, fait par Ordre du Gouvernement Français de 1835 à 1837, et publiée par le Ministère de l'Instruction Publique*, deuxième partie, deuxième volume. Paris, 1849. The incorrect statement concerning the shape of the regula has been repeated in many textbooks on Greek architecture.

<sup>2</sup> *Preliminary Report*, p. 90.

rics. The epistyle was but two stones in thickness, the inner beam occupying nearly two thirds of the width of the soffit, yet being less than one half as high as the outer lintel. The block resting upon it — that is to say, the second member of the inner side of the entablature — was at least 20 cm. less in

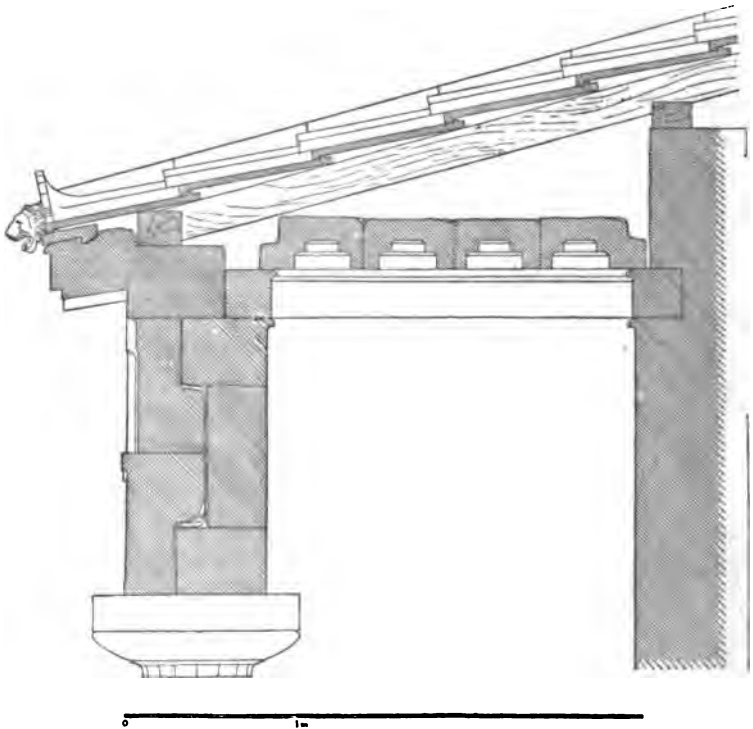


FIG. 12. SECTION OF THE ENTABLATURE AND COFFERED CEILING OF THE PTEROMA.

thickness, and hence it was not necessary to tool away from the upper half of the back of the outer epistyle beam, and from the lower half of the back of the triglyph blocks, those rough and projecting faces which still show the marks of the quarrying. Indeed, these bosses, keyed in, as it were, to the

second course of the inner entablature, are in the transverse section seen to have practically formed a broken joint, and must have considerably increased the resistance which the mass of masonry above the columns could offer to the thrust constantly exercised against it by the roofing timbers, and to the dislocating effects of earthquakes. This will be clear from the section of the entablature, Figure 12.

It was remarked in the First Report, that it would be difficult to advance any satisfactory explanation of the triple construction then assumed. The saving effected in the weight of the facing blocks would have been more than counterbalanced by the additional labor required to cut stones, naturally cleaving to parallel and rectangular planes, into the irregular shape thus determined; and the difficulty of assuring exact joints upon the soffit would have been increased through such a duplication of the surfaces of contact.

On the other hand, the more correct information relative to the composition of the entablature gained during the subsequent investigation is entirely in agreement with the general character of the design, and again permits us to recognize the wise economy with which the construction was planned. The inner lintel, and the two courses above it, were formed of the parallelepipedons, most readily obtained in the quarries of Assos, while the rough projections upon the back of the single outer epistyle naturally resulted from the cutting necessary upon the lower edge alone in order to bring it to a straight and close joint upon the soffit. Although the sculptured epistyle block was greatly decreased in weight, and could consequently be more readily provided and more easily worked, there were still the fewest possible surfaces of contact, and a triple memberment of the entablature was thus secured upon the inner side, without the necessity of introducing for this purpose a low and narrow string-course



behind the corona, and upon the same level with it; an expedient which would have presented far greater difficulties in the coarse andesite of Assos than in the fine-grained and firm limestones elsewhere employed by Greek builders.

The true arrangement of the epistyle beams is evident from the position of the pry-holes on the top of the capital. Deep pry-holes of oblique section,  $\alpha$   $\alpha'$  and  $\gamma$   $\gamma'$ , Fig. II, were cut upon the outer and inner projections of the abacus. They provided a purchase for the heavy lever by which the stones, while hanging from the derrick tackle, were guided to their positions upon the bed. From the depth and the broad outward slant of these sinkings it may be assumed that they also served to receive the ends of the upper timbers of a staging, subsequently erected to facilitate work upon the higher parts of the entablature. The epistyle beam,  $\Lambda$ , of the outer side, was first swung into position. This stone set, and released from the tackling of the derrick, it was shifted into close contact with the epistyle above the next column, already in place, by the help of a crowbar, purchasing in the transverse pry-hole  $\beta$ . The corresponding inner lintel,  $\mathfrak{B}$ , was similarly set, being pried against the outer epistyle by means of a lever bearing in the slot  $\gamma$ , and against the adjoining inner lintel by placing the lever in the pry-hole  $\delta$ . In some cases it was necessary to shift forward the outer epistyle from the position in which it was first laid upon the abacus, so as to bring it into the exact alignment determined for the face of the entablature. This was effected, as in the case of the beam  $c$ , Fig. II, by a leverage exercised from a longitudinal pry-hole,  $\epsilon$ . It was rare, however, that recourse was had to this expedient, it having almost always been possible to guide the blocks while hanging from the derrick with sufficient precision by means of the outer slots,  $\alpha$  and  $\alpha'$ . The beam  $\Lambda$ , for instance, is seen to have required no such lateral correction, no pry-hole ap-

pearing at  $\omega$ . The last stone to be laid upon the capital was the second inner epistyle,  $d$ . This was shifted into an exact position, laterally by a leverage applied at  $\gamma'$ , and longitudinally by a purchase provided upon the next capital in that direction in which the construction was carried on. The last of all the epistyle beams to be laid must have been at one of the corners of the building. Accurate jointing was assured by cutting an anathyrosis upon all the surfaces of contact.

The indications thus obtained from the pry-holes upon the top of the abacus were sufficient, not only to prove that the lintels were two in number, but also to determine the width of the blocks which formed the inner epistyle. The height of these was evident, within certain limits, from that of the tooled surface beneath the projecting boss of the outer epistyle. The acquisition of these facts permitted, during the work of excavation on the Acropolis subsequent to the first year, and during the remeasurement of all the squared stones whose original destination had not already become evident, the recognition of one entire inner epistyle beam, and of six others more or less fragmentary. In height these members, with an irregularity of but a few millimeters, averaged 385 mm. Their width, complementary to that of the outer epistyle blocks, varied from 495 to 550 mm. The length of the one entire stone, evidently belonging to the side entablature, was 2.39 m. This block now serves as one of the jambs of the gateway to the Turkish fortifications which once occupied the summit of the Acropolis; it still stands upright. That so few fragments should remain of the thirty-four inner epistyle beams — which formed a total length of eighty-four meters (or eighty-eight meters, if the inner epistyle was cut to a mitre at the corners, as in the temples of Aigina and Olympia) — is readily explicable by the consideration that these stones, having been without projecting members, and accu-

rately squared upon all sides, were eminently suited to the purposes of later builders, Christian and Mohammedan, who looked upon the ancient monuments as a convenient quarry.

The blocks of the inner epistyle, like those of the outer, were somewhat less finely tooled upon their bed surfaces than upon their exposed soffits, and were likewise provided with shallow rectangular notches, destined to receive the point

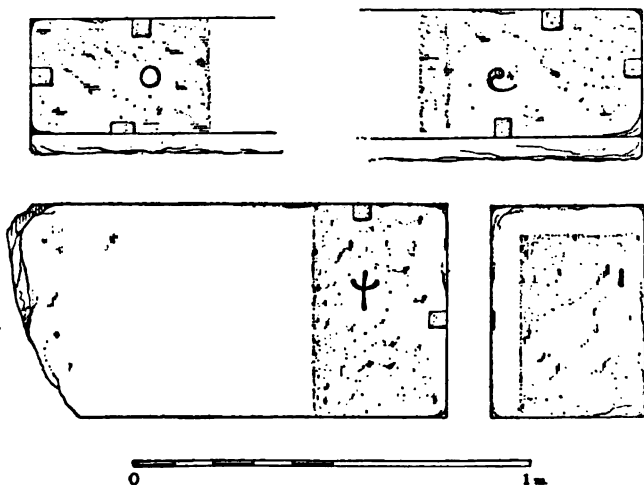


FIG. 13. FRAGMENTS OF INNER EPISTYLE BEAMS, SHOWING SHIFT-HOLES AND MASONS' MARKS.

of the crowbar by which they were raised while being shifted into position. As it was necessary that the widths of the outer and inner lintels should together make up the total thickness of the epistyle, namely, 82 cm., they must have been fitted together upon the ground. Those which had been matched were occasionally designated by masons' marks. Three of these signs, the only ones found, are shown in Figure 13. They will be referred to in the discussion of the age of the building.

The members of the frieze show irregularities in point of size, which far exceed those observed in other parts of the structure. The triglyphs and metopes found during the course of the investigations, as well as the spacing of the regulas upon the blocks of the epistyle, prove the dimensions — even of those details which were in immediate proximity, and could easily be compared by the observer — to have varied, in some instances, in the enormous proportion of seven to ten. The width of the smallest triglyph found was 480, that of the largest 575 mm. The former dimension was exceptional, the nearest to it being 51 cm.; the latter was not uncommon, four of the thirty-eight triglyphs recognizable measuring over 57 cm. In general, the triglyphs may be divided into two classes; those of the fronts, averaging 56, and those of the sides, averaging 52 cm. The corner triglyphs, three of which were found, were of the smaller size, — a fact which is of importance in determining the relative position of the sculptured epistyle blocks.

In the metopes considerable variations were naturally to be expected, inasmuch as the equalization of the corners of the frieze, and of the front and side intercolumniations, devolved mainly upon them. Still, this fact by no means suffices to explain the great differences in the size of these members. The narrowest metope found was 63 cm.; the broadest, nearly half as large again, namely, 905 mm. The nearest approach to the minimum was 680, to the maximum 835 mm. It is to be borne in mind that these blocks were of exactly the same height, and that a variation of, let us say, 5 cm. could readily be detected by the eye. Particularly worthy of remark is the fact that adjacent metopes, which can be measured from one and the same epistyle block, differed in width as much as 13 cm., namely, from 68 to 81 cm. This is proved by the spacing of the regulas on the epistyle sculp-

tured with horse-legged centaurs, discovered during the course of the excavations. Nor was this an altogether exceptional case. On the large relief of two bulls, in the Louvre, the adjacent metopes are seen to have varied 5 cm. in width, namely, from 63 to 68 cm.

Under these conditions it appears probable that the exact position of the *regulas* was determined after the members of the frieze had been set in place above the epistyle. This was without doubt effected by leaving the ends of the *regulas*, as carved while the epistyle blocks were still upon the ground, somewhat longer than the required dimension, (namely, the width of the triglyphs to which they appertained,) thus securing the possibility of a subsequent correction. There does, indeed, seem to be a difference in tooling between certain of the patches adjoining the *regulas*, and the rest of the epistyle face, although the weathering of the coarse stone renders it difficult to judge of this point with certainty.<sup>1</sup>

Truly, the execution of a Doric entablature in primitive times, without the aid of working drawings on a large scale, or of accurately computed measurements, was a complicated and difficult work. The architects Tarchesios, Pythios, and Hermogenes,<sup>2</sup> were not without good grounds when they complained of the irksomeness of laying out the Doric memberment, especially the division of the frieze, and the other details of the entablature thereupon dependent.

Fortunately, we are provided, by the difference in tooling

<sup>1</sup> The probability that the triglyphs and metopes were placed in position before the ends of the *regulas* were cut upon the epistyle tends to disprove the etymological note of Bötticher, *Tektonik*, p. 204: "Regula ist wohl Uebertragung von κανών, also Richtscheid oder Norm für die Stätte der Triglyphen." Even viewed solely in the light of constructive development this is an altogether arbitrary assumption. The word *Regula*, employed by Vitruvius (IV. 3. 4), needs only to be taken in its literal meaning, — a straight piece of wood, a ruler.

<sup>2</sup> Quoted by Vitruvius, IV. 3. 1. Tarchesios is probably identical with Argeios, the builder of the temple of Asklepios at Tralles (Vitr., VII. Pref. 12)

on the beds and on the soffits of the epistyle blocks of the temple of Assos, with a means of ascertaining that the triglyphs situated above the columns were but little out of the axes; the maximum error in this respect amounting to less than 5 cm. A greater irregularity than this would, indeed, have been intolerable. In the jointing of the epistyle beams themselves, on the other hand, so little attention was paid to a correspondence with the axes of the supports, that the half-regulas cut upon the ends of the blocks vary in length from 11 to 46 cm.; the joints themselves must have been so close that this want of agreement did not force itself upon the attention of the observer, as did the irregularities in the width of the triglyphs and metopes. Thus no æsthetic consideration required an equalization of the lintels, which were worked, as chanced to be convenient, from the stones provided by the quarrymen. The differences in length have, however, to be taken into account in the attempt to determine the arrangement of the reliefs upon the fronts and sides of the building.

The backs of the triglyphs were so cut that the lower half formed a rough boss, which corresponded with the projection upon the upper half of the epistyle beams, and, together with it, came into bond with the second course of the main entablature. This boss, retaining the marks of the quarrying, projects from 8 to 12, and varies in height from 22 to 35 cm. Compare Figures 12 and 14.

as has been assumed by Schneider and Marini in their editions of Vitruvius, Pythios worked at Priene (Vitr., I. 1. 12) and Halikarnassos (Vitr., VII. Pref. 12, and Pliny, *Hist. Nat.*, XXXVI. 5. 4, § 31); Hermogenes at Magnesia (Vitr., III. 2. 6) and Teos (Vitr., VII. Pref. 12). All three are thus seen to have been Asiatic, and their remarks concerning the Doric system without doubt express the opinion as to that style prevalent in Asia Minor. This is a point of much interest in the present connection, for it is to be borne in mind that the temple of Assos (with exception of the small fane, of much later date, at Pergamon) is the only known Doric temple on the eastern coast of the Aegean.

Both triglyphs and metopes were shifted to an exact position by means of levers applied in pry-holes cut upon the upper surface of the outer epistyle beams, and show upon their beds the shift-holes, or rectangular slots which provided a hold for the lifting crowbar, the function of which has been described in connection with the epistyle. The pry-holes visible upon the top of the epistyle beams conclusively prove that triglyphs and metopes were placed in position alternately.

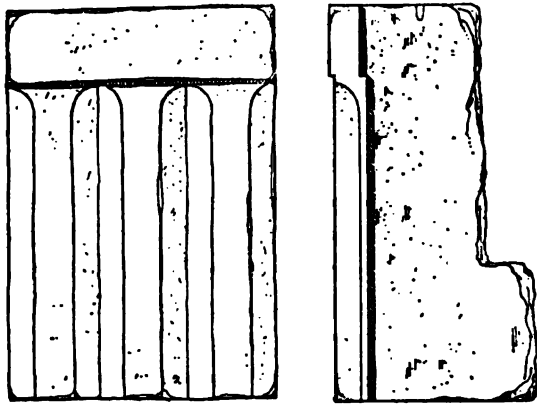


FIG. 14. TRIGLYPH, FACE AND SIDE.

The triglyphs were not laid first, and the metopes then slipped in between them from above, as has been frequently assumed by writers upon Greek architecture.<sup>1</sup> The joints between the two were hidden by inserting the edges of the metopes into rabbets, cut upon the sides of the triglyphs in such a manner that the faces of the former came to be 6 cm. farther back than those of the latter. The form of these rabbets — which

<sup>1</sup> This time-honored error has been illustrated by a steel engraving in the *Expédition Scientifique de Morée*, vol. iii. plate 10. Paris, 1831.

were shaped to receive the projecting band along the upper part of the metopes, but not the delicate hawk's-bill moulding terminating them — is shown in the side view of a triglyph, Figure 14.

The general arrangement of the cornice has been described in the First Report. So great are the inevitable irregularities in the distribution of the mutules, as to make it probable that at least the soffit of the corona was not carved until the members of the frieze had been laid upon the epistyle, and the position of the individual cornice blocks in relation to them exactly determined.

The spacing of the mutules — the lacunaria, which in the passage of Vitruvius, before quoted,<sup>1</sup> is referred to as so troublesome — could not well be laid out, or even corrected, by the stone-cutter, after the blocks of the cornice had been placed in position. For it was requisite that the length of the separate stones which formed the cornice should exactly correspond with the divisions determined by the irregular widths of the triglyphs and metopes. Moreover, the inclination of the soffit, forming an acute angle with the vertical face of the entablature, would have cramped the workmen, and would of itself alone have rendered it necessary to cut the deep interstices between the mutules before the blocks were set in place.

The surfaces of lateral contact formed by the anathyrosis upon the cornice blocks averaged 55 mm. in width; the sinking between them being, in some cases, as deep as three centimeters.

From the marks upon the overthrown stones we may recognize two distinct methods of lifting these heavy cornice

<sup>1</sup> The word *lacunaria* in this passage, IV. 3. 1, should not, I think, be translated "ceiling," as it usually is, (for instance by Brunn, *Geschichte der Griechischen Künstler*, vol. ii. p. 359, Stuttgart, 1859,) but rather *the soffit of the corona, or the mutules.*



blocks into position ; the one by means of ropes looped into broad and deep U-shaped grooves cut upon the lateral joint surfaces, A, Figure 15 ; the other by means of iron hooks, or dogs, grappling into comparatively small and shallow slots in the same position, B, Figure 15. The first of these, the deep grooves, are observable in other Doric edifices of early period, — as, for instance, the temples of Aigina, Paestum, and Se-

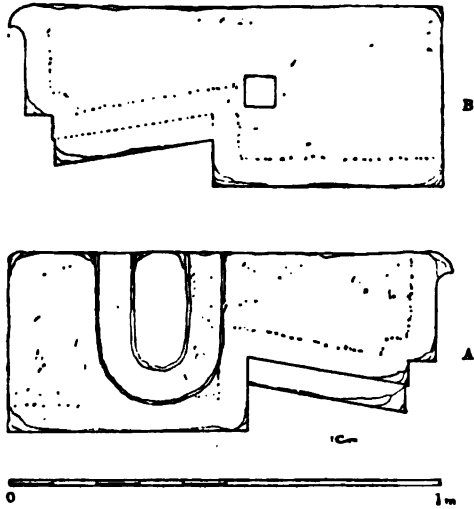


FIG. 15. ENDS OF CORNICE BLOCKS, SHOWING ATTACHMENTS OF DERRICK TACKLE: A, FOR LOOPED ROPE; B, FOR IRON DOG.

linous. Although they required much more stone to be cut from the block than did the slots of the second method, they were far less secure. When the projection was not sufficiently great, or sufficiently undercut, there was danger of the loop slipping off ; and by the swinging of the heavy blocks the rough edges of the stone must always

have sawed upon the fibre of the rope. In one instance at Assos, that of an exceptionally heavy corner piece, the entire U-shaped boss had broken away, and was replaced by a deep slot, into which the end of a beam could be inserted. Of the second variety, a square or oblong slot, about 8 cm. in width, is the most simple form, and is, as a general rule, employed upon one end of all those stones which were lifted by grapples. Stones upon both ends of which were simple slots of this kind

could not, of course, be laid to a close joint, on account of the bar of the lifting-iron intervening. It was necessary to cut, upon one at least of the two surfaces meeting at a joint, a vertical channel, through which the grapple could be released and withdrawn. This channel was made either sufficiently deep in plan for the hook of the iron — the dog — to pass freely when slipped backwards, towards the joint; or sufficiently

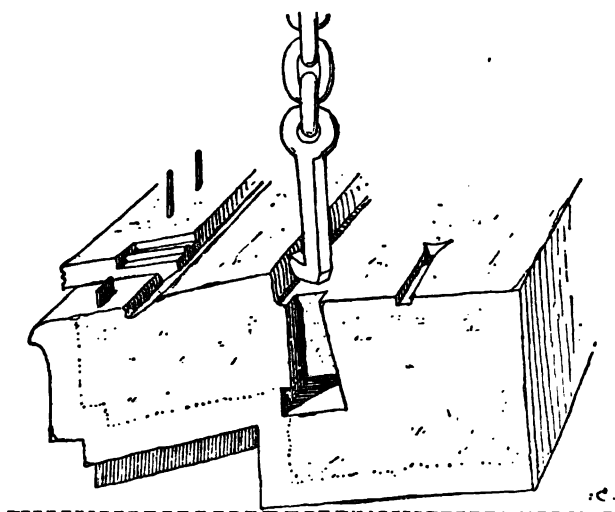


FIG. 16. CORNICE BLOCK, AS TILTED IN LIFTING. — RELEASE FOR TURNING GRAPPLE.

broad to permit the grapple to be turned 90° on its vertical axis, and to be withdrawn in that position, as shown in Figure 16. The latter arrangement, complicated as it appears, was somewhat the more economical in respect to stone-cutting, as it did not require the horizontal slot to be sunk to so great a depth as did the former.

One of the blocks of the cornice, upon the southern side of the building, deserves particular remark. It evidently

adjoined a stone, inserted between two others already in position, which is to be considered as the very last laid. This last stone seems to have been swung into the air, above the entablature, before it was noticed that in this case both of the ends ought to have been provided with vertical channels through which the lifting-irons could be withdrawn, and that, as it was, it could not be set. The difficulty was ingeniously met, not by lowering the stone and cutting the second channel upon it, but by sinking the release upon the corresponding joint surface of the adjoining block, here in question.

It appears from the position of all the grooves and slots in the ends of the cornice blocks, that these stones were so balanced as to incline slightly towards their front edge, which thus touched the bed first, and could be adjusted with great accuracy upon the given line above the triglyphs and metopes. Compare Figure 16. The tilt requisite for this expedient was determined by the position of the lifting slots, which were cut somewhat farther back from the face than the centre of gravity; the exact point being without doubt ascertained by some graphic method based upon the section, as actual experiment was scarcely possible. It may be remarked, parenthetically, that modern research constantly tends to prove that the unequalled refinements of classic architecture — perhaps the most striking instances of which are presented by the corrections of optical illusions, namely, the curvature of the horizontals, and the inclination and entasis of the columns — were, like the solution of static problems such as those in question, arrived at rather by the means of architectural drawings on a large scale than by any system of arithmetical calculation. This was in accordance with one of the dominant traits of Greek intelligence, which delighted in the expression of an idea by some material representation.

In the variety of methods employed in lifting the cornice

blocks of the temple of Assos, we have another indication of the many independent hands engaged upon the structure. Throughout the edifice there was as entire a lack of constructive as of artistic unity,—a fact which is to be borne in mind in the consideration of the provincial character and the archaic semblance, yet comparatively recent age, of the sculptures, so unequal in point of style.

Having been set in position, the cornice blocks were united by iron cramps, sunk into the upper surface of the stone at about the middle of the bed, namely, 70 cm. from the face of the corona. These cramps, averaging 2 cm. in section, were formed of exceedingly tough wrought iron, and were set by a lead casting. A specimen is preserved in the Museum at Boston, No. M. 578.

The profile of the hawk's-bill moulding which terminated the cornice is shown on a large scale in Figure 10, B.

The cornice block from the southeastern corner of the edifice, Figure 17, is of particular interest, inasmuch as it displays almost all the marks of dowels, cramps, lifting holes, etc., occurring upon the course to which it belongs. It may hence be considered somewhat in detail, as an example of the many indications which may be derived even from a single displaced block.

The holes for the grapple irons of the derrick tackle by which this heavy stone was lifted are to be seen upon both of its ends. One of these ends is exceptional, in being, not a joint surface, but the exposed face of the eastern corona. It was thought preferable to disfigure this member by cutting a deep square slot upon it, rather than to depart from the regular method of attaching the tackle by the adoption of some other form of iron hook, which might, indeed, have been made to find a hold upon the outer edge of the corner mutule, but would have been liable to slip unless a dog-hole had there been cut.

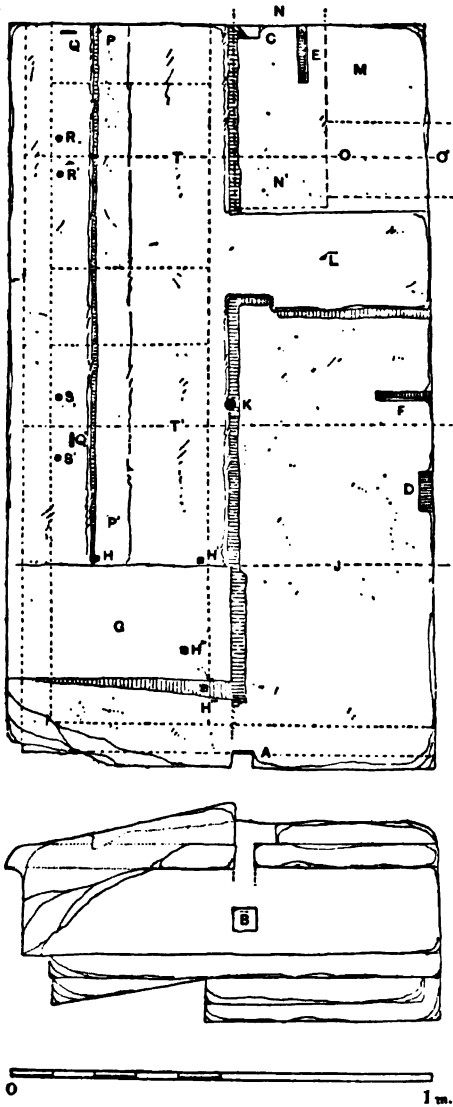


FIG. 17. CORNICE BLOCK FROM SOUTHEASTERN CORNER.— UPPER SURFACE AND END.

A further disadvantage of the plan adopted was that the hawk's-bill moulding of the front had to be cut quite through at A, Fig. 17, in order to allow the grapple, when hooked into the slot B, to lie flat against the vertical face of the corona. It is, of course, to be assumed that the hole in the face of the corona, and the unsightly notch in the moulding above it, were filled in and bridged over with a stucco of the same color as the stone. Upon the inner western end of the block — a joint surface — the grapple slot is provided with a release channel, c, for turning the iron, like that previously described, and illustrated in Fig. 16. This proves that the adjoining stone of the southern cornice was

set before the corner block was swung into position. On the other hand, the adjoining block of the eastern cornice, which was laid afterwards, cannot have had a release of any kind, for we see at *D*, Fig. 17, that a broad channel for this purpose was cut upon the corner block, without doubt after it had been placed in position, and the equilibrium of the next stone ascertained by a graphic method, as before explained.

The iron cramps which attached the block to those adjoining it were sunk in carefully cut grooves at *E* and *F*. In order to profit by the stability which was afforded to the next stone of the front by the great depth of bed, from east to west, of this corner block, and more particularly in order to anchor the stones of the front cornice together for the purpose of resisting the lateral thrust exercised, as will presently be shown, in this line by the inclined course of the pediment cornice, the cramp at *F* was placed much farther in from the face of the cornice than was that at *E*.

In the tooling of the upper surface the bed, *G*, for the stone carved with the gargyle, serving also as a base for the corner acroterion, was permitted to project above the rest, having the full slant of the gable, requisite for the continuation of the gutter channel to the orifice in the lion's mouth. The inclination of this surface, *G*, may be seen in the drawing of the end of the cornice block, Fig. 17. The superposed stone, subjected as it was to the thrust of the terra-cotta gutter of the front, was securely attached to the cornice block by four vertical dowels at *H*, *H'*, *H''*, and *H'''*. On all the cornice stones of the front a plane bed, level with the top of the hawk's-bill moulding, was cut to receive the blocks which formed the tympanon veil, — the face of which was situated in the line *J*. The first of the stones of the pediment cornice, cut to an acute angle, rested directly upon the corner block, having a bearing against an exceedingly stout

dowel, the large hole for which is to be seen at κ. This dowel must have been quite sufficient to prevent any slipping of the pediment cornice block along its bed, to which it was exposed through the thrust of the other stones of this course, lying as they did upon an inclined plane. At no point in the entire structure did more depend upon the expedient of metal bondings, and nowhere is greater forethought and care displayed in their arrangement and execution. In recognition of the fact that the force tending to outer displacement was mainly exercised against this dowel, it was placed in a line with the cramp Ϝ, by which the corner block was anchored to the other stones of the front cornice; the cramp Ϝ having for this purpose been removed fully one third farther from the corona edge than was the cramp ε. In the intimate relations of these bondings, bearing upon different courses and fixed at different times, we have a striking proof of the thought bestowed by the designer, before the erection of the building, upon constructive details apparently of little significance, whose disposition would, in a modern work, probably be left to haphazard.

From the sinking of right-angled plan cut in the untooled boss of stone remaining, at L, between the bed for the pediment cornice and the bed for the wall-plate and rafters, M, it must be assumed that the thrust of the pediment cornice was exercised, in its lowest block, not directly against the small surface of the dowel at κ, but against the bar of iron interposed between dowel and stone, and affording a broader surface for the pressure. From the size of the sinking in the boss L, this bar may be judged to have had a width of about 10 cm. It was probably not longer than 60 cm., and did not extend farther to the east than to the west of κ, being imbedded in a socket cut upon the lower outer edge of the first pediment cornice block, so that the end of the metal bar was not exposed upon the face of the gable.

The plane bed for the roof timbering, *m*, extended along the sides of the building, upon a level with the upper edge of the hawk's-bill moulding, from which it is distant about 53 cm. Upon this bed lay the wall-plate, *n n'*, into which were mortised the main rafters, the first of these being situated, as will presently be shown, in the line *o o'*. The upper surface of the cornice, which remained between this plane bed and the outer edge of the stones, namely, a strip about half a meter in width, is roughly split to the slope of the roof tiles; that is to say, somewhat less than the  $15^\circ$  slant of the gable, owing to the overlapping ends of the tiles. The nature of this difference in slope will be readily understood by a glance at the section of the entablature and roof above the pteroma, Fig. 12. The line of inclination is shown by dots upon the drawing of the end of the corner cornice block, Fig. 17. Along this rough-split surface, at a distance of 18 cm. from the edge, is cut a groove, *p p'*, averaging 3 cm. in depth, the purpose of which was to receive the bent inner edges of a course of ornamental tiles, subsequently to be described. These tiles were attached to the cornice blocks by iron dowels of peculiar shape, two of which, *q* and *q'*, appear upon the cornice block. The dowels of the gargoyle were of square section, those of the antefixes and that receiving the thrust of the pediment cornice were round rods and bars; those of the lighter terra-cotta course, on the other hand, are of oblong section, considerably thinner than the ones elsewhere employed, as they were not called upon to resist any considerable strain, but merely to prevent an accidental displacement of the long and narrow strips of terra-cotta interposed between the imbrices and the stone.

The antefixes which terminated the lines of tegulæ were each attached to the cornice by two dowels, the corner block showing borings for them at *r r'* and *s s'*. The position of



these irons furthermore indicates the axes of the tegulæ at  $\tau$  and  $\tau'$ , and consequently the situation of the rafters, upon which the imbrices were placed without the intervention of purlins or slots. The first rafter above mentioned is shown by dotted lines at  $o$   $o'$ . The most easterly of the antefixes are thus seen to have been removed exactly the width of one imbrex from the terra-cotta gutter of the gable. We must, however, here terminate our examination of this interesting corner cornice block, reserving the more detailed description of the roofing for a later section.

On the gable ends of the building the cornice blocks were smoothly tooled upon their upper surfaces, in order to receive the upright slabs which formed the tympanon wall. One of the stones in question, from the western front, is so stepped that the bed thus provided rises to a height of 6 cm. above the tympanon floor. From these indications it is evident that the depth of the gable field, exclusive of the beak moulding of the corona, was 41 cm. The reveal was consequently not greater than the projection of the main cornice, differing in this respect from the Parthenon and the temple of Aigina, where it was necessary to increase the width of the tympanon floor because of the gable groups standing upon it.<sup>1</sup> At Assos the wall veil was very nearly (within 2 cm.) in the same plane as the face of the entablature.

From the traces upon the cornice blocks before mentioned, it is further possible to ascertain that the tympanon wall itself was formed of stones which varied from 36 to 40 cm. in thickness. During the excavations of the second year three of these stones, belonging to the western gable, were brought to light. Of equal width, varying in this dimension but a

<sup>1</sup> In the Parthenon and in the temple of Aigina the width of the tympanon floor is greater than the projection of the main cornice by respectively one eighth and two elevenths of the entire thickness of the entablature.

few millimeters from 92 cm., they were respectively 0.59 and 0.837, 0.837 and 1.084, and 1.084 and 1.33 m. in height. The proportions and constructive arrangement of the tympanon wall became perfectly clear through this discovery. The triangular veil, with a total length of 12.64, had a total height of 1.695 m., — the rise in the three stones recovered being exactly 0.268 to the unit of length. It is furthermore evident, that a single slab, of pentagonal shape, occupied the centre of the field, and that the three stones found were the second, third, and fourth upon the north of this. The entire wall must consequently have been formed of thirteen stones. This would seem to be a more perfect arrangement than that attained by the adoption of any even number of slabs, which must result, as in the Parthenon and Theseion, in a central joint, with two acute angles at the apex of the wall veil, instead of the one obtuse angle, more easily cut, and less liable to fracture.

In the restoration of the temple, given in the First Report,<sup>1</sup> it was assumed, from a comparison of Doric temples of about the same age, that the inclination of the gable was as one in four. The difference between this assumption and the truth now ascertained, namely, between 0.25 and 0.268 in the unit, amounts to but 11 cm. in the total height of the gable. This deviation is nevertheless sufficient to make it certain that the slant of one in four, so easily laid out with entire accuracy, was not fixed upon by the architect. Indeed, no simple arithmetical ratio corresponds with the proportions now recognized. But on examination it will be seen that the angle of inclination is, with extraordinary accuracy, fifteen degrees, there being hardly the error of a single minute involved in the dimensions of these blocks, which themselves represent nearly half of the entire slope.

<sup>1</sup> *Preliminary Report*, Plate 14.

It will be remembered that the right angles at the corners of the building were found, when tested by instruments of precision, to have deviated but one tenth of a degree from the true square. The geometrical accuracy of the tympanon triangle is hence not surprising. Its angle of inclination, just one sixth of that which had been employed in the plan, could readily be, and doubtless was, laid out by dividing the arc of the quadrant into equal parts. We have here a further instance of the preference so generally shown by Greek architects for graphic methods of design,—for geometrical rather than arithmetical proportions. In such a gable no eye could have detected the difference between the height resulting from the ratio of one to four, and that determined by an angle of inclination equal to fifteen degrees. It is a significant fact, that the designer chose the latter, rather than the former, method of approximation to a purely æsthetic ideal.

The largest of the three gable blocks (Fig. 18) presents a curious peculiarity. The stone is a rejected cornice block, and still shows upon the back, which was hidden from view, the mutules and rectangular steppings of the corona soffit. It appears to have been rendered unserviceable, before the completion of the entablature, through some fracture of the end which has been cut off, or through the mutilation of the projecting hawk's-bill moulding. None of those cornice details which still remain upon the stone, now reduced to six sevenths of its original length, show defects sufficient to account for its condemnation. One of the end joint surfaces became the bed of the gable block, the other being cut to the required slope, while the back was straightened, and the moulding removed from the front, so as to allow of close jointing upon the sides. A deep slot, 75 mm. square, was sunk into the face of the former corona, and into the

opposite side, so as to afford a hold for the lifting tackle. The two other slabs of the tympanon wall were raised by the same means. After being released from the grapples, the stones were shifted into close contact by means of levers applied in pry-holes, which are to be observed upon the

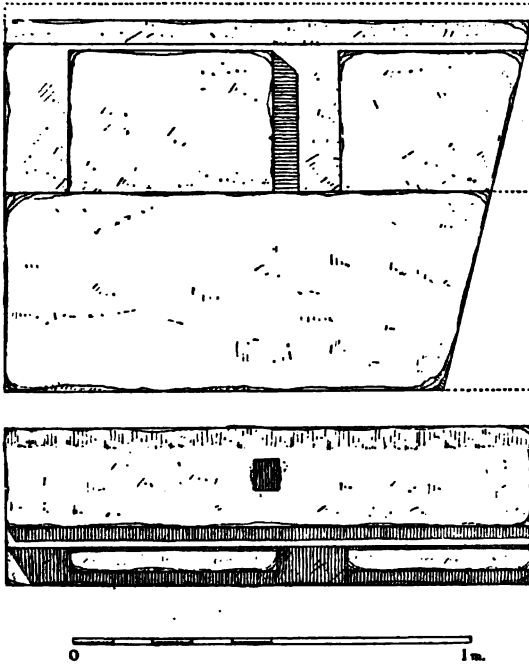


FIG. 18. REJECTED CORNICE BLOCK, RECUT FOR EMPLOYMENT IN TYMPANON VEIL.

smoothed tops of the cornice blocks of the eastern and western fronts of the temple.

The tympanon corona was provided with the customary hawk's-bill moulding, to separate its soffit from the upright surface of the tympanon wall. It was undercut not less than 73 mm. in a projection of 41 cm. At the re-entering angle

thus formed the stones were only 15 cm. in thickness, — too little for such a coarse-grained material, although they were required to support no weight except the light gutter of terracotta. Almost all those which were found had been broken at this point by their fall.

It is worthy of especial remark, that the system of effecting an accurate jointing by means of leverage was adopted even in the case of the gable cornice, which rested upon an inclined bed. Pry-holes are visible upon the slanting upper surfaces of the three blocks from the tympanon wall. The joints themselves, as in all Greek gables, were not vertical, but at right angles to the slope.

There were no indications whatever which could lead to a belief that the tympanon was ornamented by sculptures. On the contrary, the entire lack of such an extensive dowelling as would have been rendered necessary by the presence of statues is quite sufficient to prove that gable groups never existed. Upon the upper surfaces of two of the cornice blocks of the main front, that is to say, upon the floor of the eastern tympanon, small pins of metal were found to have been driven into the stone; without doubt for the purpose of affixing votive offerings, of no great size or weight. Unfortunately, these indications do not suffice to convey any idea of the actual character of such decorations, which may have been permanent agalmata, or merely festive garlands of leaves and flowers.

The inner side of the entablature appears to have been entirely plain. That this was the case with the inner epistyle is rendered certain by the lintels brought to light during the digging of the second year; and that the upper blocks were likewise without memberment is to be assumed from the fact of there being no fragment of string-courses or mouldings appertaining to the structure to which a position

is not elsewhere assignable. In this respect the temple of Assos agrees with the Attic Doric of the fifth century, rather than with the archaic style of the farther West.

The character of the inner lintel has already been set forth. As to the second and highest course of the inner entablature, its dimensions may be determined with a certain degree of accuracy by the maximum heights and projections of the bosses upon the upper half of the outer epistyle and upon the lower half of the triglyphs, the results thus obtained being checked by comparison with the corresponding measurements of the blocks of the inner lintel actually discovered. Thus it becomes evident that the second course was of very nearly the same height as the outer epistyle (82 cm.), and that the third or uppermost course was, both in height and average width, the same as the first, or lowest (namely, the inner epistyle), the variation in no respect having been greater than half an inch. There can be but little doubt that this agreement was intentional, especially in view of the fact that the total thickness of the entablature was in like manner equal to the height of the epistyle. It appears probable that some unit of measurement was here embodied. The thickness of the second course did not exceed 35 cm.

The pteroma, vestibule, and pronaos of the temple were covered with a ceiling of coffered stone beams, the recognition and restoration of which was entirely a work of the second year. Small fragments of two of these beams were brought to light during the digging upon the site of the temple; two remaining in their entire length are to be seen built into the walls of the Mosque which stands upon the northernmost terrace of the Acropolis,<sup>1</sup> and twelve others, more or less perfect, were found among the débris of the lower town; namely, seven near the foundations of a portico

<sup>1</sup> *Preliminary Report*, p. 93, Plate 23.

situated one hundred meters west of the Greek Bath, and five in a modern enclosure about the same distance southeast of the Bouleuterion.

Three considerations make it evident that these stones belonged to the temple. A strong presumption is supplied, in the first place, by the presence of several of these beams among the ruins upon the summit of the Acropolis, where the remains of no other antique building are to be found. Carved blocks known to have been derived from the lower town—among them a marble capital from the Greek Bath and an inscribed lintel from a Christian church—have, it is true, been incorporated into the Mosque which stands upon the lower terrace of the Acropolis. Stones so shaped as to be of service to the Turkish builders were undoubtedly removed from a considerable distance to the site of the Mosque; but with the fragments of coffered beams before mentioned the case is altogether different. It would be misleading to refer to the marble blocks in the façade of the Mosque in explanation of the remains of a stone ceiling buried in the earth which covered the plan of the ancient temple, amongst the ruins of this one edifice, and of no other. It is more than improbable that useless blocks belonging to any structure in the lower town would ever have been carried up this great height. On the contrary, the materials of the temple furnished enough and to spare for the rude mediæval fortifications of the citadel, and, having in part been rolled over the steep, are met with in various parts of the enclosure below. A number of the drums, for instance, lie upon the slopes of the southeast, are half buried among the ruins of the Turkish village at the north, and were dug out of the débris which chokes the reservoir beneath the Agora. Thus the coffered beams, before mentioned as having been found upon the lower level, show, by the very fact of their discovery nearly half a

kilometer one from another, that they must have been removed from some common centre. Of exceptional length, and plane upon three long sides, they were admirably adapted to serve the later builders as jambs and lintels. Nothing could be more easy than to drag these blocks down the incline from the Acropolis, to be used in the construction of the Christian edifices among whose ruins they were found; nothing more unnatural than to carry them to a height where no building other than the Doric temple ever stood. The wide distribution of the coffered beams is fully explained by the consideration that they must have been the first blocks of the temple to fall. The evenly squared stones of the cella wall must have been regarded with covetous eyes by all those who profited by that edict of Theodosius which authorized the destruction of heathen temples for the purpose of employing their materials in the erection of Christian dwellings; and these stones could not be removed until the ceiling above the pronaos and pteroma had been overthrown.

The second point is the character of the stone-dressing. The marks of hammer and chisel, still to be seen upon some of the coffered beams, are precisely the same as those observable throughout the temple. The untooled upper surfaces were split in the quarry in the same manner as were the backs of the main lintels; the brush-hammered finish upon the sides, forming a shallow anathyrosis, is like that upon all the blocks of the entablature; and, finally, the beds of the beams frequently show near their ends those peculiar rectangular notches, cut to receive the end of the lifting crowbar during the process of shifting the stone, which have been described as existing upon the epistyle blocks and the triglyphs. These indications are sufficient to furnish a definite proof.

In the third place, there was not in the ancient town any



other building to which a stone ceiling of these dimensions, or of such a variety of span, could have belonged. All our knowledge of Greek architectural remains leads us to the belief that these coffered beams appertained to a temple, and, judging from their proportions and style of workmanship, to an archaic Doric peripteros. It cannot be that a building of such importance as that which is attested by this monumental ceiling should have so entirely disappeared that no traces whatever of it should have been brought to light during the course of investigations so thorough as those at Assos. The small size of the town itself scarcely allows us to assume the existence of two temples of this grandeur within its walls.

The proofs that these beams belonged to the coffered ceiling of the temple are stated thus in detail, because the fact of the discovery of the stones in such remote localities — the majority even in the lower town — might otherwise give rise to doubts in regard to the correctness of the identification, in spite of the agreement of every dimension with the plan of arrangement which the writer believes to have ascertained.

As in the Theseion, and other Doric temples, the coffers must have been supported upon transverse beams extending from the entablature, above the third course of the inner side, to the cella wall, — a distance, including the projection of the mouldings upon either side, of 2.14 m. in the pteroma, and 4.06 m. in the vestibule. No remains of these supports were recognized. Tooled as they were upon all four sides, and provided at most with a narrow kyma along the upper edges, it is easy to account for their entire dispersion by later builders, as well as for the impossibility of identifying them among fragmentary remains. From a comparison with the corresponding members of other Doric ceilings, however, they may be assumed to have been about two feet in width. In point of fact, the dimension of 0.615 m., including the projecting

mouldings, if such existed, is found to fit exactly the present case.

In those beams referable to the pteroma and vestibule the coffers varied from 325 to 335 mm. square, averaging 33 cm., while the bridges, which separated them, varied from 16 to 19 cm., averaging a millimeter or so less than 17 cm. Thus the panels were almost exactly half a meter on centres. The dimension of any set of three or more never varied more than one centimeter from the length calculated according to the given mean. This difference, small as it is, quite suffices to allow of the slight adjustment requisite in the total extent of the compartments. And, on the other hand, the agreement of the entire plan to the average dimensions of the lacunaria is so striking as to place the intention of the designer, and the restoration of the ceiling, altogether beyond question.

The width of the pteroma from entablature to wall is, as before stated, 2.14 m. To ascertain the clear span of the

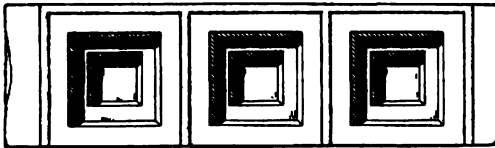


FIG. 19. BEAM FROM THE COFFERED CEILING OF PTEROMA.

(For Scale, see Fig. 20.)

ceiling we have to deduct from this twice the projection of the cyma moulding upon the third course of the inner entablature and upon the wall plate. This dimension must have been about 5 cm. Now, in a compartment four coffers in length, the four sinkings (together, 1.32 m.), the three whole and two half bridges (together, 0.68 m.), and the extra fifth fillet (0.035 m.) very nearly make up the requisite 2.04 m.

The width of these compartments may be determined by the two coffered beams which were found entire. Their clear span from fillet to fillet was, in one case, 1.53 m.; in the other, 1.52 m. One of these beams from the pteroma ceiling is shown in Figure 19.

The number of compartments on the sides and at the rear of the building is at once determined by the known length of beam. From the total length of the cella wall (namely, 22.33 m.) is to be deducted the width of the transverse interior epistyle, which divided the ceilings of the pteromas from that of the vestibule. Like that of the Theseion, this lintel may be assumed to have had the same width as the entablature, namely, 82 cm. The entire length of the pteroma ceilings upon the sides of the building was, consequently, 21.51 m.,—exactly ten times the width of the compartment plus the main beam.

In like manner, the ceiling of the rear pteroma is found to have contained six compartments of the same size, each with twelve coffers. Its actual length of 12.25 m., when thus divided (duly omitting the non-existent sixth beam, and subtracting the kymas upon the side entablatures), shows the compartments to have had a mean width of 1.51 m. The discrepancy here observable, amounting to less than an inch, is entirely negligible in a construction which, as has been seen, everywhere displays much greater irregularities than this in the dimensions of individual members.

In regard to the details of the construction, it can only be presumed, from the striking analogy of the Theseion, that a strong under-tie, higher, but not of greater width, than the other transverse beams, was carried across the sides, in the line of the rear wall of the cella.

As in all other Doric temples, the beams were arranged entirely without reference to the axes of the supports. Con-

trary as this is to our own statical, and too often mechanical, system of design, it is by no means unjustifiable upon æsthetic considerations. The transverse beams, it must be borne in mind, were situated more than five feet above the tops of the columns, and the want of agreement with these is much more apparent in the drawn plan (Fig. 22), than it can have been in reality.

The coffered beams which formed the ceiling above the vestibule were longer than those of the pteroma, each con-

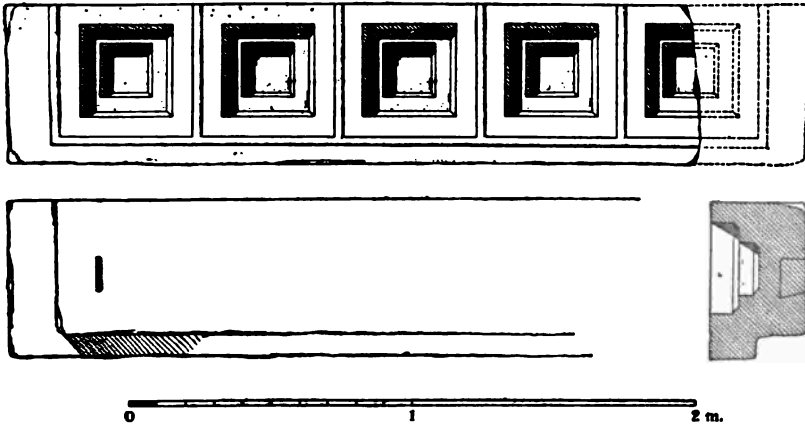


FIG. 20. BEAM FROM THE COFFERED CEILING OF VESTIBULE.

taining five coffers. This is proved by the remains of three of these stones, found among the ruins of the lower town. The first and best preserved, shown in Figure 20, contains four entire panels and about half of the fifth, — only 37 cm. of the total length of the block being missing. The lifting holes, which will be referred to hereafter, were cut upon either end of the upper surface; the one remaining consequently affords no indication of the original length of the stone. But that the coffer beams of this series did actually contain five panels,

and no more, is fully proved by the second and third specimens discovered, both of these showing a single lifting hole cut in the middle of the block, so as to balance it from a single rope, and disposed exactly above the centre of the third sinking. The length of these coffer beams, thus determined, makes it evident that the ceiling above the vestibule was divided into four compartments, there consequently being three beams of support extending from the entablature of the eastern front to the entablature above the pronaos columns. These main beams, being of so much greater span than those above the pteroma, would, *a priori*, be supposed to have had a somewhat greater thickness. And in fact, when we subtract from the total length of the vestibule ceiling, namely, 12.25 m., the projecting cymas upon the side entablatures (together about 10 cm.), and the width of four compartments each containing five coffers of the average size ( $4 \times 2.535$  m.), we find that there remains to the beams of support a thickness of 67 cm. each,—just that increase of strength which the greater span would seem to require. It will be observed that the division of the ceiling of the rear pteroma into eighteen coffers and five beams, and of the equally long front pteroma, or vestibule, into twenty coffers and three beams, permitted this greater thickness to be assigned to the supports of the latter,—the dimensions of two coffers with their bridges being less by about 20 cm. than that of three pteroma beams. And it may be assumed that the choice of four compartments in the vestibule, instead of six, was in some measure influenced by this consideration,—certainly an extremely rational and ingenious method of design.

The division of the vestibule ceiling into an even number of compartments requires a main beam above the central intercolumniation in the longitudinal axis of the building; an arrangement which seems to have been generally followed in

Greek architecture, appearing in the temples of Selinous, the Theseion, the Parthenon, the little fane of Nike Apteros, and the temple of Bassai. The vestibule ceiling of the temple of Assos differs, however, from those of all these temples in the much greater span of its coffered beams; a peculiarity which may have been determined by the before mentioned considerations relative to the thickness of the supports, or may be in part referable to a desire to gain breadth of effect by increasing the size of the compartments in this largest and most important section of the ceiling.

The width of the vestibule ceiling, from the entablature of the front to that above the pronaos columns, was 4.06 m. This agrees very accurately with the length of the compartments, which is to be computed from the size of eight coffers, with their seven whole and two half bridges, plus the width of the extra fillet. Eight coffered beams consequently lay side by side, making a total of forty panels in each compartment.

The three lintels which crossed the vestibule must have been the longest stones employed in the construction of the temple. That they could be quarried without insuperable difficulty is evident from the existence, in the much less carefully built Bouleuterion, of monolithic shafts of the same material, which exceeded the clear span requisite for these temple beams by more than two feet and a half, being 4.8 m. long. Elsewhere in the lower town, among the ruins of ordinary dwelling-houses, is to be seen a door lintel 3.7 m. long. Nevertheless, there are many indications of the care which was taken to diminish as much as possible the weight imposed upon these supports. The coffered beams, already relieved of fully one eighth of their material by the sinkings, were made as thin as was at all consistent with strength; and in the case of those at the ends of the compartments adjoining the entablatures, the stone was cut away from the ends and outer edge of the

upper side so as to form deep steps. In regard to the beams of support, however, little could be gained by this latter expedient, which will be readily understood from a reference to Figure 20. The sinkings of the coffers have the boldness peculiar to Doric ceilings of the best period, being cut to a depth of 17 cm., more than half as much as their total width. Only those practically acquainted with the details of stone-cutting can understand how enormous a work is involved in the execution of so deep a reveal, in so refractory a material. So great an expenditure of time and labor in details so unostentatious is only to be met with in monuments antedating that debasement of the style which may be said to have commenced immediately after the attainment of its greatest perfection in the age of Iktinos. To illustrate this by Assian examples, the shallow coffers of the Prostylos Temple at the west of the Bath, or those of the Tomb of Apollonios in the Necropolis, differ as distinctly from the lacunaria of the temple, both as regards design and workmanship, as do the superficial and pretentious sculptures of the third century from the archaic works of the sixth century before Christ. It is noticeable that in the panels of the temple the depth of the steps, both upper and lower, is made exactly equal to their width, including fillet, the individual beams being thus conceived as square in section. Compare the detail, Figure 25. This is the case with the small coffers of the pronaos, as well as with those of the pteroma and vestibule. Throughout the ceiling the inner coffered beams, that is to say those not adjoining the wall or the entablature, were cut so that each included, at least upon one of its sides, the fillet running along the middle of the bridge; the greatest possible width and strength thus being assured to those stones which were supported only at the ends. This is evident from all the fragments of outer, as well as of inner beams, — the former being always without a

fillet, while one of the latter in each compartment has two fillets. In this way the junctures between the separate beams were in great measure concealed, the bands being slightly sunk, and without doubt painted up to the edges with some bright color.

Reference has already been made to the fact, that in the coffered beams of the pronaos ceiling the sinkings and bridges were made of a much smaller size than in those of the pteroma and vestibule, thus following a principle of design which is evident also in the panels of the Parthenon. Several fragments of these smaller coffers were met with in various parts of the town, one, in particular, being preserved from further

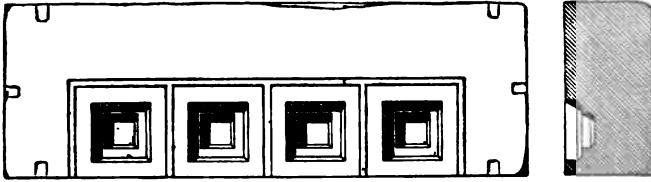


FIG. 21. BEAM FROM COFFERED CEILING OF PRONAOS.

(For Scale, see Fig. 20.)

injury by its position in the walls of the Mosque. A single beam remained in its entire length, Figure 21. The sinkings, 215 mm. square, were separated by bridges 135 mm. broad, with fillets 2 cm. in width, — these dimensions being the average of all the specimens found. The one entire beam contained four coffers, and had a clear span of 1.42 m. This makes it probable that the pronaos ceiling was divided into three compartments, the two adjoining the antæ being each four panels in width, while the central field was square, and seven panels in length. Assuming the transverse beams to have been of the same size as those in the pteroma, or a trifle smaller, this arrangement would very accurately conform to the given



space: the projection of two cyma mouldings upon the antæ walls (together 10 cm.), the two compartments of four coffers ( $2 \times 1.42$  m.), two beams of 62 cm. each, and the central field of seven coffers (2.47 m.) making up the total length of the pronaos, between the antæ, namely, 6.65 m. The only other possibility is that there may have been four compartments, two of four, and two of three coffers each; but such an arrangement must be regarded as extremely improbable, on account of its irregular and awkward character. A square central field, on the other hand, must have been of good effect. The design of the pronaos ceiling would thereby be brought into connection with that of the vestibule, as the main beams of the former would lie almost exactly in the axes of the two middle compartments of the latter. The triple division would also have been the more economical from a constructive point of view, only two transverse supports being required. In regard to the width of the pronaos ceiling, from the entablature above the columns in *antis* to the wall above the door, it is plain that this must have been occupied by seven coffered beams laid side by side; the dimension of this number of sinkings and bridges agreeing very accurately with the total of 2.48 m.

The plan of the entire ceiling, as seen from below, is shown in Figure 22; while sections of the pteroma and of the vestibule and pronaos are given in Figures 23 and 24, drawn to a uniform scale for the purpose of comparing the very dissimilar proportions of these spaces. For a representation of the ceiling of the pteroma on a larger scale, see also the section, Figure 12, and the isometric elevation, Figure 30.

The arrangement of the coffered ceiling, thus demonstrable, is of fundamental importance in the consideration of the ground plan of the temple. It is plain, not only that the size and number of the compartments must have been determined

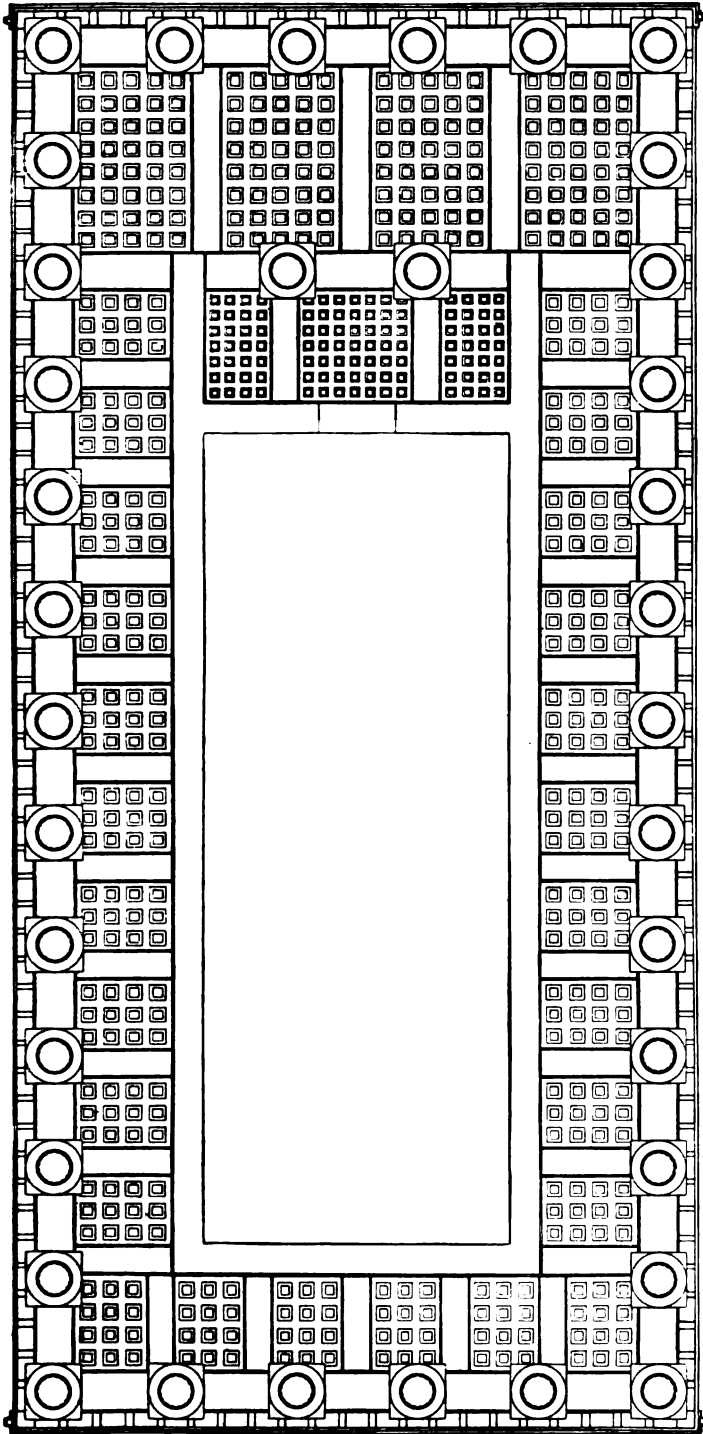


FIG. 22. GENERAL PLAN OF COFFERED CEILING.

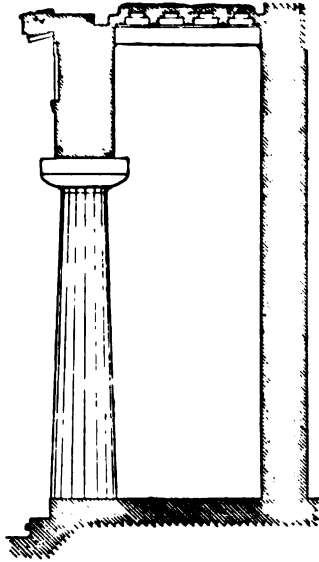


FIG. 23. SECTION OF PTEROMA.

upon before a single stone of the building could be laid, but that the design of the panels must have been drawn out, or figured, by the architect earlier than the plan of the stylobate. The independent ceiling of the vestibule required the antæ and columns of the pronaos to stand in precisely the same transverse axis as those columns of the sides to which they corresponded, because of the epistyle beam which was carried above them. And the fact that, contrary to the normal development of the Doric plan, the pteroma of the rear

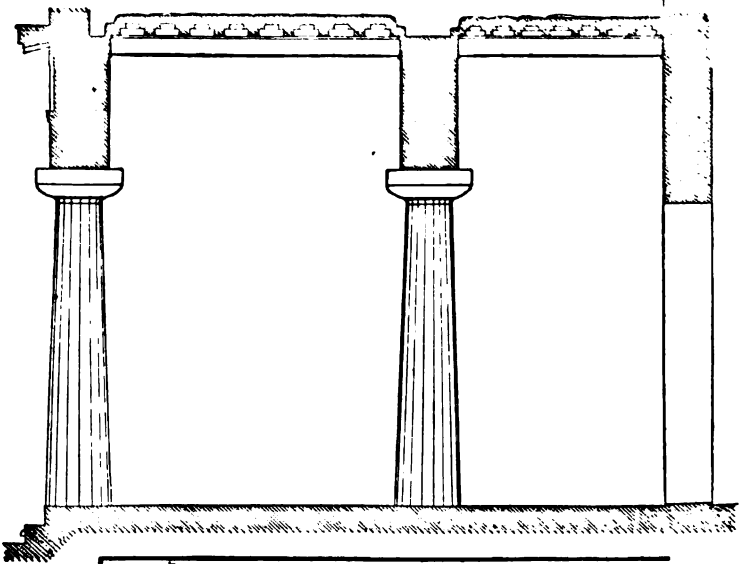


FIG. 24. SECTION OF VESTIBULE AND PRONAOS.

was made equal in width to that of the sides, can only be explained by the adoption, in these spaces, of compartments containing the same number of coffers. More than this: the arrangement of the ceiling must have been determined at the same time as was that simple system of numerical proportions which is to be traced throughout the plan. The width of the compartments was so calculated as to give, when taken six and ten times respectively, the width of the peripteros and the length of the cella. The factor is here of such magnitude, exceeding two meters, that it is not possible to be mistaken in the recognition of its multiples. The known irregularities of the structure, amounting at most to some centimeters, have scarcely to be taken into consideration in this regard. An agreement of the main dimensions, so exact as that set forth in the points in question, certainly furnishes a convincing proof of the correctness of the reconstruction.

In respect to the constructive details of the ceiling, one peculiarity still requires attention. While—fortunately for the proof of the identification—some of the coffered beams were shifted by the same lever as the stones of the stylobate and entablature, and bear the rectangular notches indicative of that method, others were attached to the derrick rope by a lewis precisely like that in use to-day. Upon the upper surface of these latter is to be seen the narrow slot, in section of inverted wedge shape, peculiar to this form of tackle. Such a lewis-hole is shown in the plan and top view of the vestibule beam, Figure 20. From a careful consideration of the section of these blocks, it appears that the slots were so disposed that the centre of gravity should fall between 25 and 35 mm. inside the inclined edge: this proving the chief iron of the lewis to have been about 6 cm. in width at its narrowest part, Figure 25. As far as it was possible to as-

certain from the fragmentary material under examination, the coffered beams of the pteroma and pronaos were invariably lifted by dogs, and only the longer ones, belonging to the vestibule, by the lewis. Certain it is, at all events, that lewis-holes never appear upon those remains of the former,

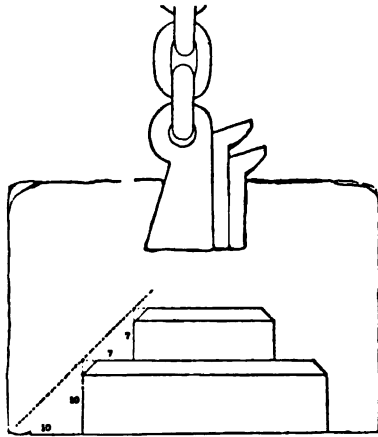


FIG. 25. SECTION OF VESTIBULE CEILING BEAM, SHOWING LEWIS TACKLE.

and dog-holes never upon those remains of the latter which could be identified with certainty. Hence it may be concluded that the derricks erected above the wide span of the vestibule differed from those employed elsewhere in the construction, — having wedge-shaped irons, instead of crampoons, for their tackle, and being, without doubt, considerably lighter in the wood. When possible, as in the case of the pteroma, the lifting apparatus which had been in use for the sub-structure was employed also for the laying of the coffered beams. But when a new derrick was required by the exigencies of the vestibule, its form was altered to suit the case. The light stones of the ceiling did not need to be attached to the ropes by methods so strong and clumsy as the U-shaped grooves, or as the deep slots observable upon the massive cornice blocks. Under these conditions the choice of a lewis was perfectly natural.

It may be assumed that those five-coffered beams upon which only one lewis-hole was cut, and which were consequently lifted from a single support, belonged to the two

outer compartments of the vestibule ceiling,—where the erection of two derricks, one at either end of the beams, would have been impossible on account of the insufficiency of the standing space afforded by the side entablatures. The beams of the two inner compartments, on the other hand, must have been lifted and set by the help of two derricks, two legs of each of which rested upon the entablature above the pronaos columns. The employment of two complete sets of tackle, hence to be assumed, is further indicated by the fact that the lewis-holes situated at the ends of the beams, such as that shown in Figure 20, were not cut slanting towards a common centre, but exactly vertical to the bed surface.

On the first discovery of the coffered beams among the ruins of Assos, it was thought that these stones could not be identified with the temple, inasmuch as the lewis does not appear to have been employed in any other part of the structure. This view seemed to find confirmation in the opinion, entertained at the time, that this mode of lifting, so modern in appearance, necessarily indicated a later age than that to which the temple can be assigned. The only lewis-holes which the writer had previously seen among ancient remains were those in the marble epistyle of the Olympieion at Athens, six centuries more recent than the temple of Assos.<sup>1</sup> The first of these objections, not in itself unreasonable, is fully met by the above considerations, which have on this account been set forth at length. And that this mode of lifting was known to the Greek architects of the sixth and fifth centuries before Christ has been proved, since the

<sup>1</sup> The lewis may possibly be that lifting-iron "the teeth of which fit into holes cut in the stone" mentioned by Vitruvius (X. 2. 2). This, at all events, is the opinion of Piranesi (Giovanni Battista), *Le Antichità Romane*, (Roma, 1756,) vol. iii.

commencement of the investigations at Assos, by the excavations at Olympia, where, as the writer can testify from recent examination of the remains in the Altis, lewis-holes are to be seen on fragments of the oldest ruins. Lewis-holes appear also upon blocks of the archaic Doric temples A, R, D, and T, of Selinous.<sup>1</sup> It is particularly worthy of note that the last named of these — perhaps the most recent of the temples of Selinous, but still erected in the fifth century before Christ — offers an example of that very appearance of the lewis-hole and the U-shaped groove, side by side, which is so remarkable in the temple of Assos. So far, indeed from being an invention of the Diadochi, it can be shown that the lewis was in common use among the Egyptians,<sup>2</sup> — those earliest teachers of the Greeks in all that appertains to the working of stone.

The arrangement of the temple roof is clear in its main features, more or less complete remains having been found of the terra-cotta bands, antefixes, tiles, and gutter, and of the stone acroteria. But as this part of the building was evidently subject to frequent repairs, and even extensive restorations, there is uncertainty in regard to some details of its construction.

The upper surfaces of the corona blocks of the sides are regularly tooled to a slope somewhat less than that of the roof for a space of about half a meter from the outer edge. The ends of the rafters rested upon the horizontal bed behind this projection, all downward pressure upon the projecting portion of the corona being thus avoided. The imbrices, lying

<sup>1</sup> Hittorff and Zanth, *Architecture Antique de la Sicile*, 2d ed., (Paris, 1870,) Books 3, 4, 5, and 8, Plates 16, 44, 47, and 89.

<sup>2</sup> Representations of the lewis appear among the sculptures in the sandstone quarries of Silsilis. Compare Long (George), *Egyptian Antiquities*, vol. i. (London, 1832,) or other books upon Egyptian remains.

directly upon the rafters, must in the lowest course have overlapped the stone so far as effectually to have prevented water from penetrating to the interior. Along the sloping upper surface of the cornice, at a distance of 18 cm. from the front, there is cut a groove, from two to four centimeters deep, the purpose of which was evidently to hold the bent inner edge of a course of ornamental tiles, interposed between the cornice and the terra-cotta antefixes. A single fragment of this original course, now in the Museum at Boston (P. 4258), was found upon the site of the temple during the digging of the second year (Fig. 26). It is of dark gray clay, primed with black, is 54 mm. thick, and bears in relief the lines of a meander ornament. During a restoration of the roof, which appears to have been made at least two centuries after the completion of the building, this moulding was replaced by a band of terra-cotta, of about the same thickness, but of an entirely different material, much more porous and

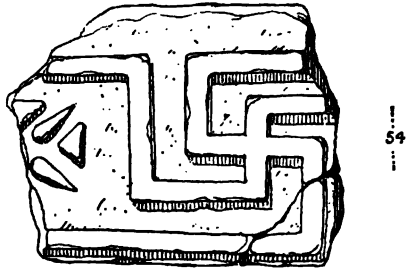


FIG. 26. FRAGMENT OF TILE, WITH ORNAMENTED EDGE, FROM A COURSE INTERPOSED BETWEEN LOWEST IMBRICES AND CORONA.

lighter in color. The peculiarity of this band is that only those parts of its edge which were situated immediately beneath the antefixes were ornamented, these sections, exactly as long as the original antefixes were wide, having a wave pattern, of the usual Greek type, but quite foreign to the Doric grammar of ornament.

The discovery of one of the painted antefixes of the temple, Figure 27, was mentioned in the First Report.<sup>1</sup> This fine

<sup>1</sup> *Preliminary Report*, p. 96.



specimen of archaic Doric terra-cotta, now in the Museum at Boston, No. 4149, is remarkable for the richness of the colors, deep red and black, still to be seen upon it. It is formed of a coarse and porous kernel, coated with a priming of fine clay and powdered flint, technically known as a slip, the oxide of iron



FIG. 27. ANTEFIX. — FROM A PHOTOGRAPH.

contained in which gives to the surface its delicate reddish fawn tint. The inner mass contains numerous crystals of the andesite of Assos, which is thus seen to have been employed by the local potters in the same way as was crushed granite and quartz in those specimens of terra-cotta from the Northern Troad analyzed by Dr. Landerer.<sup>1</sup> The principle of an

<sup>1</sup> Landerer, in Schliemann's *Ilios*, p. 218.

anathyrosis jointing, so consequentially carried out in all the stone-work of the structure, appears even in the antefixes, which were moulded with a slight projection along the edge of the bed surface. Compare the section, Figure 28. In view

of the tendency of terra-cotta to warp in the baking, this precaution must here have been of particularly good effect, inasmuch as these narrow rims could easily be filed to an exact plane. Each of the antefixes was attached

to the cornice by two circular dowels of iron, about 1 cm. in diameter, these evidently having been carried through the intervening plates of terra-

cotta. The holes in which these pins were inserted were neatly bored to a depth of not less than 7 cm. Their positions upon the upper surfaces of the cornice blocks show the antefixes to have been spaced at a distance averaging between 63 and 64 cm. from centre to centre, and thus consequently to have been arranged without the

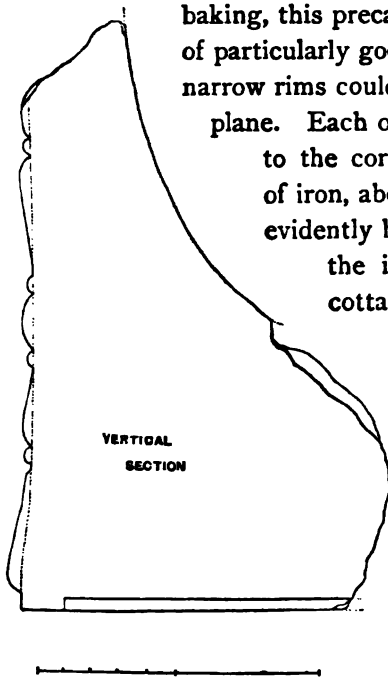


FIG. 28. ANTEFIX SECTION.

slightest reference to the mutules beneath them.

The roofing of Doric temples seems always to have been constructed without purlins or cross slats, — the tiles lying directly upon the inclined timbers. The spacing of the antefixes consequently determines also the distance of the rafters from centre to centre, and the total width of the imbrices. There can be but little doubt that these latter were intended

to be exactly two Greek feet in width, — that is to say, of a dimension commonly employed in all parts of the ancient world.<sup>1</sup> The flat tile shown upon the sculptured slab which was set up in the market-place of Assos as the official standard, has precisely this width of  $63\frac{1}{2}$  cm. with a length of  $71\frac{1}{2}$  cm. It is not possible to ascertain the exact age of this interesting gauge, which will be described in detail hereafter, but it is evident that either the slab is as old as the building of the temple itself, or that the size of roofing tiles common at the beginning of the fifth century before Christ was retained until the period when this official standard was sculptured.

No remains of tegulæ belonging to the temple were found in a state of preservation sufficient to show their dimensions, or their exact shape. It is only certain that they were of angular section, like that sculptured upon the standard, from which they cannot have materially differed in width.

The fragments of three imbrices belonging to the temple — the only ones referable with certainty to that structure — form part of the collection in the Museum at Boston, P. 4175, 4180, 4186. All these are of a coarse-grained terra-cotta, coated with a lustrous black glaze. No two are precisely alike. The side lips of the first and third are of a curved section at the juncture with the body, like that shown by the standard, while the lip of the second is sharply angular. The material of the third also differs from that of the others in being of a yellow color, and having a tinge of purple in the glaze. The varieties of contemporary manufacture, and of the tiles employed in the slight repairs so frequently necessary, quite suffice to account for these differences, which can scarcely warrant the assumption of so many complete restorations of the roofing. As no notches were moulded upon

<sup>1</sup> Dörpfeld, Gräber, Borrmann, und Siebold, *Ueber die Verwendung von Terracotten am Geison und Dache griechischer Bauwerke*. Berlin, 1881.

the corners of these imbrices to receive the ends of those in the courses above or below them, the jointing was rudely effected by cutting off the angles on the inner edge of the upper and outer edge of the outer lip, so as to form a triangular base (Fig. 29). This clumsy makeshift is visible upon the specimens numbered 4175 and 4180.

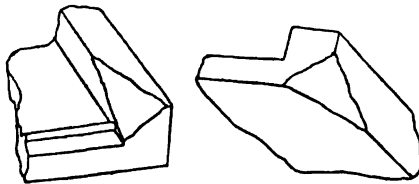


FIG. 29. CORNERS OF IMBRICES, ROUGHLY CUT FOR JOINTING.

The constructive system of the temple thus far considered is shown

in Fig. 30. The gable ends of the building were provided with gutters, in order altogether to prevent, above the entrance, that dripping which was not considered objectionable upon the sides. At the time of writing the First Report, the mere fact of the existence of such a gutter was evident from the gargoyle brought to light during the digging of the first year. In the restoration of the temple which is figured in that volume,<sup>1</sup> this moulding was represented as an anthemion band, — according to the analogy of other Doric temples, which show the crowning member to have been ornamented in the same fashion as coronets, such as that worn by the Juno Ludovisi. The correctness of this restoration was confirmed during the second year by the discovery of a portion of the original sima, now in the Museum at Boston, P. 4152. This important fragment, Fig. 31, is formed of a kernel of coarse and exceedingly hard terra-cotta, coated upon the face with a slip of fine clay, in which the details of the ornament — an archaic astragal and anthemion — are carefully moulded in high relief, projecting 11 mm. from the background. (Compare the section, Fig. 32.) Traces of a dark red glaze are still visible upon the diamond,

<sup>1</sup> *Preliminary Report*, pl. 14.

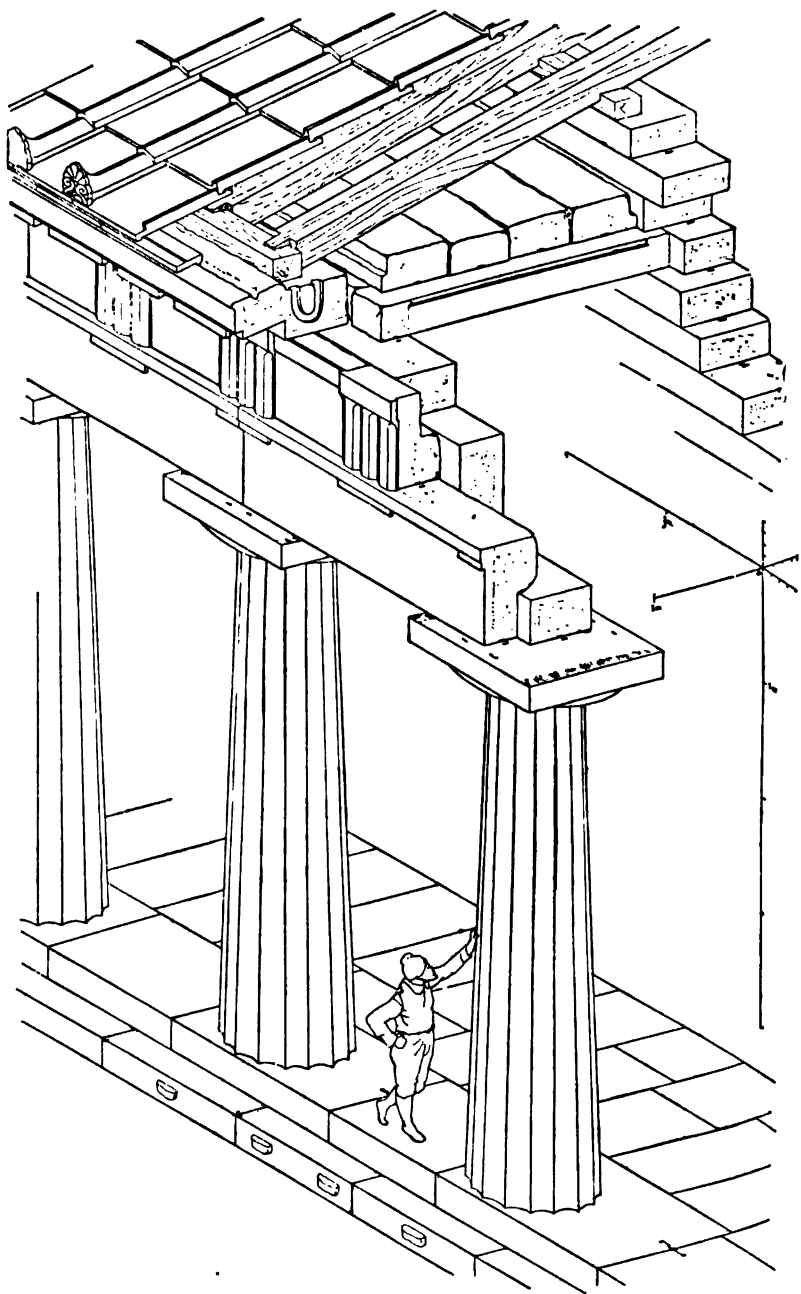


FIG. 30. CONSTRUCTIVE SYSTEM OF PTEROMA.— ISOMETRIC.

while the slip itself is of a light red tint. The inner side is primed with a hard stucco, 2 mm. thick, of a yellowish color. The thickness of the upright body is 3 cm., that of the base something over 4 cm. The separate lengths were attached to the upper surfaces of the tympanon corona by iron pins, the distance between which in the single instance capable of measurement was 53 cm. It will be remarked that the profile of the gutter is perfectly straight-lined, having nothing of the vigorous and graceful curve which characterizes the *simas* of the perfected style.



FIG. 31. FRAGMENT OF GUTTER.  
FROM A PHOTOGRAPH.

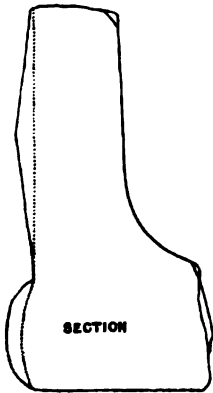


FIG. 32. FRAGMENT OF GUTTER.—SECTION AND SCALE.

The small amount of water collected by these gutters was discharged through four gargoyles at the corners of the building. One of the fine lion's heads of volcanic tufa which performed this function was found during the first year, and has been fully described and illustrated.<sup>1</sup> It is now preserved in the Museum at Boston, S. 1162.

Fragments of the acroteria were found sufficient to convey an understanding of the nature of these prominent ornaments, although not to permit of a complete restoration.

<sup>1</sup> *Preliminary Report*, p. 94, pl. 12.

The ridge acroterion is represented by a block of the same volcanic tufa employed for the gargoyles, having a regular thickness of 18 cm., and cut to the form of a scroll (Fig. 33). The inner convolutions are indicated by rectangular incisions, about 8 mm. broad, which deepen as they retreat from the centre, varying from a shallow notch to a cut fully 5 cm. deep. The spiral line thus varies in appearance from a light gray to a perfectly

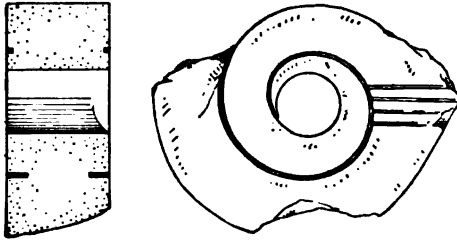


FIG. 33. FRAGMENT OF RIDGE ACROTERION.

black shadow. The circular perforation in the centre of the volute, corresponding to the *ὄφθαλμός* of the Ionic capital, is cut completely through the stone, and probably served for the insertion of disks of some more brilliant material, such as colored glass or gilded metal. A branch is thrown off from the scroll at a point situated one entire revolution from its inner termination, the juncture being marked by four narrow lines, nearly parallel, incised across the volute. The treatment is the same upon both sides of the slab.

It is plain that we have here to deal with the upper scroll of a central acroterion, closely resembling that of the temple of Aigina, now in the Glyptothek of Munich. Remains of a similar kind have also been found among the overthrown stones of the Parthenon; and, taking these facts in connection with the representations of archaic temples upon vases, gems, etc., there is good ground for the belief that a monumental anthemion, *découpé* from a slab of equal thickness, was regarded as the normal decoration of the apex of Doric gables. The sky line of the building was thus emphasized at its most

salient point by an ornament having the forms which appear in the terminations of sacred steles, and frankly treated in profile alone.

In technical respects the fragment closely resembles the Proto-Ionic capital discovered by the writer upon the site of Neandreaia, in the Troad.<sup>1</sup> The material is the same, and seems to have been employed at no other period by the Greek builders of this country. The surfaces are dressed with a fine brush-hammer of the same kind. In both cases the scrolls seem to have been laid out by unwinding a cord, to the free end of which was attached a chisel-point, from a cylinder fixed in the centre of the scroll as an involute, — the *ophthalmos*, perhaps for this purpose, having been cut entirely through the stone. Above all, the spiral lines are in both indicated by peculiar incisions of rectangular section, varying in depth from a slight sinking to a cutting nearly equal to one third the thickness of the stone. In short, the workmanship is that of one and the same school of masonry, and is to be referred to about the same period of artistic development, — a fact which will be referred to in the discussion of the age of the temple.

Of the corner acroteria, the single fragment brought to light was the fore paw of a sphinx or griffin, standing upon a portion of the base by which the figure was attached to the end of the sima, above the gar-



FIG. 34. FRAGMENT OF ACROTERION. PAW OF SPHINX OR GRIFFIN.

<sup>1</sup> Clarke (Joseph Thacher), *A Proto-Ionic Capital from the Site of Neandreaia*. Baltimore, 1886. Reprint from the *American Journal of Archaeology*, vol. ii. p. 1.



goyle (Fig. 34). The stone is now in the Museum at Boston, S. 1105. The carving of the paw displays that mastery in the rendering of animal forms which is so evident in all the sculptures of the temple ; and it is much to be regretted that nothing remains of the body, which would have been especially interesting as an example of the work of the sculptors of Assos in the full round.

It will be remarked, that in the choice of subjects for the corner, as well as for the central acroteria, the temple of Assos agrees with that of Aigina. But in Assos there was particular reason for the representation of the sphinx or griffin in connection with the fane of Athena Polias, one or the other of these animals having formed the heraldic symbol of the city.

The corner acroterion, like the central scroll, the lion's head, and the before mentioned Proto-Ionic capital from Neandrea, is carved of a fine-grained tufa, obtained from quarries in various parts of the Southern Troad. This stone, though stratified by the action of water, is of the same volcanic formation as the andesite of which the temple is constructed. But it is much softer and more easily worked, and was therefore better adapted to the requirements of the earliest Greek stone-cutters. So far as the writer is aware, tufa is never found among remains of a later date than the first half of the fifth century before Christ. It thus bears the same relation to the archaic architecture of the Troad as poros does to that of the Peloponnesos and Sicily. As poros because of its coarseness, so tufa seems to have been discarded by the masons of later ages on account of its friability. This was not wise ; for, though crumbled by a blow, the resistance of this stone to the disintegrating effects of the weather is far greater than that of the andesite. The forms of the lion's head and the delicate fillets of the Proto-Ionic capital

retain a sharpness unequalled in the sculptures or architectural details executed in other materials.

A most careful search was made for materials which might serve to prove the existence of any aperture in the roof of the building for the purpose of admitting light to the interior. But nothing was found which could possibly be brought into connection with such a feature.

All the dimensions of the temple were remeasured at the close of the excavations, and the averages of those members which show perceptible variations were recalculated. The final results are given in the following table: —

	Meters.
Length of lower step . . . . .	30.86
Breadth of lower step . . . . .	14.58
Tread of lower step . . . . .	0.27½
Length of stylobate . . . . .	30.31
Breadth of stylobate . . . . .	14.03
Exterior of cella, length . . . . .	22.33
"    "    breadth . . . . .	7.97
Walls of cella and antæ, thickness . . . . .	0.66
Door of naos, breadth of opening . . . . .	1.65
Interior of naos, length . . . . .	17.71
"    "    breadth . . . . .	6.65
Antæ walls, length . . . . .	3.30
Total width of vestibule, before antæ . . . . .	4.95
"    "    pteroma, sides and rear . . . . .	3.03
Columns on centres, sides, average . . . . .	2.45
"    "    front, average . . . . .	2.61
Lower diameter of shaft, average . . . . .	0.91½
Upper diameter of shaft, average . . . . .	0.64
Height of steps, each . . . . .	0.28
"    column, calculated . . . . .	4.78
"    shaft, calculated . . . . .	4.3
"    capital, average . . . . .	0.48
"    epistyle . . . . .	0.82

	Meters.
Height of frieze . . . . .	0.78
“ cornice . . . . .	0.42
Total height of order, <sup>1</sup> including steps, calculated . .	7.36
Thickness of entablature (epistyle) . . . . .	0.82
Dimensions of coffered ceiling, vestibule . .	4.06 × 12.25
“ “ “ sides . . .	2.14 × 21.51
“ “ “ rear . . .	2.14 × 12.25
“ “ “ pronaos . .	2.48 × 6.65
Angle of gable slope . . . . .	15°

The remeasurement led to the conviction that it is not practicable to express the general dimensions of an edifice constructed of so rough a material as the Assos andesite in units smaller than half a centimeter.

On comparing these figures with those given in the First Report,<sup>2</sup> slight corrections will be remarked. These have become necessary, partly through the greater number of measurements which have gone to make up the averages, and partly through the comparison of the steel tape used by the expedition with an accurate standard, — a task kindly undertaken by Professor William A. Rogers, of Cambridge, Mass. Attention has already been called to the fact, that throughout the structure the dimensions exhibited variations greater than those of any other Greek temple with which the writer is acquainted. The above table in all cases states the average computed from every recognizable block. The labor involved in its preparation may be judged from the fact, that in the case of the columns alone more than one thousand measurements were taken with rod and tape.

<sup>1</sup> In an anonymous review of the *First Report*, published in the *American Architect*, Boston, 1882, it was asserted that the height of the order does not agree with the total obtained by adding together the dimensions of the steps, column, and entablature. The critic, however, omitted to include the lower step in his computation. His total of 7.08 m. increased by the neglected figure gives the 7.36 m. of the original table, here repeated.

<sup>2</sup> *Preliminary Report*, p. 96.

## CHAPTER III.

### TEMPLE SCULPTURES.

NOTWITHSTANDING the fact that during the first year of the work at Assos the plan of the temple had been entirely laid bare, and the greater part of the rude mediæval fortifications which surrounded the upper citadel examined, hopes were still entertained that additional reliefs might be brought to light by further digging in this vicinity. The eleven fragments of the sculptured epistyle which had been already found constituted one of the most valuable results of the undertaking, and nothing was to be left undone from which an extension of this series could be expected. A thorough search was consequently made upon all parts of the Acropolis during the early months of the second year, as has been related in the first chapter of the present volume. The faces of all walls known to have been built after the temple was overthrown were exposed to their lowest courses, while those masses of masonry which were of sufficient thickness to hide sculptured blocks between scarp and counter-scarp were broken up with wedge and hammer. The great square tower adjacent to the mosque was found to contain no recognizable stones of the temple whatever, while the sphinxes from the eastern façade proved to be the only work of sculpture embedded in those masses of rubble and mortar which protected the uppermost step of the Acropolis upon the northeast. But in the most recent of the fortifi-

cation walls, hastily piled up of large stones without mortar, namely, those at the south of the temple site, several epistyle blocks were discovered, one of them sculptured. A block showing the body of one of the sphinxes from the western front of the temple was found, face downwards, upon the surface of the earth, outside the citadel gate. In short, five further fragments of the temple reliefs were discovered during the work of the second year. Three of these form an entire lintel, with a representation of horse-legged centaurs; one completes the heraldic sphinxes from the western front; and the last, a part of a new metope, shows the hind legs of a galloping centaur. Meagre as these results appear in themselves, they are yet of scientific importance, as throwing new light upon the significance and arrangement of the sculptures previously known. The total count of the fragments discovered by the expedition is thus brought up to sixteen, — within one of the number of those removed to the Louvre in 1838.<sup>1</sup> The pieces in the Louvre represent thirteen separate reliefs; those found by excavation, ten.

The largest and most important of the newly found sculptures (Fig. 35) represents four centaurs,<sup>2</sup> galloping, with uplifted fore feet and outstretched arms. The design is frankly

<sup>1</sup> Clarac (*Musée*, vol. ii. part ii.) repeatedly refers to the fragments of sculptures removed from Assos to Paris as seventeen in number. But if we consider the relief of the Banquet to be composed of four separate pieces, the total number of fragments would be eighteen.

<sup>2</sup> The archæological literature upon the subject of centaurs is extensive. The chief authorities in regard to it are referred to by Colvin (Sidney) in his *Representations of Centaurs in Greek Vase Painting*, *Journal of Hellenic Studies*, vol. i., London, 1880. But although he goes as far back as Bochart (Samuel), *Hierozoicon, sive de Animalibus Sacra Scriptura*, Londini, 1663, and Bachet (Claude Gaspar), *Commentaires sur les Épîtres d'Ovide*, La Haye, 1716, his list is far from complete. The most thorough and learned contributions to the subject in recent years have certainly been those of Stephani (Ludolf), in the *Compte Rendu de la Commission Impériale d'Archéologie de St. Pétersbourg*, 1865 and 1873.







FIG 35 RETREATING CENTAURS.





decorative, the differences in position being so slight that the monsters, placed as they were in an architectural framework, and at some height above the eye, must at the first glance have appeared almost like repetitions of a conventionalized ornament. The bodies, entirely similar in outline, are, like the heads, shown exactly in profile; yet, in a childlike striving after clearness of representation, the front legs of each centaur are placed before, while the hind legs are behind, those of the individuals which they adjoin. The pattern-like effect of the composition is greatly augmented by this overlapping. With a single exception, the arms are held out at length; the thumbs of the left hand all point upwards, the thumbs of the right downwards. The right and left legs are precisely parallel, being, as it were, shown in perspective. The tails, made prominent in the relief by too great a projection from the background, fall in the same curve, nearly to the ground.

The third centaur roars, open-mouthed, with a peculiarly naive and archaic expression. He alone has bent one of his arms, as if carrying a club or stone; yet nothing is grasped in his clenched fist.

The body of the second centaur has been split off with clean fracture. Otherwise the preservation of the relief is excellent,—much superior, for instance, to that of the fragmentary and weathered centaur-blocks which have been removed to Paris. Coarse as the stone is, the fillets around the heads, the twisted curls of the hair and beards, and the outstretched fingers, are quite distinct. It will be shown, in a subsequent discussion of the arrangement of the sculptured lintels, that this block was probably situated upon the main façade, above the second intercolumniation from the southeastern corner, and adjoining that relief—discovered by the expedition during the first year—which

represents Herakles in combat with the centaurs who had fallen upon him in the cave of Pholos,<sup>1</sup> presently to be referred to. There can hence be no doubt in regard to the action in which these four centaurs take part: they are fleeing from the arrows of the hero.<sup>2</sup> Their precipitous haste is well expressed by the arms flung into the air, and by the position of the heads; the foremost three of which are stretched forwards in headlong flight, while the last is turned

<sup>1</sup> Some account of this myth was given in the *First Report*, p. 107; but the passages of the ancient authors referring to it were not there cited. Those known to the present writer are as follows. The story of Herakles and Pholos is not mentioned in the *Iliad* or *Odyssey*, though evidently referred to in the pseudo-Homeric *Καμύρος ἢ Κεραύς*, 18. There is, however, reason to suppose that it was included in the narratives of the epic poets and chroniclers of the seventh and sixth centuries before Christ, — notably in those of Peisandros of Kameiros, Panyasis, and Herodoros the Pontian. Quintus of Smyrna (*Posthom.*, VI. 273, and VII. 107), imitating the manner of Homer, towards the close of the fourth century of our era, is without doubt following an ancient epic prototype when he describes the labors of Herakles wrought in relief upon the shield of Eurypylos, and among them the combat of the hero with the centaurs of Mount Pholoe, "when wine and the spirit of strife stirred up these monsters to fight against him in the house of Pholos." A passage of Stesichoros, preserved by Athenaios, XI. 499 B, is the most ancient reference which has been handed down to us. It will be quoted in a subsequent passage of the text. Among the Attic tragedians this exploit of Herakles is referred to by Sophokles (*Trachin.*, 1095) and Euripides (*Herc. Fur.*, 181, 364, 1272). We learn from Eustratios (Commentary to Aristotle, *Eth. Nicom.*, III. 5, ed. Camerarius, Francofurti, 1578, p. 126) that one of the comedies of Epicharmos was entitled 'Ἡρακλῆς ὁ παρὰ Φόλω. The story is alluded to also by Aristophanes (*Frogs*, 38, and the scholiast), and told at considerable length by Apollodoros (II. 5. 4), Diodoros (IV. 12. 3-6), and Tzetzes (*Chil.*, V. 111-137), who are our chief authorities for the details of the exploit. Other references are to be found in Theokritos (*Idyll.*, VII. 149), Lykophron (*Alex.*, 670, with the commentary of Tzetzes), Ptolemy (*Nov. Hist.*, V., ed. Westermann, p. 192), Lucian (*Jup. Tragoed.*, 21), Orpheus (*Argon.*, 410), Philostratos the Lemnian (*Imag.*, XVI.), Polyainos (*Strateg.*, I. 3. 1), Stephanos of Byzantion (p. 670, ed. Meineke). Further, among the Romans, Virgil (*Aen.*, VIII. 294, with the commentary of Servius, and *Georg.*, II. 456), Juvenal (*Sat.*, XII. 45), and Lucan (*Pharsal.*, VI. 388, 391).

<sup>2</sup> The French authorities attached a much less tragic significance to the two reliefs of centaurs, belonging to this representation, which were removed from Assos to the Louvre. The clubs and stones with which the devoted combatants

backwards, in full profile, to cast a glance of terror at the pursuer.

In point of style this block presents a marked contrast to its more archaic neighbor. The most striking difference is that — while the centaurs upon the corner block are represented in that primitive combination of man and beast in which an entire and perfect human being is joined to the trunk and hind legs of a horse, the front legs being human — in this relief the centaurs show the improved form of the monster, with equine fore legs. While centaurs with human fore legs are not unfrequently figured upon archaic vases<sup>1</sup>

are armed were held to be the instruments of pastoral music, and the attacking column itself but a festive train. The official account of the Director of the Louvre (Clarac, *Musée*, vol. ii. part ii.) is delightfully idyllic: "Ceci paraît une course de plaisir, et ce que ces centaures tenaient presque tous à la main gauche et près de leur bouche, pourrait bien être une sorte de trompette ou de cornet dont les sons champêtres accompagnent et excitent leur course joyeuse."

<sup>1</sup> Representations of human-legged centaurs upon archaic vases have been met with by the writer in the following works: Dorow (Wilhelm), *Voyage Archéologique dans l'Ancienne Etrurie*, Paris, 1829, Pl. I. 6, and IV. 2. Witte (Jean Joseph Antoine Marie de), *Pélée et Thétis, Annali*, Roma, 1832, pp. 91-127, engraved in the *Monumenti Inediti* for 1832, vol. i., Roma, 1829-32, pl. 37. Micali (Giuseppe), *Storia degli Antichi Popoli Italiani*, Firenze, 1832, pls. 19, 20, 95. Inghirami (Francesco), *Etrusco Museo Chiusino*, Firenze, 1833-34, pl. 84. Maximis (Franciscus Xaverius de), *Musei Etrusci quod Gregorius XVI., in Aedibus Vaticanis Constituit Monumenta*, Romae, 1842, vol. ii. pl. 100. Roulez (Joseph Emmanuel Ghislain), *L'Éducation d'Achille*, pl. 1. E. *Académie de Bruxelles, Bulletin*, vol. ix., 2me partie, 1842. Campana (Giovanni Pietro), *Antiche Opere in Plastica*, Roma, 1842-52, part 2, pl. 22. Micali (Giuseppe), *Monumenti Inediti*, Firenze, 1844, pl. 27. 4. Michaelis (Adolph), *Athenische Vasen, Archäologischer Anzeiger*, No. 149, 150; *Archäologische Zeitung*, Berlin, 1861, No. 14. Gamurrini (G. F.), *Un Antico Sepolcreto in Arezzo, Annali*, Roma, 1872, p. 279; compare the notes entitled *Scavi d'Arezzo*, by the same writer, in the *Bullettino*, Roma, 1869, p. 72. Heydemann (Heinrich Gustav Dieudonné), *Vasensammlung des Museums zu Palermo, Archäologische Zeitung*, Berlin, 1871. Salzmann (Auguste), *Nécropole de Camiros*, Paris, 1875, pls. 26, 27, 39. Colvin, *Centaur in Greek Vase Painting*, quoted above, pls. 1 and 2, fig. 4. Puchstein (Otto), *Kyrenäische Vasen, Archäologische Zeitung*, Berlin, 1881. Special search among the catalogues of vase collections would with-

and gems,<sup>1</sup> in sculpture they are exceedingly rare. The Assos relief of Herakles and Pholos, discovered by the expedition, is the only known example of the occurrence of such forms in any work of considerable size, or of monumental character. A figurine, found by Ross upon the Acropolis of Athens, and a small bronze relief, lately unearthed at

out doubt reveal many others. In the Museo Etrusco, Rome, is an inedited vase with representations in low relief, one of the human-legged centaurs of which is shown in Fig. 36. Besides two fragments from Kameiros, published by Salzmann in the work quoted above, and the vase given by Colvin, pl. 2, there are in the collection of the British Museum two fine inedited vases with representations of human-legged centaurs. These are numbered B. 116, and B. 420.



FIG. 36. HUMAN-LEGGED  
CENTAUR.

Upon a Vase in the Museo Etrusco,  
Rome.

The scene illustrated by the latter is the reception of Herakles by Pholos. The writer has observed unpublished vases showing human-legged centaurs in the Louvre and the Museum of Berlin; but as the purpose of the present note is merely to provide proof for the statement in the text, a further enumeration is unnecessary.

A curious uncertainty of form — a hesitation between human and equine members — is noticeable in some representations referable to a period of transition. Thus centaurs with human fore legs terminating in horse's hoofs are shown upon an archaic vase published by Helbig (Wolfgang), *Imitazioni di Vasi Corintii, Annali*, Roma, 1863, tav. I. The same combination appears upon one of the gems in the British Museum, referred to in the following note.

<sup>1</sup> In the British Museum are two gems representing human-legged centaurs; one from the Hamilton, the other from the Castellani collection. At the time of writing they are not designated by catalogue numbers. Woodcuts of them are given by Colvin in the Essay before quoted, figs. 2 and 3. Two other gems are illustrated by Micali, *Storia*, pl. 46. A striking peculiarity of these latter is that both of the human-legged centaurs are winged; the one, with the front legs terminating in talons, having the wings extended from the human shoulders, the other from the horse's back, Pegasos-like. These additions open a wide vista of monstrous formations, and prove the agglutinative character of such types, which may very probably have arisen, as Mr. Murray has suggested to me, through the combination of various heraldic symbols, like the quarterings of our coats of arms. A fifth gem, showing a human-legged centaur, and published by Gori (Antonio Francesco), *Museum Florentinum*, Florentiae, 1731-66, vol. ii. pl. 39, appears, as well as can be judged from the exceedingly mannered engraving, to

Olympia, have been mentioned in the Preliminary Report<sup>1</sup> as being the only parallels to this representation which are to be found in the wide field of Greek decorative sculpture. To this may be added two Etruscan bronzes,<sup>2</sup> between three and four inches in height, and, notably, a terra-cotta figurine from Cyprus, now preserved in the Metropolitan Museum of New York.<sup>3</sup>

The combinations of human with animal forms, which played so great a part in the sculpture of Egypt and Mesopotamia, were rarely adopted, and never favorites in that of Greece. It is hence the more remarkable that, in this type of centaur, as in the primitive gorgones (*μορμολυκεία*), the archaic art of Hellas and Etruria even exceeded the malformations in vogue among the barbarians. Oriental art does not appear to have ever figured a quadruped with human legs. Such a form was, however, too monstrous to be long retained by the rapidly advancing sculpture and painting of the Greeks, and was soon proscribed as disgraceful. Entirely apart from its horrid

be a forgery of the later Renaissance. A gem in crystal, representing a female centaur of this type drinking from a rhyton, in the National Library at Paris (Chabouillet, *Catal. des Camées*, No. 1689), is engraved in A. Bougot, *Philostrate l'ancien. Une Galerie antique*, p. 361.

A bronze vase with a representation of this kind is given by Helbig (Wolfgang), *Ciste Prenestine, Bullettino*, Roma, 1866, p. 144, No. 16; and a large cylinder of ivory ornamented with reliefs, is published by the same writer in the *Bullettino*, 1874, p. 210, in an article entitled *Scavi di Chiusi*. This highly interesting cylinder is now in the Terrosi collection, Cetona.

<sup>1</sup> *First Report*, p. 110, notes 1 and 2.

<sup>2</sup> The one published in Gori (A. F.), *Museum Etruscum*, Florentiae, 1737-43, pl. 65; the other by Braun (Emil), *Bronsi Etruschi, Annali*, 1836, p. 61, engraved in the *Monumenti Inediti*, Roma, 1836, vol. ii. pl. 29. Compare the references in the *Bullettino* for 1835 and for 1836. It is apparently the latter of these to which reference was made by Helbig, in a paper read at an archæological meeting and reported in the *Bullettino* for 1871, No. IV.; if this be not the case, then a third bronze, closely resembling the other two, is to be added to the list.

<sup>3</sup> See *Note on a Terra-Cotta Figurine from Cyprus of a Centaur with human Fore Legs*, by Thomas W. Ludlow, in *Bulletin of the Archaeological Institute of America*, I., Jan., 1883, Boston; with a photograph of the object.

nature, this combination was at a disadvantage, because not lending itself to the exigencies of artistic representation. In a state of rest, the dissimilarity of the legs might not be found intolerable, but any vigorous movement became at once unmanageable and ludicrous, — the mode of locomotion of the human members being entirely unlike that of the equine. The awkward sprawl of the human-legged centaurs upon the Assos epistyle, for instance, must have formed a striking contrast to the easy gallop of their neighbors. Thus the primitive conformation of the centaur, in which a horse's trunk and hind legs were attached as an outgrowth to the complete body of a human being, was given up after but few experiments. The more perfect structure seems to have come into general use some time before the building of the Assos temple, — as early, at all events, as the time of Pindar, who refers to centaurs as horse-legged, "from their dam inheriting the parts below, from their sire the parts above."<sup>1</sup> In fact, the earlier conception, which in monumental stone-carving is represented only by our relief, ultimately became altogether foreign to the Greek mind, as is evident from a forcible, albeit somewhat coarse, epigram preserved in the Anthology of Planudes :

Ἀνδρόθεν ἐκκέχυθ' ἵππος· ἀνέδραμε δ' ἰππόθεν ἀνὴρ,  
ἀνὴρ νόσφι ποδῶν, κεφαλῆς δ' ἄτερ αἰόλος ἵππος·  
ἵππος ἐρεύγεται ἄνδρα, ἀνὴρ δ' ἀποπέρδεται ἵππον.<sup>2</sup>

And even more directly from another :

Ἴππος ἔην ἀκάρηνος, ἀνὴρ δ' ἀτέλεστος ἔκειτο  
ὄν γε φύσις παῖζουσα θεῶν ἐνεκέντρισεν ἵππῳ.<sup>3</sup>

<sup>1</sup> Pindar, *Pythia*, II. 88, ed. Heyne. Müller (*Archäologie der Kunst*, ed. 1878, § 389) seems to place too late a date for this transformation of the human-legged to the horse-legged centaur, stating that it took place "etwa seit Pheidias." Schmitz (Article *Centauri*, in *Smith's Dictionary of Greek and Roman Biography and Mythology*, London, 1876) likewise states that the latter form "was probably not used before the time of Phidias and Alcamenēs."

<sup>2</sup> *Anth. Palat.*, Append. Planud., 115.

<sup>3</sup> *Ibid.*, 116.

The appearance of three human-legged centaurs upon the Assos relief suffices to disprove the assumption of Klügmann,<sup>1</sup> who has argued that this form was not that in which the archaic designers figured to themselves the entire race of centaurs, but was a distinction with which the more humane and mild-mannered among them were alone honored: Cheiron, and occasionally Pholos, being thus anthropomorphized, as it were. Still it must be admitted that the human members were retained until a somewhat later date in the case of Cheiron, who, from the nature of those mythological scenes in which he appears, was not commonly represented in violent action.<sup>2</sup>

While the Herakles relief is unquestionably the more characteristic and interesting work, the block newly discovered displays a great advance in respect to technical ability. The bodies of the horse-footed centaurs are much more correctly formed; the curves of back and belly show a direct observation of the living animal, and contrast strongly with the lank and almost cylindrical bodies of their human-footed neighbors. The action of the hind legs, though entirely conventional, is more true to nature; and the same may be said of the human trunks, which are better proportioned, and modelled with a greater understanding of the muscular development. These remarks apply also to the arms,—much too short in the more archaic relief. The heads are of a like type,—the hair

<sup>1</sup> Klügmann (Adolph), *Sulla Maniera di Rappresentare i Centauri*, *Bullettino*, 1876, p. 140. It is interesting to note in this connection that the ancient tradition (Aelian, *Var. Hist.*, IX. 16) represented Mares, the centaur of the Ausones, to have been human-legged.

<sup>2</sup> Almost all those vases of later date which have been referred to as showing human-legged centaurs represent the single figure of Cheiron. It is worthy of especial notice that on the François vase (Braun, Emil, *Vaso di Clitia ed Ergotimo*, *Annali*, 1848, engraved in the *Monumenti Inediti*, 1844-48, vol. iv. pls. 54, 55) Cheiron has human legs, while all the other centaurs are horse-legged.



looped above the ears and falling in a thick mass upon the back of the neck, while lying so closely upon the skull itself as clearly to show its round outline. In the new relief they are smaller and in better proportion with the figures, but much less expressive, being almost entirely free from that uncouth and goblin-like aspect which is so attractive in the centaurs of the corner block, because so well in keeping with the wild nature of this mountain roaming race, infuriated by the odor of the wine which Pholos had broached for the hero.

The most interesting, and in scientific respects by far the most important, of all the Assos reliefs, namely, that representing Herakles, Pholos, and the three human-legged centaurs (Fig. 37), fell to the share of the explorers in the official division, and is now in the Museum of Boston, No. S. 1157. The main features of this work have been referred to in the Preliminary Report.<sup>1</sup> In one respect that description was at fault. It was stated that, judging from the position of the middle regula, and the width of the intercolumniations, this block is, upon its upper surface preserved in its original length. Hence it was concluded to be hardly possible that the body of a horse could have been sculptured upon the missing portion of the relief, and that the figure standing immediately behind Herakles was consequently not a centaur, but a human being.<sup>2</sup> In conformity with this view the figure in

<sup>1</sup> *First Report*, pp. 107-111, Pl. 15.

<sup>2</sup> A curious argument is advanced by an anonymous writer in the *New York Critic*, July 1, 1882, in respect to this figure. The author of a review of the First Report states that there exist ancient representations of centaurs which show them not as quadrupeds, but as perfect human beings with the sole addition of a horse's tail. Hence, it is argued, the individual standing behind Herakles on our relief, although destitute of a horse's trunk and hind legs, may nevertheless be held to be a centaur, and in fact Pholos himself, who is "thus represented to distinguish him from the other centaurs." It is scarcely necessary to enter into a criticism of such a confusion between the clearly differentiated forms of satyrs and of centaurs.







FIG. 37. HERAKLES AND PHOLOS.



question was identified as Iolaos, the companion of the hero, who not infrequently appears in ancient representations of this scene. A calculation of the original length of the blocks, with reference to the positions occupied by the separate reliefs upon the epistyle,—in this case to be determined with certainty,—has shown the incorrectness of the identification at first adopted. Owing to the excessive irregularity of all the members of the entablature, no estimate of dimensions can pretend to greater accuracy than that which may be expressed in decimeters, but even this is sufficient to furnish a proof. To ascertain the width of the intercolumniation, from centre to centre of the columns above which the block was placed we have to add to the total length of the two fragments found the length of the half-regula which is missing upon the left-hand side. The result thus obtained—namely, a minimum of 2.7 m.—makes it evident that this relief was above one of the corner intercolumniations of the front, which alone are of so great a dimension. Now the position in which the two fragments were discovered—close to the southern corner of the eastern front—leaves little doubt as to which of the four corner intercolumniations it is to be assigned. The exact spot in which the Herakles relief was unearthed is indicated upon the plan of the Acropolis given in the First Report.<sup>1</sup> It may be here remarked that those sculptured epistyle blocks which were incorporated into the rude masonry which surrounded the temple plan seem never to have been moved, after their fall, from the front to the rear of the building, or *vice versa*. This fact, naturally to be assumed in the absence of contrary evidence, is actually to be proved in the case of all those other reliefs of which the position upon the entablature is recognizable from other considerations; namely, the two fragments of the sphinxes now

<sup>1</sup> *First Report*, Pl. 2, B.

in Boston, and the horse-legged centaurs of the eastern front, and the two fragments of the other sphinxes, and the lion and boar from the western front. In the case of the Herakles relief the conclusion drawn from the place of discovery is confirmed by the general direction of the composition, which would naturally have been advanced towards the centre of the façade, rather than towards the sides of the building. The movement from left to right, so decidedly pronounced, would thus indicate the relief to have occupied either the northern corner of the rear, or this southern corner of the front. To contain the full body of a centaur behind the trunk of the individual standing next to Herakles would, indeed, require the panel to have had a length of about three meters, — greater by 20 cm. than any intercolumniation in the building, — so that the identification set forth in the First Report was not without a semblance of reason. The difficulty is, however, entirely removed, and a further argument to prove the position of the relief gained, by the recognition of the fact that the corner epistyle was lengthened beyond the axis of the corner column by one half the thickness of the entablature, so that there must have been a length of three meters from the right-hand side of this relief to the corner of the building. It does not, of course, follow that the lintel itself was of this length, for the corner epistyle blocks were not mitred, but overlapped, and, as the lap and true corner seem, as will be subsequently explained, to have been cut upon the beams of the side, we have to deduct from the given total the width of these overlaps, which, judging from the lower thickness of the epistyle beams, and the length of the two other corner beams, was planned to equal somewhat less than one half of the corner regula, or about 20 cm. The original length of the relief representing Herakles and the centaurs may thus be asserted to have been very nearly 2.8 m., — or,

in other words, of just that dimension which, taken together with the overlap, would be necessary to contain the body of a centaur behind the hero. The figure called Iolaos in the Preliminary Report is hence, beyond all doubt, that of Pholos, whose presence is scarcely less necessary for the identification of the scene than that of Herakles himself.

Pholos holds in his left hand the drinking vessel which, in the most ancient reference to the story that has come down to us, the friendly centaur is described as handing to his guest :

Σκύφειον δὲ λαβὼν δέπας ἔμμετρον ὡς τριλάγυρον,  
πιῖν ἐπισχόμενος, τό γὰρ οἱ παρέθηκε Φόλος κεράσας.<sup>1</sup>

<sup>1</sup> Stesichoros in Athenaios, XI. 499 B. The form of drinking vessel illustrated by Jahn (Otto), *Beschreibung der Vasensammlung König Ludwig's in der Pinakothek zu München*, München, 1854, pl. i. 6, (re-engraved and more generally accessible in Guhl and Koner, *Das Leben der Griechen und Römer*, ed. 3, Berlin, 1872, fig. 198. 4.) as a skyphos, is precisely like that held by Pholos in the relief discovered at Assos. This form of drinking vessel is termed by Panofka (Theodor), *Recherches sur les véritables Noms des Vases Grecs*, Paris, 1829, pl. 4, a kotyle; but that this identification is incorrect may be plainly seen from the testimony of Athenaios (XI. 478 B), who expressly states that the kotyle has but a single handle. Stephani, *Compte Rendu*, 1873, is likewise in fault when describing the skyphos as a *henkelloses Gefäss*, — for that the skyphos was provided with handles is plain from a reference of Simonides (in Athenaios, XI. 498 E) to an *οὐατόβερρα σκύφον*. The correct identification of the ancient name is due to Gerhard (Eduard), *Intorno le Forme di Vasi Volcenti*, *Annali*, 1831, p. 257, and *Monumenti Inediti*, 1831, pl. xxvii. 46-49; also, *Ultime Ricerche sulle Forme di Vasi Greci*, *Annali*, 1836, pl. c. 24, 25, and 47, and *Berlin's Antike Bildwerke*, Berlin, 1836, Beilage A, No. 28. Compare the critical remarks upon this point by Letronne (Jean Antoine), *Observations Philologiques et Archéologiques sur les Noms des Vases grecs*, Paris, 1833.

The skyphos, a homely substitute for the kantharos, seems to have been particularly in use among country people. Thus Asklepiades of Myrlea (in Athenaios, XI. 498 F) says, "None of those who live in towns, not even citizens who are but moderately well off, use the skyphos, — which is employed only by swineherds and shepherds, and men in the fields generally." Alkman (in Athenaios, XI. 499 A) speaks of a huge skyphos "such as is owned by shepherds"; and Eumaios offers wine to Odysseus in a cup of this kind (*Odys.*, XIV. 114). Theokritos (*Idyll.*, I. 143) even uses the word for wooden milk pails: evidently such two-handed vessels as are still employed by the herdsmen of Sicily and Calabria in dipping out whey from the enormous caldrons in which the milk is



The left hand is raised as if in deprecation of so rude an interruption of his hospitality. The quiet and almost stately attitude of Pholos contrasts strongly with the wild gestures of the other centaurs. His head is of a higher type than theirs, being smaller and better formed. He is bearded like the others, but his beard is shorter and more comely. The chest, which is shown in direct profile, is full and well formed; and though the head, supported upon too short a neck, droops slightly forward, as if to indicate the physical weakness of this aged centaur, the carriage of the shoulders is erect and dignified. In fine, the endeavor of the sculptor to give a certain nobility to this personage is clearly apparent.

The other figures were correctly identified in the Preliminary Report. Hence the following remarks concerning them should be taken in connection with the general description of the relief, and of the scene which it represents, given in that volume.<sup>1</sup>

The chief attention of the sculptor was evidently devoted to the figure of Herakles, which displays a closer observation of nature, and greater care in execution, than do the centaurs. In spite of the surface weathering, the details of the head are still distinct, and prove how firmly the outlines must originally have been marked. Though elevated considerably more

boiled. In short, the vase is precisely such a one as might be supposed to be in the hands of the more civilized of the centaurs, and is fitly representative of the rude hospitality which Pholos offered to the Doric hero.

To this it may be added that the skyphos had come to be peculiarly identified with the gluttonous Herakles, who was said to have originally used this kind of a cup while on his expeditions (Athenaios, XI. 500 A). Macrobius (*Sat.*, V. 21) says, "Scyphos Herculis poculum est." "To drink the cup of Herakles" evidently came to mean excessively large potations. (Plutarch, *Alex.* 75.) Compare Virgil (*Aen.*, VIII. 278) and the commentary of Servius on this passage. Lucian (*Conviv.*, 14) particularly refers to the position in which the ancient Greek painters were wont to represent Herakles, drinking in the cave of Pholos, and holding this cup in his right hand.

<sup>1</sup> *First Report*, pp. 108-110.

than seven meters above the eye of the beholder, every feature must have been readily distinguishable, even without the emphasis of color. The hair, though by no means so closely cropped as that of Herakles is usually shown in later times, is comparatively short, as becomes an athletic hero. Masses of clustering curls, the separate locks of which were without doubt represented by painted spirals, are indicated by a broad welt above the brow, and by a short chignon. Between these a sharply pronounced curve displays the outline of the skull, high and short, — in fact of the same hypsibrachycephalic type as the crania of the ancient Assians themselves. The features are those of a young man. The receding forehead is higher and somewhat more convex than that customary in the more advanced style, forming with the coarse and prominent nose a profile resembling that of the heads of such statues of athletes as the so-called Apollos of Thera and Tenea. The eye, standing in a slightly oblique position, is full and almond-shaped, almost as if drawn *de face*. The lips are thick and pouting, nearly touching the lower surface of the nostrils; the corners of the mouth are still drawn upwards, but the archaic smile has almost vanished. The inferior jaw is massive; the chin round. In short, the face is that of a vigorous, unintellectual athlete, excellently characterized.

Although the energetic movement of the body has evidently been studied from the living model, and is rendered with considerable freedom and technical skill, it is in the forms of the trunk and lower limbs, rather than in the head, that we meet with distinct reminiscences of archaism. Thus the waist is unnaturally compressed; the buttocks are too small, and yet too protruding; the upper part of the legs is of too convex a curve upon the front side; the knees, especially the left, are insufficiently indicated, and too much rounded in outline. The feet are small, the heel and ankle having but little projection,

while the toes are too long and too flat. Now all these features are characteristic of black-figured vases of a style which, without taking into account the influence of provincial backwardness, would be ascribed to the end of the sixth, or first decade of the fifth century before Christ. On the other hand, a highly intelligent observation of nature is no less noticeable in those parts which are in action, and in the representation of which no set model of forms and proportions can have been employed by the designer of this figure. Indeed, the treatment is here extremely skilful. The swift yet cautious stride upon the slippery ground;<sup>1</sup> the inclination of the trunk, thrown forward in pursuit; the outstretching of the arms, so as to hold the bow entirely free; the slight lowering of the head, in order to take sight of the arrow;—all these movements are clearly expressed, while the body is brought into perfect equilibrium. The muscles of the right upper arm are distended with the effort of drawing the stout bow; the left arm is stiffened in full resistance. The chest, expanded as if by a deep breath, is excessively thick, this effect being produced by a greater exaggeration of the muscles of the back than of those of the breast. This peculiar formation evidently resulted from an attempt to indicate the displacement of the right shoulder by the strain of the arm, but even taking this into account, the back appears too round, and even slightly humped. The difference in plane between the lower ribs and the abdomen is so marked as to cause the latter to appear unnaturally contracted. This extreme development of the trunk is, however, entirely in accord with the character of the hero, who was conceived by the Greek sculptors of all ages

<sup>1</sup> Nephelē, the cloud mother of the centaurs, had during the combat deluged the earth with torrents of rain, so that Herakles could hardly stand upright upon the slippery ground, while his four-footed opponents were not thereby discomfited. Diodoros (IV. 12. 6) makes particular mention of this picturesque detail of the legend.

as a human being of extraordinary strength and energy, rather than as a demigod endowed with supernatural powers. It has been truly remarked that the testimony of Greek writers<sup>1</sup> clearly shows us that what seems an undue exaggeration in such figures as these was but the emphasized idealization of the athletic form as it appeared in reality.

Herakles attacks the affrighted centaurs with the bow so closely connected with several of his exploits. His peculiar skill in the use of this weapon was renowned in the Homeric poems,<sup>2</sup> and was, throughout antiquity, so striking a characteristic of the hero that the bow must be regarded as his original attribute. As Preller<sup>3</sup> has ingeniously surmised, the 'Ομηρικὴ στολή of the Herakles of the poet Xanthos<sup>4</sup> signifies this accoutrement of the hero as an archer, as distinguished from his further equipment with a club, which, if we are to believe the statement of Megakleides, preserved by Athenaios,<sup>5</sup> was first introduced by Stesichoros. Thus the reference of Pausanias<sup>6</sup> to the primitive σχῆμα of Herakles upon the chest of Kypselos in Olympia asserts the hero to have there appeared as a bowman, — of the same type, doubtless, as the 'Ηρακλῆς

<sup>1</sup> For instance, Aristophanes, *Clouds*, 1009-1014.

<sup>2</sup> It was with the bow that Herakles wounded Aides, and even Hera herself (*Il.*, V. 395). Compare also the renown of Herakles as an excellent bowman in the *Odyssey* (VIII. 224 and XI. 606). It is quite possible that the last mentioned of these passages, relating to the descent of Herakles to the infernal regions, is the interpolation of a later age (compare the special literature of this question, in particular Lauer, *Quaestiones Homericae*, Berolini, 1843); but we may nevertheless recognize in the tradition there recorded a true exponent of the primitive conceptions obtaining in regard to the hero, who is described as "armed with a naked bow, and an arrow at the string, . . . always like unto one about to let fly a shaft." The peculiar skill of Herakles in archery was celebrated also in later ages; e. g. Euripides, *Herc. Fur.*, 157-164, 188, etc.

<sup>3</sup> Preller (Ludwig), *Griechische Mythologie*, Leipzig, 1875, ii. 129, n.

<sup>4</sup> Xanthos in Athenaios, XII. 512 F.

<sup>5</sup> *Ibid.* For the costume of Herakles see Müller's *Dorians*, B. ii. ch. 12, § 1.

<sup>6</sup> Pausanias, V. 17. 11.

ροξότης in combat with a human-legged centaur, shown upon the archaic bronze relief before mentioned as having been recently unearthed at Olympia, or as the Herakles of the Assos relief of the same subject, now under consideration. By its contrary flexure we recognize the weapon which he here holds in his hand to be that given to him by the Scythian shepherd Teutaros, earliest instructor of the Dorian hero in archery,<sup>1</sup> — a legend significant, it may be surmised, of the Oriental origin of all that was known to the primitive Greeks in regard to the bow and its fittings.<sup>2</sup> No doubt can exist concerning the peculiar form of this Scythian bow. Its double curve, re-entering to the bar grasped by the hand, is compared by Agathon<sup>3</sup> to the shape of the cursive  $\Sigma$ , as written towards the close of the fifth century before Christ. Moreover, the ancient geographers<sup>4</sup> were accustomed to compare the outline of the Black Sea to that of a Scythian bow; the northern coast, with its two great gulfs separated by the promontory of the Crimea, standing for the bow itself, the comparatively straight southern coast for the string. This graceful contrary

<sup>1</sup> Scholiast to Theokritos (*Idyll.*, XIII. 56), quoting from Herodoros. Compare Lykophron, *Alex.*, 56 and 458, with the commentary of Tzetzes, and also on v. 50.

<sup>2</sup> The Oriental origin of Greek archery has been referred to in the previous chapter, p. 45, in connection with the bronze arrow-heads of Persian shape found upon the Acropolis of Assos. Raoul-Rochette (Désiré), *Sur l'Hercule assyrien et phénicien, considéré dans ses Rapports avec l'Hercule grec*, (*Mémoires de l'Académie des Inscriptions*, Paris, 1848, vol. xvii., deuxième partie,) has called attention to the striking similarity between the Ἡρακλῆς ροξότης of the archaic coins of Thasos, and the types of the royal archer upon the darics of Persia.

<sup>3</sup> Agathon, in Athenaios, X. 454 D. This was, of course, not the later sigma of segmental shape. Euripides and Theodektes (in the same passage of Athenaios), the one writing in the same age as Agathon, the other nearly a century later, both compare the form of the letter sigma to that of a wavy lock of hair. The contrary flexure of the letter, and of the bow which it is said to resemble, is thus fully assured.

<sup>4</sup> Dionysios Periegetes, 156. Strabo, II. 5. 22, p. 125. Ammianus Marcellinus, XXII. 8. 10.

flexure, so foreign to the nature of wood, must have resulted from the employment of the horns of animals in the manufacture of bows, — the bases of two horns being attached by a splicing of a metal ferule to a short, straight middle piece. Such were the weapons so accurately described by Homer; <sup>1</sup> while the bow thus came, even in later ages, to be termed *κέρας*.<sup>2</sup>

The Scythian bow was the favorite arm of Herakles, and continued to be a characteristic attribute of the national hero until the latest ages of Greek literature and art.<sup>3</sup> As will be remembered, this was the very weapon given by Herakles to his friend and armor-bearer Philoktetes,<sup>4</sup> which, after conquering the islands near the Troad and expelling from them the Carian (Lelegian) population,<sup>5</sup> finally terminated the Trojan war by killing Paris.<sup>6</sup> And it is not impossible that the Aeolic colonists of Assos, the Greek inhabitants of the ancient capital of the Leleges, may have chosen this episode of the Centauro-machia from among the many deeds of Herakles on account of the connection of this invincible bow with the traditional history of the land which they occupied. As shown upon our relief, it is a stout and very short weapon, — scarcely more than half as long as the bow of Pandaros described in the *Iliad*. So diminutive is it, indeed, that we

<sup>1</sup> *Iliad*, IV. 105; *Odyssey*, XXI. 395.

<sup>2</sup> As, for instance, in the passage of Strabo before quoted, and Theokritos, *Idyll*, XXV. 206.

<sup>3</sup> A reference of the twelfth Christian century to the Scythian bow as an attribute of Herakles is contained in the commentary of Tzetzes to Lykophron, *Alex.*, 917.

<sup>4</sup> Diodoros, IV. 38. 4. Philostratos, *Her.*, V. 1. Philostratos the Lemnian, *Imag.*, 17. Scholiast to the *Iliad*, II. 724, ed. Bekker, 90 B, 6. Hyginus, *Fab.*, 36, 102, and other ancient authorities.

<sup>5</sup> Philostratos, *Her.*, V. 3.

<sup>6</sup> The ancient authorities in support of this version of the legend, ranging as they do from Sophokles down to Kedrenos, are too numerous, and in part at least too well known, to be quoted here

are led to suspect that archery was but little practised by the Assians at the period to which this sculpture is to be ascribed. There is ample space upon the relief for the introduction of a larger bow, and the careful observation of nature, so evident in the muscular development of the bowman, could not otherwise have failed to be extended to this important adjunct, which thus appears rather as a model, a plaything, in short a conventional attribute, than as a really effective weapon. Some acquaintance with the nature of the bow is shown in the thickening of the tips by the ends of the cord wound around them; but the curved horns do not taper sufficiently, and the string is stretched to much too acute an angle. Moreover, the arrow is not represented, as it should have been, with a bow thus bent in actual use.

The fact that Herakles is depicted at Assos without the lion's skin is exceptional among archaic works of art, — there being but very few instances of this guise upon black-figured vases,<sup>1</sup> — and may perhaps be adduced in support of the belief that the date of the temple is to be placed at least as late as the close of the Persian war. A more forcible argument to the same effect is to be based upon the adoption of a youthful and beardless type in this figure. We have in the head of Herakles a very definite indication that the sculptures of Assos are to be assigned to the first half of the fifth century before Christ, rather than to a more remote date; for, while upon black-figured vases belonging with certainty to the sixth century before Christ, Herakles is almost invariably shown as bearded, he has here the beardless youthful form in which

<sup>1</sup> One is shown by Welcker (Friedrich Gottlieb), *Rappresentazioni dell' Idra Lernea, Annali*, 1842, p. 103, and *Monumenti Inediti*, pl. 46, Roma, 1836; also in the *Alte Denkmäler* of the same author, vol. iii. pl. 6, Göttingen, 1849-64. The hero attacking the hydra is armed only with quiver and sword.

he appears in the gable group of the temple of Aigina and in the metopes of the Parthenon, — works which, in respect to style, must certainly have been in advance of the sculptures of provincial Assos. This manner of depicting Herakles may have been introduced by the Argive sculptor Ageladas, whose youthful Herakles, preserved in Aigion, is mentioned by Pausanias<sup>1</sup> in a manner which seems to show that the representation of the hero without a beard was an innovation in the age when that artist was at work. The determination of the exact date of Ageladas is, as Brunn has remarked in his discussion of this point,<sup>2</sup> one of the most difficult questions in the history of ancient art. For our present purpose, it will, however, suffice to bear in mind that Ageladas, having been alive at least as late as the eighty-second Olympiad, cannot well be assumed to have created this type of Herakles, which subsequently became common, before the termination of the Persian wars.

In regard to the comparative iconography of the Assos relief, a striking parallel presents itself in the well-known Karapanos relief of Herakles drawing the bow. Attention has been called to the similarity of these figures by Emerson,<sup>3</sup> who has engraved them side by side for the purpose of comparison. The genuineness of the Karapanos relief, assigned by Rayet<sup>4</sup> to the first years of the fifth century before Christ, has been questioned by Emerson, who nevertheless conceded this work to have retained many features of some original very similar to the Assos sculpture. Furtwängler,<sup>5</sup>

<sup>1</sup> Pausanias, VII. 24. 4.

<sup>2</sup> Brunn, *Griechische Künstler*, 1857, i. 64.

<sup>3</sup> Emerson (Alfred), *Two Modern Antiques*. *American Journal of Archaeology*, vol. i. p. 152, pl. 5. Baltimore, 1885.

<sup>4</sup> Rayet (Olivier), *Monuments de l'Art Antique*, pl. 23. Paris, 1880-84.

<sup>5</sup> Furtwängler (Adolf), *American Journal of Archaeology*, vol. ii. p. 52. Baltimore, 1886.



on the other hand, believes the Karapanos relief to be, not a modern, but an ancient imitation, ranking it among the finest known examples of archaistic art, and suggesting the first century before Christ as the probable date of its execution. Furtwängler bases his argument wholly upon the style of the relief. He compares it with another slab of the same size (showing Herakles with his knee upon the neck of a stag), which he holds to have belonged to the same series of representations of the labors of Herakles. A direct proof of this view, which asserts the Karapanos relief to be an antique but archaistic work, may be derived from the fact, that, while the similarity between it and the sculpture of the Assos epistyle is so great as to exclude the assumption of chance resemblance, no other figure of this type is known to be in existence, and at the time of the discovery of the Karapanos relief the Assian sculpture was still buried beneath the earth.

It is scarcely possible to assume the archaistic relief to have been imitated directly from the decorations of the temple of provincial Assos, especially as it appears to be but one of a series of representations of the labors of Herakles. We have hence to seek for some common original from which the leading features of both these works were derived. Furtwängler suggests that these archaic originals were statuary groups of the series of Kritios and Nesiotes, inasmuch as the head of the Karapanos Herakles bears a close resemblance to that of Harmodios in the group of the Tyrannicides at Naples, — itself a copy of the work by Kritios and Nesiotes, dedicated in 477 B. C. by the Athenians.<sup>1</sup> This striking resemblance, to which attention was called by Rayet, has been

<sup>1</sup> Marmor Parium, *C. I. G.*, vol. ii. No. 2374, Epoch. i. line 70. Compare Bergk (Theodor), *Zur Periege der Akropolis von Athen. Zeitschrift für Alterthumswissenschaft*, vol. iii. p. 972. Giessen, 1845.

fully recognized by both Furtwängler and Emerson. When critics of opinions so various — the one seeing in the Karapanos relief a work antedating the Persian wars, the second ascribing it to the age when Greece was a Roman province, and the third even terming it a modern forgery — are so unanimous in fixing upon the type from which it must have been imitated, it is certainly difficult to avoid the conclusion that the original from which these characteristics were derived is indeed to be referred to the school in question. Moreover, the peculiarities of the style of the Kritios and Nesiotes, as described by Lucian,<sup>1</sup> (a most competent observer, himself trained as a sculptor,) are certainly recognizable in both the Assos and Karapanos reliefs. We have in the figure of Herakles a clear illustration of the term *ἀπεσφυγμένα*, tightly drawn in, compressed like the abdomen of our hero; *νευρώδη καὶ σκληρά*, sinewy and rigid, of firm rather than lithe and supple muscles; and in the execution of the entire relief, that sharply cut composition of the outlines and somewhat exaggerated emphasis of the physical development resulting from a too distinct demarcation of the protruding muscles, which is referred to as *ἀκριβῶς ἀποτεταμένα ταῖς γραμμαῖς*.

We thus have good grounds for the belief that the style of the Assos relief now under consideration was influenced by that of Kritios and Nesiotes, and may perhaps even go so far as to assume that the type of the Herakles which here appears was a direct creation of these sculptors. The converse cannot be admitted for a moment. It is obviously impossible to entertain the supposition that the work of Athenian artists, who represented the highest contemporary development in the modelling of the human figure, can have been in any way influenced by the rude decorations of a building in a provincial town of Asia Minor.

<sup>1</sup> Lucian, *Rhet. Praec.* 9.

This identification is entirely in harmony with the date which other considerations would lead us to assign to the temple of Assos. If the building was in reality erected during the age immediately succeeding the Persian wars, — let us say between the seventy-fifth and eighty-fifth Olympiads, — nothing would have been more natural than that its sculptures should have displayed in the better figures some traces of the contemporary art of Athens, with which city Assos was then politically allied, and to which she must have looked as the great leader of intellectual and artistic advance. Even as the plan of the temple was copied almost exactly from that of the Theseion, the types of its most perfect sculptured decorations were derived from contemporary works of the Attic school.

While the Karapanos relief thus supplies us with an indication as to the artistic style of the work from which this figure of Herakles was derived, other parallels make it plain that this original was a relief of considerable extent, depicting the combat of Herakles and the centaurs of Mount Pholoe in the same general composition as that which appears in the sculptured epistyle found at Assos. There exist a number of painted vases with representations of this scene in which the grouping of the figures evidently was determined, in greater or less measure, by reminiscences of some archaic work of art known throughout the Hellenic world, and regarded as typical of the subject. The composition and forms of this popular original were imitated, not only in the monumental decorations of a provincial temple, but in the paintings of those exquisite vases which were to be found in the dwellings of every Greek citizen; even as to-day a popular picture — such as, to take an example, Rubens's Trinity — is not only copied in the altar-pieces of the churches of small towns, but is more or less recognizable in the coarse prints which in



FIG. 38. HERAKLES AND THE CENTAURS OF MOUNT PHOLOE.

From a Vase in the Museum at Berlin.

Catholic countries enliven the walls of the most humble cottages.

Chief among the vases of this class is an archaic amphora, probably of Attic manufacture, found at Caere, and now in the Museum of Berlin.<sup>1</sup> Upon it the chief figures of the Assos relief are readily to be distinguished (Fig. 38). So great is the similarity that no doubt can obtain in regard to the fact that both of these representations were influenced by some common model. The composition, advancing from left to right, is almost exactly the same. Herakles, bending the Scythian bow, strides with body bent forward, the advanced left foot flat upon the ground, while the right is partially raised, as in the Assos and Karapanos reliefs. The retreating centaurs are in the same peculiar position as those shown upon the newly discovered block,—their front legs overlapping, while their hind legs are behind those of their neighbors. In general outline the likeness is quite sufficient to establish the point in question; for, in a comparison of this kind, it is obviously the similarities, and not the differences, of design which require to be taken into consideration as proof of a relation to some common model. When these features of similarity surpass the narrow limits of chance resemblance, the fact of some imitation, conscious or unconscious, is at once fully established. This remains true, whatever may be the variations in the treatment of detail,—dependent, it may be, upon the exigencies of the space to which the composition is adapted, or upon the individual taste of the designer. In consideration of the further fact that these representations are not supposed to have been de-

<sup>1</sup> Gerhard (Eduard), *Auserlesene Griechische Vasenbilder*, Berlin, 1839-53, vol. ii. pl. 119. The tracing reproduced above (Fig. 38) was made by me from the vase, for the purpose of this illustration, as the lithograph given by Gerhard is incorrect in certain details.

rived the one from the other, but from a third and still more archaic composition, the general agreement must certainly be admitted to be surprisingly close.

Another painted vase, representing this scene, and apparently deriving some of its features from the common prototype, is that found at Akrai, and published by Judica.<sup>1</sup> The figures of Herakles and his antagonists are here shown in much the same arrangement, the composition being likewise from left to right. One detail, altered in the Caere vase, is here preserved, — Pholos standing behind the hero, with arm uplifted, as at Assos. Other vase paintings of this type would doubtless be found on examination of all those representing the subject, few of which have been published in plates, or are distinctly recognizable from the short descriptions given in the catalogues of the various collections.<sup>2</sup>

<sup>1</sup> Judica (Gabriele), *Le Antichità di Acre*, Messina, 1819.

<sup>2</sup> As was mentioned in the *First Report* (p. 108, note 1), seventeen antique illustrations of the combat of Herakles with the centaurs of Mount Pholoe have been quoted by Stephani, *Compte Rendu*, 1873. This list has been unquestioningly referred to as correct by both Colvin and Puchstein, in the works quoted above, p. 142, note 2, and p. 145, note 1. An examination of these representations will, however, make it evident that many of them are, in reality, not at all referable to the subject. Thus, the most important in monumental respects, the sculpture upon the Roman sarcophagus published by Braun (Emil), *Sarcophago rappresentante Combattimento tra Ercole e Centauri*, *Monumenti Inediti*, 1855, pl. 19, which figures as No. 15 of Stephani's list, shows one of the centaurs to have seized upon a woman, one of whose feet and some folds of whose drapery, visible upon the shattered side of the coffer, were evidently overlooked by the learned Russian archæologist. The rape thus indicated cannot possibly be brought into connection with the combat of Herakles with the centaurs of Mount Pholoe, who were on that occasion attracted solely by the odor of the liquor. It is probable that the sculptor of the sarcophagus has illustrated an episode from the wedding of Peirithoos, — one of the most popular subjects of ancient art. The same objection is applicable to the bronze of Antoninus Pius, which Stephani cites as his sixteenth instance. (Published by Foy-Vaillant (Jean), *Selectiora Numismata*, Parisii, 1694, pl. 25; Beger (Laurentius), *Hercules Ethnicorum*, Berlin, 1705, pl. 18; Millin de Grandmaison (Aubin Louis), *Galerie Mythologique*, Paris, 1811, pl. 195, No. 437; Guignault (Joseph Daniel), *Religions de l'Antiquité*, Paris, 1825-51, pl. 170, No. 659; Cohen (Henri), *Description Historique des Monnaies frappées sous l'Empire*

By putting these various indications together we can gain a tolerably definite idea of the characteristics of that archaic work of art, now lost, whose fame is attested by so many imitations. The general outlines of its composition, and some of the peculiarities of its style, are clearly recognizable, and have been set forth at sufficient length. In other respects we can only assert that the original representation occupied a field much longer than broad, and was, in all probability, a relief composed within the limits of some architectural framework. Ancient writers have left us no account of any works of Kritios and Nesiotes representing Herakles; and Furtwängler's identification of the Karapanos relief, as derived from "the series" of those artists, should, without doubt, read *a* series.

A celebrated work in relief, representing the labors of Herakles, in an architectural framework, and fully answering

*Romain*, Paris, 1859-68, vol. ii. p. 338, No. 436.) Here also a centaur is shown carrying off a woman, — perhaps Homados with Alkyone, the sister of Eurystheus, as identified by Guigniault. In this case the objection has been anticipated, but by no means fully met, by Stephani, who errs also in describing the coin as silver. With the representations of the wedding of Peirithoos we have, furthermore, to class the red-figured vase published by Inghirami (Francesco), *Pitture di Vasi Etruschi*, Firenze, 1852-56, 2d ed., vol. i. pl. 79, and Hugues (Pierre François), *Antiquités Etrusques*, Paris, 1785, pl. 124; Stephani's list, No. 12. The fine silver vessel now in Munich, published by Arnetz (Joseph Calasanza von), *Die Antiken Gold und Silbermonumente des k. k. Müns, und Antiken Cabinettes in Wien*, Wien, 1850, pl. S. 11, Stephani, No. 17, also does not relate in any way to the legend of Herakles and Pholos, merely showing the struggle of two Lapithæ with two centaurs before an image of Ares; and the vase published by Moses (Henry), *A Collection of Antique Vases, Altars, Patæra, Tripods, Candelabra, Sarcophagi, etc.*, London, 1814, pl. 1, represents Herakles between two centaurs, with nothing to identify the site of the combat. Still another of Stephani's references (No. 13, quoting Maximis, *Mus. Etrusc.*, vol. ii. pl. 77) is erroneous, there being no such representation shown upon the plate in question. Several of the rest are catalogue entries, so vague that the real character of the scenes depicted upon the vases cannot be fully ascertained therefrom. Even taking these latter into account, as correctly identified, Stephani's list is to be reduced from seventeen to eleven examples.

the requirements of the case in point of date, was the sculpture of the temple of Athena Chalkioikos at Sparta, the work of Gitiadas. We learn from Pausanias<sup>1</sup> that these reliefs, evidently arranged in compartments upon the wall, represented, not only those labors which Herakles was commanded to perform by Eurystheus, but also those exploits in which the hero engaged of his own free will. In the latter category, the combat with the centaurs of Mount Pholoe can scarcely have been lacking. The fame of the decorations of this sanctuary was widely extended; for instance, coins were struck, not in Sparta alone, but in other towns, with the type of the sacred effigy preserved within the building.<sup>2</sup> But beyond the suggestion that a connection may have existed between these reliefs and those of Assos, our present entire ignorance concerning the artistic style of Gitiadas and its relation to the contemporary work of Attica, does not permit us to go.

Little remains to be said concerning the other figures shown upon this relief, namely, the three human-legged centaurs who hasten away from the arrows of Herakles. A general description of them has been given in the First Report, and the chief peculiarities of their form have already been discussed. Although evidently the work of another hand than the horse-legged centaurs, they display indications of having been imitated from one and the same model with them. The arrangement of hair and beard, and of hind legs and tail, is entirely similar; and, in particular, the position of the outstretched arms of the middle centaur upon the corner block closely resembles that of the others, the juncture with the body showing the same malformation of the muscles,

<sup>1</sup> Pausanias, III. 17. 3.

<sup>2</sup> Compare Koner (Wilhelm), *Darstellung des Standbildes der Athene Chalkioikos zu Lacedaemon*, in Köhne's *Zeitschrift für Münz, Siegel und Wappenkunde*, vol. v., 1845.



while the thumbs of the left hand are turned up, and those of the right down, in the same way. These peculiarities of agreement are the more remarkable, because of the great technical superiority and general correctness of form noticeable in the relief now first published. The centaur nearest to Herakles, turning back his head to aim his missile, holds a stone in his uplifted right hand; the foremost bears upon his shoulder a thick club, — these being the weapons with which, according to the legend, the centaurs of Mount Pholoe carried on the combat.<sup>1</sup>

Among the discoveries of the second year is the fragment of a metope, about 44 cm. long and 27 cm. high, representing the hind legs of a running centaur. (Fig. 39.) Being the lower left-hand corner of the slab, it shows a rebate, in plan, about 25 by 15 mm., cut upon that side of the stone which was to be hidden behind the projecting edge of the adjoining triglyph. A fillet 7 cm. broad forms a plinth for the feet, and corresponds to the tainia upon the lower edge of the epistyle blocks. This emphasis of the architectural framework of the metopes — a decided drawback in æsthetic respects, as it cramps the field available for sculptured representations — is an archaic feature, omitted entirely from the

<sup>1</sup> That the centaurs were armed with the branches of trees is attested by Hesiod (*Scut. Herc.*, 188), Pindar (*Frag.*, 144, ed. Bergk), Apollonios Rhodios (*Argon.*, I. 64), Orpheus (*Argon.*, 173), Diodoros (IV. 12. 5), Apollodoros (II. 5. 4. 3), and Ovid (*Metam.*, XII. 507). We learn from the three authorities last named that they also threw stones.

Upon the shield of Eurypylos, described by Quintus of Smyrna (*Posthom.*, VI. 273), the centaurs of Mount Pholoe were represented as fighting with clubs, attacking Herakles. The poet, without doubt following an ancient epic prototype, says, "Some were shown prostrate upon the pines which they grasped, while others still carried on the fight with like weapons."

The names of two centaurs, written out upon a vase published by Gerhard (Eduard), *Etruskische und Kampanische Vasenbilder des Museums zu Berlin*, Berlin, 1843, pl. 13, viz. ΤΑΛΙΟΞ and ΠΕΤΡΑΙΟΞ, are evidently derived from the wooden club and the rock with which they threaten Herakles.

Theseion and Parthenon. It had, however, certain practical advantages, protecting in some measure the raised portions of the relief from being split away during the process of lifting and setting the block, and is more tolerable in the coarse stone of Assos than it would have been in the marble of Attica.

The small portion of the figure which remains is perfectly sharp and free from weathering, and shows the sculpture to have been executed with much care. The hoofs and legs are in the conventional position, but somewhat farther apart than any of those represented upon the other reliefs of centaurs. It will be recollected that one of the three metopes removed from Assos to the Louvre also represents the single figure of a centaur, galloping, with a club upon his shoulder. The hind legs shown upon the newly discovered fragment are of the same size as those upon the block in Paris. It is hence evident that this metope also did not contain a second figure,—in this respect differing most disadvantageously from the metopes of the Attic monuments before mentioned.

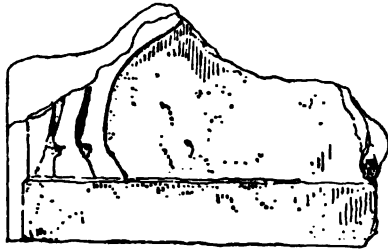


FIG. 39. FRAGMENT OF A METOPE.  
HIND LEGS OF A CENTAUR.

The last of the reliefs found during the second year which remains for our consideration is a fragment of the heraldis sphinxes once decorating the western front of the temple. The greater part of the other sphinx sculptured upon this epistyle block was removed from Assos by the French in 1835, and has since been preserved in the Louvre. A second fragment, found by us upon the surface of the

earth, where it had apparently been seen and drawn by Texier, was published in the First Report.<sup>1</sup> The third fragment, with which we are now concerned, contains the body and wings of the sphinx upon the left-hand side; it completes the sculptured subject,—the panel now lacking but a small portion of the tainia, split from the second fragment. (Fig. 40.)

Before going further, it should be explained that the fact of this relief having been situated above the central intercolumniation of the western front, and not in the corresponding position of the eastern front, can be determined from the lengths of the half-regulas cut upon the ends of these blocks, which, together with those adjoining, must have exactly made up the total widths of the triglyphs above them. As has been already set forth, there can be little doubt that the epistyle block sculptured with the four centaurs, found during the second year, was placed next to the relief of Herakles and Pholos, and consequently adjoined one of these sphinx reliefs upon the left-hand side. Now the half-regula upon the right-hand end of the relief of the four centaurs is exceptionally long, namely, 33 cm., and cannot have been complementary to the corresponding moulding upon the newly discovered sphinx, which is itself 27 cm. long. It agrees entirely, however, with the space remaining for a half-regula upon the shattered end of the other sphinx block, discovered during the first year, and published in the First Report as Plate 16. We are thus as fully justified in assigning these heraldic reliefs to the front and rear of the building, respectively, as we are in the assumption that the four centaurs formed a continuation of the file retreating before the bowman Herakles. They will hence be distinguished as the eastern and western sphinxes.

<sup>1</sup> *Preliminary Report*, p. 115, pl. 19.



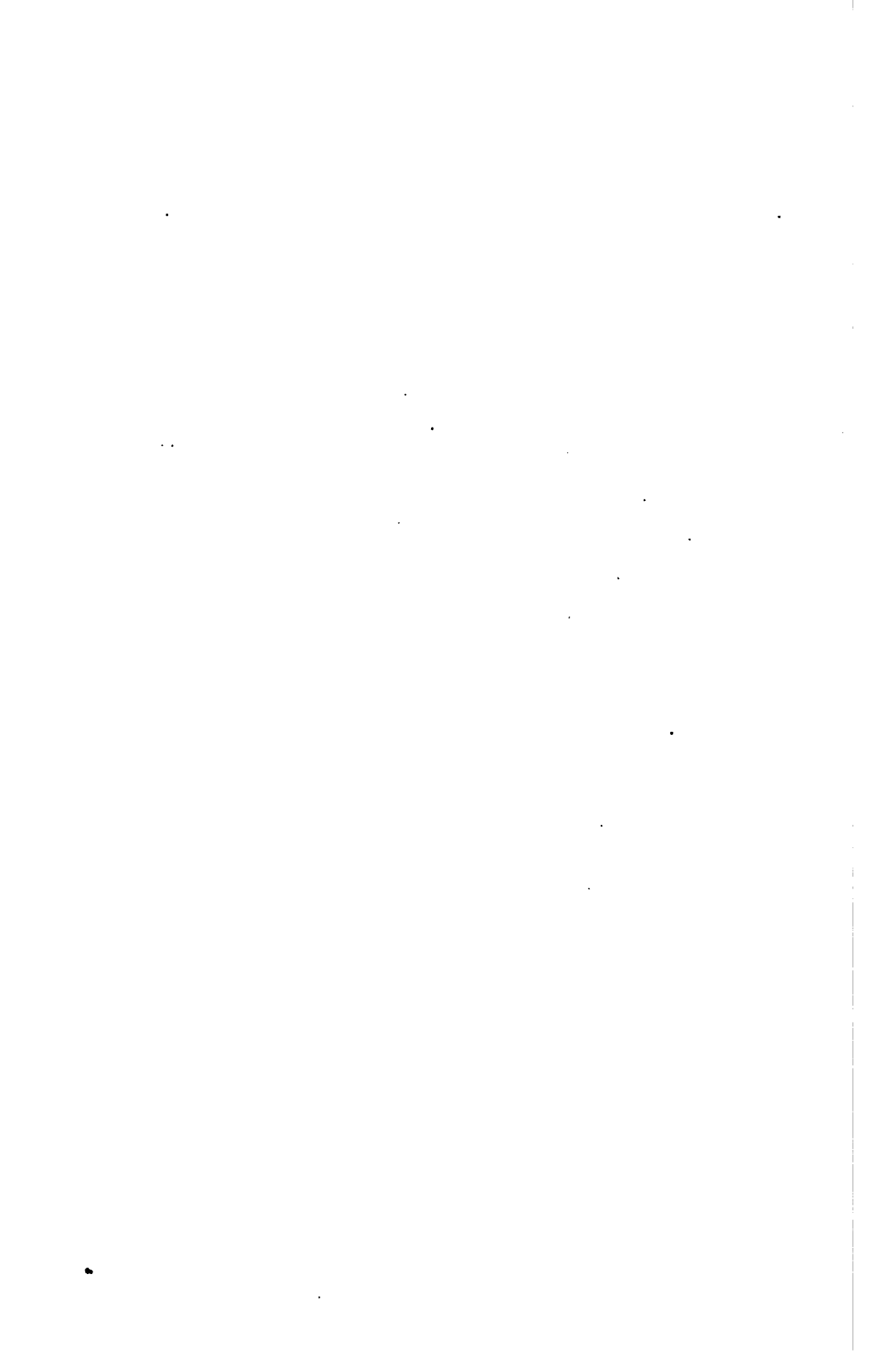




FIG. 40. HERALDIC SPHINXES, WESTERN FACADE.

180

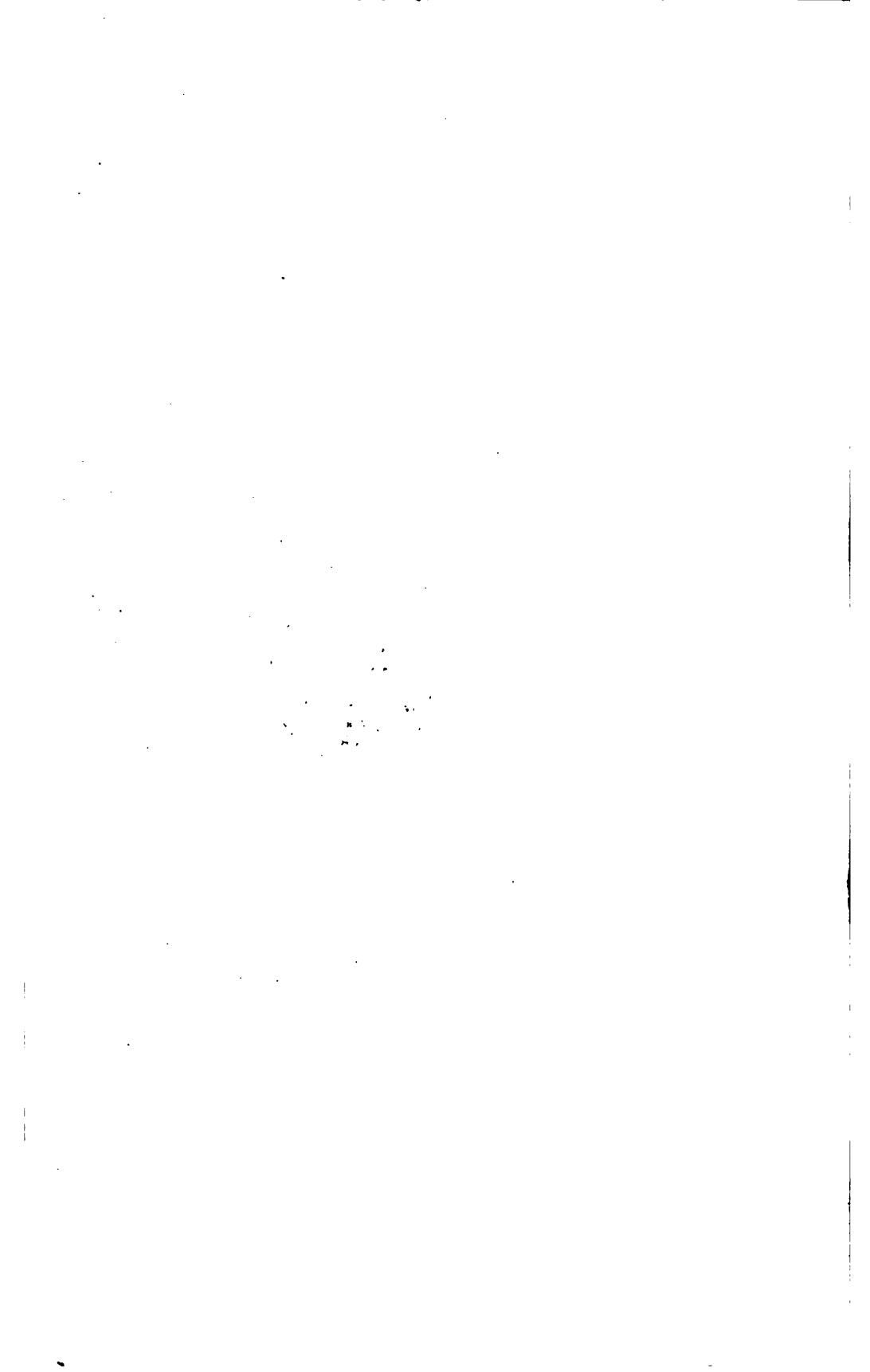
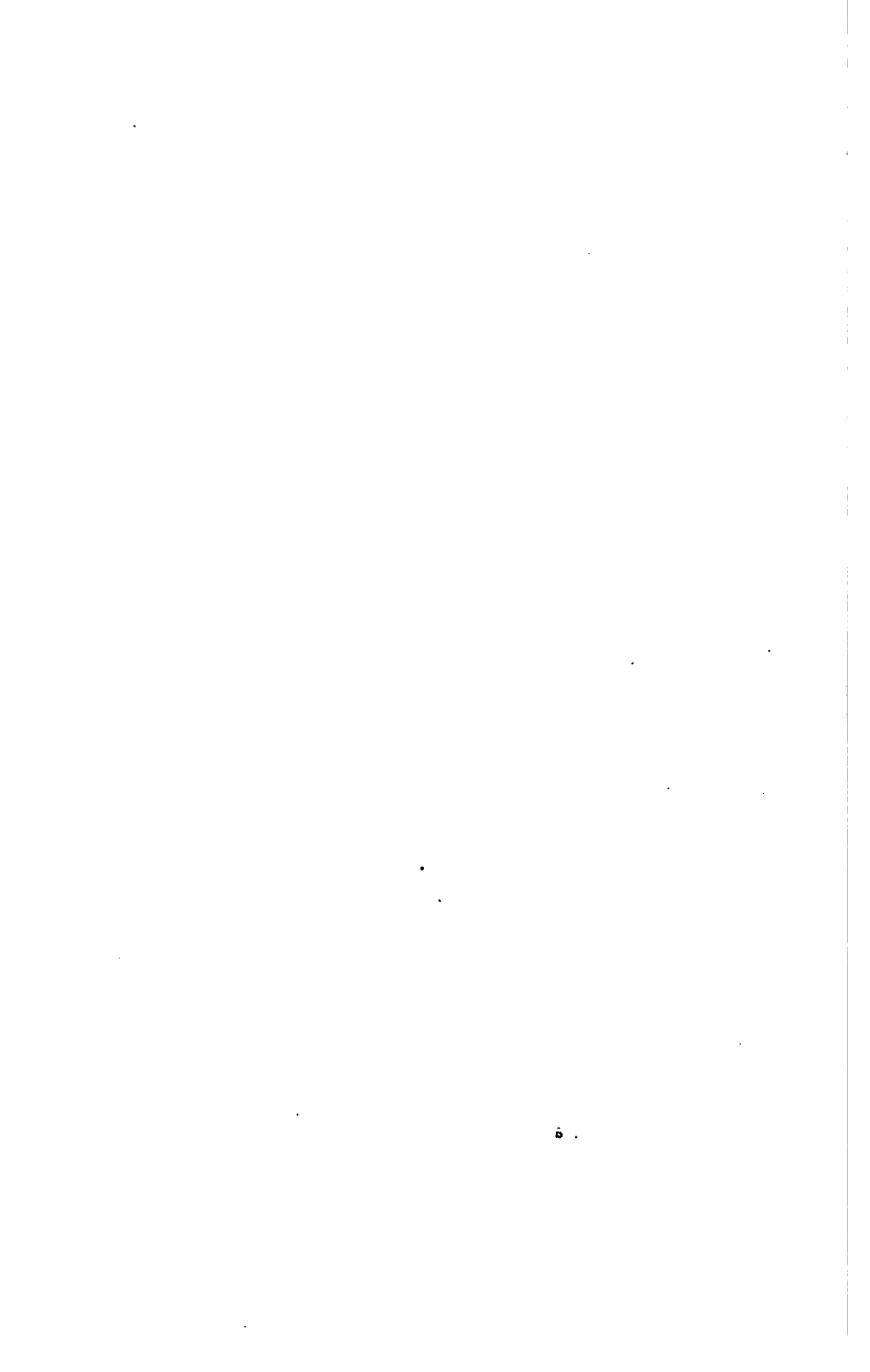






FIG. 41. HERALDIC SPHINXES, EASTERN FACADE.





It is interesting to compare the sculpture of this epistyle from the less important façade, to which our newly discovered fragment appertains, with that of its pendant from the front of the building. A glance at the photogravures of the two reliefs (Figs. 40, 41) will suffice to show that the figures were executed from the same design, but by different hands, differing widely in technical skill. The variations in position manifestly resulted from the sphinxes being framed in panels of unequal dimensions, that of the front measuring less than 2.5 m., while that of the rear was considerably more than 2.6 m. in length. The sculptor of the latter placed his figures quite as near to the ends of the block as they were in the former, the entire difference in length falling between the heads and breasts of the animals. Thus the fore legs of the western sphinxes were disproportionately lengthened, while the angle of their elevation was correspondingly decreased. It was without doubt in conformity with this change of angle that the wings were made to lie somewhat lower upon the back. With these exceptions, the outlines of the two reliefs are almost identical.

In modelling, however, the sphinxes of the west are decidedly inferior to those of the east. Although projecting quite as far from the background, they yet appear flat and undefined, — betraying in technical respects a more marked influence of the sphyraton style. The western relief is, indeed, an especially good example of that clumsiness of form in the masses, the protuberances being of basket-shaped rather than of oval section, and of that angular and strap-like rendering of the details, so indicative of a practice of beaten-metal work in which the sculptors of Assos were evidently versed. The curves of trunk and haunch are not so true to nature as in the eastern sphinxes, while the edges of the relief are too thick and cushion-like to permit of the

rotundity of the body being effectively rendered. Thus the fine gradations of light and shade within the outlines of the figures are almost entirely lost. The thigh-bone does not project sufficiently from the flank, the hind legs are too weak and thin, the tail too little prominent and too sharply curved. In short, the western sphinxes are of a dull and heavy sleekness, while those of the east are sinewy and vigorous. Although the main outlines are, as before said, substantially identical, there are still slight differences in the curves and relative positions of the members. Even if we suppose the design to have been transferred to the surface of the stone from an original cartoon by a tracing, or other mechanical means, there must have remained a certain scope for the sculptor to display his taste and technical skill.

A noticeable deviation in the western sphinx from the forms of the eastern is the decorative scalloping of the outer edges of the wings. More important and less successful are the straightening and flattening of the outlines of the belly, through which much of the grace and force of the original has been lost. It is evident that the architect or artistic superintendent of the decoration of the temple was well acquainted with the relative abilities of the sculptors working under his directions, and assigned the execution of those reliefs which were to be placed upon the front of the building to the more intelligent and skilful hands.

We may even venture the supposition, that the less proficient sculptor of the western sphinxes was, as compared with his rival, an artist of the old school, clinging to conventional methods. As has already been pointed out, the style of the sphylaton is more apparent in his work, while the wings are scalloped in conformity with a highly archaic decorative practice. Another feature of much interest, leading to the same conclusion, is the shape assigned to the termi-

nation of the vertical shaft upon which the sphinxes rest their uplifted paws, and which marks the centre of the symmetrical composition. In the relief from the rear of the building this termination has the form of an archaic Ionic capital with upright volutes, — an architectural member which was certainly antiquated at the period to which we must assign the execution of these sculptures. The outline of the volutes and of the anthemion surmounting them is clearly indicated, and there still remain upon the weathered surface of the stone traces of the engraved spiral lines which mark the convolutions of the helix. The member thus represented is of precisely the same shape and proportion as the proto-Ionic capital, found by the writer upon the site of Neandreaia, in the interior Troad, and described in a separate publication of the Archæological Institute.<sup>1</sup> The significance of this form in architectural history has been fully discussed in that connection. In regard to its place in the composition of this relief it will suffice to observe that the heraldic sphinxes of Assos rest their paws upon a diminutive proto-Ionic stele, in the same manner as the heraldic lions of Mykenai face a small column having proto-Doric characteristics.

This arrangement was a common one in every age of Oriental art, and has by some historians been directly referred to an Asiatic origin. We may trace it, in examples too numerous to mention, from Assyria and the highlands of Asia Minor, through Phoenicia and Cyprus, to Attica and the Peloponnesos. It had certainly been adopted by the Greeks at a period long anterior to the building of the temple of Assos, appearing not only above the gate of Mykenai, but in many ornaments of precious metal found in the still more ancient sepulchres of that citadel,<sup>2</sup> and among the remains

<sup>1</sup> Clarke, *Proto-Ionic Capital*, fig. 2.

<sup>2</sup> Schliemann, *Mycenæ*, Nos. 175, 264-266, 274, 279, 480, and 539.

unearthed at Menidi in Attica.<sup>1</sup> Sphinxes and griffins with uplifted paws, in precisely the same attitude and relative position as those of Assos, occur upon the well-known François vase,<sup>2</sup> and are frequently to be observed upon vessels of the early Corinthian style.

The archaic Ionic capital with upright volutes — evidently a favorite in the Troad and its neighborhood,<sup>3</sup> whence the



FIG. 42. IONIC CAPITAL, WITH UPRIGHT VOLUTES.

Portion of the Handle of a large Jar found at Assos.

majority of the known examples have been derived — finds still another illustration among the minor discoveries at Assos, which may appropriately be noticed in this connection. The object in question is a fragment of a terra-cotta vessel, apparently the handle of a large amphora (Fig. 42). The upright scrolls are boldly modelled, the anthe-

mion, too small a feature to be fully indicated, being replaced by a knob-like abacus. The spiral lines of the volutes are deeply ploughed out with some pointed instrument. Scrolls and abacus are lightly touched with a white pigment, the surface of the red clay being elsewhere covered with a dull red priming. The decorative effect of the detail is striking;

<sup>1</sup> *Deutsches archäologisches Institut. Das Kuppelgrab bei Menidi. Ausgrabungsbericht von H. C. Lolling. Athen, 1880.*

<sup>2</sup> *Mon. Ined.*, vol. iv. Roma, 1844-48, pls. liv., lv.

<sup>3</sup> Shortly after the discovery upon the site of Neandrea, Ionic capitals with upright volutes were found upon the coast of Lesbos, opposite the Troad. These capitals have not as yet been published, but they are referred to by Puchstein (Otto), *Das Ionische Capitell. Siebenundvierzigstes Programm zum Winckelmannsfeste der Archäologischen Gesellschaft zu Berlin. Berlin, 1887, p. 55.*

and, though slight in execution, it is evidently the work of a skilled hand. The fragment is now in the Museum at Boston, and is numbered P. 4121.

In regard to the fragment of a sphinx from the western front of the temple, among the reliefs removed from Assos to the Louvre in 1835, it should be remarked that the lithograph published in the *Monumenti* errs in omitting the uplifted paw.<sup>1</sup> The engraving given by Clarac<sup>2</sup> makes good this defect, while the accompanying text supplies us with an all too elaborate explanation of the significance of these mythical animals in this connection. As types of intelligence and perspicacity, Clarac holds that the sphinxes have reference to the story of Proteus, with whom he would identify the marine monster of another relief, and are to be taken as significant of the astuteness displayed by the hero Menelaos in overcoming the wiles of this prophetic old man of the sea. In the exposition of this view Clarac draws a parallel between the feat of Menelaos in discovering Helen in her Egyptian retreat, and that of Oedipus in solving the riddle of the Theban sphinx, even going so far as to suggest that the latter episode may have been represented upon the walls of the temple of Assos. We could scarcely point out a more striking instance of the far-fetched interpretations, based merely upon vague suppositions, which were in favor among classical scholars as recently as the middle of the present century.

The researches of more modern archæologists have thrown so clear a light upon the wide scope of the mythical representations of the sphinx, and its general use in this form

<sup>1</sup> *Monumenti Inediti publicati dell' Istituto di Corrispondenza archeologica*, vol. iii. Roma e Parigi, 1839-43, pl. 34.

<sup>2</sup> Clarac, *Musée de Sculpture antique et moderne*. Paris, 1841, tome ii. seconde partie.



by ancient decorators, — whether Mesopotamian, Egyptian, Syrian, or Greek, — that we need no longer thus grope after some episodal connection in order to justify the appearance of the sphinx among the Assos reliefs. As will presently be shown, a sphinx, in later ages generally transformed to a griffin, was the heraldic symbol — the coat of arms, as it would to-day be termed — of Assos. It was on this account that these figures, in heraldic position and duplication, were sculptured above the main entrances to that sanctuary which was dedicated to the guardian deity of the town. Apart from this, in its independent significance, we need seek in this symbol nothing beyond those characteristics of supernatural force, wisdom, and ever-blooming youth which were ascribed by popular belief to the sphinx as a combination of the bodily forms of the strongest animal of the earth, the strongest bird of the air, and the intelligent head of a human being. These picturesque attributes of mysterious, almost demonic power, seem to have been gradually connected with the sphinx through the observation of a definite image, which had itself arisen through the agglutinative methods of heraldry, rather than to have been originally based upon any specific tradition. Among the ancients, no composite form was more widely known, none more frequently employed. From that oldest Egyptian sphinx, the Colossos of Gizeh, a work of the fourth dynasty, and from the winged Assyrian sphinxes of the palace of Esarhaddon (681–668 B. C.), we may trace the migration of the monster, and the development of the various types of its representation in every part of the ancient world, and in every age of ancient history. The original home of the human-headed and lion-bodied sphinx seems to have been Egypt. In the demonology of Mesopotamia the form was never of more than secondary importance. The Assyrian images always bear a foreign stamp, more or less distinct.

The winged type seems, however, to have been derived from Assyrian art by the Greek designers of the archaic period, and in the lack of direct communication we are led to seek for some intermediate stage of development and transference. This can have taken place only upon those southeastern coasts of the Mediterranean where the hieratic forms of both Egyptian and Mesopotamian art were blended in merely decorative types, free from all fetters of religious symbolism. It is a well known fact that the favorite subjects of Hittite and Phoenician decorators were constantly repeated in every branch of Greek art-workmanship, during the archaic period, and were retained long thereafter in distant Etruria. The hybrid art of Phoenicia, so widely disseminated through the commerce of Tyre and Sidon, is, without doubt, responsible for the introduction of the sphinx to Greek culture. Beyond the recognition of this fact, it is for the present scarcely possible for us to go; the threads of artistic history which from the tenth to the seventh century before Christ connected the civilization of Phoenicia with that of Asiatic and European Hellas are so inextricably entangled that we cannot attempt to assign to the races of Cyprus and southern Asia Minor, more closely allied to the Greeks, their direct contributions to the transformation and introduction of this ancient form. We may recognize in the sphinxes of Euyuk<sup>1</sup> a transitional stage, — a link between the sphinxes of Nimroud<sup>2</sup> and those of archaic Spata<sup>3</sup> and Etruscan Vulci,<sup>4</sup> — but we are as yet far from possessing even so clear and succinct a

<sup>1</sup> Perrot (George), *Exploration Archéologique de la Galatie et de la Bithynie, d'une Partie de la Mysie, de la Cappadoce et du Pont; exécutée en 1861.* Paris, 1862-72, pl. 65-67.

<sup>2</sup> Layard (Austin Henry), *The Monuments of Nineveh*, vol. i. London, 1849, pl. 44.

<sup>3</sup> Milchhöfer, in the *Mittheilungen des deutschen archäologischen Instituts* vol. iv. Athen, 1879.

<sup>4</sup> Micali (Giuseppe), *Monumenti Inediti.* Firenze, 1844, pl. v.

history of the artistic development of this form as we have, for instance, in the case of the similar evolution of the Ionic capital.

It is only certain that in the sphinxes of Assos we have already to deal with a fully developed type, determined by long familiarity with the composite form. The wings, rounded and bent forward at the tips, are of a peculiar shape, frequently met with in the oldest black-figured vase paintings. This conformation, most excellent in decorative effect, however much at variance with all natural wings, whether of feathers or membranes, is evidently the result of two distinct tendencies. In the first place it was necessary to adapt the projecting members to the panels upon which such figures were drawn or sculptured. Thus it became particularly important that the wings should rise but little above the crown of the head, which was to be made as prominent as possible. In the second place, the conventionalization of the forms of the living model for the purposes of decorative design made itself particularly felt in such irregular terminations as the tips of wing feathers. As the wings of the most ancient Mesopotamian and Syrian sphinxes and griffins are not thus rounded, this improvement is undoubtedly to be ascribed to that Greek genius for conventionalization which everywhere left its mark upon the material borrowed from the East. The beginnings of the change in formation are to be traced upon many painted vases and sherds of the early Rhodian style, as well as upon some few Phoenician works, referable to the period when the art of that country was influenced by Hellenic traditions and methods.

In various other details already referred to, both reliefs bear the stamp of that well trained yet somewhat conventional school of archaic design which in remote and provincial parts of the ancient world but shortly preceded the highest

development of sculpture in Attica and the Peloponnesos, or was even contemporary with it. The very type and the duplication of the sphinxes adopted as the coat of arms of Assos are not infrequently met with in other parts of the ancient world during the archaic period. The design on the François vase has already been referred to, and, to name another example, a tripod vase recently discovered at Tanagra, and now in the Museum of Berlin,<sup>1</sup> shows couchant sphinxes face to face, in almost exactly the same position as those sculptured above the entrances to the temple of Assos. In the Troad itself, such figures were naturally favorite subjects with the painters of vases and the modellers of figurini. Two sherds of decorated vessels, showing the heads and wings of sphinxes of this design, have been found among the Greek remains of Hissarlik,<sup>2</sup> the first being a fragment of hand-made ware. The second of these heads, in particular, is much like those of the Assos sphinxes; the hair is arranged in a similar manner, and bound by a tainia, which, after encircling the forehead, falls behind the wings in the same way as the fillet upon our reliefs. Among the earlier discoveries at Hissarlik<sup>3</sup> was the figurine of a sphinx squatting upon its haunches, in form and position exactly resembling the sphinx sculptured upon one of the metopes of the temple of Assos, now in the Louvre. To these may be added seven further examples of squatting and couching sphinxes, found by Calvert in various parts of the Troad. Among these the most striking parallel to the figures of the Assos reliefs is the sphinx painted on a sherd found

<sup>1</sup> Löschcke (Georg), *Dreifussvase aus Tanagra*, in the *Archäologische Zeitung*, Berlin, 1881.

<sup>2</sup> Schliemann, *Ilios*, figs. 1432 and 1434. The former of these now bears the number 2379 in the collection at Berlin.

<sup>3</sup> Schliemann, *Trojanische Alterthümer*. Atlas. Leipzig, 1874, no. 3362. This figurine is now numbered 2433 in the collection at Berlin.

upon the ancient site of Ophrynion<sup>1</sup> (Fig. 43). The figure here shown might almost pass as a direct copy of the couching sphinxes of the Assian reliefs, so close is the resemblance. We may notice the same fillet-bound hair, falling in a convex curve, the same bordering tainia, the same wings bent forward at the ends, and membered by a rib at the conventionalized juncture between flesh and feathers, the same doubly curved turn of the tail, and, in particular, the same



FIG. 43. COUCHING SPHINX ON SHERD FROM OPHRYNION.

excessive emphasis of the rising curve of the belly, which along its entire length is arched above the ground in exaggeration of the natural appearance of recumbent animals. The painting upon this sherd is mainly dark brown upon a light red ground, the pigment being applied very thinly. Another color makes its appearance in the fleshy part of the wing, between neck and wing feathers, this being of a dull deep red, similar to dragon's blood. The length of the sherd is 15 cm.

<sup>1</sup> Near Erenkieui, between the sites of Troy and Abydos. Compare Virchow, *Alt-Trojanische Gräber und Schädel*. Berlin, 1882.

A resemblance nearly as close is observable between the squatting sphinx of one of the metopes of the Assos temple, before referred to, and a figurine from Aqkieui, identified by Calvert as the site of Berytis (Fig. 44). This small image, 11 cm. high, is formed of a light red clay, hollowed within, and primed with a slip of grayish black. It is carefully and intelligently modelled, belonging to the same category as the figurine from Hissarlik, before referred to, and as another, somewhat ruder, image of a sphinx found by Calvert at Bounarbashi (Lechevalier's Troy). Almost the only difference between this form of the sphinx and that shown upon the Assos metope is the high head-gear, of Oriental appearance, which is seen upon the Berytis figurine, but could not find place in the low frieze of the temple. The list of sphinxes discovered in the Troad by Calvert further includes four specimens on black-figured sherds from Akshi-Kieui, the site of the later (Hellenic) Thymbra.

Turning now from the coat of arms of Assos as it appears among the ornamental sculptures of the chief sanctuary of the town, to the heraldic symbol stamped upon the coins, from the earliest to the latest Assian mintage, we are at once struck by the fact that in the latter case the image of a griffin is substituted for that of the sphinx. In formation and position the bodies of the two mythical animals are precisely alike, but upon the coins the head of a human being is exchanged for that of an eagle.



FIG. 44. SQUATTING SPHINX.  
FIGURINE FROM AQKIEUI.

It is perhaps impossible to adduce a decisive reason for this change of type. The most probable explanation which the writer is able to advance is, that the coins of Assos, circulating widely throughout the Troad, were, from the first, imprinted with a griffin in order to distinguish them from the coins of another town of the province. Upon the coins of Gergis, a sphinx forms the symbol of the obverse. References by ancient writers to matters of this kind are extremely rare, but the fact of its appearance upon the Gergithian coinage is specially mentioned by Stephanos of Byzantion.<sup>1</sup> The antiquity of Gergis, renowned as a stronghold of the Teucrians,<sup>2</sup> and as the native place of one of the Sibyls, is beyond question, and the fact that it was one of the first towns of the Troad to establish a mint is attested by the archaic coins preserved in all large collections. Thus no difficulty stands in the way of the assumption that coins of Gergis, bearing the image of the sphinx, had been issued prior to the emission of coins by Assos. The adoption of this symbol would naturally have precluded its repetition elsewhere in the Troad. Every precaution would, moreover, be taken to prevent the confusion of the coinages by the country folk, inasmuch as the values of the Gergithian pieces were based upon a different standard from that adopted by the Assians.<sup>3</sup>

Brandis is certainly justified in speaking of the griffin as *das eigentliche Stadtwappen* of the city; but he is at fault in assuming that the Assians did not issue coins before the fourth century. Coins of an archaic series, probably dating from the middle of the fifth century, are to be found in most of the numismatical cabinets of Europe, under various

<sup>1</sup> Stephanos of Byzantion, s. v. Γέργυς.

<sup>2</sup> Herodotos, V. 122, VII. 43.

<sup>3</sup> Brandis (Johannes), *Das Münz-, Mass- und Gewichtswesen in Vorderasien, bis auf Alexander den Grossen*. Berlin, 1866, pp. 310, 313.

classifications. They bear upon the reverse a lion's head in an incuse square, and upon the obverse a couching griffin. The discovery, during our excavations, of a coin of this type with the inscription  $\Lambda\Sigma\Sigma$ , leaves no doubt as to the true attribution. In the British Museum the rearrangement of the coins of Assos thus indicated has already been made.

The form of the griffin stamped upon the oldest known coins of this series is shown in Figure 45 A. We here see a creature precisely like the sphinx of the temple reliefs, excepting that the head is that of an eagle. So close is the resemblance of the body in attitude and modelling, that we are tempted to believe that the die-cutter intentionally followed the design so familiar to Assians from its prominent position among the sculptures of their temple. The action of the fore legs is the same: the nearer one lying extended on the ground, the one beyond being so uplifted as to rest against the circular framework of the coin, in place of the upright support. The belly rises in the same compressed curve; the hip is similarly salient. In like manner, the tail has the single turn, and the wings are rounded at the ends and bent forward at the tips, being bordered along the fore edge by that fillet which may be regarded as a conventionalized and elongated representative of the wing-bone. The short head, on the other hand, is that of the oldest known type of Greek griffin. Its features are peculiar, and in part unnatural. The mouth is widely opened, the lower jaw being disproportionately long; so long, indeed, that if closed it would project much beyond the hooked beak. The protruding tongue curves upward; the outline of the jawbone is prominently indicated. The one ear visible is a formidable appendage, entirely foreign to bird nature, and rather resembling that of a hare. It stands erect, as if in excitement and vigilance. A further abnormal addition appears



in the shape of a knobbed projection, rising from the centre of the skull, just above the large round eye. This projection is perhaps a reminiscence of the single horn upon the lion-headed proto-griffins of Mesopotamia.<sup>1</sup> It effectively enhances the energetic and defiant aspect of the monster.

In all these details the head closely resembles the fine archaic bronze discovered at Olympia,<sup>2</sup> which is sketched in Figure 45 B. On comparing this and the representation upon the Assian coin, certain features of the latter which might otherwise have appeared inorganic and inexplicable are made clear. Thus, it is evident that the downward curve of the lower jaw, which, as before mentioned, could not possibly fit into the beak if closed, is derived from an exaggeration of the similarly curved, but too short, lower jaw of some head similar to the Olympian bronze. Another point of the same character is the strap-like conventionalization of the swollen cheek-pouch, which results upon the coin in a distinct line, running downwards from

<sup>1</sup> Witness the figure upon the relief of a small temple near the palace of Nimroud, referable to the age of Assurnasirpal (885-860 B.C.). Layard, *Monuments of Nineveh*, second series, London, 1853, pl. 5; and *Discoveries in the Ruins of Nineveh and Babylon*, (Second Expedition,) London, 1853, p. 348 *et seq.* Compare Perrot and Chipiez, *Histoire de l'Art dans l'Antiquité*, Vol. II. *Assyrie*, Paris, 1883, p. 408. The horn appears upon similar images of archaic coins of Asia Minor (ascribed to Miletos) referable to the seventh century (*Numismatic Chronicle*, new series, vol. xv., London, 1875, pl. viii.), and upon the lion's head of the Kroisos mintage (Head, Barclay Vincent, *A Guide to the Principal Gold and Silver Coins of the Ancients*, pl. i.). Furtwängler (s. v. *Gryps*, in Roscher's *Lexikon der Griechischen und Römischen Mythologie*, Zehnte Lieferung, Leipzig, 1886) is inclined to ascribe the adoption of this feature in the head of the griffin to the Ionian Greeks of the Asiatic coast.

<sup>2</sup> *Ausgrabungen zu Olympia*, pl. xxvii. This head is the most perfect representative of a distinctly pronounced and widely known type. Among other examples of the same form may be mentioned that shown by Salzmann (Auguste), *Nécropole de Camiros*, Paris, 1875, pl. 43, and two in the Museum of Berlin, Nos. 2935 and 1023.

the eye, and gradually approaching the outline of the jawbone.

Furtwängler<sup>1</sup> has shown this peculiar form of griffin's head to have been developed by Greek designers from the Phoenician image of the monster. He maintains that the open mouth, with curved and projecting tongue, is a specifically Greek device, referable to the seventh century before Christ. The form of the griffin which appears upon the earliest known coins of Assos thus belongs to a distinctly pronounced

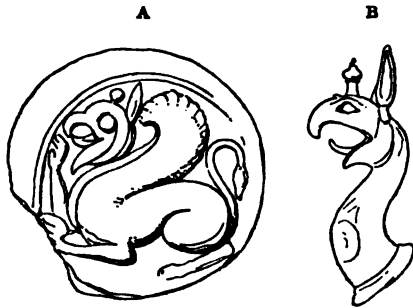


FIG. 45. A, ARCHAIC COIN OF ASSOS.  
(Enlarged two and a half diameters.)  
B, BRONZE HEAD OF GRIFFIN, FOUND  
AT OLYMPIA.

and widely known archaic type. The appearance of this type, so different from that in general use throughout the Greek world at the period when this coinage was issued, may with good reason be considered as the retention of a still older stamp, and thus be held to indicate the employment of the griffin during the sixth century side by side with the sphinx, and perhaps interchangeably with it, as the civic symbol. Be this as it may, it is certain that in all representations of this kind upon the coins of Assos the image of the griffin is exclusively adopted.

Upon Assian coins of subsequent issues the form of the griffin is that which is known to have been employed in European Greece as early as the fifth century before Christ, and which continued in vogue, without material alteration, until

<sup>1</sup> Furtwängler (Adolf), *Die Bronsefunde aus Olympia und deren kunstgeschichtliche Bedeutung*. Berlin, 1880.

the latest ages of classic art. (Fig. 46.) The unnatural appendages, top-knot and upright ears, are here omitted, their place being taken by a jagged comb. The entire head has been so lengthened and flattened as more closely to resemble that of a bird. The wings are turned backward, and divided along their entire length into distinct feathers. The tail is often flung into the air in a double curve. A curious reminiscence of the older griffins and sphinxes is retained in the



FIG. 46. COIN OF ASSOS.  
(Enlarged two diameters.)

farther fore leg, which, though not supported by a stele, or pressed against the framework of the coin, is lifted aimlessly in the air. As the anatomist recognizes the derivation of one species of animal from another in the existence of rudimentary and useless muscles, so also may the student of decorative forms trace the development of one type from another by the appearance of

features such as these, otherwise inexplicable.

With the exception of a single variety, presently to be referred to, this form of the griffin remained unaltered until the latest ages of Assian mintage, even appearing upon coins which bear the heads of Tiberius and Claudius. It is however to be remarked, that on such imperial coins the griffin, which in earlier ages invariably faces to the left, is occasionally turned to the right.

In the early years of the third century before Christ a temporary fashion completely altered the stamp of the Assian coinage, and led, as before mentioned, to the adoption of a griffin of entirely different appearance. The head of Athene upon the obverse, previously in profile, here turns to three-

quarters face; the griffin upon the reverse arises from his recumbent position, and strides upon all fours. (Fig. 47.) A striding griffin of this form appears upon contemporary coins of the neighboring town of Phokaia, and evidently served as model to the die-cutter of this Assian series. A single issue only seems to have been made of this novel type, the mintage immediately afterwards reverting to the accustomed images. We are enabled to assign an approximate date to this experiment through the close resemblance of the three-quarters face of Athene, which appears upon the obverse, to the head upon a coin of Antiochus I. (B. C. 280-262).<sup>1</sup>



FIG. 47. COIN OF ASSOS.  
(Enlarged two and a third diameters.)

It is not possible to advance an entirely adequate explanation of the reasons which led to the temporary abandonment of the time-hallowed Assian type, but we may be permitted to assume that it was due to those political motives which were of so great importance in this age of the fusion and centralization of the Greek states of Asia Minor. The change in the civic symbol may have been brought about through agents of one of the earlier rulers of Pergamon, with the intention of breaking down, in this as in many other ways, the autonomous spirit of a town destined to be annexed to that kingdom. From the first revolt of Philetairos (B. C. 283) the Pergamene dynasty had made its influence felt on

<sup>1</sup> Gardner (Percy), *The Seleucid Kings of Syria*. London, 1878, pl. iv. no. 12.

the coast of the Gulf of Adramyttion, rapidly extending its power throughout the Troad by reason of the services it rendered in repelling the continual inroads of the Gauls. The absolute dominion of Eumenes and Attalos must have been preceded by many such attempts to counteract the individual and separatist spirit of towns which clung obstinately to the rights of local independence. In few matters was this conservative feeling of the Greek citizen more strongly evinced than in the unaltering retention of the civic symbol upon coins, as indicated by the archaic character of many Greek mintages. An entire change of the Assian symbol perhaps being found impracticable, something might at least be effected by altering the design, and assimilating it to that of a town upon the farthest confines of the advancing state. This town, Phokaia, had originally been a stronghold of the Ionians, and it was in the interest of the cosmopolitan power at Pergamon to break down the distinctions of race, as well as the tenacious hold of autonomous feeling.

A highly remarkable combination of the forms of the two varieties of griffin which appear upon the Assian coinage, namely, the couching and the upright or striding, is met with in the figures of a mosaic pavement of a building unearthed in the lower town. This building, which stood in close communication with the Agora, was evidently employed for some administrative purpose, and was therefore ornamented with the civic symbol. It is situated at a distance of only 23 m. from the Bouleuterion, but on a much lower level, access being provided to it from the market-place by a subterranean passage and staircases, designated JJ upon the general plan of this quarter of the town, and shown in section upon the drawing of the western façade of the Bouleuterion. The edifice forms a quadrangle of 12.6 by 5.4 m., and is divided into two rooms of unequal size, the larger and easternmost

of which, paved with the mosaic, has a clear space of 6.3 by 4.6 m. That the building was not a dwelling or shop, but was devoted to the transaction of some public business, is evident from the entire lack of fireplaces, as well as from the simple division of the plan, and the character of the interior decoration. The masonry is substantial, but exceedingly rough, having been hidden from view by a revetment of plaster, painted with brilliant colors, which will be described in detail in a subsequent chapter. The southern wall, together with the terraced street upon this side, has been entirely destroyed, — carried away by the masses of earth and débris which, falling from the Bouleuterion and other buildings upon a higher level, deeply buried the re-entering angle of the rooms, and left the masonry upon the north standing to a height of from 1.2 to 0.5 m. Traces of an entrance doorway from the street are, however, still to be perceived near the eastern end of the southern wall, from which side the chambers must have been lighted through windows. As the hillside is particularly steep at this point, almost the entire plan of the structure had to be quarried from the native rock, which is here of a bright red color, resembling ochre, and is occasionally used as a pigment by the Turks of Behram. Specimens of this material are preserved in the Museum at Boston, under the number S. 1155. The pavement was, in part, laid directly upon the quarried surface of the native rock. The flooring consists of a thick substratum of mortar, upon which the mosaic pattern is formed by rounded pebbles of various colors, imbedded in a fine cement. The lime of this cement was mixed with minute particles of pounded brick, for the purpose of diminishing the brightness of the white background visible between the pebbles,—a mode of preparation known to Roman builders as *opus signinum*.<sup>1</sup>

<sup>1</sup> Vitruvius, II. 4. 3. Columella, I. 6. 12.

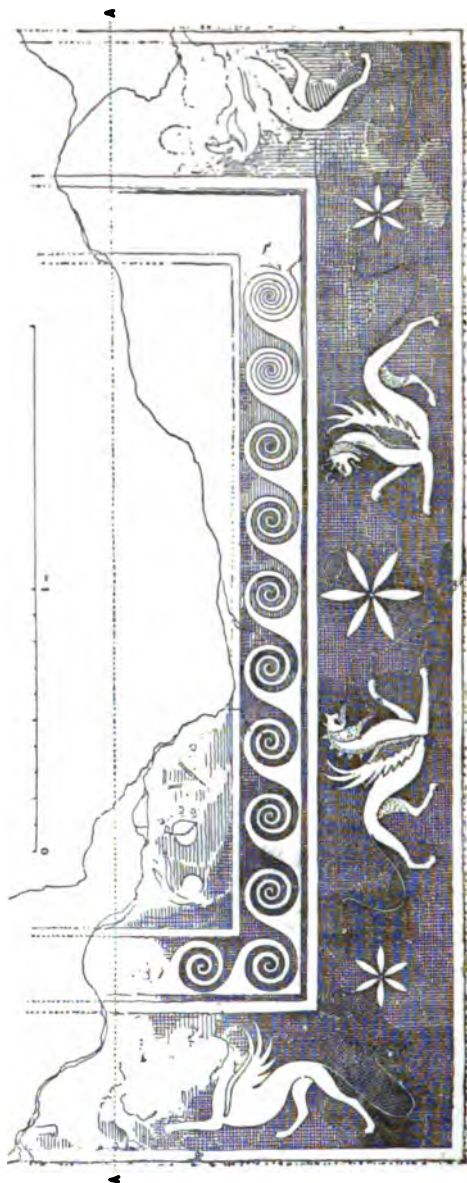


FIG. 48. MOSAIC PAVEMENT FROM A BUILDING SOUTH OF THE AGORA, SHOWING EAGLE-HEADED AND LEOPARD-HEADED GRIFFINS.

A plain border, one meter in width, formed of mixed light gray and olive-green pebbles, surrounds the central pattern, which occupies an oblong measuring 4.3 by 2.66 m. This pattern itself, shown in Figure 48, consisted of two borders of considerable width, separated by narrow white bands, and surrounding a central field which measures 2.53 by 0.89 m. The outermost border, 51 cm. wide, contains upon each side two griffins face to face; the inner border, 22 cm. wide, a wave ornament with large scrolls of many convolutions. The central field was broken away in so great part that it was not possible to make out the subject represented therein. It is only certain that brilliant colors, red, yellow, and white, were here employed in comparatively broad surfaces on a dark green background.

The outermost and broadest border — our interest in the subject of which has led to the consideration of the mosaic in this connection — is fairly well preserved throughout one half of its extent. Almost everywhere the background of dark olive-green was found to have held together better than the figures, and in several patches where the pebbles had been broken away the pattern could still be traced by the impressions left on the bed of mortar and the cement of the interstices. Every detail of the two griffins upon the longer side remaining was thus clearly recognizable.

The monsters, alike in formation and posture of body, are dissimilar in their heads, the one having the crest, elongated skull, beak, and wattles of a bird, the other a head resembling that of a leopard or lioness, with widely open mouth and protruding tongue, and with curiously conventionalized horns and beard.<sup>1</sup> It will be recollected that similar pairs

<sup>1</sup> Furtwängler (s. v. *Gryps*, in Roscher) has pointed out that the Greeks derived this horned panther-headed or lion-headed type of the griffin from the Persians, who in their turn had taken it from the Chaldean image of Tiamat, the enemy of the gods. Compare the characterization of this monster given by Delitzsch,



of eagle-headed and leopard-headed griffins appear among the sculptured decorations of the temple of Miletos,<sup>1</sup> and formed favorite subjects in later ages.<sup>2</sup> The feathered wings, turning slightly forward at the tips, are similar to those of the griffins represented upon the more common coins of Assos, while the farther fore legs are uplifted in the air like those of the sphinxes sculptured upon the temple: this imitation of the posture, while omitting the supporting stele, resulting in the same aimless and inorganic character which has been noticed in the corresponding feature of the coins. The hind legs, on the other hand, are erect and striding, like those shown upon these coins, which, as before said, belong to the first half of the third century before Christ. The tail, abnormally long and thin, is flung into the air in a graceful curve. So fine is the execution of the mosaic that even such

*Wo lag das Paradies?* Leipzig, 1881, p. 88. A sufficient number of Mesopotamian and Persian representations of the figure have been quoted by Furtwängler. This lion-headed and horned griffin undoubtedly found its way to the northern coasts of the Aegean by way of Lycia, where it appears upon coins assigned to the first half of the fifth century B. C. (Gardner, Percy, *Types of Greek Coins*, Cambridge, 1883, pl. iv., and Fellows, Charles, *Coins of Ancient Lycia before the Reign of Alexander*, London, 1855, pl. xi.), as well as upon mintages of later date.

<sup>1</sup> Chandler (Richard), *Ionian Antiquities*, London, 1769, vol. iii. pl. vii.-x. Rayet et Thomas, *Milet et le Golfe Latmique, Fouilles et Explorations Archéologiques*, Paris, 1877, pl. 17, 49-51.

<sup>2</sup> Eagle-headed and leopard-headed griffins form pendants upon the reliefs of one of the fine bronze helmets found in the Caserma dei Gladiatori at Pompeii (Niccolini, Fausto e Felice, *Le Case ed i Monumenti di Pompeii*, Napoli, 1854, fasc. 19, tav. ii. 2, and ii. 7), upon the vase of Xenophantos (Gille and Stephani, *Antiquités du Bosphore Cimmérien*, St. Pétersbourg, 1854, pl. 45, 46), upon a vase in the Museum of Berlin (Gerhard, Eduard, *Neuerworbene antike Denkmäler des königlichen Museums zu Berlin*, Berlin, 1836-40, vol. iii. no. 1791), and in a wall-painting (Zahn, Wilhelm, *Die schönsten Ornamente und merkwürdigsten Gemälde aus Pompeji, Herkulaneum und Stabia*, Berlin, 1828-56) and on a marble table of Pompeii (Niccolini, *Case e Monumenti*, fasc. vi.). They are likewise common upon Roman sarcophagi; compare Zoega (Georg), *Abhandlungen, herausgegeben . . . von T. G. Welcker*, Göttingen, 1817, and Guattani (Giuseppe Antonio), *Monumenti Antichi*, Roma, 1785, tav. iii.

small details as the claws are distinctly indicated. In artistic respects the design of the griffins is exceedingly good. They are drawn with a clear understanding of animal movement, — see the outstretched hind leg, and the swell of the muscles in all parts of the body, — as well as with a full appreciation of the principles of conventionalism. A trained skill is likewise displayed in the adaptation of the figures to the exacting methods of mosaic-work. Thus, while there is no attempt to give roundness to the limbs by shading, the concave curve of the wing and the distance of the farther hind leg are ingeniously indicated by means of darker local tints. The outlines are everywhere vigorous and graceful. These griffins rank among the finest works of ancient mosaic known, and are without doubt to be assigned to that period in which this branch of art attained its very highest development.

Between the griffins, and in the corners of the border, are six-pointed stars, of the shape familiar to all who have amused themselves with striking arcs from centre to centre with a fixed radius. It is with figures such as these that modern carpenters delight to decorate architectural drawings intrusted to their care. There is a singular fascination to the human mind in this use of a pair of compasses, — so accurately can the periphery of a circle be divided with six strokes of the opening by which it was generated. The mechanical and inartistic character of these ornaments does not, however, stand in contradiction to the antique spirit of design. The same six-pointed star appears not infrequently upon Greek vases, and is to be seen, in monumental execution, upon the sacred buildings of Eleusis.

Enough remains of the griffins upon the shorter sides of the border to make it apparent that they were, pair by pair, precisely like those already described. The dotted line

AA (Fig. 48) indicates the longitudinal axis of the pattern, and will convey an idea of the proportions of the whole. The fore legs and claws of one of the griffins beyond this line will be perceived upon the left-hand side. The monster shown upon the right-hand side of the drawing has an eagle's head. The corresponding feature of the griffin upon the left has been almost entirely obliterated, yet from curved lines above it, undoubtedly representing the peculiar crooked horns, we may safely conclude it to have been that of the quadruped.

This altogether unnatural combination of the typical outstretched and uplifted fore legs with erect and striding hind legs—that is to say, with conventional forms which elsewhere appear only during the early ages of Pergamene supremacy—leads to the supposition that the mosaic was executed during the third century before Christ. All other indications to be gathered concerning the age of the pavement and the building which contained it are in entire agreement with this view. Apart from the artistic style of the design itself, the chief argument for this date is the close relation of the edifice to the Agora, known to be a creation of the Pergamene period. There is thus little doubt that we have in the fine figures of the mosaic a further evidence of that period of the monumental renaissance of Assos. It was under this dynasty that figured mosaics, which had previously been restricted to sacred edifices, were generally extended to profane buildings.<sup>1</sup> A civic hall such as this would naturally have been among the first of the latter class to profit by this extension. The flinty pebbles are deeply worn, and must have been trodden under foot for generations. Although not restored, the figured pavement may even have remained in sight until

<sup>1</sup> See upon this point Becker (Wilhelm Adolph), *Charikles, neubearbeitet von Hermann Goell*, Berlin, 1877, vol. ii. p. 143, with the ancient authorities there quoted.

the Christian era. Moreover, the hall continued to be used for a considerable period after the mosaic had been condemned as no longer serviceable, for it was found to be covered with other floorings of plain stucco, the removal of which from the surface of the design was a work of some difficulty.

The fact that the conventional colors of the griffins, as well as their forms, are indicated in the mosaic, permits us to consider them from another point of view, rarely to be obtained in relation to ancient works of art, and peculiarly interesting when it is borne in mind that the conclusions thus derived are without doubt directly applicable to the polychromatic treatment of similar subjects in sculpture. All the backgrounds of the patterns, as also the pavement outside the design, were formed, as has been said, of grayish green pebbles, shading from a tint such as that shown by the inner side of an olive leaf to an almost perfect black. The darkest of these pebbles were selected for the background, so that the general effect of this was much deeper and more solid than that of the outer border.

The bodies of the griffins themselves were of round whitish gray pebbles, of two distinct shades. It is apparent that an attempt was thus made to indicate the spots which were attributed to the griffins by ancient mythographers. Pausanias<sup>1</sup> describes these markings as similar to those of a leopard, an animal still common in Asia Minor, and it may well be that the substitution of the head of a leopard for that of an eagle was thus rendered more natural. An indication of such spots may be observed upon various other works of ancient art.<sup>2</sup>

<sup>1</sup> Pausanias, VIII. 2. 7.

<sup>2</sup> For instance, upon the highly remarkable Etruscan relief, published by Braun (Emil), *Pitture Etrusche Vulcenti, Annali dell' Istituto di Corrispondenza Archeologica*, Rome, 1859, and figured in the *Monumenti Inediti*, vol. vi., Roma,

The wings are of a very light bluish gray, edged along the front line of the bone with a bright yellow. The same yellow appears upon the beards, as well as upon the crest of the eagle-headed and the horns of the lion-headed monster. The beak of the former and the tongue of the latter are of a brilliant red jasper. Fragments of the mosaic showing these colors, as well as illustrating the method of adjoining the separate stones, are preserved in the Museum at Boston (No. 111). In general, it is to be remarked that the mosaic-work of the figures is composed of carefully selected stones, finer and smoother in texture than those of the background, as well as brighter and clearer in color.

The prevalent white tint of the bodies of the griffins is in accordance with the descriptions of the traditional colors of these monsters given by ancient writers.<sup>1</sup> It may likewise be observed, that in the rare specimens of ancient vase paintings, where a number of pigments are employed on which griffins are represented, their bodies are white. Upon a vase published by Jahn,<sup>2</sup> the resemblance of the colors to those of our mosaic is very close, the wings of the griffin being blue, while the rest of the body is white. The same colors appear upon the well known painted vase of Xenophantos,<sup>3</sup> and upon the fragments of an antique wooden sarcophagus,<sup>4</sup> as well as

1857-63, as well as in Des Vergers (A. Noël,) *L'Étrurie et les Étrusques, dix Ans de Fouilles dans les Maremmes Toscane*, Paris, 1862, vol. iii. pl. 27. Compare also the Pompeian helmet referred to in a preceding note.

<sup>1</sup> Concerning the conceptions of the ancients in respect to the conventional colors of griffins, compare Aelian, *De Nat. Anim.*, IV. 27, quoting from Ktesias and preserving the fragment of the *Indica* numbered xxvi. in Lion's edition. Aelian is in turn followed in the mediæval tract *De Anim. Propr.* of Manuel Philes, II., ed. Pauw, p. 15. A different description, altogether at variance with the colors of our mosaic, is given by Ktesias, *Ind.*, xii.

<sup>2</sup> Jahn (Otto), *Ueber bemalte Vasen mit Goldschmuck*, Leipzig, 1865, pl. 15, No. 29.

<sup>3</sup> Stephani, *Antiquités du Bosphore Cimmérien*, pls. 45. 46.

<sup>4</sup> Published in the same work, pl. 84. Further examples are supplied by various painted sherds found in the same locality. Pl. 70 A.

upon various less important ceramic specimens, too numerous to mention. Great stress should not, however, be laid upon this point, as the instances of a different usage are common; witness the red and dark green plumage of two inedited sphinxes in the Barbakion and Central Museum of Athens. It is possible that, as the specimens referred to would tend to show, the Asiatic and the European usages differed in this particular.

The appearance of the sphinx above the main entrance to the temple of Assos led to the remark that the figure of this monster may have been employed interchangeably with that of the griffin as the symbol of the city. This assumption derives further support from the appearance of the sphinx, in its characteristic crouching position, upon an engraved seal discovered at Assos. The gem in question, broken from the setting in which it had originally been secured, was found among the débris of the lower town by a peasant of Behram, some years before the arrival of the American explorers. It was purchased from the custom-house official of the little port by the present writer, who, after mounting it in a gold ring, copied from an antique of about the same age and character, gave it to the Museum of Boston, where it is preserved under the number S. 1020.

The stone is a carnelian, — a material much more highly prized in ancient than in modern times. It is worthy of note that Pliny<sup>1</sup> particularly mentions Assos as one of the two places in the Greek world whence were derived supplies of carnelian, described by him under the name *Sarda*. The geological researches of the expedition did not lead to the discovery of any deposit of this stone in the vicinity of Assos, and it appears probable that the carnelians known to the ancients as Assian were merely brought into commerce from

<sup>1</sup> Pliny, *Nat. Hist.*, XXXVII. 31, ed. Delph.

this port, and were found at some place in the interior Troad where the formation is not of a volcanic origin.

The gem is of an oval shape, measuring 12 mm. on its longer axis, and is but slightly convex. The intaglio engraving upon it (Fig. 48<sup>a</sup>) is carefully executed, being decidedly superior to the average work of the class to which it belongs. With exception of the farther fore leg, which is not uplifted, and of the tail, which is thrown straight up into the air, the attitude is that of the sphinx sculptured upon the epistyle of



FIG. 48<sup>a</sup>. HERALDIC SPHINX UPON ENGRAVED SEAL FOUND AT ASSOSS.  
(From the Impression. — Enlarged six diameters.)

the temple. The wings, fully feathered, turn backwards like those upon the later coins of Assos. The female breasts are distinctly indicated. Evident reminiscences of the archaic image of the Assian sphinx are to be seen in various details, such as the modelling of the haunch, and the fillet binding the head and falling upon the shoulders, as well as in the general position. There can be little doubt that this gem was engraved with definite reference to the civic symbol

of Assos. We cannot, indeed, adduce direct proof that the seal was actually used in this significance by city authorities, but there is nothing in the nature of the case to render this view unlikely. The identity of the words employed by the ancients for coat of arms and seal ring (or the use of the same root, as in the Latin *signum* and *sigillum*) shows that the fundamental idea of such an image was heraldic; and there can scarcely be a doubt that seals bearing the symbol or device of a boar were made use of not infrequently. There is thus an entire agreement between the ancient and the mediæval usage in this respect, and it may well be that we have become possessed of an actual seal of the Greek city.

We are reminded by this gem of one of the most interesting episodes in the history of the town. When Hermeias, tyrant of Assos and Atarneus, fell into the hands of the Persians (B. C. 345), his enemies possessed themselves of his ring, and by sending letters bearing the impression of its seal to the governors left in charge of those towns beguiled them into giving up the citadels and garrisons, under the belief that an amicable arrangement had been effected between King Artaxerxes and their former ruler.<sup>1</sup> We may imagine this ring of Hermeias to have borne the image of the sphinx, inasmuch as the rulers of such small states commonly adopted for this purpose the symbol which they stamped upon their coins.<sup>2</sup>

<sup>1</sup> Diodoros, XVI. 52.

<sup>2</sup> It may be mentioned as a coincidence, that the Emperor Augustus likewise employed seal rings bearing the image of a sphinx, two of which he had found among the jewels of Atia (Pliny, *Nat. Hist.*, XXXVII. 4, ed. Delph.; Suetonius, *Octav.*, I.; Dion Cassius, LI. 3). In the absence of the Emperor from Rome, during the civil wars, his agents were authorized to use the duplicate to seal official documents which had to be sent from the capital. Pliny informs us that it was a common jest among those who received such edicts that this sphinx was ever the bearer of some enigma. On account of this mockery, Augustus subsequently exchanged the sphinx upon his seal for another image.



The interchangeable employment of sphinxes and griffins as the heraldic symbols of Assos, surprising as it appears at first sight, is thus to be traced in the Hellenistic as well as in the archaic period. While, on the one hand, we have a parallel between the oldest coins of the town and the coat of arms sculptured above the entrances to the temple, on the other, we have the figures of the civic hall and of the seal ring. Even a cursory examination into the relations between the sphinx and the griffin, intimate in all ages of antiquity,<sup>1</sup> will fully explain this interchange. We may even recognize in it a constant tendency.

In mythological significance, griffin and sphinx were most closely allied, and in that conventional artistic usage with which we are at present concerned they were often regarded as actually identical. The fundamental idea in both is that of a supernatural, irresistible force, ascribed to these monsters because of their combining the characteristic features

<sup>1</sup> The parallelism between sphinx and griffin formed the subject of learned investigations as early as the of time Turnebus (Adrianus), *Adversariorum*, vol. iii., Basileae, 1581, x. 62; xxiii. 26; xxiv. 23. It has been treated at great length by Voss (Johann Heinrich), *Mythologische Briefe*, Stuttgart, 1827-34, Theil i. p. 305, Anhang, *Ueber den Ursprung der Greife*, and Theil ii. p. 189; and more particularly by Stephani (Ludolf), *Erklärung einiger im Jahre 1863 im südlichen Russland gefundenen Gegenstände*, *Compte Rendu de l'Académie de St. Pétersbourg*, St. Pétersbourg, 1864, p. 64.

The most important materials for a consideration of the position and development of this type in ancient literature and art have been collected, among others by Ukert (Friedrich August), *Geographie der Griechen und Römer*, Weimar, 1816-46; Welcker (Karl Gottlieb), *Hekate und Eros, von Greifen gezogen*, in his *Alle Denkmäler erklärt*, Göttingen, 1849-64, vol. ii., and in another paper entitled *Sarcophag im Museum zu Köln*, *Zeitschrift für Alterthumskunde des Rheinlandes*, Bonn, 1845; Baehr's note to Herodotus, 2d ed., Lipsiac, 1856-61, vol. ii.; Brunet's *Recherches sur quelques Animaux fantastiques*, in the *Revue Archéologique*, vol. ix., Paris, 1853; Brunn's *Intorno ad alcune rappresentanze della Sfinge*, in the *Bullettino dell' Istituto*, Roma, 1853; and, more particularly, Stephani, in the works already quoted and in the volumes of the *Compte Rendu de l'Académie de St. Pétersbourg* for the years 1863 and 1867; Langbehn (J.), *Flügelgestalten der ältesten griechischen Kunst*, München, 1881; and Furtwängler as quoted above.

of the most powerful animals of earth and air. Hence both are among the most common apotropaic symbols.<sup>1</sup> Sphinx and griffin being identical in formation with the sole exception of the head, it is not difficult to account for their similarity of attributes and exchange of functions. The alternation of the head of a leopard with that of an eagle, in the griffins of our mosaic, indicates the readiness with which the human head might be exchanged for that of the bird.

As the result of this we may frequently notice in ancient literature a failure clearly to distinguish between these monsters, while in ancient decorative art we constantly see sphinx and griffin employed as the most natural pendants, and often used interchangeably.

Thus it is worthy of note that in one of the earliest references to the griffin Aischylos terms it ὁ ξύστομος Ζηνὸς ἀκραγῆς κύων,<sup>2</sup> a designation which closely corresponds with that applied by the same author to the sphinx, δυσσημεριῶν πρύτανις κύων.<sup>3</sup> The Romans certainly conceived sphinx and griffin to be identical, designating both by one and the same word.<sup>4</sup> So direct literary proof of this particular confusion is, it is true, wanting in the case of the Greeks themselves; but a noteworthy parallel is presented by their identification of the griffin with the hippalektryon.<sup>5</sup>

We reach these same conclusions more directly, and with

<sup>1</sup> For much that concerns the prophylactic significance of sphinx and griffin, see Jahn (Otto), *Die Lauersforter Phaleræ*, Bonn, 1860. Sphinxes are very frequently represented upon apotropaic vases.

<sup>2</sup> Aischylos, *Prom.*, 803.

<sup>3</sup> Aischylos, *Frag.*, No. 232. Sophokles (*Oed. R.*, 391) applies to the sphinx the word βαψιδὸς κύων.

<sup>4</sup> "Piceis," "Pices," or "Phices," (*Festus*, ed. Müller, p. 206; Isidorus, *Orig.*, *xx.* 2, 3; Nonius Marcellus, *De Propri. Serm.*, p. 152. 7, Leipzig ed., who refers to the important passage of Plautus, *Aul.*, IV. 3. 1), from the Boeotian form of the word sphinx, φιλξ, as used, for instance, by Hesiod, *Theog.*, 326.

<sup>5</sup> This is done by Photios, *Lex.*, and by Hesychios, both s. v. Ἴπταλεκτρίων.

greater certainty, in surveying the wide field of ancient decorative art, a small number of characteristic examples from which will suffice for illustration. The potency in warding off malignant influences, attributed alike to sphinx and griffin, led to the employment of both forms in the sculptured decorations of arm-chairs, couches, lamps, and other furnishings of the dwelling, as well as upon the helmets and breastplates of the warrior, and it was without doubt through this common significance of an occult protection, quite as much as through the resemblance of form, that the identity of character was established. In one of its commonest functions, as the guardian of funeral monuments or of sacred edifices, the griffin formed a pendant to the sphinx, or even replaced it altogether. It will be recollected that in the case of the acroterion of the temple of Assos we were in doubt as to which of these monsters the fragment of a paw was to be ascribed.

In apotropaic vases, of the earliest as well as of the most recent styles, the griffin is constantly found in combination with the sphinx. Apart from Oriental examples of this parallelism<sup>1</sup> well known Greek examples of the appearance of both monsters in figure compositions are afforded by the François vase, before instanced, by a vase of the Ermitage, published by Micali,<sup>2</sup> and by one from the Castellani collection.<sup>3</sup> It must have been as such pendants that sphinxes and griffins stood together in the palace of the Scythian King Skyles at Olbia,<sup>4</sup>—if, indeed, we may not conclude, from

<sup>1</sup> Layard, *Monuments of Nineveh*, vol. i. pl. 89; vol. ii. pl. 69. Cesnola (Alessandro Palma di), *Salamina*, London, 1884, 2d ed., fig. 115. Lajard (Jean Baptiste Felix), *Recherches sur le Culte public et les Mystères de Mithra en Orient et en Occident*, Paris, 1867, fig. 53, et al. For an Etruscan example, see Micali, *Monumenti*, tav. xliii.

<sup>2</sup> Micali, *Monumenti*, tav. xl.

<sup>4</sup> Herodotos, IV. 78.

<sup>3</sup> Fröhner (Wilhelm), *Collection Castellani*, Rome, 1884, No. 368.

the frequency of griffins and the entire lack of sphinxes among the remains of this part of the ancient world, that Herodotos himself affords us an example of that confusion between the two forms which appears to be frequent among ancient writers.<sup>1</sup>

The griffin, like the sphinx, with which it was so readily confounded, by no means originated amongst the Greeks. This fact is substantiated not only by the constant appearance of griffins upon Oriental monuments of the highest antiquity,<sup>2</sup> but also by the traditions of an Eastern derivation

<sup>1</sup> Compare upon this point the note to this passage given by Rawlinson in his translation of Herodotos, London, 1875, vol. iii., and the authorities in regard to the discovery of griffins in Scythia there cited.

<sup>2</sup> An outline history of the employment of this form in ancient art may be recognized from the facts already adduced. To sum up concisely. The griffin, like the sphinx, undoubtedly had its origin in the agglutinative methods of mythology and heraldry. The earliest formal combination of the kind known to the writer is that Chaldean image of the winged lion with bird's talons upon its hind legs which Assyriologists identify as the enemy Tiamat. In Assyrian art we see this figure assume the eagle's head (Lajard, *Culte de Mithra*, figs. 54 B, 56, 57; Menant (Joachim), *Les Pierres Gravées de la Haute Asie*, Paris, 1883-86, vol. ii. fig. 7; Perrot and Chipiez, *Histoire de l'Art dans l'Antiquité*, vol. ii. fig. 11), and finally adopt the characteristic form of the griffin with the hind legs of a lion (Lajard, *Monuments of Nineveh*, vol. i. pls. 8, 43, 46; *Discoveries in the Ruins of Nineveh and Babylon*, p. 200, et al.).

An adequate investigation into the further history of the type would here lead us too far afield. Attention should, however, be called to the fact that griffins, closely approaching in form those depicted by the Greeks of the archaic period, and differing in certain important respects from the Tiamat type of Mesopotamia, appear upon the most ancient engraved cylinders of the Hittites. Lajard, *Culte de Mithra*, fig. 58; Wright (William), *The Empire of the Hittites*, London, 1884, pl. i.; Seal from Marash in the Museum of Berlin, No. 7894.

Perhaps the next stage in the further migration is presented by the sitting griffin so frequently met with upon Cyprian seals, such as that referred to in a former note. In general it may be remarked that the griffin quietly posed as a guardian, and not in attack as a beast of prey, forms the Syrian, as contrasted with the Mesopotamian type. It is this guardian which appears upon the seals of the very earliest Greek period, such as the "island stones" in Copenhagen, Breslau, and the British Museum, published in the *Archäologische Zeitung*, Berlin, 1883, pl. 16; and upon the Boeotian tablet mentioned by Milchhüfer (Arthur), *Die Anfänge der Kunst in Griechenland*, Leipzig, 1883, p. 48, and now in the Museum

dwelt upon by almost all those classic writers, before quoted, who make mention of the monster. The task of the Greek archæologist is hence rather to follow the changes which altered and perfected the primitive Oriental type, than to seek for direct explanations of its origin, or original mythological signification. Taken from this point of view, the great diversity of the sphinxes and griffins of Assos renders them of peculiar interest.

The attributes of the chief deities of ancient towns were commonly adopted as civic symbols; for example, the owl of Athenian Pallas, the steeds of Delian Apollo, the peacock of Samian Hera, the cock of Epidaurian Asklepios, the stag of Ephesian Artemis, the goat of Ainian Hermes, and many others. This usage leads us to inquire whether the sphinx or griffin may not have been — upon this Asiatic coast, at least, where these monsters were early received from the East, and possibly connected with an orientalized cult — associated with the protecting deity of Assos. Some indications do, in fact, point to the existence of such an association. Chief, as also most familiar among these is the general adoption of sphinx and griffin as symbols upon the helmet crest of Athena, as in the chryselephantine statue of Pheidias,<sup>1</sup> a work in which all such details were most carefully considered. Some other points, capable of supporting this argument, have been referred to by Stephani.<sup>2</sup> But after examination of all instances of such association, we are forced to the conclusion that the available materials do not suffice for a definite attribution of either sphinx or griffin to Athena, or indeed any

of Berlin, No. 7548. The small griffins of beaten sheet gold found among the most ancient remains of Mykenai (Schliemann, *Mycenae*, No. 261) are more Oriental in character.

<sup>1</sup> Pausanias, I. 24. 5.

<sup>2</sup> Stephani (Ludolf), *Der ausruhende Herakles*, pp. 147, 182, and the other publications of this author already quoted.

one Greek deity. Perhaps the closest relation recognizable is that existing — doubtless in great measure by virtue of their attributes of invincible force — between these Oriental monsters and Phœnician Herakles. The exploits of this hero, as will be borne in mind, formed the subjects of the sculptures of our temple. Whether it was in any wise through this intimate connection of Herakles with the official worship of Assos, natural enough in an Aeolian colony, that sphinx and griffin were adopted as civic symbols, can, in the present state of our information, be no more than a conjecture.

Here we may terminate our consideration of those temple sculptures which were discovered during the excavations of the second and third years, and of those other works of art which by reason of their subjects are connected with them. The following observations upon the reliefs previously known have the sole purpose of correcting and supplementing the accounts hitherto published.

Of the epistyle blocks and metopes seen upon the site of the temple by earlier investigators, there is one which it has been impossible to discover, or at all events to identify. Prokesch von Osten, in the two descriptions of his visit to the site of Assos in the year 1826,<sup>1</sup> enumerates eleven fragments of the reliefs which were at that date to be seen upon the surface of the earth. Of these the eighth is described as "ein sitzender Amor, der die Hand auf den Bogen stützt" Nothing exactly corresponding with this was found either by the French or by the American explorers. We are thus left in doubt whether a relief showing a subject of this nature actually disappeared during the nine years which

<sup>1</sup> The earlier of these accounts was given in the *Anzeigblatt* of the *Wiener Jahrbuch der Literatur*, vol. lviii., Wien, 1832, under the title, "Mittheilungen aus Kleinasien von Oberstlieutenant von Prokesch Osten: I. Reise von Smyrna durch Mytilene nach Alexandria-Troas und Assos," July, 1826; and subsequently in his *Denkwürdigkeiten und Erinnerungen aus dem Orient*, before quoted.

elapsed between the visit of Prokesch and that of Texier, or whether Prokesch may have seen a portion of the relief of Herakles and Pholos (Fig. 37), — discovered at no great depth beneath the surface during the American excavations, — and have entirely mistaken the position of the body and failed to discriminate between the two personages. That a figure of Eros should have been represented among the sculptures of the temple is, in itself, exceedingly improbable, and we are perhaps warranted in assuming the bowman seen by Prokesch to have been the Aeolic hero. It is, moreover, well known that some carved blocks belonging to the temple have been removed from the site by Turkish builders of the present generation. Indeed, it is surprising that so much still remains.

The one complete metope relief discovered during the first year was referred to in the Preliminary Report as representing a man pursuing a woman. Further examination of the block has, however, made it apparent that the figure upon the left, supposed to be that of a female, is entirely nude. This amounted to a proof that it was also male; for, as is well known, naked female figures were not depicted by the Greeks in the age to which these sculptures belong. Even as late as the time of Praxiteles the nudity of the Knidian Venus required to be explained and justified by the suggestion of the bath. Close scrutiny of the stone showed that the figure of the pursued, like that of the pursuer, had been originally provided with male organs, which must have been obliterated at some period subsequent to the displacement of the frieze. Several of the other reliefs have suffered similar mutilation.

In order to complete our view of these sculptures, we must now give our attention to two of the reliefs from the temple of Assos, removed from the surface of the ground by the French in 1835, and now preserved in the Louvre. The subjects of these remarkable works, in the writer's opinion, have

not hitherto been correctly explained. A determination of their significance is of importance, not merely on its own account, but because it has a bearing on the age and dedication of the temple, and on the artistic relations of its sculptured decorations.

The chief of these reliefs, upon the longest known epistyle block of the temple, represents a marine monster, a kind of merman with human body and fishy tail, who has been seized from behind by a naked hero. (Fig. 49.) The monster occupies considerably more than half the panel, the space beyond and above the tail being filled in with six human figures, retreating with outstretched and uplifted arms, as if affrighted at the struggle. As the trunks of the merman and hero are inclined to an angle of about thirty degrees, and as all the heads rise to precisely the same level, the six upright figures are of less than half the size of the hero. This want of scale results from the designer having adhered to the conventional principle known as isocephalism: a method of composition regardlessly followed in many archaic works, and often recognizable, though skilfully disguised, even in reliefs of the perfected style. In this case the naive violation of relative proportions is not without advantage; for the figures of the chief actors in the scene are thus rendered prominent in the same striking fashion as are the heroes of those monumental wall-paintings and reliefs of Egyptian and Assyrian art, in which a giant king strides victorious through hosts of pygmy assailants, and warriors outtop the fortification towers which they defend.

The surface of the stone is so chipped and corroded that it is scarcely possible to determine the sex of the six retreating figures. Texier<sup>1</sup> and Clarac<sup>2</sup> describe them as

<sup>1</sup> Texier, *Description de l'Asie Mineure*, vol. ii.

<sup>2</sup> Clarac, *Musée de Sculpture*, vol. ii.





FIG. 49. EPISTYLE RELIEF FROM THE TEMPLE.

female; De Witte, as male.<sup>1</sup> The writer inclines to the former view, and it is at least certain that the engravings published in the *Monumenti*<sup>2</sup> are incorrect in showing these bodies as nude. As indicating the terror inspired by the struggle, these fugitives effectively emphasize the main action. In decorative respects, they contrast strikingly with the slanting trunks of the combatants, being erect, or slightly inclined from the group, the arms of the first five outstretched in a contrary direction, while those of the last, terminating the relief, are held vertically aloft. The regularity of the postures is almost that of a conventional ornament; even the turn of the heads, towards or from the dreaded spectacle, is in unvaried alternation.<sup>3</sup>

The attacking hero, though entirely naked, bears upon his back a quiver, seemingly rather as an attribute than as part of his equipment, and is thus sufficiently designated as Herakles. Such was not, however, the identification of this figure given by the earliest editors of the relief. Both Texier and Clarac conceive the wrestler to be King Menelaos, and the monster to be one of the shapes of Proteus, the Egyptian, whom the bearded husband is constraining to prophesy, as recounted in the *Odyssey*.<sup>4</sup> In conformity with this view, Texier supposes the six fugitives (whose figures are, as he declares by way of support for the identification, *tout à fait Egyptiennes*) to represent Helen and her maids, at that time domiciled with Proteus, after having been driven to Egypt by contrary winds, while on the voyage from Sparta to Troy.<sup>5</sup> Clarac, on the other hand, conjectures that the six subordinate personages

<sup>1</sup> De Witte, *Annali*, 1842.

<sup>2</sup> *Monumenti*, vol. iii., 1839-43.

<sup>3</sup> It is a further error of the engraving in the *Monumenti*, that the fourth figure from the combatants is shown looking forwards.

<sup>4</sup> *Odyssey*, IV. 435-460.

<sup>5</sup> Herodotos, II. 112, 118.

may be taken for the daughters of the Old Man of the Sea, "among whom we may recognize the divine Eidothea" (the only daughter of Proteus known to Homer, by the way); or, again, six of the Nereids; or, if one prefer, the Pleiades, or the Hyades, — "constellations which, by reason of the changes produced by them in the seasons of the year, may be brought into relations with Proteus, the variable god, to whom they may have been compared, and with whom they may have been associated."

Yet, perplexed by the fact that Menelaos is not known to fame as a huntsman, while a variety of animals, lions, boars, bulls, and the like, are figured among the sculptures of the temple, Clarac offers as an alternative an entirely different identification of the hero, who he suggests may be Aristaïos, son of Apollo and Kyrene. Virgil,<sup>1</sup> in evident imitation of the Homeric episode, has described this bucolic divinity as questioning the prophetic Proteus concerning bee culture, and Aristaïos thus might be represented in the struggle with the marine monster quite as naturally as Menelaos. Clarac calls attention to the fact, that the attribute of the quiver is decidedly more in keeping with the functions of Aristaïos than with those of the Lacedaemonian king; while the six fugitives of the relief may remain, as before, the daughters of Proteus, the Nereids, the Pleiades, or the Hyades, or they may be taken as representatives of the Muses, or of the Seasons, from whom Aristaïos had received his training in the arts of husbandry. Every indication afforded by the decorations of the temple is readily brought into line with this explanation. Thus, the lion is that beast which ravaged the country around Mount Pelion, and attacked Kyrene, the mother of Aristaïos; the Centaurs are Thessalians, naturally connected with the nymph and her son, inas-

<sup>1</sup> *Georgics*, IV. 387 *et seq.*

much as Cheiron had himself instructed the boy; the pairs of bulls are those offered by Aristaios in sacrifice before entering upon the struggle with Proteus; and, finally, the pig and the stag are peaceable animals, significant of the agricultural renown of this mortal, who attained to the dignity of a god through the benefits bestowed by him upon mankind. An exegesis such as this is too perfect and too characteristic to be passed without mention.

On the other hand, the sufficiently obvious fact that the hero represented upon our relief is none other than Herakles was fully recognized by De Witte, one of the earliest editors of the Assos sculptures, and, as compared with Texier and Clarac, a trained archæologist. The monster whom the hero attacks was, in De Witte's view, Nereus,<sup>1</sup>—a being gifted, like that other Old Man of the Sea, Proteus, with powers of prophecy and of transforming his shape to elude the grasp of mortal hands. Herakles was, as is well known, fabled by the later Greeks to have sought from Nereus advice concerning the whereabouts of the Hesperides and golden apples, and for this purpose to have fallen upon him while he was asleep, holding him firmly during his various transformations.<sup>2</sup> This identification of the monster as Nereus, correcting as it did the most obvious error of the Menelaos-Proteus version, was generally accepted, found its way into many handbooks, and has been reiterated in recent years by authorities such as, among others, Lenormant<sup>3</sup> and Murray.<sup>4</sup>

The fact was, however, soon recognized that the scene thus

<sup>1</sup> In respect to this marine opponent of Herakles, De Witte, though naming Nereus first, still leaves the choice open between him and Triton. The same failure to decide between the two candidates is noticeable in the description of the relief given by Guigniault.

<sup>2</sup> Apollodoros, II. 5. 11. Scholiast to Apollonios of Rhodes, *Arg.*, IV. 1396.

<sup>3</sup> Lenormant (François), *Intailles Archaiques de l'Archipel Grec*, *Revue Archéologique*, vol. xxviii., Paris, 1874, pl. 12.

<sup>4</sup> Murray (Alexander Stuart), *History of Greek Sculpture*, London, 1880-83.

appearing among the sculptures of Assos belongs to a well defined category of archaic representations, and Gerhard,<sup>1</sup> republishing in the year 1843 a vase painting which resembles the Assos relief in several characteristic features, satisfactorily proved that the monster suffering under the rough embrace of Herakles is not Nereus, but Triton. His argument was based upon the observation, that in no case does the group display indications of that illusory change of shape by which Nereus resisted Herakles, as Proteus did Menelaos, and Thetis did Peleus. To this is to be added, that upon three of the vases depicting this struggle the name of the monster is given by accompanying inscriptions as Triton.<sup>2</sup> Moreover, Nereus himself, identified by an inscription, appears in several of these representations as a spectator of the combat.<sup>3</sup> Hence Gerhard justly concludes: "*Dass ein wirklicher Triton in*

<sup>1</sup> Gerhard, *Auserlesene Griechische Vasenbilder*, vol. ii. pl. cxi. This vase had, in the previous publications of De Witte, *Description des Antiquités et Objets d'Art qui composent le Cabinet de Feu M. le Chevalier E. Durand*, Paris, 1836, No. 302, and Dubois (Léon Jean Joseph), *Description des Antiques faisant Partie des Collections de M. le Comte de Pourtales-Gorgier*, Paris, 1841, No. 196, passed as representing Herakles and Nereus. Gerhard, in his *Berlin's Antike Bildwerke beschrieben*, Berlin, 1836, had in like manner called the monster of the vase No. 697 "Nereus," in spite of the inscription "Tritonnos" upon it. Compare also the same author's *Etruskische und Kampanische Vasenbilder des Museums zu Berlin*, Berlin, 1843, pl. xv. 5, 6.

<sup>2</sup> One of these is the vase in the Berlin Museum, referred to in the preceding note, which has been more recently described by Furtwängler (Adolf), *Beschreibung der Vasensammlung im Antiquarium*, Berlin, 1885, No. 1906. For the second, see Brøndsted (Peter Oluf), *Description of thirty-two Ancient Greek Painted Vases, lately found in Excavations made at Vulci, in the Roman Territory, by Mr. Campanari*, London, 1832, No. 7; also in the *Archäologische Zeitung*, 1856, p. 248. For the third, see De Witte, *Description d'une Collection de Vases Peints et Bronzes Antiques provenant des Fouilles de l'Étrurie*, Paris, 1837, No. 84.

<sup>3</sup> As, for instance, on the vase last referred to in the preceding note. That on another vase, published by Dubois, *Notice d'une Collection de Vases Antiques*, Paris, 1843-48, the name Nereus does not appertain to the monster, but to one of the lookers on, has been pointed out by Jahn (Otto), *Berichte der K. Sächsischen Gesellschaft der Wissenschaften*, Leipzig, 1854, p. 173. An excellent résumé of the argument for this change of names is given by Roulez (Joseph

*diesem gequälten Meer-gott gemeint sei leidet somit durchaus keinen Zweifel."*

Reasons for questioning the appearance, upon such archaic works of art, of Nereus engaged in a struggle with Herakles, are likewise to be derived from purely literary sources. Long before the publication of Gerhard's argument, Welcker<sup>1</sup> had advanced the theory that the legend of Nereus prophesying to Herakles was merely an imitation of the Homeric story of

Emmanuel Ghislain), *Lutte d'Hercule et de Triton*, *Bulletin de l'Académie Royale des Sciences et Belles Lettres de Bruxelles*, vol. xi., Bruxelles, 1844.

<sup>1</sup> Welcker (F. G.), *Die zwölf Kämpfe des Herakles bey Pisander*, *Rheinisches Museum für Philologie, Geschichte und Griechische Philosophie*, Bonn, 1833, reprinted in the second edition of his *Akademische Kunstmuseum zu Bonn*, 1841, and in his *Kleine Schriften*, vol. i., Bonn, 1844-50. Welcker apparently overlooked the fact that the scholiast to Apollonios of Rhodes (*Argon.*, IV. 1396), in repeating the tale of Nereus prophesying to Herakles, refers to Pherekydes as his authority for this version of the story. Pherekydes the logographer (not to be confounded with the better known philosopher of the same name) lived during the first half of the fifth century before Christ, and it is hence evident that this episode of the Herakles legend is older, at all events, than that large class of literary embellishments and duplications for which we are indebted to the plagiarists of the Hellenistic age. On the other hand, we learn from Athenaios (XI. 38, p. 469 d), that Panyasis the poet, a contemporary of Pherekydes, relates that Herakles received the sun-bowl for the voyage to Erytheia from Nereus. This may well have been the original version of the tale, which but loosely connected the adventurous hero with the Old Man of the Sea. Athenaios himself remarks, that "perhaps, as Herakles was fond of large cups, the poets and historians, jesting because of the great size of this one, may have invented the fable of his having gone to sea in a cup." This vessel was naturally reputed to have been given to Herakles by Okeanos, as stated by Peisander (Athenaios, XI. 38), — a much older and better authority than either Pherekydes or Panyasis, — and in this business Nereus is obviously nothing more than a deputy for Okeanos. From this genesis of the tale of Herakles and Nereus it is plain that the connection between the two was neither sufficiently primitive nor sufficiently close to serve as the basis for a scene so popular as that represented upon such numerous works of archaic art must have been.

In regard to the marine monster itself, Welcker, though rejecting all connection between this combat and the expedition to the Hesperides, yet fails to make any advance towards the true solution of the problem. He still follows the identification of the merman shown upon the ancient vase-paintings as Nereus, contenting himself with the generalizing remark that the labors of Herakles led him to subdue the monsters of the sea as well as those of the land.

Menelaos and Proteus, invented as an embellishment of the exploits of Herakles.

Gerhard's identification of the monster is now regarded as so firmly established, that Klein<sup>1</sup> has based upon it the bold yet plausible suggestion that the scene sculptured upon the highly archaic throne of Amyklai, described by Pausanias<sup>2</sup> as the struggle between Menelaos and Proteus, in reality belonged to the wide-spread category of works of art depicting the combat of Herakles with a Triton. The antique sight-seers would thus have fallen into precisely the same error with respect to this representation, so entirely obsolete in his day, as did the French archæologists upon its rediscovery in modern times.

Judging from the great number of archaic Greek works of the kind which have come down to us, this victory of the national hero over the emissary of Poseidon must have been one of the most popular exploits of the cyclus. Gerhard<sup>3</sup> had collected twenty-three representations of the struggle at the time of his publication, and this list was increased to fifty by Stephani.<sup>4</sup> Seventeen further examples have recently been added by Petersen,<sup>5</sup> and, finally, seven more by Stud-

<sup>1</sup> Klein (Wilhelm), *Bathykles, Archäologisch-epigraphische Mittheilungen aus Oesterreich-Ungarn*, vol. ix., Heft 2, Wien, 1885. In basing his argument upon the Olympian bronze, which forms so excellent a parallel to this representation upon the throne of Amyklai, the author justly remarks that this change of identification removes the relief described by Pausanias from its inexplicable isolation, placing these two works side by side, at the head of a long and typical series of archaic designs.

<sup>2</sup> Pausanias, III. 18. 15.

<sup>3</sup> Gerhard, *Auserlesene Griechische Vasenbilder*, vol. ii. p. 95, note 12. This list is not without important errors. Thus No. 9, the pl. xxxii. of Millingen (James V.), *Peintures Antiques et Inédites de Vases Grecs*, Rome, 1813, is incorrectly referred to as showing two female figures beside the combatants.

<sup>4</sup> Stephani, *Compte Rendu de la Commission Impériale Archéologique*, St. Pétersbourg, 1867, p. 21, and *Nachtrag*, p. 209.

<sup>5</sup> Petersen (Eugen), *Ercole e Tritone, Annali*, vol. liv., Roma, 1882. Petersen overlooks one of the representations given (in the Appendix to the *Compte*

niczka,<sup>1</sup> bringing the total up to not less than seventy-four. Among these we have, in works of monumental sculpture, the poros gable, recently unearthed upon the Acropolis of Athens,<sup>2</sup> a bronze fragment found at Dodona,<sup>3</sup> the Olympian bronze<sup>4</sup> and the Assos relief now under consideration. Probably no single subject in all the wide range of ancient mythological scenes is known to have been so frequently illustrated.

In not one of these representations is Herakles shown as attacking with his accustomed weapons, the club or the bow. In accordance, doubtless, with some detail of the legend now lost, the hero wrestles with the monster naked-handed, seizing him from behind, and employing those devices of the palaistra known to the sport-loving Greeks as *ἄμματα*. Moreover,

*Rendu*) by Stephani, to whom he refers as having collected forty-nine examples only. The same remark applies to Studniczka. The example thus omitted in these recent lists is No. 416 of Dubois (L. J. J.), *Catalogue des Vases Grecs formant la Collection de Mr. C. L. F. Panckoucke*, Paris, 1835.

<sup>1</sup> Studniczka (Franz), *Attische Porosgiebel, Mittheilungen des Deutschen Archäologischen Instituts*, vol. xi., Athen, 1886.

<sup>2</sup> Described in the essay quoted in the foregoing note. Other fragments of this gable relief have since been discovered, and were examined by the writer in the small museum upon the Acropolis of Athens.

<sup>3</sup> Carapanos (Constantin), *Dodone et ses Ruines*, Paris, 1878, pl. xvi. fig. 4. This fragmentary relief, published by Carapanos as Herakles and the Lernean Hydra, was identified as Herakles and Triton by Studniczka in the essay before quoted. It is a work of the second half of the fourth, or even the first half of the third century, and is of interest as one of the very few works of so late a date which depict this scene. So little remains of the body of the monster upon this fragment, that it appears scarcely sufficient to afford a conclusive refutation of the original assumption of Carapanos; nevertheless Furtwängler (in Roscher's *Lexikon*, art. *Herakles*) unquestioningly adopts Studniczka's identification.

<sup>4</sup> *Ausgrabungen zu Olympia*, vol. iv. pl. 25, p. 19. Engraved also in Curtius (Ernst), *Das archaische Bronzerelief von Olympia, Abhandlungen der k. Akademie der Wissenschaften*, Berlin, 1880, p. 13, No. 6. Compare especially Furtwängler (A.), *Die Bronzefunde aus Olympia und deren Kunstgeschichtliche Bedeutung, Abhandlungen der k. Akademie der Wissenschaften*, Berlin, 1880, p. 96.



two classes of these numerous works are to be distinguished, as well by the formation of the merman as by the different action and grip of the hero. In the more primitive and by far the larger category the fishy portion of the triton extends as high as the navel, or even higher. Herakles sits astride of the monster's back, the farther leg being concealed from view, and chokes or hugs him with interlocked arms. In the later works, among which the Assos relief is to be classed, these features are considerably altered, and, from an artistic point of view, improved. The human portion of the fish-man has been extended to the hips, while Herakles, shown in entire figure in front of the monster, no longer bestrides and garrotes his victim, but grasps him firmly by the wrists, as at Assos, or otherwise holds him in subjection. It is in some measure possible to trace the development of the older works towards this type. In the most ancient representation of the scene, upon an "island stone" now in the British Museum,<sup>1</sup> the scales of the Triton extend quite up to the armpits, only head and arms being human. Herakles, on the other hand, naked, yet with the quiver slung across his back, is shown in substantially the same guise and action as at Assos. It would be difficult to find a more striking illustration of the persistency with which artistic traditions were retained by the Greeks than the identity of this type upon works of such widely different epochs; the gem referred to being perhaps the very earliest known instance of a mythological subject represented by Hellenic art. Even in the movement of the struggle from left to right, as shown upon the Assian relief, we may note the retention of an archaic feature, which may

<sup>1</sup> Lenormant (F.), *Intailles Archaiques de l'Archipel Grec*, quoted above, page 213, note 3. Re-engraved in Milchhöfer (Arthur), *Die Anfänge der Kunst in Griechenland*, Leipzig, 1883, fig. 55. Lenormant, as has been noted, still follows the identification of the figures as Herakles and Nereus. Mythological representations are of extreme rarity upon gems of this class.

be traced from the island stone, through the long series of black-figured vases, to the red-figured vase of free style which closes the list.<sup>1</sup>

That the advance in artistic composition which led to the changes above enumerated had been made in European Greece a century or more previous to the building of the temple of Assos, is rendered probable by the transitional character of the gable relief recently discovered upon the Acropolis of Athens. The hero shown upon it, though still garroting the Triton, no longer sits astride of the monster's back, but stands in front, entirely naked, like the Assian Herakles. There can be little doubt that these improvements were the result of the execution of the scene on a monumental scale. Postures which were tolerable, and in some respects even advantageous, in the outline drawings of the vases, were felt to be altogether unsuitable when enlarged and rendered in relief.<sup>2</sup> These changes, when once

<sup>1</sup> Described by Brunn (H.), *Viaggi in Etruria*, IV. *Vasi e Specchi Chiusini*, *Bullettino*, 1859, p. 105, and engraved by Petersen in the paper before referred to, *Annali*, 1882, tav. K. The entire class of archaic black-figured vases displays a marked tendency, almost amounting to a rule, to turn the profiles and direct the action of the composition towards the right. On this point compare Loschcke (G.), *Darstellung der Athenageburt*, *Archäologische Zeitung*, 1876, Berlin, 1877.

<sup>2</sup> Studniczka advances the contrary view. (See p. 75 of the essay before quoted.) It will be remarked, however, that he is forced to contradict his own theory in treating of the red-figured vase, the design of which, though depicting an archaic subject, is wholly free from archaistic mannerism. As has been observed in connection with the human-legged centaurs, it was the steady tendency of Hellenic art to free itself from those monstrous combinations of human and animal forms which had, in early ages, been adopted from the Orient, and to believe, so far as might be possible, such of these images as were retained from their horrid and unnatural character. Thus the extension of the human trunk of the Triton from the armpits to the waist, as in the Attic gable, the Assos relief, and the red-figured vase, is a distinct advance. The assumption that these figures appertain to a more ancient type than that of the black-figured vases, or of the island stone, is at variance with leading principles of historic criticism.

made, were readily adopted by designers of all classes, as is shown by the painting of the red-figured vase before referred to. In view of the fragmentary condition of the Athenian gable, it is difficult to determine how far the Assian relief was directly influenced thereby. That the provincial artists who decorated our temple depended largely upon prominent works of Attica and the Peloponnesos is certainly to be assumed, as we have had occasion to observe in connection with the relief of Herakles and Pholos. The main point of difference — the adoption of the wrist grip instead of the interlocked arms — may possibly, as Petersen has suggested,<sup>1</sup> be ascribed to a misunderstanding of the wrestling hold of the older type, through which the arms of the combatants were interchanged. The readiness with which this might happen may be judged from a comparison of the illustration of the relief, Fig. 49, with the drawing of a black-figured vase, Fig. 50. Yet the present writer hesitates to adopt this explanation, in view of the otherwise intelligent character of the design, and the evident purpose of the sculp-

<sup>1</sup> The observations of Petersen (Essay in the *Annali*, 1882, before referred to) in regard to this relief are so interesting as to deserve quotation in full: "È d' uopo gettare uno sguardo di confronto anche sul rilievo d' Assos. Fu già osservato che la forma di Tritone è quivi analoga a quella della tazza a figure rosse 'R' [published as plate K of the *Annali*, 1882]. Con lo stesso [*sic*] e con pochi altri esso ha comuni le donne che corrono via. Il gruppo dei combattenti poi non mostra mai altrove deviazioni sì notevoli dal tipo antico se non in 'R'; ma vi contribuisce forse anche la necessità dello spazio. Ercole non cavalca più Tritone; vedesi però ancora serbato il gran passo; egli non abbraccia più Tritone, ma gli afferra le braccia, non si sa bene con quale scopo. Chi sa che l' autore di esso rilievo non abbia frainteso il tipo Greco, come pure è accaduto a recenti osservatori, ed abbia scambiato il braccio destro di Tritone con quello di Ercole? Ammesso questo, e immaginandoci che la sinistra di Ercole abbracciasse il petto di Tritone e fosse quindi intrecciata coll' altra, allora anche la sinistra alzata di Tritone e stringente senz' alcun dubbio un pesce avrebbe il suo esemplare nei vasi. L' ammetter questo abbaglio diminuirebbe l' affinità con 'R,' ma gioverebbe a mettere in luce il carattere semigreco del rilievo."

tor to bestow upon the Triton his attribute,—the conch held in the uplifted right hand.

For despite the weathered and battered surface of the relief, and the consequent uncertainty of outline, there can be little doubt that this object is actually a shell trumpet, through which the distressed merman is about to blow a call for aid. No different explanation was offered by Texier, Clarac, De Witte, and Guignault, the first four editors of these sculptures, and no other possibility suggested itself to the mind of the present writer, during a close scrutiny of this relief. Yet Stark<sup>1</sup> speaks of the object as a ring; Tümpel<sup>2</sup> sees in it a handle of the sun-bowl which Herakles received from Nereus; and Petersen and Wolters<sup>3</sup> have recently published it as their opinion, that the attribute is not a conch, but a fish, seemingly basing this view rather upon the frequent appearance of a fish in other representations of Tritons than upon an examination of the work itself. Furthermore, Studniczka,<sup>4</sup> following the same method of determination, and arguing from an ancient description of a certain "statue of a Triton, carved of wood and holding a silver kratanion in its hand,"<sup>5</sup> believes the object to be a drinking-vessel. He quotes in this regard the statement of De Villefosse, the present Director of the Louvre, in reply to inquiries made by Purgold, that the attribute in question is at all events not a fish, and may be either a drinking-horn or a conch. Were

<sup>1</sup> Stark (C. B.), *Gaza und die Philistäische Küste*, Jena, 1852.

<sup>2</sup> Tümpel, *Die Aithiopienländer des Andromedamythus*, Supplementband der *Jahrbücher für classische Philologie*, Leipzig, 1887, p. 199.

<sup>3</sup> Friedrichs and Wolters, *Die Gypsabgüsse antiker Bildwerke in historischer Folge erklärt*, Berlin, 1885.

<sup>4</sup> Essay in the *Mittheilungen des Deutschen Archäologischen Institutes*, 1886, before quoted, p. 67, note 1.

<sup>5</sup> Polemon (or the author of the *Manners and Customs of the Greeks*) quoted by Athenaios, XI. 59, p. 480 a. The Triton thus described, evidently a xoanon, stood in the treasure house of the Byzantines at Olympia.

it necessary to bring forward literary and archæological arguments to explain the appearance of a shell in the hand of a Triton, it would not be difficult, on the one hand, to adduce a great number of classic references to this attribute,<sup>1</sup> while, on the other, besides the ancient account of figures of Tritons blowing conches in the gable of a temple far older than that of Assos,<sup>2</sup> we have examples of the kind upon well known coins of Corinth, Akragas, and Askalon, as well as in vase paintings, and on reliefs, engraved gems, mosaics, etc., too numerous to mention.<sup>3</sup> It is worthy of remark, that the great majority of these representations show the conch as of a curved form, like that of the Assian relief.

Recent investigations have given us much information concerning the origin of this monster, graphically designated by an inscription upon the archaic Olympian bronze as the "Old Man of the Sea" (ΑΛΙΟΣ ΓΕΡΩΝ). Like his adversary, Herakles, he is of Oriental, and, as it appears, Phœnician extraction.<sup>4</sup> The similarity of the formation of this fish-man to that of the deities Dagon and Derketo, especially worshipped in Askalon and Gaza,<sup>5</sup> must strike every observer. The prototypes of the Greek Triton appear upon Assyrian

<sup>1</sup> Pausanias (VIII. 2. 7) states as particularly characteristic of Tritons that they blow through perforated shells. Compare also Moschos, *Idyll.*, II. 120; Nonnos, *Dionys.*, I. 61, VI. 270, XXXVI. 93; Virgil, *Aen.*, X. 209; Lucan, *Phars.*, IX. 347; Ovid, *Metam.*, I. 333; Pliny, *Hist. Nat.*, IX. 9; Hyginus, *Fab.*, II. 23; Appuleius, *Metam.*, IV. 85; and many others.

<sup>2</sup> This was the temple of Saturn, in Rome, destroyed by fire in the year of the city 257. The account referred to is given by Macrobius, *Sat.*, I. 8. 4.

<sup>3</sup> A list, far from complete, of such representations of Tritons and their conches, is given by Stephani in the *Compte Rendu de la Commission Impériale Archéologique*, St. Pétersbourg, 1871.

<sup>4</sup> Compare, upon the course of this development, the remarks of Milchhöfer, *Anfänge der Griechischen Kunst*, p. 84.

<sup>5</sup> A discussion of this point is to be found in Stark, *Gaza*, p. 249. For examples, see Lajard (J. B. F.), *Recherches sur le Culte, les Symboles, les Attributs et les Monuments figurés de Venus, en Orient et en Occident*, Paris, 1837-49, pl. 22, 24.

reliefs and seals;<sup>1</sup> and upon that class of painted vases termed by ceramic specialists of the older school Tyrenian, Phoenician-Babylonian, or Syrian-Phoenician,<sup>2</sup> we see monsters of similar shape, the offspring of the same artistic tradition. Furtwängler<sup>3</sup> believes this image to have been introduced to Hellenic art by the Ionian inhabitants of the Asiatic coast during the eighth century before Christ. Certain it is that the island stone, before referred to as representing the struggle of Herakles with the monster, shows distinct traces of the Phoenician influence.

The Attic vase painters who inscribed their representations of this monster with the name "Triton" undoubtedly followed an identification of this Oriental type made by Greek mythographers of a much earlier age. The image of the Phoenician sea-god was readily made to serve for that of a corresponding member of the Hellenic theogony. It is interesting to observe, as illustrative of the Greek conception, even at the early date when this adoption took place, that such a monstrous combination of human and animal forms

<sup>1</sup> As, for instance, the relief from the palace of Sargon, which dates from the close of the eighth century, engraved in Botta and Flandin, *Monument de Ninive*, Paris, 1849-50, pl. 32, 34. Babylonian seals representing the subject are shown in Lajard, *Mithra*, pl. 62, 1, 2; 17, 2; 31, 5; Layard, *Discoveries in the Ruins of Nineveh and Babylon*, London, 1853, p. 343; King (Charles William), *Antique Gems and Rings*, London, 1872, vol. ii. pl. 3, 6; and others.

<sup>2</sup> On this class of vases compare De Witte, *Cabinet Durand*, Pref. II. and III.; Gerhard, *Archäologisches Intelligenzblatt*, Berlin, 1836, p. 307; Raoul Rochette, *Nouvelles Observations sur les Anciennes Fabriques de Vases Peints*, *Journal des Savants*, Paris, 1841, p. 356.

Human figures ending in fishes' tails are shown upon the so called Phoenician vase published by Gerhard, *Ueber die Kunst der Phönicier*, Berlin, 1848, pl. 47; and upon those given by the same author in his *Berlin's Antike Bildwerke*, Nos. 480 and 542. Upon a vase now in the collection of Munich, published by Micali, *Monumenti Inediti*, Firenze, 1844, pl. 43, sphinxes and griffins closely resembling those of Assos appear, together with a winged figure provided with a similar appendage.

<sup>3</sup> Furtwängler, *Die Bronzefunde aus Olympia*, pp. 96, 97.

was never employed to represent the mighty Poseidon himself, but was, from the first, restricted to an inferior order of beings, the frightful emissaries of the Earth-Encircler. The name Triton, as we may observe in such compound forms as Amphitrite and Tritogeneia,<sup>1</sup> is directly significant of the element inhabited by these creatures, having, as has been recently pointed out, a common origin with the Sanscrit word *trita*, water.

Pausanias<sup>2</sup> has given us a description of the appearance of these beings, which corresponds closely with their portraits upon the archaic works of art, and furthermore indicates various details which upon the reliefs of Athens and Assos were undoubtedly supplied by color. He remarks that their hair resembled the frog-grass seen in swamps, falling in masses so that the separate hairs were not distinguishable; that they had a human nose, eyes of a bluish tint, hands with fingers indicated and with finger-nails similar to mussel shells, and that they had below the belly, instead of legs and feet, a tail like that of a dolphin.

When the conception is confined to a single individual, this Triton,<sup>3</sup> as is well known, takes his place in the mythology of

<sup>1</sup> It is interesting to observe how entirely the Greeks themselves were ignorant of the derivation and the true significance of this word, referring its first two syllables to the Lake Tritonis in Libya, near which Athena was born, — to the stream Triton in Boiotia, — to the head of Zeus, — or to the numeral *τρεῖς*, either because the goddess was born on the third day of the month, or was the third child born (after Apollo and Artemis), or, finally, was the author of the three main bonds of social life. The references to the classic authors who have thus explained the word will be found in Stephani's, *Thesaurus*, s. v. *Τριτογένεια*. Compare upon this point also Welcker, *Die Aeschylische Trilogie*, Darmstadt, 1824, pp. 164, 282. The recognition of the Sanscrit root can leave no doubt as to the real significance of the epithet, of which not one of the ancients seems to have been aware.

<sup>2</sup> Pausanias, IX. 21. 1.

<sup>3</sup> Triton is said to have been the son of Poseidon by Amphitrite (Hesiod, *Theog.*, 930, and Apollodoros, I. 4. 6), or by Kelaino (Tzetzes, commentary to Lykophron, 885), or by Salakia (Servius, commentary to Virgil, *Aen.*, I. 144).

the Greeks as a son of Poseidon, dwelling with his parent in a golden palace beneath the waves.<sup>1</sup>

But why is this son or satellite of the sea god so frequently depicted as thus struggling in the rough embrace of Herakles? Not one of the archæologists who have treated of the subject has had the slightest explanation to advance in this regard. Welcker, Gerhard,<sup>2</sup> and Stephani alike remark that the ancient authors make no mention whatever of such a combat, popular as it was in the earliest ages of Greek art. Baumeister and Furtwängler speak of the legend as altogether unattested by the mythographers. In short, all those who have treated of the subject are in agreement with the concise conclusion of Petersen, "*abbiamo frequentissime rappresentazioni, ma nessuna menzione nei superstiti monumenti letterarii.*"

Yet in spite of this great weight of authority, the present writer believes it possible to explain the nature of the struggle, and to connect this large class of ancient works of art with one of the most notable exploits of Herakles, recounted by classic authors of every age. The conclusion at which he has arrived is, briefly stated, that the combat represented is that known to have taken place between Herakles and the sea monster who devastated these very coasts and threatened the life of Hesione, in visitation of the wrath of Poseidon upon Laomedon, king of Troy.<sup>3</sup>

This legend is one of the oldest of the Trojan Cycclus,

<sup>1</sup> Thus described in the passages of Hesiod and Apollodoros referred to in the foregoing note. According to the Homeric idea (*Iliad*, XIII. 20), this palace was situated at Aigas,—the name of half a dozen Greek towns near the sea, derived, without doubt, from the same root as *Αἶγαν* and *αἰγιαλός*.

<sup>2</sup> This explanation was suggested in the *Preliminary Report*, p. 106,—the ground for the reason there assigned being the local character of the Hesione legend. It is perhaps fair to state that the identification would not have been advanced at that time had the writer then been aware of the difficulty of supporting this bold hypothesis in the lack of many arguments since collected.



connected with the most primitive traditional history of the country, and repeatedly referred to by the singer of the Homeric epics as if familiar to all his hearers. Poseidon, together with Apollo, had been bound over to serve Laomedon, king of Ilion, for a full year, whether in punishment for a revolt against the power of Zeus, or voluntarily, in order to test the presumptuousness of this mortal ruler.<sup>1</sup> During this year, Poseidon, obviously in his character as Asphalios, built the fortification walls of the city. When this task was performed, Laomedon refused to give the gods the wages which had been promised them, and drove them from his dominions, threatening to cut off their ears, to bind them hand and foot, and to sell them in some distant island as slaves. In revenge for this ignominious treatment Poseidon sent a sea monster, which destroyed those who ventured upon the sea-shore, and even those whom it caught tilling the fields near the coast.<sup>2</sup> Laomedon, in distress at the suffering which had thus befallen his people, inquired of the oracle of Apollo for a remedy, and was told that a virgin must be sacrificed to the monster as a propitiatory offering. The lot fell upon Hesione, daughter of the king, who was accordingly exposed to her fate upon the promontory of Agamias or Agammeia,<sup>3</sup> — a spot to-day recognizable in the steep and desolate point of land which forms the northern

<sup>1</sup> *Iliad*, VII. 452 and XXI. 443. Apollodoros, II. 5. 9; Hesiod, quoted by the scholiast to Lykophron, 393; Horace, *Carm.*, III. 3. 21; Valerius Flaccus, *Argon.*, II. 491; Servius, commentary to Virgil, *Aen.*, II. 610.

<sup>2</sup> Of this vengeance, the fullest account, and that preserving most of the features of the archaic legend, is given by Diodoros, IV. 42, 49. For other references to the story of Herakles and Hesione see Lykophron, *Cass.*, 34, with the commentary of Tzetzes; the scholiast to the *Iliad*, XX. 145; Apollodoros, II. 5. 9; Dictys of Crete, IV. 22; Philostratos Jr., *Imag.*, 13; Eudokia, *Viol.*, p. 344; Isaac Porphyrogenitos, preserved in Allacci (Leone), *Excerpta Varia*, Romae, 1641, p. 272; Hyginus, *Fab.*, 89; Valerius Flaccus, *Argon.*, II. 497-533; Servius, commentary to Virgil, *Aen.*, I. 550, III. 3, VIII. 157.

<sup>3</sup> Hesychios, *s. v.* 'Αγαγίας, and Stephen of Byzantium, *s. v.* 'Αγαμμεία.

boundary of Beshika Bay. At this moment it chanced that Herakles, proceeding on his expedition against the Amazons, passed that way, and, releasing Hesione, took her with him into the city. Here Laomedon induced the hero to go forth to battle against the monster, offering as a reward, in case of success, the immortal horses which his grandfather, Tros, had received from Zeus in compensation for Ganymede. The details of the struggle have been variously related. The only archaic account, that of Homer, tells of a wall of earth which the Trojans, with the help of Athena, piled up for the protection of the hero "when he should be driven back from the coast to the fields."<sup>1</sup> Other and later descriptions of the encounter will subsequently be referred to.

Setting aside that late imitation of the Homeric story of Menelaos and Proteus, by which Herakles was connected with Nereus,—a legend excluded, moreover, from the present consideration by inscriptions upon archaic vases, as before mentioned,—this exploit of the hero in subduing the monster sent by Poseidon against Laomedon is the only feat of the kind which the ancients attributed to Herakles. It can be no other than this deed to which Euripides refers, when, in connection with the twelve labors, he describes Herakles as

<sup>1</sup> *Iliad*, XX. 145. The same statement in regard to the wall is made by the scholiast to this passage, who refers to Hellanikos as having related the story. Welcker (F. G.), *Jason der Drachentödter*, *Rheinisches Museum für Philologie*, etc., Bonn, 1835, III., subsequently reprinted in his *Alte Denkmäler erklärt*, Göttingen, 1849-64, — followed by Wieseler (Friedrich), *Herakles in den Rachen des Meerungeheuers tretend und die befreite Hesione*, *Zeitschrift für Alterthumswissenschaft*, Giessen, 1851, Nos. 40 and 41, and Flasch (Adam), *Angebliche Argonautenbilder*, München, 1870, — emends the scholion by substituting *τεῖχος* for *τείχος*, preferring to believe that Herakles was supplied by his patroness with means of attack rather than with means of defence. But in view of the clear account of the wall and its purpose given in the Homeric text, and of the fact that the word *τείχος* is repeated by Tzetzes (commentary to Lykophron, 34) this change appears altogether inadmissible.

“entering a bay of the sea and establishing with his oars a calm for mortals,”<sup>1</sup>—or which is meant by Pindar,<sup>2</sup> Sophokles,<sup>3</sup> and Euripides in another passage,<sup>4</sup> when they speak of the hero as clearing the sea of its monsters.

It would, indeed, be an altogether unparalleled case in the mythology of art, if a deed so celebrated as to have formed the subject of some seventy of the black-figured vase paintings known to us should have been passed by entirely without mention by the ancient poets, playwrights, and mythographers. But here we have full accounts of a legend, of exceptional popularity and of the highest antiquity, which is applicable to this scene, or is in its turn wholly unrepresented by Greek art.

The fact that this identification has not hitherto been proposed is undoubtedly due to two considerations, which will suggest themselves to every archæologist as objections. The first of these is that the marine monster sent by Poseidon was called by a word (*κήτος*) which in later ages, and especially in its Latin form, gradually came to be restricted to large sea animals having an actual existence, such as whales, sharks, and the like; the second, that, in consequence of this change of idea, works of ancient art of a later period—among the Romans, though not among the Greeks—actually

<sup>1</sup> Euripides, *Herc. Fur.*, 399: *πῶρτας θ' ἄλδος μυχῶδς εἰσέβαυε, θνατοῖς γαλακείας τ.θελς ἔπερμυῖς.*

This passage shows that the exploit was not performed with the intention of forcing the sea-monster to prophesy, but rather for the purpose of establishing peace for mortals. The figurative words of the poet fully characterize the deed as the deliverance of some human sufferer.

<sup>2</sup> Pindar, *Isthm.*, III. 75; and *Nem.*, I. 62.

<sup>3</sup> Sophokles, *Trach.*, 1012.

<sup>4</sup> Euripides, *Herc. Fur.*, 225. These references are in entire contradiction with the only explanation of the purpose of the combat between Herakles and Triton hitherto advanced, namely, that of Furtwängler (in Roscher's *Lexikon*, art. *Herakles*, section iii. p. 2192), who speaks of the Triton as “subdued and held in restraint until he imparts his secret knowledge to Herakles.”

represented the monster to which Hesione was exposed as a large fish or sea-dragon.

That, however, the word *Ketos*, as employed by Homer, is not necessarily to be taken to mean a fish of any kind, is evident from the context of other passages, in which the word is applied to sea-dwelling monsters of entirely different nature.<sup>1</sup> Elsewhere, the word is used for such frightful beasts as crocodiles and hippopotami.<sup>2</sup> And, finally, that Triton was himself considered to be one of these monsters is evident from the reference of Lykophron to him as Poseidon's *κάρχαρος κίων*,<sup>3</sup> to which the scholiast adds, that this Triton is the *Ketos* subdued by Herakles.<sup>4</sup> This passage is conclusive, and completes the chain of evidence. To it may be added another and most curious instance of the employment of the word in this signification, to which attention has not, in so far as I am aware, hitherto been drawn. It appears, namely, from the accounts of Demonstratos<sup>5</sup> and Pausanias,<sup>6</sup> that a show monster, purporting to be the embalmed body of a Triton, formed one of the chief sights of a temple at Tanagra, in precisely the same way as the mummies of mermaidens and sea-serpents are exhibited in the booths of country fairs at the present day. So famous was this ancient curiosity,

<sup>1</sup> The word is, for instance, applied to the sea-calves (seals) of Proteus (*Odyssey*, IV. 446, 552). It is correctly rendered "sea-beasts" by Butcher and Lang in their version of the *Odyssey*, and by Voss, still more correctly, "Meerscheusal"; but Buckley (London, 1880) translates the word "whales," absurdly mistaking the obvious sense of the passage. The translator last named thus exemplifies the error into which the mythographers of later antiquity had themselves been led.

<sup>2</sup> Euthymenes, quoted by Athenaios, II. 90.

<sup>3</sup> Lykophron, *Cass.*, 34, with the scholion of Tzetzes to this passage.

<sup>4</sup> Preller (*Griechische Mythologie*, vol. ii. p. 163, note 2), in referring to the passage of Lykophron quoted in the text, remarks concisely, "Triton also belongs to the category of the *κάρχη*."

<sup>5</sup> Demonstratos, *Halieutics*, preserved in Aelian, *De Animal.*, XIII. 21.

<sup>6</sup> Pausanias, IX. 20. 4.

that its effigy was frequently impressed upon the coins of Tanagra as one of the symbols characteristic of the town.<sup>1</sup> The bloated appearance of the stuffed animal evidently became proverbial; and Athenaios, in adducing it as an illustration of excessive obesity, has referred to the defunct Triton as "the Ketos of Tanagra,"<sup>2</sup> thus leaving no doubt as to the direct applicability of this term to the being in question.

The instance of his evil deeds afforded by the adventure of Hesione is quite in accord with what the ancients have otherwise reported in regard to the nature of Triton. At Tanagra he was believed to have attacked the women who went down to the sea to bathe, and to have carried off the herds grazing near the coast,<sup>3</sup> even as he had at Troy in the days of King Laomedon. And without doubt such a Triton was in the mind of Odysseus, when he dreaded lest Poseidon should send an evil Ketos against him.<sup>4</sup>

It is nevertheless undeniable, that, through the gradual restriction of the word to members of the fishy tribe, the conception of the monster to which Hesione was exposed came more and more to resemble a whale, rather than a merman. Thus the scholiast to the Venetian manuscript of the *Iliad*<sup>5</sup> relates that Herakles entered the body of the sea beast

<sup>1</sup> A number of such coins have been collected by Wolters, *Der Triton von Tanagra*, *Archäologische Zeitung*, 1885.

<sup>2</sup> Athenaios, XII. 75, p. 551 A: Πόσψ οὐν κάλλιόν ἐστιν, ἀγαθὸν Τιμόκρατες, πενόμενον εἶναι λεπτότερον ὢν καταλέγει Ἑρμῖππος ἐν Κέρκωψιν ἢ ὑπερπλουτοῦντας τῷ Ταναγραλῷ κήτει ἐοικέναι, καθάπερ οἱ προσηρημένοι ἄνδρες. Meineke, in his edition of the *Deipnosophists* (vol. iv. p. 253), has questioned the correctness of this passage, basing his doubts upon a corrupt gloss of Hesychios. The question raised has been adequately discussed by Wolters in the essay quoted in the foregoing note.

<sup>3</sup> Pausanias, IX. 20. 4. This legend appears, indeed, to be a duplication of the Hesione story.

<sup>4</sup> *Odyssey*, V. 421.

<sup>5</sup> Scholiast to *Iliad*, XX. 146. The commentator remarks that the story of Herakles and Hesione had been related by Hellanikos, but it by no means fol-

and pierced its ribs; while Theophylaktos<sup>1</sup> and Tzetzes,<sup>2</sup> writing in the eleventh and twelfth Christian centuries, go still farther in this direction, asserting, in obvious imitation of the Biblical legend of Jonah, that the hero remained in the belly of the monster for the space of three days. That the archaic conception of Herakles having wrestled with the monster bare handed had been entirely forgotten, even in the classic period of Latin literature, may be gathered from the long account of the combat given by Valerius Flaccus,<sup>3</sup> who describes the hero as killing the monster with a rock, after vainly attempting to wound it with arrows. And that some uncertainty in this respect began to creep into the legend early in the epoch of the red-figured vases of Greece may be surmised from the fact, that, upon the single representation of the subject belonging to this category, Herakles is shown armed, although not attacking, with his club.

Probably no other ancient legend became, as time went on, more entirely perverted. The later writers confounded the deliverance of Hesione with that of Andromeda, the Triton with the dragon and with Jonah's whale, and the tactics of Herakles with those of Menestratos the Thespian.<sup>4</sup> The vengeance wrought by mighty Poseidon upon the presumptuous Laomedon and his subjects appears, in the account preserved by Diodoros, as the visitation of a divine emissary,—"a Sea God who destroyed the people by a plague, and blasted all the fruits of the field." This original conception had somewhat of the mystical character of the Oriental mythology from which it was derived; its vagueness rendered it the more superhuman and terrible. But when this Sea God

flows from this fact that all the details of the tale are to be referred to the more ancient authority.

<sup>1</sup> Theophylaktos, *Expositio in Prophetam Jonam*, cap. ii. 1 (ed. Migne, p. 189).

<sup>2</sup> Scholion to Lykophron, 34.

<sup>3</sup> Valerius Flaccus, II. 497-533.

<sup>4</sup> Pausanias, IX. 26. 5.

reappears, in the decrepitude of Greek culture, the archaic idea is wholly lost, and we see nothing but an ugly beast: the hungry, carnal monster depicted in the shape of a conventional dragon.

Thus it came about that in Roman art, when the story of the exploit was again popularized and freely paraphrased by Latin mythographers, the Ketos became at last a true cetacean, or sea-dragon. Subsequent to the isolated red-figured vase and the Dodona relief, we do not find this scene depicted in any work of ancient art until after the advent of the Christian era.<sup>1</sup> When, after this long break, the subject is again taken up, the change has been fully effected. No less than six

<sup>1</sup> This is a highly remarkable fact, for the story of Herakles and Hesione was, in the third century before Christ, still sufficiently popular to have been chosen as the subject of a comedy, called *Hesione*, by the poet Alexis. Ribbeck (Otto), *Die Römische Tragödie im Zeitalter der Republik*, Leipzig, 1875, p. 46, is thus in error when he asserts that no Greek drama is known to have treated of this legend. From the fragment of the play preserved by Athenaios (XI. 41), we may see that the struggle with the monster was related in detail, the lines in question describing the exhaustion and great thirst of the hero after the exploit.

From two of Pliny's lists (*Nat. Hist.*, XXXV. 114 and 139) we know that the subject was treated by Antiphilos and Artemon, artists of the Hellenistic epoch, but the mention throws no light whatever upon the nature of these representations. That the exploit was not forgotten in the subsequent ages would likewise be proved by the painting upon an Apulian amphora in the Museum of Berlin, if we are to accept the explanation given by Gerhard (*Apulische Vasenbilder*, Berlin, 1845, pl. xi., described in the same author's *Berlin's Antike Bildwerke*, No. 1018), who identifies the figures as Herakles, after the struggle is over, approaching Laomedon to ask for his reward, — the rescued, yet still fettered Hesione following with Telamon. This vase has however been referred by Furtwängler (*Beschreibung der Vasensammlung*, No. 3240) to an entirely different subject, Laomedon appearing in this identification as Kreon, and Hesione as Antigone. Compare the critical literature to the subject cited in the volume last mentioned.

It is likewise uncertain whether we should include among these examples the painting upon an Etruscan vase, found at Perugia, of late yet fine style, engraved in the *Monumenti*, vol. v., Roma, 1849–53, pl. ix., in the *Annali*, vol. xxi. 1849, pl. A, and in Welcker's *Alle Denkmäler*, vol. iii. pl. 24 (compare the remarks in the Adunanze, *Bullettino*, 1846, p. 87), which depicts a hero advancing

of the Pompeian wall-paintings, hitherto unearthed, represent the deliverance of Hesione, and in those in which its form is distinguishable the monster is a veritable sea-serpent, wholly without human semblance.<sup>1</sup> In two of these instances it is

with drawn sword into the mouth of an enormous fish or dragon. This scene was identified by Welcker (*Jason der Drachentödtter*, quoted above, p. 227, note), and by Emil Braun (*Ingresso di Giasone nelle Fauci del Dragone, Annali*, vol. xxi., 1849), as Jason and the dragon, but has since been held by Wieseler (*Herakles in den Rachen des Meerungeheuers tretend*, before quoted) and by Flasch (*Angebliche Argonauten Bilder*, III.) to represent Herakles and the sea monster. Flasch even goes so far as to detect in the mantle which the hero has thrown over his head the *τεῦχος* of Welcker's emendation, before referred to. Although there is nothing whatever upon the vase peculiarly characteristic of Herakles, recent writers, e. g. Baumeister, *Denkmäler*, Art. *Herakles*, (Furtwängler, in *Roscher's Lexikon*, Art. *Herakles*, is less committal,) incline to the latter identification, which, were it susceptible of proof, would render this Etruscan vase-painting the earliest known representation of that version of the legend which is given by the scholiast to the Iliad.

<sup>1</sup> No. 1. *Reale Accademia Ercolanese di Archeologia, Pitture Antiche d'Ercolano*, Napoli, 1757-92, vol. iv. p. 62; Helbig (Wolfgang), *Wandgemälde der vom Vesuv verschütteten städte Campaniens*, Leipzig, 1868, No. 1129. A hero upon the shore, identified as Herakles by Wieseler, but as Telamon by the Neapolitan Academicians and by Helbig, hurls a rock at the monster. In the background another hero armed with a club (Telamon according to the former view, Herakles according to the latter) converses with two women, one of whom, naked, is doubtless Hesione. Notwithstanding the indorsement of so high an authority as Helbig, the view of the Academicians, which would attribute the destruction of the monster to Telamon, appears altogether inadmissible.

No. 2. Helbig, *Wandgemälde*, No. 1130. The monster is slain by a rock in like manner. This fresco had been identified by the Academicians as Perseus and Andromeda, but was correctly explained by Wieseler, to whom Helbig has adhered.

No. 3. Helbig, *Wandgemälde*, No. 1131. Herakles armed with the club; the image of the monster defaced.

No. 4. Helbig, *Wandgemälde*, No. 1132, pl. xiv. Compare Schöne, *Scavi di Pompei, Bullettino*, 1867, p. 83. Herakles standing as victor, armed with club and bow, while Telamon releases Hesione with a hammer from the shackles which bind her to the rocks.

No. 5. Helbig, *Wandgemälde*, Appendix, p. 458; Sogliano (Antonio), *Pitture Murali Campanie*, Napoli, 1880, No. 494; Kekulé, *Scavi di Pompei, Bullettino*, 1867, p. 165. Herakles armed with bow and club; the monster entirely, and Hesione in greater part defaced.

No. 6. Robert, *Adunanze dell' Istituto, Bullettino*, 1875, p. 40, identifies as



killed by a rock, as described by Valerius Flaccus;<sup>1</sup> in the third, it lies pierced by an arrow; while in the others Herakles is armed with club and bow. We may perceive from this variety, among works nearly contemporaneous, how freely the details of the legend had been treated by mythographers of the period, and how entirely the original conception had become obsolete. In conformity with the account of the exploit given by Hyginus,<sup>2</sup> who had at this very time brought the story again into vogue, Telamon appears as the companion of Herakles in two of these frescos, as he does upon the later terra-cotta relief of the scene engraved by Campana<sup>3</sup> and upon the well known mosaic of the Villa Albani, published by Winckelmann.<sup>4</sup> Upon a fragmentary paste cameo, of Roman workmanship, belonging to Gerhard and published by him,<sup>5</sup> Herakles bends his bow against the dragon guarding Hesione, the monster having here the head of a serpent rather than that of a fish. A relief of debased style upon a marble discus in the Museum of Vienne<sup>6</sup> likewise shows the struggle to have been carried on with the bow.

Herakles and Hesione the painting given in the *Pittura d' Ercolano*, vol. iv. p. 61, and in Helbig, *Wandgemälde*, No. 1184, where it had in both cases been described as Perseus and Andromeda. The hero wades into the water to meet the monster.

As proof of the popularity of the subject early in the first Christian century, there may be added to these pictures of the deliverance of Hesione the presentation of Priam to Herakles by Hesione (Helbig, *Wandgemälde*, No. 1147, upon which identification compare the extensive literature there quoted).

<sup>1</sup> Valerius Flaccus, *Argon.*, II. 533: "Alcides saxo surgentia colla obruit."

<sup>2</sup> Hyginus, *Fab.*, 89.

<sup>3</sup> Campana (Giovanni Pietro), *Antiche Opere in Plastica*, Roma, 1842-52, pl. xxi.

<sup>4</sup> Winckelmann, *Monumenti Antichi*, Roma, 1767, vol. i. pl. 66. Engraved also by Guignault, *Religions de l'Antiquité*, pl. clxxxii. No. 663; and by Millin, *Galerie Mythologique*, pl. cxv. No. 443.

<sup>5</sup> Gerhard, *Gemmenbilder*, *Archäologische Zeitung*, 1849, pl. vi. No. 4. This, I presume, identical with the gem representing the subject, referred to as inedited in Gerhard's *Apulische Vasenbilder*, p. 18.

<sup>6</sup> Stark (K. B.), *Museographisches*, *Archäologischer Anzeiger*, 1853, No. 52.

It appears to have been an immediate result of the repetition of the story by Latin poets, that this delivery of the Trojan princess was adopted by the decorative art of the Romans as one of the most characteristic exploits of the heroic age, and perhaps even regarded with a certain national pride in the mythical origin of the earliest rulers of Latium. It was introduced, obviously in this significance, and as typical of the valor of Trajan, that second Herakles, among the reliefs of the Triumphal Arch at Treves, fragments of which have recently been brought to light.<sup>1</sup> That the legend retained its place in popular favor until the very latest ages of antiquity is furthermore proved by its appearance upon a Roman sarcophagus, referred by inscriptions to the beginning of the third century of our era, which is preserved in the Museum of Cologne;<sup>2</sup> by an altar of similar character in the palace garden of Durlach;<sup>3</sup> and by a fragment of a rude sandstone relief also discovered in the Rhenish Provinces,<sup>4</sup> which shows the figure of the chained Hesione.

<sup>1</sup> Wilmowsky (J. N. von), *Die römische Villa zu Nennig*, fig. 4. Trier, 1868.

<sup>2</sup> Welcker (F. G.), *Sarkophag im Museum zu Köln*, *Jahrbuch des Vereins von Alterthumsfreunden im Rheinlande*, vol. vii., Bonn, 1845, Plates iii. and iv.; re-published in the same author's *Alle Denkmäler*, vol. ii. Wieseler, in the paper in the *Zeitschrift für Alterthumswissenschaft*, 1851, before quoted, has pointed out that the object held in the hand of Herakles is the stone which plays a part in the story as told by Valerius Flaccus,—not an apple, as supposed by Welcker in his contemptuous remarks concerning the sculptor.

<sup>3</sup> Urlichs, *Neuster Zuwachs des k. Museums*, *Jahrbuch des Vereins von Alterthumsfreunden im Rheinlande*, vol. ix., 1846, p. 153.

<sup>4</sup> Engraved in the paper referred to in the foregoing note.

Upon a Roman sarcophagus in the Villa Borghese, apparently inedited, Herakles is shown forcing open the jaws of a sea-dragon, this deed standing next in order to the Battle with the Amazons in a series of the Twelve Labors.

Weizsäcker, in Roscher's *Lexikon*, Art. *Hesione*, refers to a relief at Nime-guen, representing Andromeda chained, as published in the *Bonner Jahrbuch*, vol. xxxiii. p. 66, and vol. vii. p. 39, No. 6. These volumes have not been accessible to me. On the other hand, both Weizsäcker and Baumeister have failed to include in their lists the highly important relief for the Arch of Trajan at Treves, representing the subject in a manner similar, yet decidedly superior,

Upon sarcophagus and altar the form of the monster has remained that of a dragon, with curled tail and fin-like feet.

Let it be observed that, without a single exception, these late works of ancient art—all that have hitherto been identified as bearing upon the archaic Greek story of Herakles and the sea monster—are creations of the Roman Empire.

Homer recounts but two of the exploits of Herakles: this is one of them. It is referred to by the great lyric poet of Boeotia, by the Attic writers of tragedy and comedy, and by prose authors of every Greek race and of every age; yet not a single work of Greek art has hitherto been admitted to illustrate it. Surely this is a fact not less remarkable than the existence of so large a class of vase-paintings and reliefs unconnected with any known myth.

If the conclusions now advanced in respect to this exploit be correctly drawn, it results that the subordinate figures shown upon representations of Herakles and Triton must frequently be otherwise explained than has hitherto been done. Thus, to give a single typical example, the painting upon a vase formerly in the Durand and Pourtales collections, reproduced on a small scale in Figure 50, displays the combat in a manner fully characteristic of the large category of black-figured vases. We see Herakles, clothed with the lion's skin but wholly without weapons, bestriding the back of the fish-tailed monster, and holding him tightly around the chest with hands interlocked in the labyrinthine grasp of the palaistra. Three dolphins beneath show the struggle

to that of the Cologne sarcophagus, and published in the work mentioned in a preceding note.

Altogether uncertain is the Trojan coin of Septimius Severus, retouched in modern times, and thus rendered most untrustworthy, which Mionnet, *Description de Medailles*, vol. ii. p. 664, No. 224, describes as representing Herakles crowned by Hesione.

This completes the list of representations of this subject known to me.

to take place in the water. Upon the left, Poseidon, accompanied by Amphitrite, hastens with uplifted trident to the aid of his distressed emissary. On the right, an interested but powerless spectator, stands the white-haired Laomedon, his royal state designated by the ruler's staff which he holds in his hand, by the coronet upon his head, and by his wide-

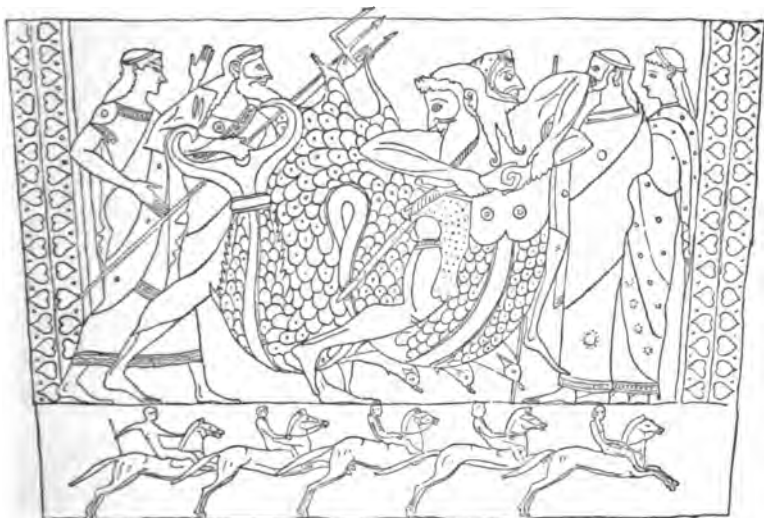


FIG. 50. THE STRUGGLE OF HERAKLES WITH TRITON.  
Painting upon a Black-figured Vase.

folding and sleeved mantle. Behind him stands the coroneted princess Hesione, awaiting, with archaic impassiveness, the issue of the conflict. Beneath this scene race the horses of Tros, the promised reward of the victor, which play so prominent a part in the subsequent story. The appearance of these horses, upon this as upon other representations of the struggle,<sup>1</sup> may possibly serve as a further argument in favor

<sup>1</sup> As, for instance, the Munich vase, described by Jahn, *Beschreibung der Vasensammlung*, No. 391, and that published by Brøndsted, *Description of thirty-two Ancient Greek Painted Vases*, No. 7.

of this identification of the exploit,—the only one with which they can be connected.

In the first descriptions of this vase-painting, by De Witte<sup>1</sup> and Dubois,<sup>2</sup> the monster was identified as Nereus, the king as Proteus, and Hesione and even Amphitrite as Nereids. Nereus was correctly called Triton by Gerhard,<sup>3</sup> as before stated, but the two figures upon the right were, in the opinion of the present writer, wrongly designated as Nereus and Doris. Gerhard could not but feel the difficulty of explaining the quiet spectator-like posture of this pair, which contrasts so strikingly with the active advance of the other sea gods upon the opposite side, and to justify this he was forced to the altogether baseless and unnatural assumption that the combat between Herakles and Triton did not take place until after Nereus had in some way been induced to favor the interests of the hero. Although these subordinate figures seem so evidently intended for Laomedon and Hesione, this identification as Nereus and Doris has been unquestioningly repeated by all modern authorities.<sup>4</sup>

Too large a number of vase-paintings would require revision in this sense to permit of a complete treatment of the subject in this place. Suffice it to note that the very next plate of Gerhard's work<sup>5</sup> shows the reward of the victor in the quadrigas represented above, the fact of the struggle taking place upon the coast being indicated by dolphins and by trees; and that, finally, on the isolated red-figured vase, so frequently referred to, Laomedon, characterized by the royal staff and mantle, appears as a spectator of the struggle,

<sup>1</sup> De Witte, *Cabinet Durand*, No. 302.

<sup>2</sup> Dubois, *Collections Pourtales-Gorgier*, No. 196.

<sup>3</sup> Gerhard, *Auserlesene griechische Vasenbilder*, vol. ii. pl. cxi.

<sup>4</sup> As, for instance, by Baumeister and Furtwängler.

<sup>5</sup> Gerhard, *Auserlesene griechische Vasenbilder*, vol. ii. pl. cxii., also described in De Witte, *Cabinet Durand*, No. 304.

standing before his palace, naively indicated by a single column.

That upon the Greek representations of the struggle Hesion is never shown as chained to the rock, and is generally omitted altogether, is due to the fact that the Greek legend does not describe her as present upon the shore on this occasion, she having been previously released by Herakles, and taken by him from Cape Agamias to Troy. In the accounts given by the Latin writers this is otherwise, and Hesion is in consequence invariably seen upon the Roman works.

Laomedon having defrauded Herakles of the promised reward, the hero revenged himself, as well as Poseidon and Apollo, by killing the deceitful monarch and demolishing Troy, as mentioned in the *Iliad*.<sup>1</sup> It is particularly worthy of note, as an evidence of the importance attached to this legend by natives of the country during the historic period, that Strabo<sup>2</sup> found the inhabitants of Ilion offering no worship to Herakles, because, as they explained, of a feeling of resentment which they entertained on account of this destruction of their town. Nothing could better illustrate that antique spirit of local patriotism which leads us to attach great weight to specifically localized traditions in the exegesis of works of art such as this. At Assos, with its Aeolic population, Herakles was the object of peculiar veneration, and it is not strange that the one exploit of the national hero which was intimately connected with the province should have been represented upon the walls of the chief temple of the Southern Troad. The defeat of the Triton which threatened Hesion, and the consequent dethronement of the unjust Trojan king, cannot but have been regarded as

<sup>1</sup> *Iliad*, V. 640. Compare also the other authorities for the legend, quoted above, especially Diodoros, IV. 49.

<sup>2</sup> Strabo, XIII. p. 596.

significant of the emancipation of the country by Hellenic valor. It certainly presented the most fitting subject for the decoration of the first monument erected by the Greek colonists of the Troad after their deliverance from Persian tyranny.

The choice had, moreover, a religious as well as a national relevancy. It was Athena who participated with the hero in the performance of this exploit, by erecting the rampart which was to serve for his protection: it was upon the walls of Athena's temple that the struggle was depicted.

The second in size and importance among the Assos reliefs of the Louvre — a corner block, like that which we have just considered — represents four men reclining at a symposion (Fig. 51). They are waited upon by a fifth, who, standing upright, is, by reason of the isocephalism, of much smaller proportions than the others. As the chief figures are more inclined, the difference of scale is even more marked in this composition than in that of Herakles and Triton.<sup>1</sup> Each of the banqueters holds in his left hand a drinking cup, the foremost, at the left, being provided with two such vessels, one of which the attendant fills from an oinochoe, replenished from a huge krater standing behind him.

The only notable act depicted upon the relief, and that which evidently forms the subject of the scene, is the presentation of a strap-like girdle by the second figure on the

<sup>1</sup> Texier (*Description*, vol. ii.) remarks that the cupbearer is made smaller because of his less dignity; but this subordination is obviously the result of, rather than the reason for, the great difference in proportions. In compositions such as these, archaic artists displayed their ability by so arranging the positions, while adhering to the principle of isocephalism, as to give prominence to the chief figures. Upon Etruscan reliefs and wall paintings representing funeral banquets, a more perfect scale of proportions was rendered possible, while keeping all the heads upon the same level, by elevating the reclining figures upon couches. Compare, for instance, the relief found at Chiusi, and published by Micali, *Monumenti*, pl. xxiii. Even here the upright figures are too small.

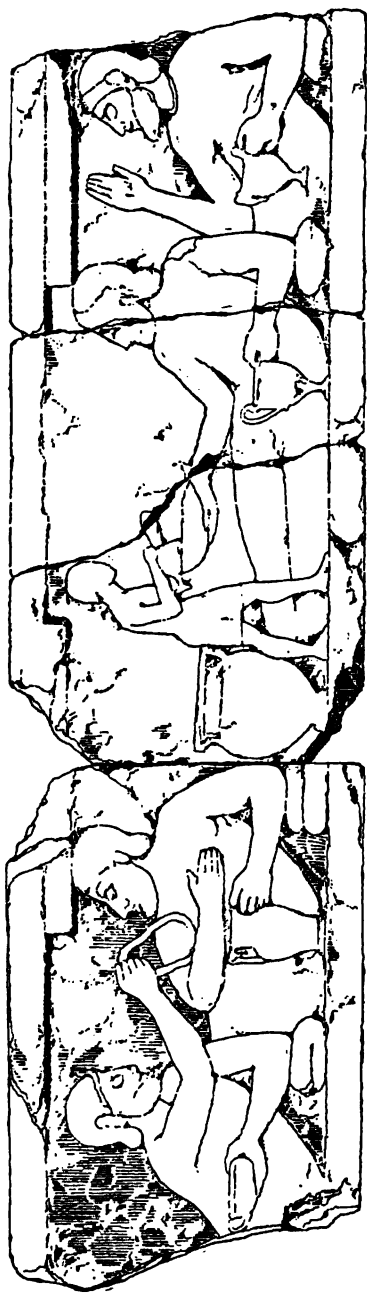


FIG. 51. EPISTYLE RELIEF FROM THE TEMPLE.



right to the first. The recipient places his hand upon his heart in an eloquent gesture of humble and almost hypocritical obligation. The scene thus depicted is conceived by the present writer to be the delivery by Herakles to Eurystheus of the girdle of Hippolyte, well known as the trophy of the expedition against the Amazons.

If this identification be correct, the subject forms a continuation of the one represented upon the corresponding block; for it will be borne in mind that the contest of Herakles with the sea monster, and the deliverance of Hesione, by which the hero was so intimately connected with the Troad, was an episode of that expedition which resulted in the defeat of the Amazon queen.<sup>1</sup> Apollodoros makes particular mention of the fact that the girdle was given to Eurystheus by Herakles himself.<sup>2</sup> And it is an accepted belief among critics of the text, that, in his concise relation of the exploits, Apollodoros has given us an abridgment of the work of Hellanikos of Lesbos, greatest of the early logographers, who, as a native of the parent city of Assos, writing in the very age to which the building of this temple is referable, would certainly be the best possible authority for the version of the legend followed by the designer of these sculptures. That, moreover, the delivery of the girdle in the residence of Eurystheus was a detail of the story regarded with peculiar satisfaction by the Greeks, is apparent from the words of Euripides concerning this expedition: "For Hellas received the rich spoils of the barbarian maid, and they are safely kept at Mykenai."<sup>3</sup>

<sup>1</sup> Apollodoros, II. 5. 9. It was related by Hellanikos (*Frag.* 33, ed. Müller, p. 49, preserved by the Scholiast to Pindar, *Nem.*, III. 64) that the Argonauts accompanied Herakles in his expedition against the Amazons, and thus the exploit gradually came to be treated as a mere episode of this cruise. Compare Diodoros, IV. 42, 49; Apollonios of Rhodes, II. 967; Valerius Flaccus, V. 132.

<sup>2</sup> Apollodoros, II. 5. 9: κομίσας δὲ τὸν ζῶστηρα εἰς Μυκῆνας, ἔδωκεν Εὐρύσθει.

<sup>3</sup> Euripides, *Herc. Fur.*, 416: τὰ κλεινὰ δ' Ἑλλάς ἔλαβε βαρβάρου κόρος λάφυρα, καὶ σώζ' ἐν Μυκῆναις.

These direct references to the delivery of this prize may be held to outweigh an isolated account of late date as to the strained relations existing between Herakles and Eurystheus, according to which the cowardly king, after the fright experienced in receiving the Erymanthian boar, — on which occasion he had crept away to hide himself in a brazen jar,<sup>1</sup> — refused to give personal audience to the hero.<sup>2</sup>

The feat of Herakles in obtaining the girdle was one popular in archaic art,<sup>3</sup> and upon the few vase paintings which display the girdle itself this object is of a form entirely similar to that shown upon our relief.<sup>4</sup> With exception of the

<sup>1</sup> Thus related by Diodoros, IV. 11. 3. Apollodoros (II. 5. 1) refers the fright of Eurystheus to the sight of the Nemean lion. This picturesque story of the king hiding away from the terrible beasts brought into his house is undoubtedly of great antiquity, being shown upon archaic vases referable to the close of the sixth century. That the event was not, however, originally held to have resulted in the entire exclusion of Herakles from the presence of his royal cousin is evident from the fact that Apollodoros, in his subsequent account of the delivery of the Erymanthian boar (II. 5. 4) and of the mares of Diomedes (II. 5. 8), as well as of the girdle of Hippolyte, describes the hero as entering Mykenai, and on one such occasion, when returning with the Cretan bull, as himself showing the animal to Eurystheus (II. 5. 7).

Diodoros gives a similar account of interviews between the two, and makes no mention of any refusal to grant personal audience.

<sup>2</sup> Venetian Scholiast to the *Iliad*, XV. 639, following the passage of Apollodoros (II. 5. 1), commented upon in the foregoing note. The Victorian Scholiast to the same passage of the *Iliad* gives another explanation of the relationship between the hero and the king, which is in like manner recognizable as a perversion of the original legend, and well illustrates how freely such alterations and additions were circulated during the later ages of antiquity. This is that Eurystheus was the pederast of Herakles, who executed the labors at his behest on account of this unnatural affection. If any weight at all be attached to these late embellishments of the tale, it must be admitted that the latter asserts the continuation of personal intercourse denied by the former.

<sup>3</sup> Compare the review of this subject given by Jahn (Otto), *Ercole combattente le Amassoni, Annali*, vol. xxxvi., Roma, 1864.

<sup>4</sup> As, for instance, upon the vase referable to the close of the fifth century, published by Welcker, *Herakles und die Amazonenkönigin, Archäologische Zeitung*, Berlin, 1856, pl. 89. The extensive ancient literature in regard to the girdle is fully given by Klügmann (Adolf), *Die Amasonen in der Attischen Literatur und Kunst*, Stuttgart, 1875, particularly in notes 19 to 23. The classic

girdle no attributes are represented, and no peculiar features distinguish the four reclining figures; unless, indeed, we may put this interpretation upon the fact that Herakles alone is provided with a deep-lipped drinking bowl,<sup>1</sup> each of the others holding in the left hand a kantharos of the ordinary type. The shallow vessel without handles, uplifted by the right hand of the foremost figure, and filled by the attendant, is a phiale, such as was customarily used for libations; and that it had this significance in this case seems evident from the fact that the member of the banquet who holds it has, like the others, a drinking vessel for his own use in his left hand.

An identification of the two figures at the left, who thus appear as guests at the royal table of Eurystheus, is neither requisite nor possible. It is obvious that they were introduced for the sole purpose of filling out the elongated panel. They belong to that class of figurants of which the ancient designers and vase painters possessed so large a retinue.

The variety and elegance of the seven vases represented upon the relief may, as will be argued in a subsequent connection, be taken as an indication of the fact that the work is not referable to any period more remote than the Lydian and Persian invasion; and the same conclusion, if any, is to be drawn from the reclining postures of the banqueters. The Greeks of the Homeric poems, as is well known, sat at their

authors, however, devote their descriptions rather to the brilliancy and great value of the trophy than to its shape.

<sup>1</sup> It may be observed that Herakles holds a cup of the same shape in his symposium with Pholos, as represented upon the archaic vase published by Gerhard, Herakles bei Pholos und Busiris, *Archäologische Zeitung*, 1865, and that his position there is precisely that of Eurystheus upon the Assian relief, — the left elbow leaning upon a cushion, the right arm crossing the breast. The exceptional direction of the composition, from right to left, is also the same, and likewise points to some common prototype. The peculiar attitude is doubtless that to which Lucian (*Conviv.*, XIV.) refers as customary in paintings of the banquet of Herakles and Pholos.

meals and drinking bouts;<sup>1</sup> and upon the celebrated vase of Sosias in the Berlin Museum, — a work of severe style, yet red-figured, — the gods of Olympos are shown seated at their carousal.<sup>2</sup> Reclining at table was originally an Oriental usage as may be gathered from the domestic scenes depicted upon Assyrian monuments, and it has been plausibly assumed to have been introduced to Hellenic life by the Ionians.<sup>3</sup> At just what period this custom became general is, however, by no means certain, and no definite *terminus post quem* can be derived from the adoption of this posture upon the Assian relief. Still it appears worthy of further consideration in this sense, that all the banqueters are here shown as leaning luxuriously upon cushions, in like Oriental fashion. Long after the Greeks had accustomed themselves to recline at table, they continued to employ plain couches for this purpose.<sup>4</sup> Even in the third century the Spartans “were wont to lie upon bare benches during the whole banquet,” and “hesitated to put their elbows upon the pillows” which had come into fashion at court during the reigns of Areus and Akrotatos.<sup>5</sup>

Notwithstanding the obvious indication afforded by the girdle, none of the writers who have discussed the subject of

<sup>1</sup> *Iliad*, XXIV. 475, 515; *Odyssey*, VII. 203, XXI. 89.

<sup>2</sup> Furtwängler, *Beschreibung der Vasensammlung im Antiquarium*, Berlin, 1885, No. 2278, where see the very extensive literature concerning this vase.

<sup>3</sup> By Müller (Carl Otfried), *Geschichten Hellenischer Stämme und Städte: Die Dorier*, 2d ed., Breslau, 1844, IV. 3. 1. The author further concludes, from a passage of Alkman preserved by Athenaios (III. 75), that the Greeks of the age of that poet reclined at meals, inasmuch as *klinai* are mentioned as being provided for the guests. Alkman, however, who was himself a Lydian by birth, appears to have described in these lines the lavishness of some Oriental banquet. The similar change in the customs of the Romans was effected at a much later date, and was particularly mentioned by Varro. Compare Servius, *ad Aen.*, VII. 176, and Isidorus, *Orig.*, XX. 11. 9.

<sup>4</sup> Plutarch, *Lycurg.*, XVIII.; Athenaios, XII. 15, p. 518; Soudas, *s. v.* κλῖτρα and λυκοῦππος; Cicero, *Pro Muraena*, XXXV.

<sup>5</sup> Phylarchos, *Hist.*, XV. and XX., preserved by Athenaios, IV. 20, p. 142.

this relief have connected it in any way with the expedition of Herakles against the Amazon queen and the possession of this trophy. Indeed, none of the reliefs has been more misunderstood. Thus, Poujoulat conceived it to represent "women upon a couch, their long hair, which forms their only covering, floating carelessly upon their shoulders."<sup>1</sup> The block happens to be so fractured as to form two chief pieces, each containing two banqueters, and it was attached to the walls of the Louvre joint surface to joint surface, so that Eurystheus rested his elbow against the krater at the other end of the relief. It was thus displayed to the public for half a century, until, in 1886, the writer called the attention of M. de Villefosse to the matter, and the fragments were correctly adjoined. This failure rightly to connect the figures naturally rendered the subject still more unintelligible. Clarac was thereby led to consider the relief as containing two separate representations, — Menelaos and Proteus *en pourparlers* (right half), and Menelaos and Proteus *d'accord* (left half).<sup>2</sup> Texier, who correctly combined the groups in his engraving,<sup>3</sup> described the scene as the feast of Perithoos, which, in view of the huge wine jar, and the centaurs of the other reliefs, was not so bad a guess. More modern critics and historians of

<sup>1</sup> Michaud et Poujoulat, *Correspondance d'Orient*, vol. iii., Paris, 1834, Lettre LXIX.

<sup>2</sup> Clarac, *Musée*, vol. ii. seconde partie, Paris, 1841. The account is too good not to be given as a last quotation from this delightful book: "Nous retrouvons encore ici Ménélas et Protée; ils sont à peu près d'accord, et le héros l'a emporté sur la résistance opiniâtre du dieu marin qui semble déjà lui avoir appris une partie de ce qui l'intéresse et qui, partageant avec lui la coupe de l'hospitalité, cherche par ses démonstrations, et en posant sa main sur son cœur, à le convaincre de sa franchise. Le Roi de Sparte n'a pas une entière confiance en ses protestations, et l'espèce de bandelette qu'il présente d'un air sérieux à Protée, n'indiquerait-elle pas que, s'il ne lui tient pas entièrement ses promesses, il va revenir encore à la force, et l'entourer de liens dont il ne lui sera pas si facile de se dégager?"

<sup>3</sup> Texier, *Description d'Asie Mineure*, vol. ii. pl. 114; re-engraved in the volume of *L'Univers* entitled *Asie Mineure*, Paris, 1862, pl. 15.

Greek art have been less committal in regard to the subject, concerning which, in the entire lack of parallel representations among the known works of ancient art, an absolute certainty is perhaps not attainable.

The positions originally occupied by many of the sculptured epistyle blocks are ascertainable from an elaborate calculation, having for its base the various widths of the intercolumniations of fronts, sides, and corners, the various lengths of the regulas and half-regulas carved upon the panels, and that peculiarity of the Greek Doric entablature by which the corner metope is removed from the axis of the corner column to the corner of the frieze. To these definite facts there are to be added, as secondary indications, the kindred nature of the subjects represented in certain cases upon adjoining reliefs, the direction of the compositions towards the central panels of the fronts, and, finally, the relative positions in which the overthrown blocks obtained by the American excavations were discovered. In the case of those reliefs which were removed from the site by the French, the last mentioned of these indications has, unfortunately, not been put on record. Moreover, these blocks have been deprived of many of their characteristic features, such as pry-holes, corner joint surfaces, and relative thicknesses of boss and soffit, by being sawed to thin slabs, in order to facilitate their attachment to the walls of the Louvre.

In view of the shattered and defaced condition of the great majority of these stones, the results attained through this examination cannot but be regarded as surprisingly full. Of the forty-four epistyle beams of the temple, only fifteen sculptured panels are now known; and of these fifteen, but a single one remains entire. Only four are sufficiently represented

by fragments to permit the measurement of their original lengths, and three of these, again, are deprived of one or both of those half-regulas which alone can supply trustworthy indications as to width of span. Yet, notwithstanding this, the relative position of every one of the reliefs is now known. Thirteen may be assigned to their exact positions; and in regard to but two small fragments, belonging to the series of wild beasts, can any doubt obtain as to the particular intercolumniation which they occupied.

The lengths of the entablature, side and front, not including the projection of the tainia, or of the band bordering the panels upon the lower edge, may be accurately ascertained by subtracting from the corresponding dimensions of the stylobate the lower diameter of the column, plus twice the distance of the arris from the rise of the upper step, and adding to this result the thickness of the epistyle. For the fronts the dimension thus obtained is 13.89 m. Assuming, for the purpose of preliminary examination, the columns of the façades to have been equally spaced, it is evident that the corner panels would have a length of about 3.03 m., while the three inner beams would have averaged 2.61 m. The length of the side entablature is in like manner found to have been 30.17 m. As it is known from the marks upon the stylobate that the corner intercolumniations of the sides were somewhat larger than the others,<sup>1</sup> — the clear opening between the shafts being in one instance 1.568 m., — the corner blocks must have been 2.9 m. long, and the others have averaged 2.44 m. We might hence expect to find four distinct classes of epistyle beams, respectively 2.44, 2.61, 2.90, and 3.03 m. in length.

It is to be borne in mind, in this examination, that the half-regulas carved upon the ends of the panels are often consid-

<sup>1</sup> See page 76 of the present volume.

erably longer or shorter than one half the width of the triglyphs, thus proving the joints of the lintels to have been displaced from the axes of the columns. While the triglyphs average 52 cm. upon the sides, and 56 cm. upon the fronts, the half-regulas vary from 11 to 38 cm., showing the joints to have been occasionally as much as 15 cm. out of centre.<sup>1</sup> In the calculation of the corresponding intercolumniations, the plus or minus, thus definitely ascertainable, has of course to be taken into account. •

The first fact to be recorded is, that the unsculptured epistyle blocks discovered upon the site were, without exception, of a length corresponding to an intercolumniation not greater than 2.45 m., and are consequently to be assigned to the sides of the building.

Turning to the reliefs,<sup>2</sup> we find three which, including the corner lap, must have had a total length of over three meters, and consequently must have occupied three of the four corners of the façades. These are the Herakles and Triton, the Banquet, and the Herakles and Pholos.

<sup>1</sup> A further proof of this fact, derived from differences in the character of the tooling upon the soffits of the epistyle beams, has been given on page 85 of the present volume.

<sup>2</sup> The twenty-two drawings of the Assos reliefs following in the text are given, not as adequate illustrations of the sculptures, but as displaying all these blocks in their character as architectural members. The total length of each lintel when complete is given in centimeters by the figures beneath, those above indicating the length of the regulas, and of the spaces between them, which correspond to the metopes. The writer is responsible for these measurements, which were taken in Paris and at Assos from the blocks themselves. In the outlines of the sculptures which are preserved in the Louvre he has, however, followed a series of sketches made by Mr. Bacon prior to the commencement of the excavations. These sketches were not drawn to strict scale, and those who desire to verify the arguments dependent upon the dimensions of these reliefs should base their calculations upon the figures accompanying these cuts and given in the text. The dots follow the architectural lines obliterated from the blocks, and give the probable length of the missing members. They furthermore show the deviation of the lintels from the normal lengths by indicating the axes of the columns.



The first mentioned (Fig. 52), though fractured, is preserved in its entire length, which measures not less than 2.95 m. The half-regula at the left-hand side of the block is about 8 cm. too long, and this amount is to be deducted in calculating the width of the corresponding intercolumniation. But, as an entire regula is not cut at either end, at least 20 cm. must be added in order to make up the length of the lintel from axis to angle; and this total of 3.05 furnishes a decisive proof that the stone was above one of the corners of

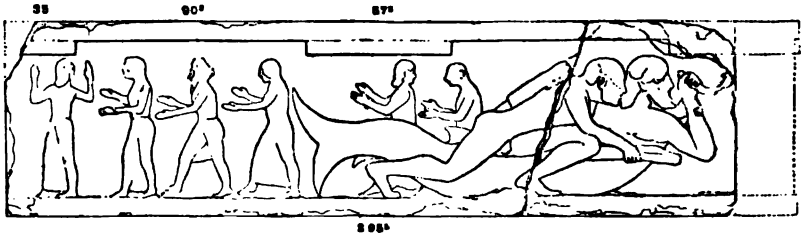


FIG. 52. EPISTYLE BLOCK ABOVE THE NORTHERNMOST INTERCOLUMNIATION OF THE EASTERN FAÇADE.

Series relating to the Rescue of Hesione.

the fronts, and not one of the corners of the sides. It is furthermore evident that the laps forming the corners of the entablature were cut upon the epistyle blocks of the sides, and not upon those of the fronts. Ample grounds for the adoption of this arrangement are to be found in the consideration that the quarrymen were thus required to provide, and the builders to handle, eight blocks of but 2.90 or 2.95, instead of four of 2.70, and four of not less than 3.10 or 3.15 m.,—an immense saving in practical respects, of which the primitive builders, ill provided with machines for transporting and lifting such heavy stones, must have well been aware. Even as it is, these front corners of the epistyle are the heaviest and most awkward stones employed in the edi-

fice, weighing half as much again as the bulky corner cornice blocks, and being much more difficult to set. The fact that another relief is known to have occupied the southern corner of the eastern front, while two reliefs of an entirely different subject adjoined the northern corner block of the western front upon either hand, and, above all, the grouping and movement of the composition, leave little doubt that the right-hand end of this panel, and not the left, was outermost. The hero has driven the monster into a corner; the affrighted spectators fly towards the middle of the entablature. From a decorative point of view, also, the broad masses formed by the bodies of the combatants are of decidedly better effect at the outer end, the upright lines of the smaller figures at the inner. Hence the lap has been drawn in Figure 52 upon the right hand of the lintel; and we only remain in doubt whether to assign the block to the northern corner of the eastern, or the southern corner of the western façade,—a point in regard to which no immediate decision is possible, as we have no information concerning the position in which these reliefs were found. Certain indications derived from the spacing of the metopes, and pointing to the probability that the Herakles and Triton occupied the eastern, and the Banquet the western façade, will be adduced in another connection. The distance from the central regula to the joint surface upon the right hand of the lintel is 1.12 m. At this end the half-regula has been split away, but it appears scarcely possible that the member can have had a greater length than 27 cm. As the corner triglyph is known, in one instance at least, to have been 52 cm. square in plan, it follows that 25 cm., or thereabouts, is to be added to the actual length of the lintel. Thus it is evident that the entire panel, from joint to angle, cannot have been less than 3.2 m. in length.

It was more difficult to obtain an accurate measurement of the relief of the Banquet, this being broken into four pieces, which were, at the time of examination, arranged upon the walls of the Louvre in incorrect sequence, and not very closely fitted together. Still, the total length of 2.86 m., given upon the drawing (Fig. 53, compare Fig. 51), can hardly involve a greater error than one inch. The half-regulas in this case are both excessive, measuring 36 and 38 cm. The larger of these was outermost, and adjoined

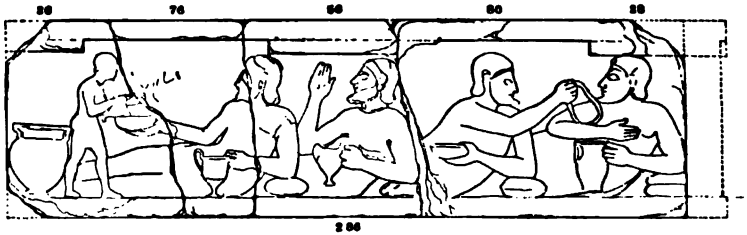


FIG. 53. EPISTYLE BLOCK ABOVE THE SOUTHERNMOST INTERCOLUMNIATION OF THE WESTERN FAÇADE.

Series relating to the Girdle of Hippolyte.

the lap, the thickness of which hence cannot have exceeded 18 cm., while it may not have been greater than 14 cm., being in either case the thinnest block of andesite employed in the construction of the temple. The object of thus restricting the width of the lap was evidently to extend the sculptured surface of this panel as nearly as possible to the corner. The length of the epistyle from axis to angle was about 2.96 m.; of the entire panel, including lap, about 3.04 m. That the right-hand end of the block, and not the left, adjoined the corner is indicated by the direction of the composition,—the banqueters naturally facing the middle of the façade,—as well as by the points referred to in connection with the relief of Herakles and Triton, which is thus

seen to have been placed upon the corner of the building diagonally opposite.

The third front corner block is that sculptured with the figures of Herakles and Pholos, discovered during the American excavations. (Fig. 54.) It presents fewer factors for the calculation than do the others, inasmuch as the two fragments remaining do not constitute the entire lintel, a considerable portion, including one of the half-regulas, being missing from the left hand side. Furthermore, the half-

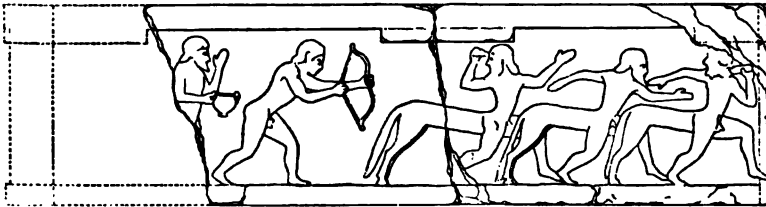


FIG 54. EPISTYLE BLOCK ABOVE THE SOUTHERNMOST INTERCOLUMNIATION OF THE EASTERN FAÇADE.

Series relating to the Centaurs of Mount Pholoë.

regula from the other end has been split away from the surface. From the end of the central regula to the joint upon the right is 1.05 m.; and it is 83 cm. from the other end to the fracture upon the left, where no commencement of the half-regula is visible, although the tainia is perfectly sharp. Measured along the lower edge of the tainia, the total length recovered is 2.43 m.; and if the dimension of the missing member be added to this we have a lintel of not less than 2.7 m., — much too long to permit us to assign it to any of the inner intercolumniations. That it furthermore occupied a front, and not a side corner, is evident from the fact that a half, and not a whole regula, was cut upon the end remaining intact, which, as may be concluded from the direction of the composition, and from other indications, would be that occu-

pying the angle of the building, if the relief had been assigned to a side corner. All these considerations are in agreement with the theory that this relief was placed at the southern corner of the eastern front, beneath which it was found. By adding to the extent of the remaining fragment the dimension of the corner regula, we see that the entire panel, from joint to angle, must have been at least 2.95 m. in length, and may have been more.

It will subsequently be shown, by a calculation based upon the lengths of the two adjoining blocks, that, assuming the middle triglyph of the front to have occupied the exact centre of the entablature, this corner stone, plus the width of the angle lap, must have had a length of exactly 3.085 m.; or, in other words, that the panel from axis to angle was precisely the 3.03 m. requisite according to the width of the corresponding intercolumniation. It is thus susceptible of proof, that a fragment of the relief has been broken away just large enough to contain the equine body of Pholos, — a fact to which reference has been made in the consideration of the sculptured subject.<sup>1</sup>

A similar calculation, if it be not affected by a want of symmetry in the position of the central triglyph of the front,<sup>2</sup> proves that the disproportion between the widths of the two metopes above the relief even exceeded the very considerable

<sup>1</sup> Page 151 of the present volume.

<sup>2</sup> The probability that some slight correction in this sense is necessary in order to determine the exact dimensions of these epistyle blocks, is indicated by the fact that the stele upon which the confronting sphinxes of the eastern façade rest their paws, and which marks the centre of the symmetrical composition, is itself removed about two centimeters from the axis of the regula above it. It is, however, impossible to make allowance for a variation of this nature, in the absence of one of the epistyle blocks of the front. The dimensions given in the text must approximate very closely to the actual sizes, and serve the most important purpose of this consideration, namely, the determination of the positions of the known reliefs, and the projected widths of the intercolumniations.

amount already evident from the spacing of the regulas upon the fragmentary block. The metope on the right hand cannot have been broader than 74 cm. ; that upon the left is seen from the space remaining upon the relief to have exceeded 83 cm., and is now shown to have been not less than 0.1 m. more than this. The difference between them of nearly 0.2 m. is at first sight astounding; yet it is proportionally little more than that between the metopes above the adjoining block, measuring 68 and 81 cm. respectively. In the latter case, the unequal dimensions can be taken from the relief itself, and thus admit of no possible doubt. Moreover, it is ascertainable, even from the few metope slabs found upon the site, that these members varied still more in width than is indicated by this calculation, namely, from 63 cm. to 905 mm.

An explanation of such inequalities in the division of the frieze, particularly above these two front epistyle beams, will suggest itself in reviewing the method of construction adopted by the builders. It has been seen, from marks upon the stylobate, that the laying of the stones which form the steps was commenced near the northwestern corner of the edifice, and was continued in both directions until they met upon the southern side.<sup>1</sup> The same sequence appears to have been followed in the construction of the entablature. Thus, the lintels and frieze members of the eastern front were laid in the direction from north to south. The work having evidently been carried on in the most primitive and irregular manner, without the aid of scaled working drawings, or accurately determined tables of dimensions, everything had to be done by

<sup>1</sup> Page 64 of the present volume. The considerations which determined this course of construction were undoubtedly connected with the facts that the stone was brought to the site of the temple from the northwest, there being no approach to the Acropolis from the south, and that the native rock reached the highest level at this part of the plan.

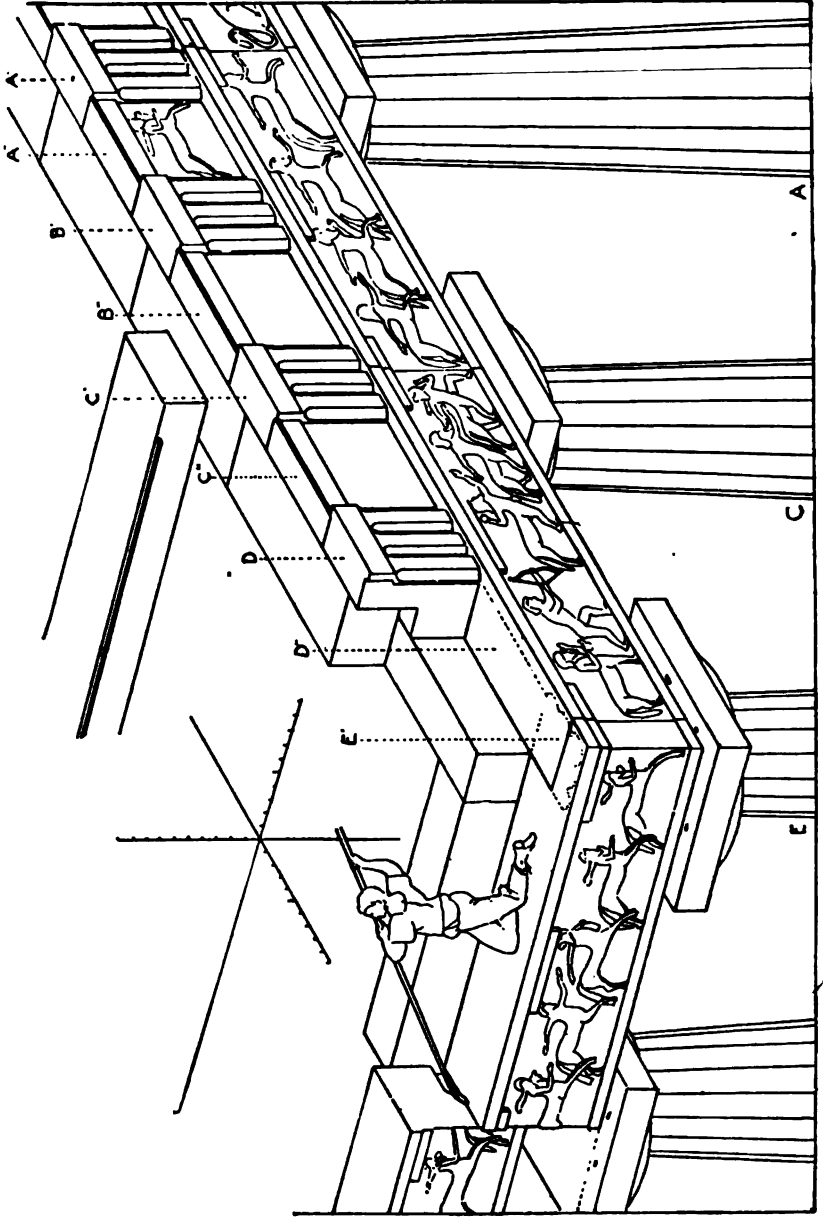


FIG. 55. SCHEMATIC VIEW OF THE SOUTHEASTERN CORNER OF THE ENTABLATURE. — ISOMETRIC.

testing and fitting. The temple was built in the same way as were the polygonal city walls of that epoch, with their irregular angles and unequal lengths of the separate stones. For the width of every second metope, at least, independent measurements had to be taken from the edifice in the course of construction. The want of agreement between the joint surfaces of the lintels and the axes of the columns was one result of this system, and we have been forced to conclude that the exact lengths of the regulas were cut upon the face of the reliefs after the members of the frieze had been placed in position above them. The only fixed principle in the arrangement of the frieze was that every alternate triglyph should be placed as nearly as possible in the line of the column beneath it. Thus it was brought about that the entire correction rendered necessary by the elongation of the members of the frieze to correspond with the longer beams of the fronts, and especially of the corners, was thrown upon the second metope laid on each lintel,—this being in the case under consideration that upon the left hand.

This will be rendered clear by retracing the steps naturally taken by the masons. As shown in Figure 55, which gives in isometrical projection the dimensions of the southeastern corner of the building, the triglyph A' was placed as nearly as possible in the axis of the column A, regardless of the jointing of the lintels beneath it. To this triglyph adjoined the metope A'', for which no width could be directly measured upon the epistyle, and which was consequently cut of the mean dimensions, about 0.7 m.; those upon the right-hand sides of the reliefs of Herakles and Pholos, and the four horse-legged centaurs being but about an inch longer and an inch shorter, respectively, than the average of the side metopes. Then followed the triglyph B', for which likewise no direct measurements were available, and which was made of



the width of 56 cm. determined for these members. In confirmation of this, it may be observed that not one of the inner entire regulas appearing upon the façade reliefs varies an inch from the average. The second triglyph being set, the question of adjustment could no longer be ignored, inasmuch as the width of the next metope, B'', determined the position of the columnar triglyph C'. Any perceptible deviation of this member, the ideal continuation of the line of support in the entablature, from the axis of the column C, would have been intolerable. Hence the location of C', thus fixed, was marked upon the upper surface of the epistyle, and the width of B'' deduced therefrom. It is obvious that so ill-considered a manner of adjustment inevitably resulted in differences between B'' and A''. And it is entirely in accord with this explanation that the maximum irregularity should occur between the metopes above the front corner block, C'' and D'', upon which devolved the equalization of the displacement of the corner triglyph E' from the axis of the corner column E by not less than 15 cm., or half the thickness of the entablature minus half the width of the corner triglyph, as seen from the calculation of the tainia and regula lengths of the relief of Herakles and Pholos, Figure 54.

This observation concerning the two metopes situated above one and the same elongated epistyle beam, according to which that last placed in position tends to become the broader, has direct bearing upon the assignment of the corner blocks of the Banquet and the Herakles and Triton to the eastern or western façades. Of these reliefs, that representing the marine monster has been seen to be the more important, in respect both to its national significance for the Greeks of Assos and to its connection with that deity to which the temple was dedicated. It is also superior in pictorial treatment, while in decorative composition it balances the

relief of Herakles and Pholos, which occupies the southern corner of the front, far better than would the Banquet. The six figures of the affrighted spectators who fly from the scene of the struggle correspond well to the discomfited and retreating centaurs of the pendant. These considerations alone might have sufficed to justify the relegation of the Banquet to the western façade. That the arrangement is correct is further indicated by the spacing of the regulas upon the epistyle beams in question. The construction of the frieze having, according to our hypothesis, been carried on above the Herakles and Triton from right to left, and above the Banquet from left to right, we should expect to find the left-hand metope above the former and the right-hand metope above the latter to be larger than their fellows. This is actually the case, by the amounts of 4 cm. and 5 cm. An exchange of the positions of the reliefs would involve the assumption of a double exception to the natural law which they thus exemplify.

We may deduce the width of the corner intercolumniations of the façades from the data already acquired. If from the smallest possible length of the Herakles and Triton panel, namely, 3.15 m., we subtract 8 cm. for the excess of the half-regula at the inner end, and 42 cm. for half the thickness of the entablature, we shall have a spacing of about 2.65 m. on centres; and if from the total length of the Banquet panel from joint to angle we make a similar deduction, we have about 2.54 m. The difference between these results is to be ascribed to the irregularities in the spacing of the frieze members. It is to be borne in mind, that the position of the triglyphs in respect to the axes of the columns often varied even more than this, as has been seen from the bed toolings visible upon the soffits of the epistyle beams.<sup>1</sup> Now the cor-

<sup>1</sup> Compare page 85 of the present volume.

ner columns of the fronts are known, from traces upon the stylobate, to have been 13.07 m. distant from centre to centre; if the shafts between them had been placed at perfectly regular intervals, we should have an intercolumniation of 2.614 m. This is very nearly the distance represented by the average of the two corner beams preserved in their entire length, the one of which is, from axis to axis, but two inches shorter, the other two inches longer; and with this dimension the length of the relief of Herakles and Pholos, determined by a method entirely independent, is in perfect agreement. Had the temple followed the customary proportions of the Doric plan in this particular, a very considerable difference between the intervals, say 0.2 m., would have been observable. Thus there can be no doubt concerning the fact that the design called for an equal spacing of the columns of the fronts, contrary to the general usage of the style. The want of this refinement is entirely in accord with the general character of the edifice. The inequality of its dimensions, especially in the division of the frieze, was so great, that the aid in the adjustment of the corner metope, commonly derived from a diminution of the corner intercolumniations, was not felt to be requisite. This neglect of one of the most characteristic features of the style is, as will subsequently be shown, by no means an evidence of great age, but merely the result of provincial rudeness.

The equal spacing of the intercolumniations being thus determined, we can proceed with greater certainty to a consideration of the other epistyle blocks of the fronts. Most readily recognizable among these are the reliefs of heraldic sphinxes. That assigned, for reasons already adduced, to the western front, is preserved in its entire length. (Fig. 56.) The block is broken into three fragments, two of which were found during the American excavations, while the third is

among the reliefs of the Louvre, so that it was not possible to fit the fractures together for the purpose of accurate measurement. The given total of 2.58 m. cannot, however, vary more than two centimeters from the original length. Fortunately

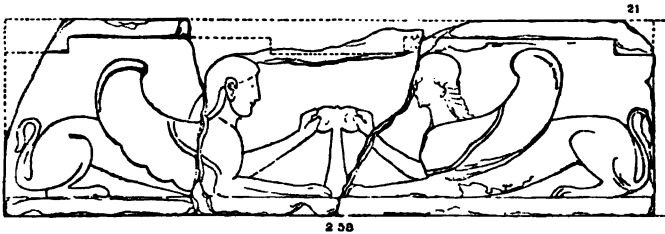


FIG. 56. EPISTYLE BLOCK ABOVE THE CENTRAL INTERCOLUMNIATION OF THE WESTERN FAÇADE.

Coat of Arms of Assos.

both half-regulas are preserved, and these, as has been seen, have sufficed to determine to which of the façades this relief appertained. As these members are short, about 8 cm. is to be added to the length of the stone in order to obtain the

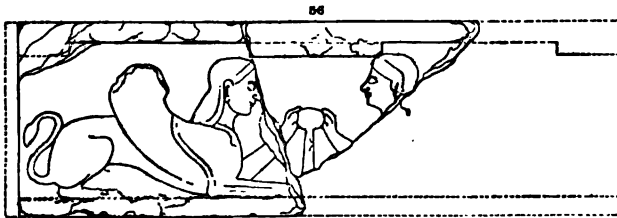


FIG. 57. EPISTYLE BLOCK ABOVE THE CENTRAL INTERCOLUMNIATION OF THE EASTERN FAÇADE.

Coat of Arms of Assos.

width of the corresponding intercolumniation, which is thus seen to have been some 5 cm. longer than the average, assuming, for the purpose of this calculation, the axes of columns and triglyphs to be exactly identical. The relief from the eastern front (Fig. 57) is lacking a considerable portion,

including the right half-regula, while the left half-regula has been split away from the surface. It is nevertheless ascertainable, both from the space remaining upon the stone and from the length of the complementary half-regula upon the adjoining block, that the member was about 23 cm. in length. The distance from the remaining joint surface of the lintel to the centre of the middle regula, and of the symmetrical composition, is 1.26 m. By adding to this a supplementary 5 cm. for the short half-regula, and doubling the result, we have 2.62 for the width of the central intercolumniation. It is thus proved that both these reliefs of sphinxes were above inner intercolumniations of the fronts, and that these can have been no others than the central openings is sufficiently obvious from the absolute symmetry and heraldic character of the figures upon them. So little doubt is possible in regard to this point, that the sphinxes were assigned to this position even by Texier's restoration of the façade of the temple, upon which every other relief is wrongly placed.<sup>1</sup>

It is worthy of note, that the three half-regulas which may be measured upon the two sphinx reliefs are all too short, the deficiency amounting in one case to 7 cm. The blocks in question are thus seen to have intentionally been made smaller than those adjoining them, and shorter than the intercolumniations over which they were placed. An explanation of this lies near at hand. The sculptured subject, consisting only of two figures, was without doubt felt to be too small, or at all events proportionally too high, to fill a panel of the normal length and proportions. While this difficulty was met, in so far as was possible by such adjustment, a corresponding advantage was gained by transferring the deducted length to

<sup>1</sup> Texier, *Description*, vol. ii. pl. 112. The author especially refers to the relief of the Banquet, one of the two largest blocks removed to Paris, as having been upon the side of the building.

the neighboring epistyle blocks, containing a greater number of figures. Of the two sphinx reliefs, that upon the eastern front was the more shortened in this manner, the half-panel measuring 1.26 m.; and it has been pointed out, in considering the style of these sculptures, of what decided advantage to the design even this slight diminution proved to be.

As a still further, if slight, indication of the correctness of the assignment of the Herakles and Triton to the eastern façade, it may be observed that the longer corner relief thus

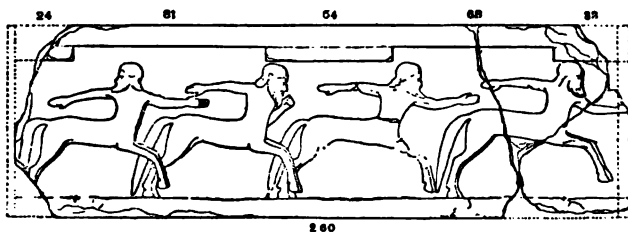


FIG. 58. EPISTYLE BLOCK ABOVE THE SECOND INTERCOLUMNIATION FROM THE SOUTH OF THE EASTERN FAÇADE  
Series relating to the Centaurs of Mount Pholoë.

becomes complementary to the shorter central beam, and *vice versa*, excess and deficiency corresponding very closely.

Fortunately for our understanding of the arrangement of the reliefs upon the building, one of the sculptured blocks discovered during the American excavations fills the gap between the Herakles and Pholos and the eastern sphinxes, having formed the lintel of the second intercolumniation of the main front from the southeastern corner. This is the relief of the four horse-legged centaurs fleeing from the arrows of the hero (Fig. 58). The stone, preserved in its entire length, and with all its mouldings intact, is 2.6 m. in length. That it belonged to an inner intercolumniation was thus evident at once. Despite the striking difference presented by the horse-

legged and human-legged monsters of the two blocks, it was further assumed that it adjoined the Herakles and Pholos group, next to which it was found, at the southeastern corner of the building, just beneath its original position. And this assumption has been confirmed through a comparison of the half-regulas carved upon its ends with the corresponding members upon the blocks on either hand. That on the right, measuring 33 cm., is exceptionally long, in agreement with the small space remaining for the other half upon the intentionally shortened sphinx block (Fig. 57); that on the left, measuring 24 cm., in like manner corresponds to the space upon the right-hand end of the Herakles and Pholos relief. Still another proof of contiguity is supplied by the total length of the half front entablature represented by these three reliefs,—an accurate test, inasmuch as no great variation is here conceivable. The total length of the corner panel, 3.085 m. from joint to angle, as before determined, added to the 2.6 m. of this relief of the four horse-legged centaurs, and to the 1.26 m. represented by the half-panel of the eastern sphinxes, gives just that total of 6.945 m. required for the half-entablature length, definitely determined by measurements of the plan.

Continuing the examination of those reliefs which are to be assigned to the southeastern corner of the building, we have next to deal with two epistyle beams in the Louvre representing centaurs (Figs. 59 and 60). Their regular gallop in the same direction, their conventional positions, so similar to those of their brethren upon the reliefs of the front, naturally lead to the supposition that they were connected with the exploit of Herakles against these monsters, of which the chief scene is depicted upon the front corner; and that, as the line of retreating centaurs is known to have been terminated by the heraldic sphinxes occupying the middle of the

façade, these wine-attracted disturbers of the hospitality of Pholos are hastening to the assault, around the corner, upon the side entablature. It may furthermore be observed, that the sculptor has shown all but one of the centaurs retreating discomfited before the arrows of the hero to have lost their weapons, while all but one of those advancing have their weapons still in their hands. Convincing indications of the correctness of this view of the incident, and of the arrangement of the blocks in accordance therewith, may be derived

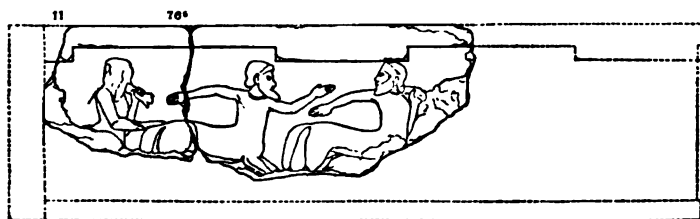


FIG. 59. EPISTYLE BLOCK ABOVE THE EASTERMOST INTERCOLUMNIATION OF THE SOUTHERN SIDE.

Series relating to the Centaurs of Mount Pholoë.

from the dimensions of the two Louvre reliefs under consideration. The first (Fig. 59) is recognizable as having belonged to a side corner by the great length of its central regula, and by the distance of this member from the remaining joint surface. While the inner side lintels averaged, as has been shown, but 2.44 m. in length from axis to axis, the corners were not less than 2.9 m. long from axis to angle. Discrimination between them is hence neither difficult nor uncertain. From the ideal axis, 15 cm. beyond the left joint surface of our block, to the centre of the middle regula, is 1.32 m.; twice this, plus the length of the half corner regula which is to be included in the calculation, gives precisely the required dimensions. It will be noticed in connection with this ideal axis, that the stone presents a further peculiarity indicative



of its position above one of the corner intercolumniations: the half-regula at the left is the shortest member of the kind cut upon any of the epistyle blocks known, being only 11 cm. in length. It is evident that the beam was thus shortened through the same desire to spare the labor of quarrymen and masons which determined the cutting of the laps upon these corner blocks of the sides, rather than upon those of the fronts. It was much easier to provide and handle two blocks of 2.6 and 2.75, than two of 2.45 and 2.9 m., respectively. The length of the whole regula is over 57 cm., considerably more than the ordinary width of the side triglyphs, which appear to have averaged about 52 cm. For a corner block this is entirely normal, such an extension being the most natural method of effecting an adjustment between the different lengths of the two classes of lintels. For the same reason, the metope was allowed a width of 76 cm., while the average width of the metopes above the inner intercolumniations of the sides cannot have exceeded 71 cm. Still another indication, and one of an entirely different nature, may be adduced to prove the position of the block. If the panel extended to the corner of the entablature, with an entire regula at the right-hand end, as indicated by the dotted lines in Figure 59, just sufficient space would have been provided to contain the figures of two centaurs in advance of the foremost now remaining. This would by no means have been the case had the lintel been above an inner intercolumniation, and terminated by a joint surface in or near the axis of the next regula upon the right. It is true that the body of the last centaur upon the left is divided by the joint; but this single instance of the kind in any of the reliefs was due, as will presently be explained, to this very elongation of the corner block by a lap, owing to which nine centaurs could be represented upon two adjoining panels, instead of four upon each.

The second of the Paris centaur reliefs (Fig. 60) is of the small dimensions which prove it to have been above one of the inner intercolumniations of the sides. The length of the half-panel remaining intact is only 1.2 m. from the right-hand axis, 2 cm. beyond the point to the centre of the middle regula. The latter moulding is considerably shorter than the average of its class, measuring but 48 cm. in length. This block obviously did not adjoin the corner lintel; the missing hind quarters of the last centaur upon that relief are not

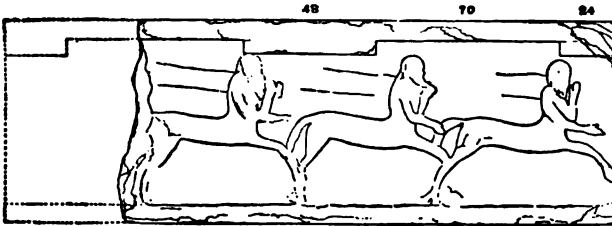


FIG. 60. EPISTYLE BLOCK ABOVE THE SECOND INTERCOLUMNIATION FROM THE EAST OF THE SOUTHERN SIDE.

Series relating to the Centaurs of Mount Pholoë.

sculptured upon it, while the half-regulas are by no means complementary. It is to be assigned, without doubt, to the third intercolumniation of the southern side, from the east. If we assume the joint surface upon the left-hand side, now lost, to have been displaced a few centimeters beyond the ideal axis, as would naturally have been the case in the first sculptured lintel, ample space would have been provided for the body of a fourth centaur. Even had joint and axis coincided, this figure might have found room. It appears probable that this fourth centaur terminated the long line of advancing assailants, and that the adjoining epistyle block upon the left was unsculptured; yet this point cannot be definitely determined.

The arrangement of the reliefs upon the six epistyle beams

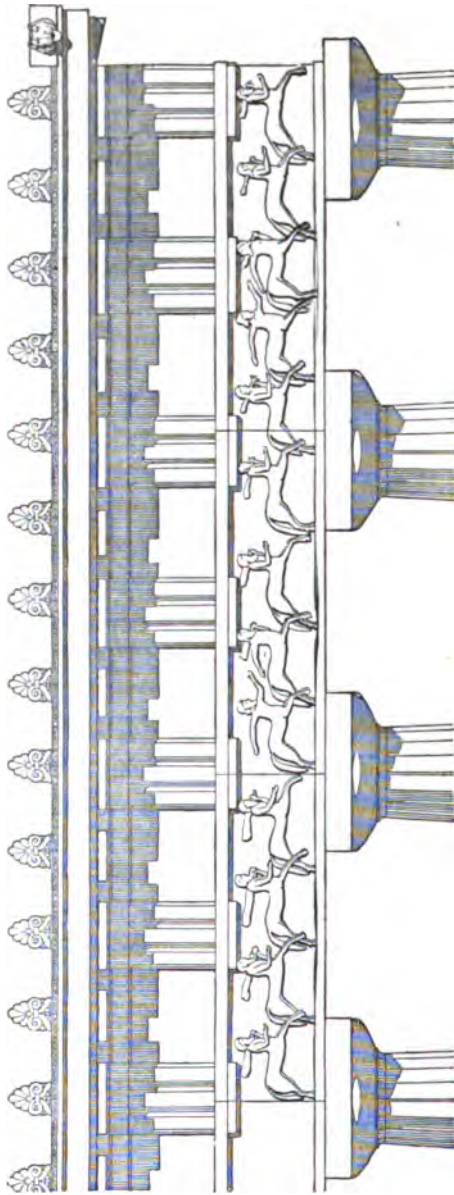


FIG. 61. RECONSTRUCTION OF THE EASTERN CORNER OF THE SOUTHERN SIDE, SHOWING THREE EPISTYLE BLOCKS RELATING TO THE CENTAURS OF MOUNT PHOLOË.

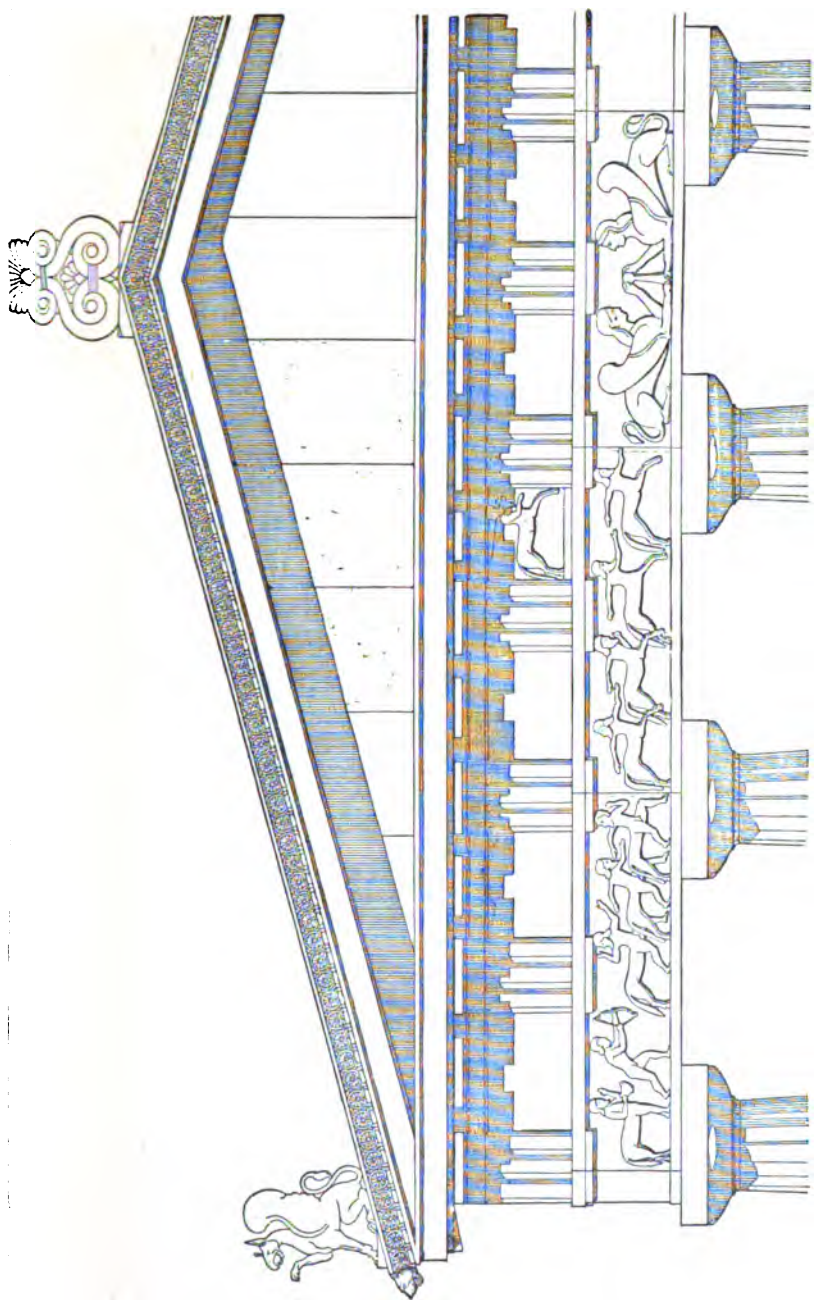


FIG. 62. RECONSTRUCTION OF THE SOUTHERN HALF OF THE EASTERN FAÇADE, SHOWING TWO EPISTYLE BLOCKS RELATING TO THE CENTAURS OF MOUNT PHOLOE, AND THE CENTRAL PANEL WITH THE COAT OF ARMS OF ASSOΣ.

nearest to the southeastern corner, thus ascertained, is shown in Figures 61 and 62.<sup>1</sup> Observe the difference between the easy canter of the centaurs advancing in regular file to the attack, and the headlong flight of those who retreat in terror before the victorious arms of the hero; the node of the action, so to speak, being the comparative repose of the upright figures of Pholos and his guest, emphasizing the vertical lines at the corner of the entablature in excellent architectural effect.

One other epistyle relief can be proved to have appertained to a front of the building; namely, that of the lion and boar, discovered during the first year of the American excavations. (Fig. 64.) The fragment, comprising about three quarters of the entire panel, measures 1.34 m. from the remaining joint surface to the middle of the central regula. Deducting 4 cm.

<sup>1</sup> The restored elevation of the gable and gable ornaments, given in Figure 62, introduces architectural features which require some words of further explanation.

The three stones of the tympanon wall veil, referred to in the description of the edifice, pages 106-109 of the present volume, are indicated by dots. It is not absolutely certain that the blocks recovered appertained to the eastern, and not the western gable; yet the position in which they were found favors the former attribution, while the fact that the three stones belonged together and originally adjoined is evident from the exact agreement in height of their corresponding sides.

The relief decoration of the terra-cotta gutter is based upon the indications afforded by the fragment discovered during the second year of the excavations. (Compare page 133, Fig. 31.) The height of this member is the chief feature which remains uncertain.

In respect to the griffin drawn as the corner acroterion, it is obvious that a single paw (page 137, Fig. 34) is by no means sufficient to warrant a trustworthy restoration. The figure is introduced merely for the purpose of indicating the ascertained fact that a monster of this nature, whether griffin or sphinx, occupied this position. Its height, which may appear excessive, is but one meter, and has been made proportionate to the dimensions of the acroterion surmounting the apex of the gable.

This central acroterion, *découplé* from a slab eight centimeters in thickness, may be reconstructed with reasonable certainty as to its main features from the existing fragment of its left-hand lower convolution. (Page 136, Fig. 33.) The

for the excess of the half-regula, and doubling the remainder, the lintel is found to have corresponded exactly to an intercolumniation of 2.6 m., or one of the inner spaces of the



FIG. 64. EPISTYLE BLOCK ABOVE THE SECOND INTERCOLUMNIATION FROM THE NORTH OF THE WESTERN FAÇADE.

Series relating to the Erymanthian Boar.

fronts. It is plain that it cannot have occupied a corner, for the direction of the composition shows that a longer half-

fragment in question, indicated by shading, is shown, together with the outline of the suggested reconstruction, upon a larger scale in Figure 63. As the volute sends off a main branch upon the side opposite to the incised parallel lines which evidently designate a horizontal juncture, it is plain that the ornament must have consisted of at least two pairs of scrolls. The fragment remaining is not less than 55 cm. broad, showing the width of the scrolls to which it belonged to have been very nearly one meter. The given dimensions of the acroterion are thus by no means too large. At first sight, so broad and bulky a mass will appear disproportionate to the gable. But it is to be borne in mind that the temple of Assos was at once archaic and of small size, both of which characteristics commonly led, as will be recognized by students of Greek architecture, to a comparatively large acroterion ornament. In the restoration of gutter anthemion and central acroterion, the indications of decorative style afforded by the known antefix have been followed as closely as possible.

It is instructive to contrast the heavy acroterion of poros stone from the temple of Assos with the graceful and refined ornament of marble

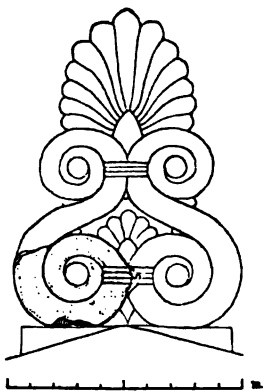


FIG. 63. RESTORATION OF THE CENTRAL ACROTERION, THE REMAINING FRAGMENT DOTTED AND SHADED.

regula would in that case have been cut upon the left-hand end, remaining intact, in order to make up the complement to the lap. On the other hand, the slight excess of the actual member was evidently determined by the desire of the masons to diminish the length of the corner block, which adjoined it upon this side. The corresponding lintel of the eastern front being already known, we may safely conclude that the relief of the lion and the boar, one of the finest in point of execution, was situated above the intercolumniation of the western façade second from the north, having on its right the heraldic sphinxes, and on its left the missing corner block which would have figured as the fourth in our list. This conclusion is borne out by the position in which the relief was discovered,—close to the western end of the temple, and directly opposite the intercolumniation to which it has been assigned.<sup>1</sup> The mass of rude mediæval masonry in which the stone was embodied was found to consist almost wholly of cornice blocks from the western entablature and gable. This circumstance would of itself almost suffice to determine the original position of the relief.

Among the smaller fragments in the Louvre is a portion of that epistyle which was situated above the westernmost intercolumniation of the northern side of the building, and overlapped the missing corner of the western façade. This is the relief of the lion springing upon the back of a hind. (Fig. 65.) Upon it is seen, extending from the end surface at the right across three quarters of the short length remaining, an entire

which occupied the corresponding position upon the temple of Aigina. As the present writer has become aware through a study of the fragments of the latter member, now preserved in the Glyptothek of Munich, none of the published restorations of the Aiginetan acroterion are altogether correct; still they suffice, in such comparison, to illustrate the characteristic differences between European and Asiatic, between advancing and provincial, design of one and the same age.

<sup>1</sup> *Preliminary Report*, plate 2. N.

regula, fully equal to the known width of one of the corner triglyphs to which it must have corresponded. The relief which formed the easternmost corner of the southern side being known, it is evident that this lintel can only have been situated diagonally opposite to it. This block with the corner lap is the only one of its kind which has come to light. When found by the French explorers it must have clearly displayed the method followed by the ancient builders in cutting the lap with reference to the narrow soffit and peculiar

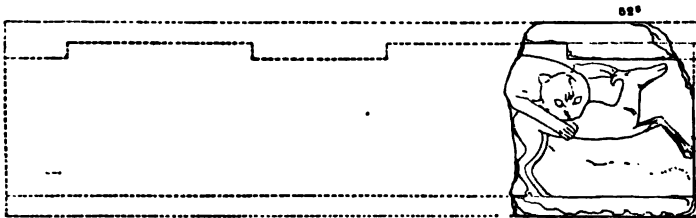


FIG. 65. EPISTYLE BLOCK ABOVE THE WESTERNMOST INTERCOLUMNIATION OF THE NORTHERN SIDE.

Series relating to the Erymanthian Boar.

boss of the epistyle beams. Hence it is a matter of great regret that, by the sawing of the lintel to a thin slab, these indications have been altogether obliterated, while no record was kept of the original formation of a member so important in architectural respects.

As the three corner blocks of the fronts preserved to us represent three of the deeds of Herakles, it is natural to assume that the subject of the fourth was of a similar nature. The reliefs adjoining the missing scene, and doubtless standing in connection with it, display the struggle of a number of wild beasts,—the lion and boar, and the lion and hind,—  
 “ces animaux féroces déchirant les paisibles hôtes des forêts,  
 dont la vélocité ne peut les dérober à leur insatiable soif de



sang," as Clarac poetically describes them.<sup>1</sup> Hence, the assumption is ready at hand, that the missing scene was the combat of Herakles with the Nemean lion, or with the Erymanthian boar. It has been observed that two of the chief subjects were connected with one and the same expedition, and as the adventure of the hero with the centaurs of Mount Pholoë was an episode of the pursuit of the Erymanthian boar, the latter suggestion enjoys the greater probability.

Three of the remaining reliefs evidently belong to the same series of representations, and may be supposed to have orna-

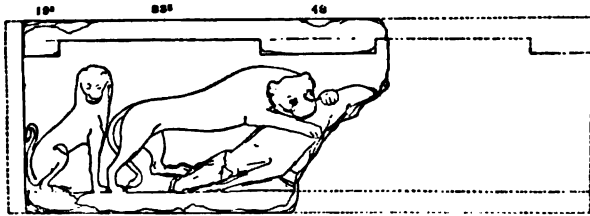


FIG. 66. EPISTYLE BLOCK FROM THE WESTERN GROUP OF THE NORTHERN SIDE.

Series relating to the Erymanthian Boar.

mented the northwestern corner of the edifice. These are the two lions and stag (Fig. 66), the lion and bull (Fig. 68), and the lion with the legs of a deer thrown over his back (Fig. 69). That the first of these was upon the side of the building is rendered wellnigh certain by the exceptionally small size of the central regula, which measures scarcely 48 cm. in length. In calculating the width of the intercolumniation to which it appertained, we find the distance from the middle of the central regula to the axis of the column upon the left hand, about 7 cm. beyond the actual joint surface, to be equal to 1.34 m. Thus, if the block be assumed to have been above an inner side intercolumniation of 2.44 m.

<sup>1</sup> Clarac, *Musté*, vol. ii., seconde partie.

on centres, as is indicated by the dotted lines of Figure 66, it is evident that the central regula has been displaced at least 12 cm. to the right. Although irregularities even greater than this have been observed in other lintels, this feature, taken together with others capable of a like interpretation, leads us to the conviction that this relief of the two lions and stag is the left-hand half of that side corner panel of which the other end is represented by the fragment of the lion and deer shown in Figure 65. The half-regula at the left is less than 20 cm. long, being the smallest member of the kind

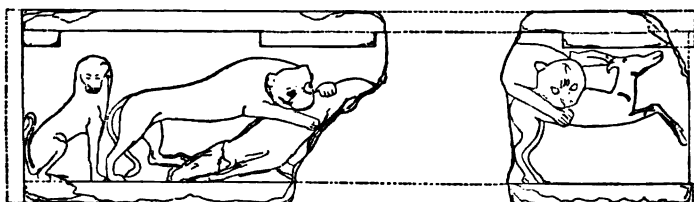


FIG. 67. EPISTYLE BLOCK FROM THE WESTERNMOST INTERCOLUMNIA-TION OF THE NORTHERN SIDE.

Combination of Fragments shown in Figures 65 and 66. Series relating to the Erymanthian Boar.

known, with the exception of that occupying the corresponding position upon the other side corner block of the advancing centaurs, Figure 59. Reference has already been made to the practical considerations which in the case of lintels placed above side corners led to such curtailment of the inner half-regulas. Shorter stones could thus be utilized than would be possible had the joint surfaces conformed to the axes of the columns. The small size of the detail in question may hence serve as an argument in support of the combination of the two fragments shown in Figure 67. Computing the length of the panel thus constituted, and assuming the two metopes above it to have been of equal size, we find the stone, from joint surface to corner of lap, to have been of a dimension

closely agreeing with the 2.9 m. required for the lintel occupying this position. In combining the fragments in the manner indicated, we are struck with the agreement in design of the groups thus brought together. Just sufficient space remains upon the missing portion to contain the trunk and hind quarters of the lion whose head and shoulders are seen upon Figure 65. The beasts of prey spring upon their booty in the same way, and with bodies inclined in the same direction, forming in their conventional regularity a pendant

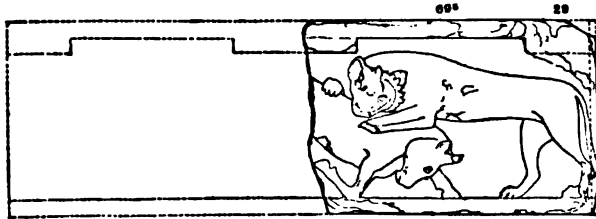


FIG. 68. EPISTYLE BLOCK FROM THE WESTERN GROUP OF THE NORTHERN SIDE.

Series relating to the Erymanthian Boar.

to the monotonous file of the advancing centaurs upon the other end of the building.

The second relief belonging to this series represents a lion dragging a bull to the ground. (Fig. 68.) That this is to be assigned to one of the inner intercolumniations of the sides is susceptible of little doubt, as the distance between the two remaining regulas exactly corresponds to the dimensions requisite for such a lintel had the two metopes been equal in size, and the triglyphs of the normal side width. The half-regula at the right is slightly excessive, and it is quite possible that the block may have adjoined the side corner panel, shown in Figure 67. In this case the third triglyph from the northeastern corner, though slightly broader than the second, and than that above one of the epistyles of

the southern entablature, would still have been two or three centimeters narrower than the average.

In regard to the third relief, that of the hind quarters of a lion with the legs of a deer thrown over his back (Fig. 69), we have a further indication of its connection with the series of the northwestern corner in the position in which it was found, immediately adjoining the relief of the lion and boar.<sup>1</sup> The only measurement which can be taken from the small fragment is that of the half-regula, 33 cm. in length. The excess is here so great that we are led

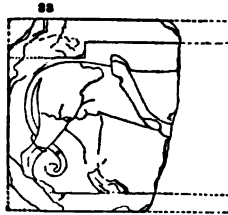


FIG. 69. FRAGMENT OF AN EPISTYLE BLOCK OF THE SERIES RELATING TO THE ERYMANTHIAN BOAR.

to consider the possibility of this block being the end of the corner lintel of the western façade, complementary to the lap. Its evident superiority in design and execution might be put forward in support of this identification. But, on the other hand, we cannot fail to observe the entire similarity of the animals in scale and action with those sculptured upon the two blocks of the northern side, and the want of any indication of a struggle of either boar or lion with Herakles. The stone represents too small a portion of the panel to allow of any decision in this matter; and it might, upon grounds quite as convincing, be deemed to have formed the left half of the side block of the lion and bull (Fig. 68).

There remain but two sculptured epistyle blocks, which cannot be brought into connection with either of the four chief scenes depicted upon the corners of the temple. These are the reliefs of the butting bulls, Figures 70 and 71. Bearing in mind the perfectly regular manner in which the sequence of subject was carried out in all the reliefs of the

<sup>1</sup> *Preliminary Report*, plate 2, N.

entablature hitherto considered,—a sequence in favor of which the fundamental law of the Doric style forbidding the decoration of the epistyle had been sacrificed,—it appeared at first sight impossible to assign a position to these blocks. On the one hand, it was difficult to conceive their having adjoined either of the series depicting the deeds of Herakles; on the other, the number of lateral epistyle beams being even, there was no possibility of the bulls having occupied the middle of the sides, in that absolute symmetry and disconnection from the other scenes which would have been

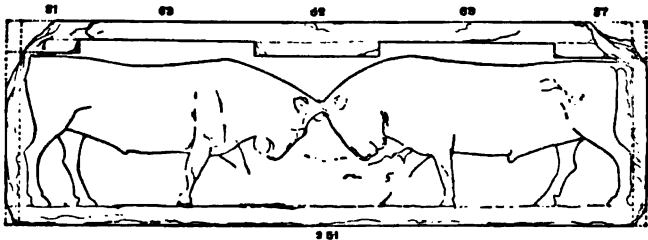


FIG. 70. EPISTYLE BLOCK FROM THE ENTABLATURE OF THE CELLA,  
ABOVE THE PRONAOS.

Subject related to the Cult of Assian Athena.

demanding by the subject and composition of these reliefs. Such difficulties are, however, entirely avoided by their removal from the peripteros. That these two epistyle blocks were, in fact, situated within the colonnade, upon the wall of the cella, can be proved from indications of so different nature that the argument is free from those dangers of a vicious circle against which we must constantly be on our guard in reconstructions of this kind.

One of the reliefs, shown in Figure 70, is remarkable as being the only lintel, preserved in its entire length, upon which the extent of all the mouldings can be measured. Its half-regulas, respectively 31 and 37 cm. long, are both excessive. Deducting from the actual length of the stone the

16 cm. thus determined, we find the axes of the columnar triglyphs to have been only 2.35 m. apart, or 9 cm. less than the average of the side intercolumniations. In like manner, the fragmentary relief of the same subject (Fig. 71) measures but 1.14 m. from the remaining joint surface to the middle of the central regula. The span thus indicated is not less than 16 cm. narrower than that of the side lintels; and although this dimension was without doubt slightly increased through a want of correspondence between joint surface and ideal

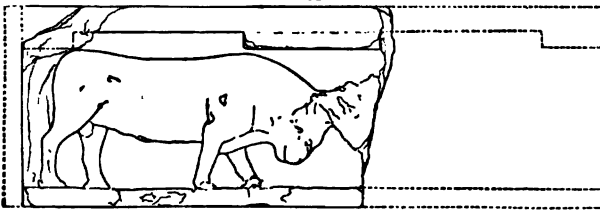


FIG. 71. EPISTYLE BLOCK FORMING THE PENDANT TO THAT SHOWN IN FIGURE 70.

Same subject and corresponding location.

axis, we have good grounds for believing that the amount of such correction cannot have exceeded six or eight centimeters in the total length. This lintel is unfortunately deprived of both half-regulas, so that no direct information is obtainable upon this point from the stone itself. But if the metopes above it be assumed to have equalled those above its pendant, the joint surface is found to have been removed from the axis of the support by not more than three or four centimeters. An indication leading to the same conclusion is furnished by the subjects represented upon these panels. The animals are so entirely similar in posture and proportions that the outlines actually appear to have been transferred to the stones from one and the same drawing. This may be tested by laying a strip of tracing-paper bearing the outlines of Figure

70 over Figure 71, when the forms will be seen to agree in a manner otherwise inexplicable. The only variations are those rendered necessary by the different height of the tainias, this member measuring in one case but eight and a half, in the other fully ten centimeters. The lengths, with which alone we are at present concerned, are absolutely identical. Hence, it is impossible to assume that the figures upon the fragmentary block occupied a more elongated panel.

It is thus evident that we have to deal with lintels placed above considerably narrower intercolumniations than those of the sides, which, with the exception of the corners,<sup>1</sup> are known, from the traces of the columns upon the stylobate, to have in no case varied more than a centimeter or two from the average of 2.44 m. In short, the reliefs of the butting bulls formed no part whatever of the entablature of the peripteros. They can only be assigned to the two side intercolumniations of the pronaos, between the antæ and the columns in antis, inasmuch as the lintels above these openings are the only ones of a smaller span than those hitherto considered.

The exact widths of these intercolumniations are not ascertainable from the plan, the traces upon the stylobate being too indistinct to permit of an accurate measurement. The columns in antis stood upon blocks larger, and without doubt deeper, than those of the surrounding pavement, having exposed surfaces of 1.2 m. square and 1.1 by 1.4 m. (Compare

<sup>1</sup> The deviations of the corner intercolumniations of the sides from the normal width, evident from traces upon the stylobate referred to upon page 76 of the present volume, are themselves not equal to the difference in length between the epistyle blocks sculptured with the two bulls and the lintels placed above the inner intercolumniations of the sides. The increased span indicated by these traces is readily explicable by the consideration that the corner passages of the sides were intentionally approximated to those of the fronts; while it is, on the other hand, impossible to assume that a restriction of such amount can have existed in the case of any intercolumniation of the peripteros.

the plan, Fig. 4.) Upon these blocks are to be seen the discolored patches in slight relief resulting from the presence upon them for wellnigh two thousand years of the lowest drums of the shafts. The outlines of the arrises, here eighteen in number, could be followed in but one case, and even there with no certainty in respect to the demarcation. All that could be definitely determined was that the circular patches occupied about the middle of the slabs, in their axes from east to west. The central opening may in this wise be seen to have been at least 1.9 and possibly 2 m. in the clear, and the columns in antis 2.8 or 2.9 m. on centres. This shows the side intercolumniations to have been spanned, from centre of anta wall to axis of column, by lintels but 2.2 or 2.25 m. in length, and to have been even narrower than we should have been led to assume from the dimensions of the blocks now under consideration. It is, however, probable that the adjustment of the members of the frieze led to some displacement of the columnar triglyphs from the axes of the supports beneath them. Although the central intercolumniation was thirty, or even forty, centimeters wider than the intercolumniations of the fronts, the average of the three pronaos lintels was almost exactly equal to that of the side lintels of the peripteros. Thus the average width of the metopes and triglyphs, determined by the dimensions of the outer entablature, would naturally have been retained, and the axes of these members have tended to a displacement in the sense indicated. This is precisely the conclusion which might have been drawn from the exceptionally short distance between the columnar axes and the excessive lengths of the half-regulas upon these blocks of the butting bulls. Lintels of the normal length supplied by the quarrymen were, from constructive reasons presently to be adduced, adjusted without curtailment to agree with the details of a frieze cor-



responding to somewhat narrower intercolumniations than those of the peripteros. It is obviously impossible to assume any fundamentally different division of the pronaos frieze. Broad as the central intercolumniation was, the lintel above it was still much too short to permit of the introduction of a supernumerary metope and triglyph. We need not, of course, suppose the spacing to have been perfectly equal; the increase of ten or fifteen centimeters, apparent from the lintels in question, would have sufficed to effect the equalization in a manner perfectly satisfactory to any eye which would tolerate the irregularities known to have existed upon the façades. In the light thus thrown upon the construction of the cella front, we can readily perceive the reasons which led the ancient builders to permit a very considerable extension of these lateral epistyle beams beyond the axes of the columns in antis. This can only have been done for the purpose of decreasing the length of the central lintel spanning the widest intercolumniation of the building.

It may further be noticed that the two epistyle beams with the reliefs of the butting bulls are the only ones which do not display upon the edges of their soffits those shallow sinkings of rectangular plan intended to receive the end of a crowbar during the process of shifting the stone to its exact position. Although scarcely of itself sufficient to furnish a definite proof, this peculiarity suggests the employment of another means for the lifting and setting of these lintels of the pronaos than that adopted to meet the different requirements of the peripteros, and may hence be advanced in support of the arrangement proposed upon other grounds.

That the entablature upon the front of the cella should have been distinguished by sculptures, is entirely in keeping with the importance assigned by ancient architects to the portal of the inner fane. Doric temples, in which sculp-

tured decorations were, from motives of economy, not extended to the entire edifice, invariably display their finest reliefs, whether metopes or consecutive frieze, above the pronaos. Well known instances of this are the temple of Bassai, the temple of Sounion, and that most striking analogy, the Theseion.

Moreover, the subject represented upon these two lintels, so entirely unconnected with the extended scenes of the outer entablature, is such as to render them eminently suitable to the decoration of the inner house of the goddess. It relates, not to the exploits of the Aeolic hero there depicted, but, as will be set forth in a subsequent connection, to the peculiar cult of Trojan and Assian Athena.

And, in conclusion, the argument may be enforced by a reference to the strictly symmetrical and almost heraldic manner in which the animals are depicted. It is at once obvious that these panels were intended to be seen as pendants. So decisive is the indication thus afforded, that it induced the designer of the French restoration of the temple to assign these shortest known epistyle beams to the widest intercolumniations of the building, at the corners of the main façade.<sup>1</sup> It is impossible not to recognize the correctness of the instinct which led to this error, readily to be detected by a measurement of even the few fragments removed to the Louvre; and it is satisfactory that the principle, though in a different application, may now be justified by the most careful comparison of the actual dimensions.

<sup>1</sup> Texier, *Description*, vol. ii. pl. 112. In the volume of *L'Univers*, referred to in a foregoing note, the author explicitly remarks, "Les deux extrémités de la façade étaient ornées de deux couples de taureaux dans l'attitude de combat." The lion and bull, and the two lions and deer, occupy the intermediate lintels. In order to make them fit the given spaces, these blocks have been subjected to a truly Procrustean elongation, even the reliefs of the wild beasts last mentioned being of that short length which proves them to have belonged to the sides of the building.

Six sculptured metopes belonging to the temple are now known, three of these having been removed from Assos to the Louvre, and three brought to light during the American excavations. Four are preserved in their entire width, yet in only one of these can the exact distance between the edges of the bordering triglyphs be ascertained. This is due to the fact that rebates, of slightly variable depth, were generally cut upon the ends of the projecting bands, so as to fit into the corresponding reveal of the triglyphs, in order to prevent the appearance of open joints. In such cases the exposed face was, of course, narrower than the slab itself, and no conclusions are to be drawn in this regard concerning four of the metopes, the edges of which have been so weathered and defaced that the extent of the overlap cannot now be determined.

Accurate measurements in this respect are to be taken only from the relief of the running centaur, Figure 72. While the total width of the slab is a fraction over 73 cm., that of the face visible between the rebates is 68 cm. The latter dimension is exactly that of the exceptionally narrow space remaining between the regulas of one of the epistyle blocks of the eastern front; and there can be little doubt that this metope was placed above the right-hand side of the second intercolumniation, from the south, of this façade, as shown in Figures 55 and 62. The sculptures upon the epistyle, and the metope above it, are thus seen to have agreed, in this instance, both in subject and direction of composition; and it is natural to assume that this was the case with all those metopes where such an agreement is indicated by repetition of type.

According to this principle, the relief of the two squatting sphinxes repeated in heraldic symmetry, Figure 73, would be assigned to the central intercolumniation of either the eastern

or western front. Unfortunately, the width of but one of the metopes placed above the epistyle blocks in question can be measured from the lintels, while the edges of the sphinx metope are so rounded that it is impossible to determine the exact width of the exposed face of this slab. Hence, no means of proving this contiguity are at hand. The dimensions as far as they can be ascertained do not, however, render it improbable. The width of the left-hand metope, above the central epistyle of the eastern front, was 75 cm., somewhat



Fig. 72.



Fig. 73.



Fig. 74.

FIG. 72. METOPE OF THE EASTERN ENTABLATURE OCCUPYING THE FOURTH FIELD FROM THE SOUTH.

Related in subject to the series of the Centaurs of Mount Pholoë.

FIG. 73. METOPE SHOWING THE COAT OF ARMS OF ASSOS.

Probably placed above the central epistyle block of one of the façades.

FIG. 74. METOPE RELATED IN SUBJECT TO THE SERIES OF THE ERYMANTHIAN BOAR.

less than that indicated by the 82 cm. of the sphinx metope, if the rebate upon this slab be assumed to have been of the same depth as those upon the two centaur metopes. The right-hand metope above the central intercolumniation of the eastern front was undoubtedly somewhat wider than the left, averaging, together with the two metopes following towards the north, above the missing epistyle block, fully 76 cm.

In like manner the metope of the boar, Figure 74, agreeing as it does with one of the reliefs of the western front, both in subject and direction of composition, may be supposed to

have occupied one of the first four panels, counting from the north, of the frieze of that façade. Here, again, proof is lacking, as the edges of the slab are rounded, and the space between two of the regulas of the relief of the lion and boar cannot be measured. We must, furthermore, admit the possibility of this metope having been above the missing lintel of the northwestern corner, the subject of which was in all likelihood that of Herakles and the Erymanthian boar.

In the case of the three metopes brought to light by the American excavations, we have such additional information as

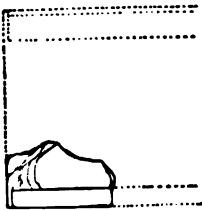


Fig. 75.

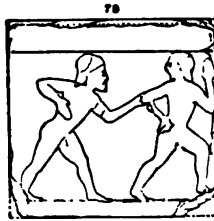


Fig. 76.

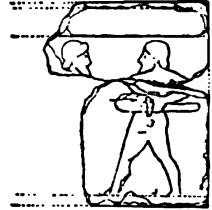


Fig. 77.

FIG. 75. FRAGMENT OF A METOPE, RELATED IN SUBJECT TO THE SERIES OF THE CENTAURS OF MOUNT PHOLOË.

Probably from the southern half of the eastern entablature.

FIG. 76. METOPE OF UNCERTAIN LOCATION AND SUBJECT.

FIG. 77. FRAGMENTARY METOPE, OF UNCERTAIN LOCATION AND SUBJECT.

may be derived from a record of the position in which these reliefs were found. The small fragment showing the hind legs of a centaur, Figure 75, was unearthed close to the south-eastern corner of the temple, together with a number of blocks known to have appertained to that part of the entablature. There is thus good ground for the belief that this centaur metope, like that other one already considered, stood in connection with the series relating to Herakles and Pholos, and occupied one of the three southernmost panels of the eastern façade. It will be observed that the galloping position and

the direction of the course are in both cases the same as those of the centaurs depicted upon the epistyle.

The entire metope, Figure 76, was found to have been removed from the spot where it had fallen, and to have been incorporated into the rude Byzantine fortifications erected upon the west of the citadel. The exact point is marked D upon the plan of the Acropolis, Preliminary Report, Plate 2. Inasmuch as both the other reliefs found in this rampart are known to have belonged to the western façade, it appears probable that this metope ornamented that end of the building. It certainly was not placed above the relief of Herakles and Triton, the regulas of which correspond to slabs of considerably greater width; and the movement of the composition, from left to right, renders it unlikely that it was above the southern half of the eastern front.

The two fragments of a metope shown in Figure 77 were found buried in the earth which had accumulated upon the stylobate of the temple itself, and, as the original width of the slab is not apparent, we possess no indications whatever in regard to its original position.

The two metopes last considered apparently represent combats of Herakles, and form further illustrations of the theme chosen for the decoration of the peripteros. Standing in no direct connection with the four great scenes of the epistyle, they open a wide field for conjecture in regard to the number of exploits thus depicted. It is highly improbable, if not absolutely impossible, that all six of these reliefs are to be assigned to the metopes of the eastern front, the widths of which, enumerating them in their order from south to north, are known to have been 93, 74, 81, 68, 75, three unknown averaging 76, and, finally, 90 and 85 cm. It is hence to be assumed that all the metopes of both fronts were sculptured, and that fourteen of the twenty slabs thus distinguished have

disappeared. That a proportionately smaller number of metopes than of epistyle blocks should have survived the ruin of the edifice, is readily explained by the consideration that their smaller size, square shape, and plane backs adapted them better to the needs of Byzantine and Turkish builders. Restriction of the sculptured metopes to one or both fronts was a common practice in Greek architecture, as, for instance, in two of the temples of Selinous. The metopes of the sides, like those of the fronts, may be supposed to have been painted, the differences between the reliefs and the unsculptured surfaces being rendered less apparent by this means.

Here we may terminate our investigation into the positions occupied by the sculptures of the temple. For the benefit of those who may not have cared to enter into all the details of the argument, the conclusions are graphically set forth in the plan of the entablature, Figure 78. The sculptured epistyle blocks now known are shown in solid black, and the names of their subjects are given in the larger lettering. The smaller lettering indicates the probable sequence of the series. The arrows drawn between the lettering and the entablature denote the direction of the composition of the sculptured blocks, and show the entire regularity of the arrangement in this respect.

The question which naturally arises as to the proportion of sculptured blocks, known and unknown, is best answered by an analysis of this plan. One lintel is certainly lacking from the eastern, and two from the western façade. If the reliefs were extended over an equal number of intercolumniations upon the two sides, at least six sculptured epistyle blocks of the shorter span are missing. The loss which we most deplore is that of the central lintel of the pronaos entablature, the subject of which doubtless had reference to the cult of

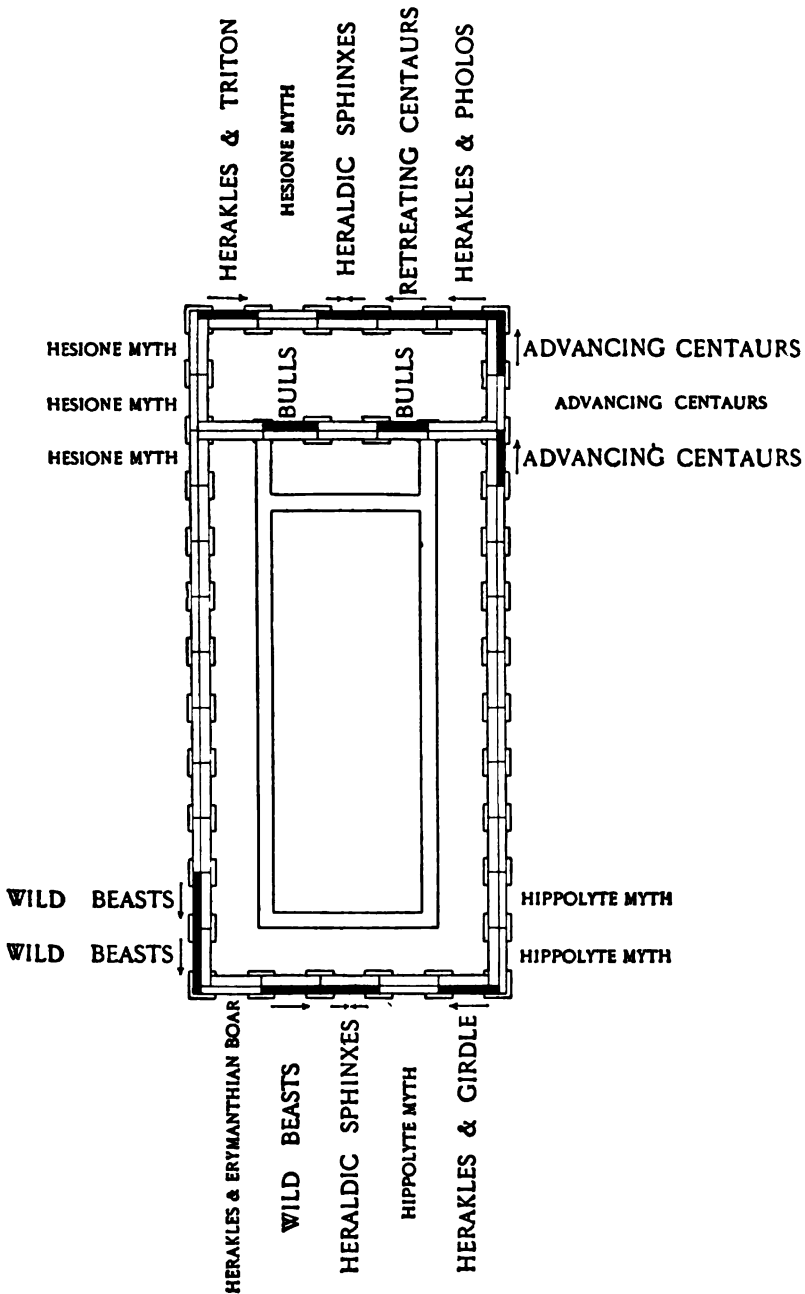


FIG. 78. PLAN OF THE EPISTYLE OF THE TEMPLE OF ASSOSS, SHOWING IN BLACK THE POSITION OF THE KNOWN RELIEFS.



Assian Athena. From these imperfect indications we should assume the epistyle of the peripteros to have had twenty sculptured panels, of which twelve now exist, in more or less considerable fragments. Of the unsculptured epistyle blocks, the remains of eleven, or possibly of twelve, were found upon the site. If twenty-four of the forty-four lintels of the peripteros were plain, this is a somewhat smaller proportion than that of the known to the unknown reliefs. It is, however, to be supposed that the stones with plane faces would be selected by Byzantine and Turkish builders in preference to the others, — the Mohammedan antipathy to graven images determining this preference no less than the practical considerations of unskilled masons.

The most significant fact which has been elicited through this examination is, that the sculptured face of the epistyle was not broken up into independent and disconnected panels, as has been assumed in the French restoration, and in all those text-books which treat of this subject, so exceptional in the history of Greek architecture. The reliefs formed four extended compositions, with their chief scenes at the corners of the building, separated in the middle of the façades by the coat-of-arms of the city. A canon of the Doric style, embodying one of the principles of architectural propriety, forbade the decoration of members directly functional in the constructive framework, but, in this instance, this canon was set aside for a definite purpose, that of securing for the sculptures the continuity of the Ionic zophoros. It was a similar purpose, coupled with the determination to respect the laws of the style, which induced Iktinos to hide the frieze of the Parthenon behind the columns of his peripteros. In æsthetic respects we must condemn the expedient adopted in the temple of Assos. Yet, in tardy justice to the unknown and much maligned architect, we may now recognize the fact that

the decoration of the epistyle was decided upon, not as an altogether purposeless innovation, but in the desire of securing a recognized advantage ; and, as in every genuine endeavor to effect an improvement, the design, with all its faults, thereby attained a high degree of individuality and interest. In connection with a plan of absolute regularity, this provincial attempt to extend and connect the sculptured decorations, undisciplined and injudicious as it was, must have given to the temple an air of rude picturesqueness analogous to that which we find so attractive in the earliest edifices of the Romanic style in Northern Europe.

## CHAPTER IV.

### DATE OF THE TEMPLE.

THE Temple of Assos is of unique interest in the history of ancient art, not only because of the enigmatic character of its sculptures, but because of the fact that it is the only known Doric edifice in Asia Minor which antedates the decadence of that style. The determination of its date is therefore a matter of signal importance. A definite settlement of the disputes which have arisen in this regard would of itself justify the direction of the American expedition to this site.

Prior to these investigations little information of a positive nature was to be gathered, either from the fragmentary and disconnected reliefs removed to Paris, or from the altogether incorrect and misleading engravings of the architectural remains which had been published by earlier explorers.<sup>1</sup> Notwithstanding this, the age of the monument and its position in the development of Hellenic sculpture and architecture have been discussed with extraordinary boldness of assumption by those scholars whose delight it is to reduce every phenomenon of the classic world to a categorized system. Almost every archæologist who has had occasion to refer to the Assos reliefs stands committed to some opinion on these points. A date, expressed with greater or less precision, is to be found

<sup>1</sup> Instances of Texier's perversions of fact in his description of the architecture of the temple have been adduced in sufficient number in the *Preliminary Report*, pp. 18, 99, etc.

in almost every book which deals with the history of ancient art. It was inevitable that such assumptions should be characterized by a high degree of incompatibility, and we have little cause for surprise when we find them ranging even from the twelfth century to the fifth century before Christ, — from semi-mythical ages preceding the Dorian migration to the years which witnessed the rivalry of full-grown Hellenic states, and the outbreak of the Peloponnesian War.

Bursian<sup>1</sup> brackets the sculptures of Assos with the Gate of the Lions at Mykenai and with works of Assyrian art at the period of its highest development. In a more recent history, Perry<sup>2</sup> lays stress upon their "most primitive character, . . . in the highest degree archaic," conceiving them to be "among the very earliest works of the relief style." Friedrichs,<sup>3</sup> followed by Wolters,<sup>4</sup> refers them to the seventh century, remarking that they are among the most ancient works of Greek art, and that they cannot have been preceded by any development extending over a considerable period of time. Studniczka<sup>5</sup> assigns the reliefs to the seventh century; Furtwängler,<sup>6</sup> describing them as "hochalterthümlich," classes them with monuments of the seventh and first half of the sixth century; Murray<sup>7</sup> thinks them not later than the middle of the sixth century; and Lübke<sup>8</sup> char-

<sup>1</sup> Bursian, s. v. *Griechische Kunst*, in Ersch und Gruber's *Allgemeine Encyclopädie*, vol. lxxxii., Leipzig, 1862.

<sup>2</sup> Perry (Walter Copland), *Greek and Roman Sculpture*, London, 1882.

<sup>3</sup> Friedrichs (Carl), *Berlin's Antike Bildwerke (Bausteine)*, Düsseldorf, 1868-71, vol. i., and in Schnaase's *Geschichte der Bildenden Künste*, 2d ed., Düsseldorf, 1866-79, vol. ii. p. 126.

<sup>4</sup> Wolters, in Friedrichs's *Gypsabgüsse antiker Bildwerke in historischer Folge erklärt*, 2d ed., Berlin, 1885.

<sup>5</sup> Studniczka, *Attische Porosgiebel, Mittheilungen des deutschen archäologischen Instituts*, vol. xi., Athen, 1886, p. 75.

<sup>6</sup> Furtwängler, s. v. *Herakles*, in Roscher's *Lexikon*, p. 2193.

<sup>7</sup> Murray, *History of Greek Sculpture*, London, 1880-83.

<sup>8</sup> Lübke, *Geschichte der Plastik*, 3d ed., Leipzig, 1880, vol. i.

acterizes them as the most primitive among those works of sculpture which have come down to us from the archaic age. Krell<sup>1</sup> refers the building of the temple to the period immediately succeeding the Lydian conquest of the Troad (B. C. 560), but adds that, judging from the sculptures, it may be somewhat more recent; while Durm,<sup>2</sup> expressing a decided opinion that the building was anterior to the invasion of Kroisos, fixes the date, with a single note of interrogation, at the year 600 B. C. A certain allowance is, however, to be made in the case of the two authorities last named, inasmuch as these viewed the problem mainly in its architectural aspects. The drawings and restorations of Texier, upon which their judgments were based, undoubtedly do bestow an air of extreme rudeness upon the temple. The excessive, and, as Krell terms it, "baggy" entasis of the shafts (which are in reality perfectly straight-lined), — the fictitious course of mouldings interposed between the frieze and the corona, in strange disaccord with the normal forms of the Doric entablature, — the supernumerary steps upon the fronts, — the lack of an incision between hypotrachelion and uppermost drum, — the trapeze-shaped regulas, — combine with a host of similarly incorrect features of plan and elevation to give to the edifice a grotesque and primitive aspect, which would, indeed, be wholly inexplicable in any known period of Greek architectural history.

Contrasted with these extreme views, we have the opinions of two historians of Greek art, whose writings have been distinguished in a high degree by penetration, lucidity, and independence, and who have been the first to advance well

<sup>1</sup> Krell (Philipp F.), *Geschichte des dorischen Styls*, Stuttgart, 1870, p. 20.

<sup>2</sup> Durm, *Baukunst der Griechen*, Darmstadt, 1881, p. 5, and p. 135. Obviously mistaking the sense of the word which he employs, Durm speaks of the "pronounced archaistic [*sic*] character" of the temple of Assos.

founded doubts concerning the great antiquity so generally attributed to the sculptures of Assos. The earlier of these, Reber,<sup>1</sup> has contended, in words exactly contradictory to those of Furtwängler, that the "keineswegs so hochalterthümlicher Fries" does not warrant the assignment of the temple of Assos to the most archaic period of the Doric style. The second, Overbeck,<sup>2</sup> quoting Reber, has enforced this view with definite arguments, carrying the examination into greater detail. He has pointed out that representations analogous to the relief of Herakles and Triton, in point of style as well as of subject, are found, not among the works of immature Greek art, but in a class of vase paintings of comparatively late date, remarkable because of the frequency with which they depict figures with inclined bodies. This class of vase paintings he maintains to be the earliest in which such ingeniously designed subjects, fully developed in organic respects, albeit somewhat exaggerated in movement, are known to appear.<sup>3</sup> Indications derived from parallels such as this, from the formation and action of the smaller figures of the same relief, and from the appearance of horse-legged centaurs upon another block, have led

<sup>1</sup> Reber (Franz), *Geschichte der Baukunst im Alterthume*, Leipzig, 1866, and *Kunstgeschichte des Alterthums*, Leipzig, 1871, p. 213. In the American edition of the latter work, *History of Ancient Art*, by Dr. Franz von Reber, translated and augmented by Joseph Thacher Clarke, New York, 1882, the translator omitted the words above quoted, thinking it advisable to be less committal in respect to the age of the sculptures, in view of the decisive information so soon to be expected from the excavations at Assos, then about to commence. This omission he has now cause to regret.

<sup>2</sup> Overbeck (Johannes), *Geschichte der griechischen Plastik*, 3d ed., Leipzig, 1881-83.

<sup>3</sup> The chief argument to this effect is based upon the fact that designs of this nature are not to be found in archaic compositions of the style represented, for instance, on the vases published in plates 95 and 96 of Gerhard's *Auserlesene Griechische Vasenbilder*, while they correspond well with later paintings, such as those shown on plates 94, 102, 105, 111, and 113 of the same work, and on plate D of Gerhard's *Etruskische und Kampanische Vasenbilder*.

Overbeck to deny to the Assos sculptures that great antiquity attributed to them by so many antiquaries, and to doubt whether they are, at all events, earlier than the sixtieth Olympiad. This is the first and only attempt to determine the age of the temple by the comparative methods of historical science; for we can scarcely give precedence in this respect to Clarac,<sup>1</sup> who supported his opinion that the reliefs of Assos were contemporary with the gable group of Aigina by arguing that, as Pliny<sup>2</sup> informs us, it was not until the fiftieth Olympiad that the Daidalian sculptors Dipoinos and Skyllis employed marble in statuary. We may consequently assume that the hard and coarse stone of Assos could not have been worked by the Greeks before the acquirement of considerable experience in the tooling of more tractable materials.

In view, however, of the scanty and untrustworthy data at the disposal of the scholars whose opinions have been cited, no surprise can be felt at the want of agreement between their estimates, or at their failure to hit upon the actual truth. The American investigations have been the first to provide materials fully adequate for a solution of the problem. The reliefs known are now nearly twice as numerous as before, and are, moreover, seen to have stood in definite relation, as parts of a mythological series, the subjects of which were carefully considered and highly significant. Above all, a definite determination of the architectural characteristics of the edifice enables us to establish the exact position of its design in the history of the Doric style.

<sup>1</sup> Clarac, *Musée*, vol. ii. 2d partie, Paris, 1841. Clarac, as will be remembered, believed the trachyte of the Assos reliefs, which were sawed into thin slabs under his personal supervision, to be a granite. Compare note 1, page 51, of the present volume. It seems unnecessary to enter into a serious refutation of an argument such as this.

<sup>2</sup> Pliny, *Nat. Hist.*, XXXVI. 4. 1.

The conclusions thus reached may be concisely stated at the outset. The temple of Assos was erected during the age which had seen the termination of the Persian wars, towards the middle of the fifth century before Christ, at that period when the Greeks of the Asiatic coast were in the first enjoyment of their relief from Oriental oppression. The building was unquestionably somewhat later in date than either the temple of Aigina or the Theseion, and contemporaneous with, or somewhat older than, the temple of Sounion. The archaic appearance of the sculptures, to which many advanced features present a marked contrast, is to be attributed to the influence of local and conservative tendencies, favored by the refractory character of the material in which they were executed. Paradoxical as it may appear, the temple of Assos is of nearly the same date as the Parthenon.<sup>1</sup>

That rude and primitive character, which so many writers on Greek art have sought to explain by the assumption of a remote date, is to be attributed to provincialism; a factor which, be it observed, has by no means received due weight in the estimates of many similar archæological problems.

<sup>1</sup> Are we actually to believe, it may be asked, that the rude figures of the temple of Assos were sculptured at the same period as the incomparable gable groups of the Parthenon? Not necessarily. We have to take into consideration in this connection the revolutionary hypothesis of Puchstein, — first published in the *Berliner philologische Wochenschrift, Winkelmannsfest der archäologischen Gesellschaft zu Berlin*, January 18, 1890, and subsequently elaborated, with highly interesting sections of the draperies of the different schools, in the *Jahrbuch des preussischen archäologischen Instituts*, vol. v., 1890, Heft 2, *Die Parthenonskulpturen*. According to this view, which in the opinion of the present writer has been established by scientific methods of comparison, *the sculptures of the Parthenon were not the work of Pheidias, or of his generation*. They are to be ascribed to some date subsequent, at all events, to 430 B. C., and are possibly more recent by half a century than the architectural design. If we are to seek, among the contemporary works of European Greece, a parallel to the sculptures of the temple of Assos, a more fitting example, itself displaying marked inequality of treatment, would be the central group of the eastern gable of the temple of Zeus at Olympia, which must be very nearly of the same age.



From the point of view of the practical investigator, it is peculiarly unfortunate that the foundations of the temple of Assos should have been laid directly upon the native rock, and have thus precluded the possibility of a discovery, beneath the stylobate, of vestiges of an earlier occupation of the site, such as those which proved of decisive importance in the exploration of the Olympian Altis. The only spot in which any considerable bed of earth existed beneath the stones of the temple was within the cella, and here the laying of the mosaic pavement, apparently to be referred to the fourth century before Christ, led to disturbances of the soil which make it impossible to draw conclusions from objects discovered therein respecting the epoch of the original construction.<sup>1</sup> The inconsiderable deposits of earth which exist beneath the paving stones of the pteroma, and which may, or may not, have been disturbed at a subsequent period, were, when accessible, carefully sifted by the explorers, but were found to contain nothing beyond a few small sherds of an unglazed pottery, such as was in every-day use from the earliest to the latest ages of Greek antiquity.

In the entire absence of direct indications, the only definite proofs as to the age of the building are to be derived from a comparison of the leading features of the temple of Assos with those of temples of the same style and of known date. Architecture, as has been generally recognized, is less influenced by personal and local conditions than sculpture, and is hence that art in which a regular growth is best to be traced. This is due to the fact that development in the art of building — in respect to design, as well as in respect to

<sup>1</sup> The discovery, beneath the mosaic floor of the naos, of various fragments of painted and moulded vessels, as well as of a bronze coin, — all of which probably belonged to the fourth century before Christ, — has been mentioned in a former chapter, page 72.

those improvements of plan and construction which are inseparably connected therewith — is dependent upon the regular advance of technical invention, and upon the degree of civilization and culture of a race or community, rather than upon any stimulation or refinement of the imaginative and perceptive faculties of individual members of such race or community. The works of the formative arts, in the historical view, are always affected in a marked degree by local and individual influences. Throughout the long vista of artistic history, sculpture and painting are naturally divided into countless *schools*, working in more or less restricted fields, while architecture is, on the other hand, grouped in *styles*, — like the Roman, the Byzantine, and the Gothic, — extending, with comparatively slight and superficial variations, throughout the entire world influenced by a kindred civilization. Hence it follows that reliefs or wall paintings cannot provide us with so direct and so valid arguments in respect to the age of the monuments with which they are connected, as the plan and the constructive details of the architectural framework.

These conclusions are of especial force at Assos, where the sculptures are extraordinarily provincial in character, — works of different hands, displaying the greatest dissimilarity of conception and execution; as, for instance, the horse- and human-legged centaurs of adjoining panels, — yet where the architectural features, of a most pronounced and regularly developed style, are directly dependent upon the contemporary advances of the Doric peripteros in European Greece. Hence the synthetical methods of architectural history here find a most direct and most trustworthy application.

This will become evident from a comparison of the temple of Assos with its immediate prototypes.

Towards the close of the sixth century, before the in-

terruption of the development of archaic Greek art by the inroads of the Persians, architects of Attica and Aigina had effected signal improvements in the arrangement and proportions of the Doric *pteroes*.

Recent researches have shown that the excessive elongation of the archaic plan, so noticeable in the temple of Corinth,<sup>1</sup> had been greatly reduced in the older temple upon Cape Sounion,<sup>2</sup> an edifice which appears to have been unfinished at the time of its demolition by the barbarians. The length of the stylobate, which was at Corinth twice and a half its width,<sup>3</sup> was at Sounion less than twice and a third its width; the appearance of the edifice being more affected thereby than might be conceived from the bare statement of the proportions of the oblong. Thus, while there were fifteen columns upon the side of the temple of Corinth, there were at Sounion but thirteen, the fronts of both edifices being hexastyle. The absolute dimensions of the temple were at the same time reduced to about three fifths of those previously in vogue, this reduction proving of excellent effect, in æsthetic as well as in economic respects.

<sup>1</sup> Dörpfeld (Wilhelm), *Der Tempel von Korinth*, in *Mittheilungen des deutschen archäologischen Instituts*, vol. xi., Athen, 1886.

<sup>2</sup> *Ibid.*, *Der Tempel von Sunion*, in *Mittheilungen des deutschen archäologischen Instituts*, vol. ix., Athen, 1884. The plan of this temple given by Blouet, *Expédition scientifique de Morée*, vol. iii., plate 32, is altogether untrustworthy as regards the plan and dimensions of the edifice, and gives no indication of the existence of an older temple upon the site.

<sup>3</sup> The proportion of two to five in the width and length of the stylobate was evidently brought about through the employment of round numbers of the units of measurement adopted in the design of the edifice. This proportion is so absolutely accurate, — namely, 21.32 by 53.30 m., according to Dörpfeld's measurements, — that it is impossible to suppose it to have been due to mere coincidence.

The temple of Corinth is by no means exceptional in this respect among Greek ruins of its class. The exact dimensions of the lower step of the Theseion, which are given by Penrose as 14.462 by 32.516 m., were obviously derived from some round number of feet having the ratio of four to nine.

Unfortunately, the exact conformation of the cella — that all-important nucleus of the Doric plan — is not ascertainable from the vestiges of the older temple of Sounion which have been brought to light beneath the stylobate of the more recent temple. Still it is certain that in its width, and probable that in its length also, the cella of this building presents the earliest known instance of the employment of those fixed dimensions (twenty-five by seventy Greek feet, or approximately eight by twenty-two and a half meters) which, as we shall see, were adhered to almost as a hieratic canon in the Doric temples of the first half of the fifth century.

In the temple of Aigina (Figure 79), — probably the first edifice of its class erected after the retreat of the Persians, and consequently but a few years later than the first temple of Sounion, — these dimensions of the cella were closely followed, while a still further reduction of the length of the plan was essayed. The stylobate is here but little over twice its width, and the flank has but twelve shafts. In evident recognition of the fact that the eleven intercolumniations of the side colonnade were scarcely sufficient to give the best proportions to the plan, these intercolumniations were extended as much as possible, being wider even than those of the fronts, and greatly exceeding those of any other Doric peripteros. Notwithstanding this, the spaces remaining between the end of the cella and the columns of the façades were much cramped. The hyperoön galleries within the naos, which had formed so important a feature of the temples of the archaic period, were retained, though here rendered practically useless by reason of the smallness of the scale. Finally, it may be observed, and this is a point of particular importance, there is in the temple of Aigina no attempt whatever to bring the cella into organic connection with the surrounding peripteros, either by means of the

agreement of main lines, or by the introduction of epistyle beams extending from wall to outer entablature. The original fane, the naos, around which the colonnades had been erected as an embellishment, still formed a distinct and altogether independent feature of the plan, the architectural unity of which was as yet incomplete.

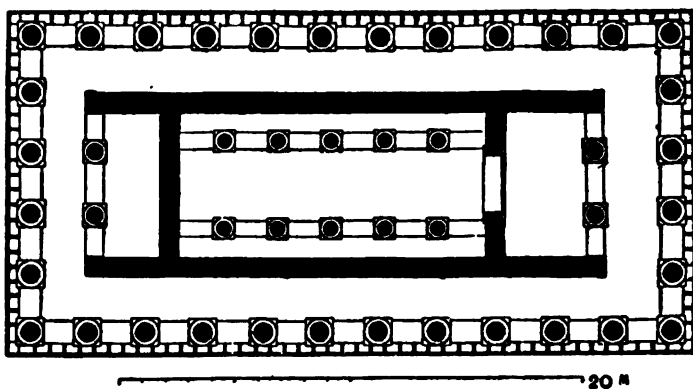


FIG. 79. PLAN OF THE TEMPLE OF AIGINA.

This last great advance of the Doric style towards perfection was reserved for the designer of the Theseion at Athens (Figure 80), and was more immediately brought about through the introduction, above the pteroma and vestibules, of a coffered ceiling constructed of stone. The dimensions of the cella, before referred to, having been found of good effect in the temples of Sounion and Aigina, and possibly having acquired some ritual significance now unknown, were adopted in the Theseion without alteration. On the other hand, the excessive width of the side intercolumniations at Aigina was recognized as a blemish. In the Theseion, the columns upon the flank were again made thirteen in number, the length of the stylobate being increased by five Greek feet, although the interval between the shafts was reduced

to its most advantageous dimensions. The organic connection of cella and peripteros was thereby the more readily effected, the front of the cella being thrown back so far from the eastern façade that the columns in antis of the pronaos were brought into line with the third columns of the sides, with which they were connected by two transverse

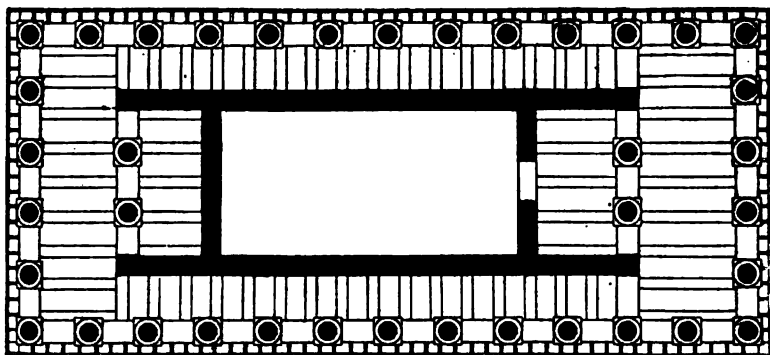


FIG. 80. PLAN OF THE THESEION AT ATHENS.

epistyle beams, on a level with those of the outer entablature. An important vestibule was thus created at the eastern end of the edifice, emphasizing the approach to the portal of the sacred interior. The diminutive galleries within the naos were wisely omitted, and do not appear in any Doric hexastyle of subsequent date.

It was this building, the Theseion at Athens, which was regarded as the most perfect model by the designer of the temple of Assos. The information placed at our disposal by the American excavations warrants the assertion, that the provincial architect was in the possession of accurate plans of the Attic masterpiece. He exactly reproduced the dimensions of the cella. He adopted a slightly simplified and more economical form of its ceiling of stone coffers and

beams. He introduced the same trabeate connection between the columns of the pronaos and the corresponding shafts of the sides, — hesitating, in like manner, to effect a similar connection between the rear of the cella and the peripteros, and being thus constrained to support this portion of the coffered ceiling by the same inorganic undertie,

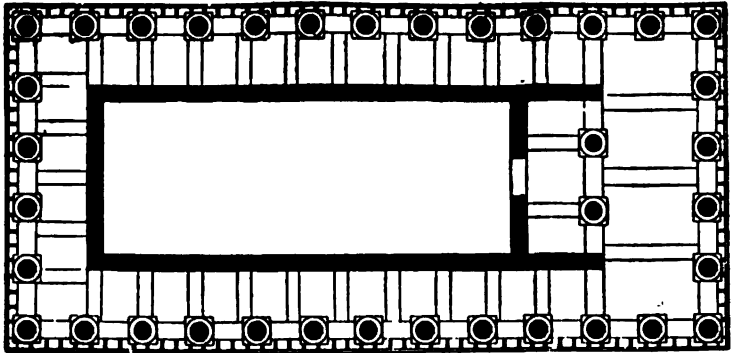
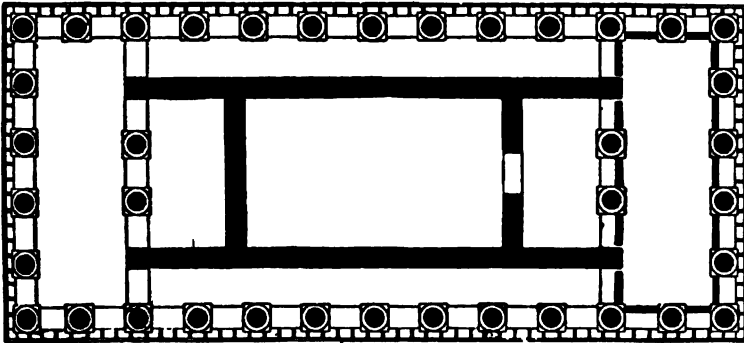


FIG. 81. PLAN OF THE TEMPLE OF ASSOS.

which cannot but be regarded as an inadequate and unsuccessful expedient.

The peculiar features which the Theseion and the temple of Assos possess in common altogether exceed the possibilities of coincidence. It is obvious that one of the edifices was copied in its main features from the other, and we cannot for a moment doubt in which of the two it was that the great and original improvements were first effected. Athens, in the age of Perikles, did not seek its artistic inspiration from remote and backward towns of the Asiatic coast. Assos was, moreover, at this very period in political confederation with Athens, to whom she looked as the guardian of her newly acquired liberty, and whom she cannot but have regarded as the most brilliant pattern of artistic excellence.

We have abundant proof that, throughout the Hellenic world, the Theseion was recognized as a decided success. Not only were certain features of its sculptures imitated in the remote Lycian village of Trysa;<sup>1</sup> its coffered stone ceiling, constituting as it did the most striking architectural innovation which the generation had witnessed, is now found



20 M

FIG. 82. PLAN OF THE LATER TEMPLE OF SOUNION.

to have been reproduced upon the eastern coast of the Aegean, as well as in the extreme west, where an adaptation of this type is recognizable in a reconstruction of the Temple G (otherwise R) of Selinous,<sup>2</sup> probably of about the same date as the building which we have now under consideration.

<sup>1</sup> Between Kyaneai and Myra, near the modern village of Gieulbashi. The reliefs of the heroön of this place were removed, in the year 1882, to the Museum of Vienna, and are to form the subject of an elaborate monograph, now in the course of preparation. Some account of them is contained in the second volume of Benndorf's *Südwestliche Kleinasien*, by Petersen (Eugen) and Luschan (Felix von), *Reisen in Lykien, Milyas und Kibyratiss*, Wien, 1889.

<sup>2</sup> Hittorff, *Architecture antique de la Sicile*, plate 36 of the original publication, plate 41 of the new edition. Compare the discussion as to the age of this building given in Benndorf (Otto), *Die Metopen von Selinunt, mit Untersuchungen über die Geschichte, die Topographie und die Tempel von Selinunt*, Berlin, 1873.



In a former chapter, treating of the design of the coffered ceiling of the temple of Assos, stress was laid upon the fact that the proportions of panelling and beams must have been determined before the plan of the peripteros could have been laid out. This plan, like the ceiling upon which it depended, may now, in comparison with the corresponding features of the Theseion, be clearly seen to be a simplification, and not a prototype. The relative ages of buildings so closely allied in point of design cannot be a matter of doubt to the student of architecture.

Apart from the arguments which may be derived from parallels such as these, we have inherent in the temple of Assos itself indubitable indications of its eclectic character. With features of the most rude and helpless archaism it combines a highly organic and perfected disposition of plan. By an attentive consideration of the details of the elevation, we may clearly distinguish where the builder neglected to follow his model, and, from motives of economy, or from the requirements of the material in which he worked, fell back upon his own conventional methods and mediocre powers of design. Hence arose that inequality of architectural expression which may well be compared to the provincial dialect of a highly cultivated speech: that curious compound of good and bad, of antiquated and perfected, which has been noticed in a foregoing chapter.

In European Greece the contemporary development of the hexastyle Doric peripteros can be traced in a fourth example, the later temple of Sounion (Figure 82).<sup>1</sup> The plan of this building, like that of the temple of Assos, was directly influenced by the design of the Theseion, but its independent features, instead of reverting to the practices of the archaic style, still further pursued that course of development in

<sup>1</sup> Dörpfeld, *Der Tempel von Sunion*, quoted in a previous note, page 300.

which the Aiginetan and Attic prototypes had made so successful an advance. The organic connection between the supports of the peripteros and those of the pronaos is here extended to the columns in antis upon the back of the cella, the vestibule before the epinaos becoming equal in size and importance to that before the pronaos. The two fronts were thus exactly alike. This was a disadvantage in æsthetic respects, inasmuch as it detracted from the pre-eminence of the main portal of the sacred naos, and deprived the temple of the only outward feature which had served to indicate its true orientation. The change was nevertheless in keeping with the formal tendencies of the age, and may be taken as an evidence that the designer was bent upon effecting original improvements in consonance therewith. It betrays, perhaps, the first taint of that academic formalism in matters of architectural design which was destined so to debase the Doric style during the following centuries. Evidently aware of the ambiguous duplication which his change had involved, the architect of the later temple of Sounion distinguished his eastern vestibule by a sculptured frieze, the slabs of which are shown in solid black upon the plan (Figure 82). This wealth of detail, invisible from without, could not, however, relieve the general composition from its bifrontal character, and is noteworthy in the present connection chiefly as a proof that the disadvantages attendant upon the adherence to the system were in some measure recognized at the time. The ends which the designer had in view were, at all events, fully attained; his changes brought the main lines of cella and peripteros into the most intimate connection, and resulted in absolute unity of plan.

Purposes of comparison do not render it necessary for us to trace the subsequent development of the Doric temple;

suffice it to note that the next stage of advance, appearing at about this same date in both the Parthenon and the temple of Bassæ, and hence undoubtedly to be ascribed to the genius of Iktinos, was the entire omission of transverse supporting beams in the pteroma ceiling, the coffered slabs of which were made to extend from wall to entablature. A lighter and more airy effect was hereby attained. That the builders of the temple of Assos were acquainted with this simplification appears improbable, inasmuch as the narrow span of their pteroma ceilings, and the readiness with which slabs of trachyte of the requisite dimensions were obtainable, would doubtless have induced them to take advantage of so economical a method of construction.

The four hexastyle Doric temples, so closely related in point of date, dimensions, and style, are shown by Figures 79 to 82 in plans drawn to the same scale. In each of these structures the dependence upon those preceding is clearly apparent. No mere coincidence can be held to account for resemblances so striking, or for dimensions so uniform. Were the arrangement of the cella in the older temple of Sounion evident from the ruins, we should doubtless be in possession of a fifth plan of this class, which would have ranked as the most primitive in point of development.

The actual measurements of these edifices, to the close agreement of which attention has not hitherto been drawn,<sup>1</sup> may be tabulated in the following form.

<sup>1</sup> The similarity of the dimensions of the temple of Aigina and the Theseion is referred to, in a general way, by Cockerell (Charles Robert), *The Temple of Jupiter Panhellenius at Aegina*, London, 1860.

	Older Temple of Sounion. <sup>1</sup>	Temple of Aigina. <sup>4</sup>	Theseion, Athens. <sup>5</sup>	Temple of Assos.	Later Temple of Sounion. <sup>3</sup>
Width of Cella <sup>2</sup>	abt. <sup>m.</sup> 8.00	(M.) <sup>m.</sup> 8.054 (C.) 8.115 (D.) 8.006	(S.) <sup>m.</sup> 7.93 (B.) 7.93	<sup>m.</sup> 7.97	<sup>m.</sup> 8.13
Length of Cella <sup>2</sup>	abt. 22.50	(M.) 22.628 (C.) 22.536 (D.) 22.555	(S.) 22.38 (B.) 22.25	22.33	20.78
Width of Stylobate	13.12	(M.) 13.820 (C.) 13.714	(S.) 13.79 (B.) 13.82 (P.) 13.72	14.03	13.48
Length of Stylobate	30.34	(M.) 28.790 (C.) 28.660	(S.) 31.77 (B.) 31.77 (P.) 31.76	30.31	31.15

<sup>1</sup> According to the measurements and estimates of Dörpfeld, published in the essay before quoted.

<sup>2</sup> According to the accurate measurements of Dörpfeld. The figures inscribed upon the plan of Blouet are so incorrect as to be useless in this parallel.

<sup>3</sup> The dimensions here given are those of the cella walls, exclusive of the projections of base and capital mouldings.

<sup>4</sup> The dimensions of the temple of Aigina appearing in this table are taken from Blouet's *Expédition de Morée* (plate 48), and from the work of Cockerell quoted in the note on the preceding page (plate 3), and from the *Antiquities of Ionia*, published by the Society of Dilettanti, vol. ii., London, 1797 (plate 3), the given measurements in English feet, inches, and hundredths of inches being reduced to meters. These authorities are designated, in the order mentioned, by the letters M, C, and D.

Cockerell's plan displays a slight discrepancy, amounting to half an inch. The corner columns of the façades, namely, are marked as 41' 5" distant from centre to centre, and as standing 7' 4½" from the face of the cella wall, exclusive of plinth moulding. This makes the width of the cella 26' 7½". But, on the other hand, the width of the interior of the naos is marked as 21' 3½", and the thickness of the walls, exclusive of mouldings, as 2' 8½", which would make the width of the cella equal to 26' 8". In one case we have a width of 8.1153, and in the other 8.128 m. for this dimension.

In the plan given in the *Antiquities of Ionia* the figures marked in the second intercolumniation of the eastern façade, from the north, namely, 8' 7".55, are obviously intended for 8' 7".45, as the amount of the total shows.

<sup>5</sup> The dimensions of the Theseion appearing in this table are taken from Stuart and Revett, *Antiquities of Athens*, London, 1762-1816, vol. iii. (plate 2),

The striking similarity of the cellas, both in length and width, is deserving of particular notice. The later temple of Sounion presents the only instance of an appreciable divergence in this respect, and in this instance constructive considerations can be proved to have been directly responsible for the departure from the normal size. The steps of the later temple were laid, it has been found, directly upon those of the older edifice which had been demolished by the Persians, — length and width of the new stylobate being thus determined by an adventitious and unalterable gauge. While in the other temples of this category the cella extended considerably beyond the third pteroma columns from the west, it had at Sounion to be brought back into line with these shafts for the purpose of introducing a connecting epistyle beam between the supports of the peripteros and those of the epinaos. Hence the length of the cella became at Sounion directly dependent upon the width of eight lateral intercolumniations, which had in their turn been determined by the available extent of the older steps. The deviation from the normal length of seventy feet is thus accounted for. The limit of

from Bühlmann (Joseph), *Die Architektur des classischen Alterthums*, Stuttgart, 1872 (plate 4), and, after reducing to meters the given dimensions in English feet, from Penrose, *An Investigation into the Principles of Athenian Architecture*, 2d ed., London, 1888. These authorities are designated, in the order mentioned, by the letters S, B, and P.

In the measurements of the cella length given by Bühlmann there is considerable discrepancy. The separate dimensions of pronaos, naos, epinaos, and walls amount, when added together, to but 22.077 m., while the length obtained by subtracting the width of the pteromas, front and rear, from the length of the stylobate is 22.56 m. The latter result is obviously the more correct.

The dimensions of the cella of the Theseion are not given by Penrose, whose work is concerned only with the peripteros. A new and complete publication of this important monument is much needed. The methods of architectural research have fully kept pace with the growth of scientific investigations in other fields, and almost all those surveys and restorations which antedate the middle of the present century may, in a sense, be regarded as obsolete.

possible compromise had here been attained. The more the archaic plan had been altered in favor of an organic connection between cella and peripteros, the more had the cella lost its fundamental and independent importance. In the later temple of Sounion, where transverse epistyles connected both pronaos and epinaos with the outer entablature, its length was altogether dependent upon that of the stylobate. When the size of the frame is taken as the starting point of a design, the size and proportions of the picture must, of course, conform themselves thereto.

From these observations we may conclude that the architects of the temple of Aigina, the Theseion, and the temple of Assos began their designs with a definite nucleus, the cella, the measurements of which were fixed by some hieratic statute, concerning which we have no direct testimony. The fundamental importance thus assigned to this portion of the building is, however, entirely in accord with what may be ascertained from other sources concerning the conceptions of the Greeks in respect to the ideal character of the temple. The naos alone corresponded to the holy of holies of the Jewish sanctuary. The oblong cella, with its columns in antis, had originally formed the entire fane. The colonnades of the peripteros did but provide a canopy-like roof for the protection and embellishment of this house of the deity, emphasizing its dignity and sacred character by that "most ancient symbol of terrestrial and celestial authority."<sup>1</sup> This

<sup>1</sup> Semper, *Der Stil*, 2<sup>e</sup> Auf., ii. 389: "Die Idee, der nackten, räumlich kleinen, Cella die ihr fehlende Autorität zu verschaffen, führte darauf, für sie einen Tempel zu bauen, d. h., einen geweihten und bedeckten viereckigen Bezirk (Temenos), dessen Säulendach die Cella (welche ihre volle alte Heiligkeit behält) nicht ersetzt, sondern nur bestimmt ist aufzunehmen, auch in struktiver Beziehung vollständig von ihr unabhängig ist, wie das Sanctuarium von dem ägyptischen Sekos oder das jüdische Tempelhaus von der Bundeslade. Eine monumentale Kapsel für das Heiligthum, — aber eine offene Kapsel, die das Allerheiligste, oder vielmehr dessen nächste Hülle, die Cella, nicht verbirgt, wie der ägyptisch-

attractive suggestion of the greatest modern investigator into the origin and principles of architectural style may be said to have received direct and final proof from the present investigations, and more especially from our recognition of the fact that the design of these temples under discussion had been crystallized, so to speak, around a cella of given form and dimensions.

A further indication of the fact that the ancients themselves attached chief importance in this matter of dimensions to the cella, and not to the stylobate, is to be found in the application of the epithet "hundred-footed" to the Parthenon, the term "hekatompèdon" designating, not, as was so long believed, the upper step of the façade, which very nearly corresponded to this length, and might readily have been accurately adapted thereto, but the length of the naos.<sup>1</sup> The most carefully elaborated fane of Greek antiquity may thus be cited as a parallel instance pointing to the correctness of our assumption.

This is not the place to enter into an adequate discussion of the bearing which the facts thus elicited may have upon

jüdische Tempel es thut, sondern sichtbar lässt, indem sie ihm Schutz gewährt, vor allem aber seine Autorität räumlich und zugleich symbolisch hervorhebt und vermehrt; — ein mächtig monumentales Schirmdach (Baldachin) als ältestes Symbol irdischer und himmlischer Macht und Hoheit."

Admiration for the insight into the principles of architectural growth which is evinced by such passages as this does not, of course, commit us to any acceptance of Semper's untrue and contradictory theory that the Doric peripteros was originally developed as a pseudodipteros, any more than admiration of the contents of Semper's book commits us to approval of his literary style.

<sup>1</sup> The belief that the upper step of the Parthenon displays the exact length of one hundred Attic feet has been current, and almost universally adopted, since the time of Stuart and Revett. The error of this assumption has been made clear by Dörpfeld, *Untersuchungen am Parthenon, Mittheilungen des deutschen archäologischen Instituts*, vol. vi., Athen, 1881; *Beiträge zur antiken Metrologie, Mittheilungen*, vol. vii., 1882; and *Fussmaasse griechischer Tempel, Archäologische Zeitung*, vol. xxxix, Berlin, 1881. The phraseology of the well known Parthenon inscription is such as to leave no doubt upon this point.

the earlier history of the Doric style. It must suffice to point out that they afford direct and trustworthy evidence concerning the derivation of the Greek peripteros, tending to strengthen our belief in the development of the Doric entablature upon a wall, and not upon free-standing supports, — from a wooden rather than from a stone prototype, — while it altogether controverts a host of artificial modern theories concerning systems of arithmetic and geometric proportions alleged to have been followed by the ancients in the design of their temples.

The four edifices which have been illustrated in Figures 79 to 82 display a development of plan far more regular than that, for instance, of the systems of the similarly related cathedrals of Mayence, Speyer, and Worms, or of the cathedral of Amiens, the cathedral of Séz, and the church of St. Ouen at Rouen, inasmuch as the development of the Doric style during the fifth century before Christ was the result of a more intimate connection, and was marked by greater regularity and unity, than that of the Romanic or the Gothic style at any period of the Middle Ages. To speak of the temple of Assos as a link in the chain of Doric development would be to employ a metaphor not altogether applicable, for while it was directly dependent, in its most essential features, upon the design of other monuments, it was not a creation in which any generally recognized advance was effected, or from which the forms of any subsequent works were derived. Hence, if the simile be permissible, it may be likened rather to a childless uncle than to a direct ancestor of the Doric temples of later generations. Its peculiarities found no imitators. This isolation, albeit limiting the scope of our conclusions in one direction, by no means detracts from the value of the historical argument for the present purpose. The marked dependence of the design upon



other works affords a perfect *terminus post*, though its isolation restricts the *terminus ante quem*.

What, then, is the positive outcome of the recognition of the fact that the design of the temple of Assos was subsequent to that of the temple of Aigina and that of the Theseion, and doubtless contemporary with the rebuilding of the temple of Sounion? To what date are these edifices themselves to be assigned?

With regard to the temple of Aigina we may feel reasonably certain that its construction is to be referred to the comparatively short interval which elapsed between the defeat of the Persians at Salamis, in 480 B. C., and the subjugation of Aigina by the Athenians, which began twenty years later. It is hardly to be assumed that the inhabitants of the island could, after the severe losses which they sustained in their naval encounters with the Athenians at this period, and especially after the siege of their chief city,<sup>1</sup> have devoted the very considerable amount of time and money which were required for the construction of an edifice such as this. The surrender of the island, and the entire loss of the independence of its inhabitants, took place four years after the opening of hostilities, in 456.<sup>2</sup> Few modern archæologists admit the assumption of Stackelberg,<sup>3</sup> repeated by Curtius,<sup>4</sup> which identifies the ruins of the Doric edifice in question as those of a certain temple of Athena which Herodotos<sup>5</sup> mentions as having been built by the Aiginetans after their triumph over a band of Samian pirates, in 520 or 519 B. C. Still less acceptable is the argument adduced by Smith<sup>6</sup> to prove that this

<sup>1</sup> Thucydides, I. 105.

<sup>2</sup> *Ibid.*, I. 108.

<sup>3</sup> Stackelberg (Otto Magnus von), *Der Apollotempel zu Bassae*, Frankfurt am Main, 1826, Beilage III., *Das Panhellenium auf Aigina*.

<sup>4</sup> Curtius (Ernst), *Griechische Geschichte*, ed. 3, Berlin, 1868-74, Book III., 1.

<sup>5</sup> Herodotos, III. 59.

<sup>6</sup> Smith (William), *Dictionary of Greek and Roman Geography*, London, 1873, s. v. *Aigina*.

temple was built before 563 B. C. ; namely, that the Aiginetans had, previous to this date, erected at Naukratis a temple to Zeus, assumed, altogether without grounds, to have been an imitation of this particular fane of their own island. Since the publication of Brunn's suggestive essay on the age of the Aiginetan sculptures,<sup>1</sup> in which these works are shown to be of later date than the battle of Salamis, the opinion of scholars has been in practical unanimity, and it is rare that the possibility of an earlier origin<sup>2</sup> is admitted. Overbeck<sup>3</sup> even names a precise date, Olympiad 76.4 to 77.1 or 77.2, — 473 to 471 B. C., — which would be as difficult to disprove as to verify.

That the building of the Theseion took place after the fourth invasion of Greece by the Persians, 479 B. C., is likewise beyond question. Its exact age is, however, still a disputed point. This temple, — the best preserved monument of classical antiquity, not only in Athens, but in all Hellenic lands, — still presents itself to us as a nameless stranger in a city where

<sup>1</sup> Brunn (Heinrich), *Ueber das Alter der äginetischen Kunstwerke. Sitzungsberichte der königlich bayrischen Akademie der Wissenschaften.* München, 1867, Heft 4.

<sup>2</sup> Prior to the appearance of the essay quoted in the preceding note, an extreme antiquity was often attributed to the temple of Aigina. Thus, Ross (Ludwig), *Reisen des Königs Otto und der Königin Amalia in Griechenland*, Halle, 1848, vol. i., and Brøndsted (Peter Olaf), *Die Bronsen von Siris*, Kopenhagen, 1837, thought the building to be more ancient than the time of Peisandros and the thirtieth Olympiad (660 B. C.). Among those writers who, since the publication of Brunn's paper, have had occasion to refer to the age of the temple of Aigina, Murray, *History of Greek Sculpture*, has been almost alone in even admitting the possibility that the gable sculptures are as ancient as 485 or 480 B. C., and may thus antedate the battle of Salamis.

An excellent *résumé* of the arguments which have been brought forward in regard to the age of this building is to be found in Overbeck's *Geschichte der griechischen Plastik*, 3d ed., Leipzig, 1881-83.

<sup>3</sup> Compare the work quoted in the preceding note. Overbeck had, in a previous essay, *Ueber das Datum der äginetischen Giebelgruppen*, (*Zeitschrift für Alterthumswissenschaft*, Giessen, 1856, No. 51.) assigned the completion of the temple of Aigina to Olympiad 64.2 (523 B. C.).

every other nook and corner is known by its ancient epithet. After having been assigned successively to Theseus, Ares, Apollo, Hephaistos, Herakles, as well as to Herakles and Theseus and to Hephaistos and Athena in joint proprietorship, it has lately been restored to the hero by whose name it is generally called.<sup>1</sup> Were it indeed definitely identifiable with that fane, which is known to have been erected after the removal of the relics of Theseus from Skyros to Athens by Kimon, we should have a fixed date, 469 B. C., for the foundation of the edifice.<sup>2</sup> The opinion of the best judges of style agrees, however, in referring its construction to a somewhat later period, little if at all anterior to the erection of the Parthenon. Michaelis<sup>3</sup> speaks of the building of the two great Doric monuments of Athens as contemporary. Adler<sup>4</sup> believes that work upon the Theseion was carried on from 468 to 440, or even 429 B. C. Gurlitt<sup>5</sup> concludes a long and detailed examination into the subject with the conviction that the construction extended from 450 to 440 B. C. Certain of Gurlitt's arguments have been traversed by Julius,<sup>6</sup> who asserts the architectural forms and sculptured decorations of the Theseion to be more ancient than those of the Parthenon ;

<sup>1</sup> For a review of the various identifications of the Theseion, compare the work of Gurlitt, quoted below, note 5. Gurlitt himself assigns the temple to Theseus, and Hultsch (Friedrich) — *Bestimmung des attischen Fusses nach dem Parthenon und Theseion*, *Archäologische Zeitung*, vol. xxxviii., Berlin, 1881 — refers to this point as definitely settled. Dörpfeld, in the work of Miss Harrison quoted in note 1, page 317, identifies the Theseion as the Athenian temple of Hephaistos.

<sup>2</sup> Plutarch, *Theseus*, XXXVI., and *Kimon*, VIII.

<sup>3</sup> Michaelis (Adolph Theodor Friedrich), *Der Parthenon*, Leipzig, 1871.

<sup>4</sup> Adler (Friedrich), *Untersuchung am Theseustempel zu Athen*, reported in the *Chronik der Winkelmannsfeste*, *Archäologische Zeitung*, 1873.

<sup>5</sup> Gurlitt (Wilhelm), *Das Alter der Bildwerke und die Bauzeit des sogenannten Theseion in Athen*, Wien, 1875.

<sup>6</sup> Julius (Leopold), *Le Metope del Tempio di Teseo in Atene*, *Annali dell' Istituto di Corrispondenza Archeologica*, vol. 1., Roma, 1878.

but Dörpfeld<sup>1</sup> has, on the other hand, thrown the great weight of his authority in favor of a subsequent date. It will be borne in mind, that the Parthenon, as we now know it, was begun about the year 447 B. C.<sup>2</sup> A favorite assumption with those scholars who have been unwilling to adopt so late an age for a Doric temple which undeniably displays a tentative and experimental character in certain architectural details, has been that the sculptures of the Theseion were executed at a period subsequent to the completion of the edifice. This is clearly inadmissible, for the sculptured frieze of the pronaos may be seen to be in bond with the constructive members of the entablature. We must, in like manner, exclude the chief argument which was advanced by Ross<sup>3</sup> to serve as a proof that the temple antedated the middle of the fifth century; namely, the appearance, upon the coffered ceiling beams, of masons' marks having forms of Greek letters which after the eightieth Olympiad were no longer employed in inscriptions. It is futile to put this argument aside,—as has been attempted by Miss Harrison,<sup>4</sup>—by a resort to the groundless and improbable assumption that the beams thus marked once formed a part of some more ancient edifice, the materials of which, after its demolition, were employed again in the con-

<sup>1</sup> Dörpfeld's opinion upon this subject has been published by Harrison (Jane E.), *Mythology and Monuments of Ancient Athens*, London, 1890.

<sup>2</sup> The last and best review of the data which we possess concerning the age of the Parthenon has been given by Koepp (Friedrich), *Die Herstellung der Tempel nach den Perserkriegen*, *Jahrbuch des preussischen archäologischen Instituts*, vol. v., Berlin, 1890, Heft 4.

<sup>3</sup> Ross (Ludwig), *Tò Θησεῖον καὶ ὁ Ναὸς τοῦ Ἄρεως, ἐν Ἀθήναις*, 1838. Republished, with additions, in a German form: *Das Theseion und der Tempel des Ares in Athen*, Halle, 1852. Certain masons' marks which had been overlooked by Ross are given by Gurlitt, in the work quoted above. Ross concluded from the forms of these letters that the temple could not be, in any event, more recent than Olympiad 80 (460 B. C.).

<sup>4</sup> In the work quoted in the preceding note.

struction of the Theseion. The position in which the letters in question appear upon the stones is such as to make it evident that they were cut during the erection of this very building. The true explanation doubtless is that masons' marks such as these were retained by workmen from the time of their first apprenticeship to their craft, and possibly even handed down from father to son, thus naturally preserving the palæographical characteristics of a somewhat earlier age.<sup>1</sup> A parallel instance of the employment of obsolete letters of the Greek alphabet as masons' marks late in the Pergamene period is to be found in the market-place of Assos, and will be discussed in a future chapter of this book. ●

If, then, it be susceptible of proof that the building of the temple of Aigina took place in the first or second, and that of the Theseion not earlier than the third decade succeeding the final repulse of the Persians from European Greece, it follows that the temple of Assos was not much, if at all, anterior to the middle of the fifth century before Christ. As will be demonstrated, there is nothing in the sculptured decorations of the temple to contradict this view, and much to support it, while the political history of the town shows that during the forty-four years intervening between the two subjugations of the Troad by the Persians the citizens of Assos were at the height of their power and independence. The invading barbarians led by Xerxes showed little respect for the national sanctuaries of the Hellenes. Where, in all

<sup>1</sup> Specimens of writing from right to left also occur among the masons' marks upon the stones of the same building; yet inscriptions of this character were considered by Herodotos (II. 36) to be barbarous. It is to be borne in mind, in this connection, that Onatas, supposed to be the sculptor of the Aiginetan gable groups, wrote from right to left in the same manner. Compare Pausanias, V. 25. 9.

the Greek lands overrun by these hosts, is any Greek temple known to have stood the conquest uninjured? Yet the temple of Assos, as we know it, can be proved to have remained intact until the advent of the Christian era.

Before turning from the architectural features of the building to its sculptures, it will be of interest to trace, in the light obtained by the foregoing analysis, the method of laying out the plan which must have been adopted by the provincial designer, and to seek, in connection therewith, for an explanation of the archaic and peculiar features which appear in the constructive framework, as well as in the decorative details of the edifice. It is now possible for us to follow, step by step, the evolution of the plan and dimensions of the temple of Assos, even as it was inscribed, some twenty-three hundred and fifty years ago, upon the abakos of the provincial designer.

The chief features of the calculation involved are diagrammatically set forth in Figure 83. The architect began by laying out an oblong cella, having the exact dimensions noted upon some tracing of the plan of the Theseion which had been procured as a pattern. These dimensions we find to equal in length at A exactly 70, and in width at B exactly 25 Assian feet.<sup>1</sup> Around this cella was drawn the plan of the peripteros, the determination of the width of the pteroma being the next step. Early in the development of the hexastyle Doric temple, the eye of the Greek architect had perceived that the best proportions of the lateral colonnades were secured when the two outermost columns of the façade framed the vista obtained in looking

<sup>1</sup> The grounds upon which this assertion relative to the number of Assian feet embodied in the length and breadth of the cella are based, will be set forth in full detail in the succeeding pages.

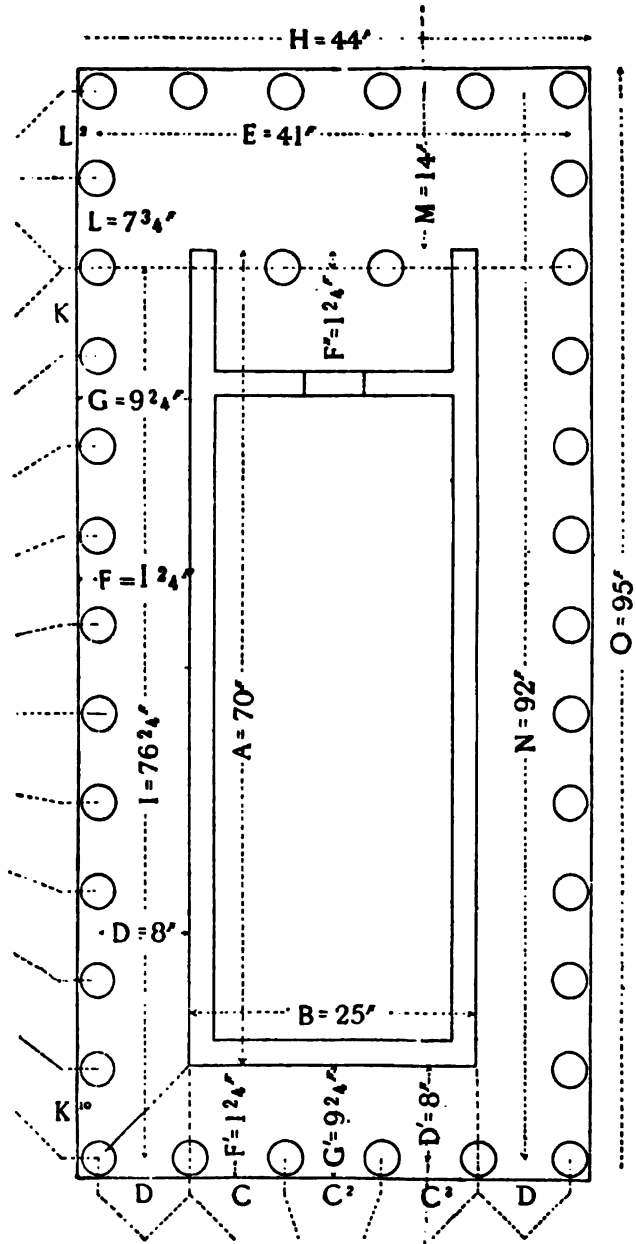


FIG. 83. DIAGRAMMATIC PLAN AND DIMENSIONS OF THE TEMPLE OF ASSO'S.

along the side wall of the cella, thus displaying but one intercolumniation of the distant front, and not permitting the inner side of the aperture to be outlined against the bright sky by the vertical line of the cella corner or anta. In the temple of Aigina and in the Theseion the desired effect had been obtained by placing the second and fifth columns of the façades exactly in line with the outer face of the cella wall. This method was followed by the Assian designer. The three intercolumniations between the axes of the second and fifth columns of the façades, C, C<sup>2</sup>, and C<sup>3</sup>, thus determined, were consequently equal to the width of the cella, or twenty-five feet. The width of the adjoining corner intercolumniations, D, which were, for static and æsthetic reasons, to be made somewhat narrower than those adjoining, naturally became eight feet from axis to axis. It is apparent, however, that the employment of round numbers was here somewhat disadvantageous, inasmuch as the interval between the outer shafts should have differed in width from those between the inner by more than one third of a foot. Both in respect to the ideal balance of the supports and the equal spacing of the members of the frieze, the outermost columns thus came to stand too far apart.

The width of the side pteroma, D, from the axes of the columns to the face of the cella wall, being thus fixed at eight feet, the distance between the corner columns of the façades, from axis to axis, E, was found to amount to forty-one feet. The distance from the axes of the columns of the peripteros, F, was next fixed at one foot and a half, or, in other words, six palms, and the width of the pteroma pavement from the rise of the upper step to the face of the cella wall, G, became equal to nine and a half feet, the total width of the stylobate itself, H, becoming equal to forty-four feet.



Before setting out the intercolumniations of the sides, the width of the rear pteroma — if so we may term the space between the western end of the cella and the columns of the western façade — remained to be determined. Here the Assian architect failed to profit by the example of the Theseion, and adopted a dimension much too small. Doubtless having in mind the difficulties and complications presented by a coffered ceiling having a width different from that of the lateral pteroma, and possibly aware that the vestibule at the rear of the temple of Aigina did not exceed the side pteroma in width, he here adopted for  $D'$  precisely the same dimension as for  $D$ , namely eight feet. The want of a sufficient reveal upon the rear of the building cannot but have been apparent to the observer who approached the Acropolis from the western side, for the bare wall at the back of the cella of the Assian temple formed a background to the columns of the western façade very different from the Aiginetan epinaos with its deep shadows. The entire omission of columns in *antis* at the rear of the temple of Assos was, as will presently be seen, undoubtedly due to hieratic considerations peculiar to Asia Minor; but this defect should have been concealed as much as possible by setting the columns of the *peripteros* at a greater distance from the rear than from the side walls of the cella.

Inasmuch as the second columns of the flanks were placed, for the purpose of receiving the transverse epistyle which connected the front of the cella with the outer entablature, in exact line with those of the *pronaos*, and consequently at a distance,  $F''$ , of one foot and a half from the front face of the *antæ*, and inasmuch as the axis of the columns of the western façade was eight feet from the rear wall of the cella, it is evident that the ten westernmost intercolumniations of the sides occupied together an extent of seventy-six and a half

feet. The spaces from centre to centre of the columns from K to K<sup>10</sup> were naturally determined by an equal division of this length, and the second columns of the sides from the western corners thus failed to come in a line with the outer surface of the rear wall of the cella by seven twentieths of a foot, or more than one palm. This affords an explanation of an irregularity which was a source of much perplexity to the investigators during the measurement of the plan, otherwise so regular. The width of the two succeeding or easternmost intercolumniations of the sides, L and L<sup>2</sup>, were made of the nearest possible dimensions to the others which could be expressed in a round number of palms; thus becoming seven and three quarters, instead of seven and thirteen twentieths feet from centre to centre. Thus the width of the vestibule before the cella, from the front face of the antæ to the axes of the columns of the eastern facade, at M, became exactly fourteen feet, the distance between the corner columns of the sides, N, being ninety-two feet from axis to axis, and the total length of the stylobate, O, ninety-five feet.

By this arrangement it was brought about that the length of the stylobate was exactly ten times the width of the pteroma. The existence and intentional character of this proportion was recognized during the investigations of the first year, and the dimensions in question were correctly assumed to embody a round number of units of the standard employed by the ancient architect in laying out the measurements of the edifice. But ignorance of the facts now ascertained rendered it then impossible to determine logically the number of feet or palms thus embodied, and the writer's guess that the dimensions were respectively ten and one hundred ancient feet was quite as far from the truth as

that of Bohn, who assumed these numbers to have been nine and ninety.<sup>1</sup>

The further steps involved in the calculation of the plan by the ancient architect, the chief of which relate to the divisions of the coffered ceiling, have not been indicated in Figure 83, but follow in direct sequence from the data already obtained. The determination of the sides of the square coffers and stiles was dependent upon the width of the pteroma ceiling. The thickness of the entablature was fixed at two feet nine dactyls, this dimension perhaps being chosen so as to make up the length of the corner epistyle panels, with the lap, to exactly nine feet and a half. Subtracting from the distance between the cella wall and the axis of the columns (namely, D, or eight feet) one half of the thickness of the entablature plus the projection of the cyma mouldings which crowned both wall and inner entablature, there remains a clear span of six feet six dactyls. In the pteroma ceiling of the temple of Assos, as in that of the Theseion, this space was divided into four panels, each of

<sup>1</sup> It was remarked in the *Preliminary Report*, that "in comparing these dimensions with the intention of recognizing the unit of measure employed in the building, it is noticeable that the width of the side and rear pteroma is as nearly as possible one tenth of the length of the stylobate. This relation of the most important divisions of the plan is so strikingly exact as to exclude the assumption of a coincidence. It is hence extremely probable that a system of decimal feet was employed, or that 3.0335 meters contains an entire number of the original unit of measure." The latter alternative is now proved to be correct, the former erroneous.

The succeeding paragraph of the *Preliminary Report* contains mere groundless suppositions, but, inasmuch as they are referred to in the present text as the evidence of an accuracy of those measurements upon which the identification of the Assian foot is founded, they must be quoted in like manner: "If the plan be supposed to be 100 feet long, and the pteroma 10 feet, a foot of 0.30335 meter would result. . . . A suggestion, perhaps more plausible, has been made by my friend Richard Bohn, architect of the excavations at Pergamon, that the dimensions were respectively 9 and 90 feet, of a consequent length of 0.337 meter."

which was one foot and nine dactyls square. These panels were divided in such wise that each sinking was exactly one foot square, and each stile nine dactyls broad, the fillet running along the centre of the stiles being two dactyls wide. Thus four sinkings, four stiles, and the supplemental fifth fillet, exactly made up the extent of one hundred and two dactyls, or six feet six dactyls, required by the span of the ceiling from wall bed to entablature bed, above the pteromas of the sides as well as above that of the rear. The aggregate width of the ceiling compartments above the side pteromas was found, from data already given, (namely, the length of the cella minus the thickness of one epistyle beam,) to be sixty-seven feet seven dactyls. This extent was divided into ten fields, each being, together with its beam, six feet twelve dactyls wide, within a small fraction amounting to less than one twelfth of an inch. One foot and fifteen dactyls was assigned to the thickness of the transverse supporting beam, together with its cyma mouldings,—a dimension from which constructive considerations permitted no wide departure. The remainder, four feet thirteen dactyls, was divided into three coffers of the dimensions previously determined, according to the width of the pteroma: three coffers of one foot each, three stiles of nine dactyls each, and the supplementary fillet of two dactyls, amounting to just the space remaining between the beams.

The first departure of the design of the temple of Assos from the arrangement of the Theseion plan is to be observed in the number of fields into which the ceiling of the side pteroma was thus divided,—an alteration for which the intractable nature of the stone employed was evidently responsible. It is to be remarked, however, that the impossibility of dividing the length into compartments having, like those of the Theseion, only two coffers in width, may have

furnished the occasion for this independent step. The sixteen fields of the Theseion, if made of the dimensions requisite at Assos, would not have permitted the employment of supporting beams more than fifteen dactyls wide, including their mouldings, and practical considerations rendered this most inadvisable.

The length of the ceiling above the rear pteroma, which had been determined by the width of the plan, proved to be readily capable of division by the factors thus obtained. The space of thirty-eight feet seven dactyls between the inner sides of the lateral entablatures, further diminished by the projection of the cyma mouldings to about thirty-eight feet two dactyls, could be apportioned into six fields of nearly the same size, and having the same number of sinkings, as those of the side compartments. An adjustment of but about three quarters of an inch in each compartment was all that was necessary to permit the continuation of the same system of coffers in this ceiling. The necessity of such adjustment, small in amount though it be, affords a proof that, as has been shown in the foregoing pages, the dimensions of the ground plan were not originally and directly based on exact multiples of the ceiling compartments, but had been determined irrespective of these, by the length and width of the cella.

Owing to constructive and æsthetic considerations, which have been fully set forth in an earlier chapter, the ceiling of the vestibule was otherwise designed than that above the rear pteroma. Its length was divided into four fields, each containing five, instead of three coffers, — the thickness of the supporting beams being increased in proportion to their greater span. Five sinkings of one foot each, five stiles of nine dactyls each, and the supplementing fillet of two dactyls, required each of these compartments to be

seven feet and eleven dactyls in length. Deducting three such compartments, plus the projection of the cymas upon the inner sides of the lateral entablatures, from the distance between these sides, there remained six feet four dactyls to be divided between the three supporting beams, these supports thus becoming about three dactyls wider than those of the pteroma. The ingenuity displayed in this method of division has already been commented upon. Thus it was found that the width of the vestibule ceiling, although independently determined, called for no alteration of the dimensions of the coffers. The space between the inner side of the eastern entablature and the front wall of the cella, equal to the distance between the columns of the façade and those of the pronaos, from axis to axis, or fifteen feet eight dactyls, minus the thickness of the entablature, amounted to twelve feet eleven dactyls, which was further reduced to twelve feet six dactyls by the projection of the cyma mouldings. Only a small adjustment was required to adapt eight sinkings, eight stiles, and the supplementary fillet, to this span, and the design of the ceiling of the pteroma and vestibule could thus be carried out with coffers of the same size.

In the ceiling above the pteroma, which was seven feet eight dactyls in depth and twenty feet fourteen dactyls in length, including the cyma mouldings, we may trace a similar principle of division, but on a smaller scale, the dimension of the square panelling — or in other words of the unit formed by coffer and stile together — being here reduced to a factor of one foot one dactyl.

It would have been unreasonable to hope, at the commencement of the investigations, that so clear an insight could be gained into the workshop of the builders of Assos. But what would have been the amazement of the provincial

architect, methodically laying out his plan, had he been informed that, after the lapse of nigh two and a half millennia, his work would be thus retraced, step by step, by fellow craftsmen of barbarous race and of an unknown continent!

The chief dimensions of the temple of Assos, expressed in Assian feet, and compared with calculated and with actually measured lengths in meters, may thus be tabulated:—

	Assian.			Calculated Dimen- sions in Meters.	Actual Measure- ments in Meters.
	Feet.	Palms.	Dactyla.		
Length of cella . . . . .	70	—	—	22.330	22.33
Width of cella . . . . .	25	—	—	7.975	7.97
Axes of columns from wall, side and rear	8	—	—	2.552	2.55
Axes of columns from edge of stylobate (Width of pteroma, side and rear) . . .	1	2	—	0.479	0.48
Axes of front columns from antæ . . .	9	2	—	3.030	3.03
(Width of front vestibule) . . . . .	14	—	—	4.466	4.47
Corner columns of sides, axis to axis .	15	2	—	4.945	4.95
Corner columns of façades, axis to axis	92	—	—	29.348	29.35
(Length of stylobate) . . . . .	41	—	—	13.079	13.07
(Width of stylobate) . . . . .	95	—	—	30.305	30.31
Length of naos interior . . . . .	44	—	—	14.036	14.03
Thickness of cella walls and antæ . . .	55	2	—	17.705	17.71
Height of each step . . . . .	2	—	1	0.658	0.66
Tread of lower step <sup>1</sup> . . . . .	—	3	2	0.279	0.28
Height of column . . . . .	—	3	2	0.279	0.27½
Height of capital . . . . .	15	—	—	4.785	4.78
Length of corner epistyle panel . . . .	1	2	—	0.478	0.48
Thickness of entablature (epistyle) . .	9	2	—	3.031	3.03
Height of epistyle . . . . .	2	2	1	0.818	0.82
Height of frieze . . . . .	2	2	1	0.818	0.82
Height of corona . . . . .	2	1	3	0.778	0.78
Length of roofing tile . . . . .	1	1	1	0.419	0.42
Width of roofing tile . . . . .	2	1	—	0.718	0.71½
	2	—	—	0.638	0.63½

<sup>1</sup> It is plain that the rise and tread of the lower step was intended to be equal; yet the tread, from edge to angle, actually measures about five millimeters less than the rise, and appears upon both tables as equal to but 27½ cm. An explanation of this small difference will have suggested itself to those who have closely followed the account of the methods of construction adopted by the Assian builders, given in an earlier chapter. In setting the stones of the stylobate the tread of the lower step was evidently scaled from its rise to those narrow fillets which, having a projection equal to about four millimeters, border the joints of the stylobate blocks. These fillets have been described upon page

With sole exception of the width of the cella door, which is apparently incommensurable,<sup>1</sup> and of the height of the gable, which was determined, not by arithmetical, but by geometrical methods,<sup>2</sup> all the main dimensions of the building will be found to be included either in this table or in the preceding analysis of the method followed in laying out the intercolumniations of the peripteros and the compartments of the coffered ceilings. Some of these dimensions did not, however, require independent determination by the architect, but could be directly deduced from a preceding step of the design. These are, in the table, enclosed in parentheses. They are given, not only as proofs of the system followed in laying out the plan, but as indications of the accuracy with which the ancient unit of measurement is embodied.

No less than sixteen of the dimensions above enumerated — and these sixteen include every length over a meter — embody an entire number of feet, or of half-feet. The determination of the fundamental unit is hence neither difficult nor uncertain. We may estimate the length of the foot rule, so accurately employed by the Assian architect, to have been as nearly as possible **319** millimeters (1 foot and 0.56 inch English). The closeness of the agreement between the lengths now calculated as multiples of this common factor and those which have been actually measured from the ruins of the temple is indeed extraordinary. The average devia-

66 of the present volume, and are illustrated in Figures 6 and 7. The allowance thus made was evidently responsible for the discrepancy in the dimensions.

<sup>1</sup> The entire width of the door, together with its jambs, is not ascertainable from the ruins, and it may well have been that this dimension was laid out by the architect with some round number of Assian feet.

<sup>2</sup> The fact that the architect designed the slope of his gable to form an angle of exactly fifteen degrees with the horizon has been ascertained and discussed in a former chapter, page 106.



tion from the standard adopted, as ascertained by an analysis of the twenty-four items of the above table, is but about one fifth of a millimeter (less than one hundredth of an inch) in the foot, while the average variation of the actual measurements from the calculated, adding both plus and minus together, is but about three millimeters in the total distances, these having a mean of nearly seven meters. This is an amount too small to have figured in the table of dimensions, which, as has been remarked in an earlier chapter,<sup>1</sup> can make no pretence to a micrometrical accuracy such as this. The maximum deviation is less than a centimeter, and this appears in one of those dimensions most difficult of practical determination, either by builder or investigator, namely, in the distance between the corner columns of the façade from axis to axis. As this dimension, moreover, exceeds seven meters, the relative error is less than one seventh of one per cent.

It must be frankly admitted that so close an agreement between theory and measurement as that now demonstrated appears most extraordinary in a structure displaying so great irregularities in respect to the spacing of the members of the entablature. Such a coincidence may even appear suspicious to those investigators who are practically familiar with the inexactitude of architectural dimensions, ancient as well as modern, and who, like the present writer, entertain a deeply rooted distrust of those artificial systems of harmonic proportions, whether arithmetic or geometric, which are being continually put forward as a solution of the problems and a key to the excellence of Hellenic design. It is, therefore, just

<sup>1</sup> It has been remarked, in connection with the table of measurements given in a former chapter, page 140, that the remeasurement of the temple during the second and third years of the investigations led to the conviction that it is not practicable to express the general dimensions of an edifice constructed of so rough a material as the Assos andesite in units smaller than half a centimeter.

that especial attention should be called to the fact that the embodiment in the dimensions of the temple plan of an Assian foot of any particular length was not recognized at all until after the table of measurements given upon pages 139 and 140 of the present volume had been put into print and stereotyped. In proof of the truth of this, it may be noticed that a table of dimensions, identical in all essential particulars with those here repeated, was published in the Preliminary Report,<sup>1</sup> and that in connection therewith the writer ventured a different suggestion, now proved to have been erroneous.<sup>2</sup>

The coexistence in one and the same structure of measurements of such exceeding accuracy, and of a spacing of the frieze members so irregular that metopes and triglyphs occasionally varied by amounts equal to one fifth of their respective widths, may, however, be fully accounted for by a consideration of the methods of construction which were adopted by the builders of the temple. The dimensions of the stylobate, and the site of walls and columns, were laid out in conformity with a regular design, which must have been traced and figured before the work itself was begun. The ruins of the temple show the ancient architect to have engraved upon the planed surface of the native rock, and upon the smooth slabs of the stereobate laid thereon, a series of lines indicating the position of the outer face of the cella walls;<sup>3</sup> the krepidoma of the temple, thus characterized technically, as well as ideally, as an *ἀβαξ*, being actually employed as a drawing board. On the plan, Figure 4, these delicate incisions are shown in broken lines, being thus distinguished from the

<sup>1</sup> *Preliminary Report*, p. 96.

<sup>2</sup> Compare above, p. 200, note.

<sup>3</sup> It may be observed that the lack of such engraving upon the inner side of the cella walls furnishes a clear indication that the dimensions which were more directly followed by the builders, and which might hence, *a priori*, be supposed to have embodied a round number of ancient feet, were those of the exterior of the cella, and not those of the naos interior.

traces of weathering at the bottom of the columns, and along the inner face of the cella wall, which are dotted.

A high degree of accuracy, both in survey and measurements, was rendered possible by this method. It will be recollected that the right angles at the corners of the plan were found, when tested by the instruments of precision at the service of the investigators, to have been laid out with surprising exactitude. A deviation of six minutes from the theoretical ninety degrees was all that could be detected, this error amounting to but fifty-four millimeters in a length of over thirty meters. Now it is well known that, for builders working with measuring rods alone, the laying out of angles is a matter of far greater difficulty than the direct determination of dimensions, and it is hence not surprising that the length and breadth of stylobate and cella should vary but little from the calculated amounts.

The case was altogether different with the spacing of the frieze members, this having been effected, not by any direct application of a predetermined scale, but by testing and fitting each lintel, metope, and triglyph upon the entablature in the course of erection. The extent and tendencies of the deviations resulting from this system of construction have been fully discussed in the section of this work which treats of the location of the sculptured epistyle blocks,<sup>1</sup> and to the arguments therein set forth the attention of the reader must now be referred.

The unit of measurement employed in the building of the temple at Assos being thus determined, we are naturally led to inquire whether a foot of similar length is known, from other investigations, to have been in use among the Greeks. The affirmative answer to this question, which is given by the most trustworthy data of classical metrology,

<sup>1</sup> Compare above, Chapter III. pp. 255 to 258.

provides a conclusive proof of the correctness of the present identification.

The foot of 319 millimeters, now ascertained to have been in use in the Troad towards the middle of the fifth century before Christ is clearly identical with that chief unit of measurement among European Greeks at this period, the so called Olympian foot, which has been determined with great accuracy, by the recent excavations in the Altis, to have had a length of from 320.1 to 320.6 millimeters.<sup>1</sup> Both must have been derived from one common prototype, the Assyrian foot of 319.68 millimeters,<sup>2</sup> a unit of that system to which the *πῆχυς μέτριος* of Herodotos<sup>3</sup> is known to have belonged. The historical connection which is to be traced between the metrical systems of Assyria and Hellas has been ably set forth by Lepsius<sup>4</sup> and by Brandis,<sup>5</sup> whose belief that

<sup>1</sup> See the deductions of Adler and Dörpfeld in vol. iii. pp. 26 and 29, and vol. v. pp. 23 and 37, of *Die Ausgrabungen zu Olympia*. Compare also the conclusions of Lepsius (Carl Richard), *Die Längenmaasse der Alten*, Berlin, 1884, and of Hultsch (Friedrich), *Die Grundmaasse der griechischen Tempel*, *Archäologische Zeitung*, vol. xxxviii., Berlin, 1881.

<sup>2</sup> The most accurate determination of the length of the Assyrian foot is that of Lepsius, in the work quoted in the preceding note; his estimate is that adopted in the text. Oppert (Jules), *Mission de la Babylonie*, in *L'Athenæum Français*, Paris, 1854, No. 16, deriving his conclusions from the average measurements of 550 bricks, first fixed the length of this unit at 315 mm., but subsequently, in his *Expédition scientifique en Mésopotamie*, Paris, 1859-63, vol. i. p. 229, found a unit of 320 mm. to be more nearly correct. This does not appear surprising, in view of the well known shrinkage of burnt clay. Brandis (Johannes), *Das Münz-, Mass- und Gewichtswesen in Vorderasien*, Berlin, 1866, gives 320 mm. in round numbers; but Hultsch, *Griechische und Römische Metrologie*, § 8, prefers 315 mm., with variations ranging between 314 and 316.6 mm. Petrie (W. M. Flinders), *Inductive Metrology, or the Recovery of Ancient Measures from the Monuments*, London, 1877, apparently following the earlier determination of Oppert, assumes the Assyrian foot to equal 12.40 English inches, or 314.95 meters. Compare also upon this point Queipo (Vasquez), *Essai sur les Systèmes Métriques et Monétaires des anciens Peuples*, Paris, 1859, vol. i. p. 279.

<sup>3</sup> Herodotos, I. 178.

<sup>4</sup> Lepsius, work quoted in a foregoing note, p. 73, *et passim*.

<sup>5</sup> Brandis, work quoted in note 2, above.

the Mesopotamian units of length were received by the European Greeks through the intermediation of the Greek colonists of Asia Minor is fully confirmed by the discoveries at Assos. The difference observable between the Assyrian and the Assian foot, namely, three fifths of a millimeter, or two per mille, is altogether negligible in a comparison of this nature. Even to-day, when measuring rods are divided by the scientific process of engine ruling, the foot and meter measures in use by practical men frequently display a variation much greater than this.<sup>1</sup>

<sup>1</sup> Dörpfeld, in illustrating this truth, relates that the meter sticks offered for sale in the shop of one optician at Athens, a few years ago, varied fully three millimeters. I have now before me two finely divided foot measures, stamped U. S. Standard, which, doubtless from shrinkage, vary not less than three sixty-fourths of an inch. A hair-splitting measurement of architectural members, such as has been assumed by certain writers upon ancient metrology, would not only be practically impossible in stone-work of any kind, but would have been inconceivable to the mind of the Greek workman, untrained in the American system of interchangeable parts. For information concerning the discrepancies in dimensions which are to be detected even in the Parthenon, — the most perfectly executed building which the world has ever seen, — compare Penrose, *Principles of Athenian Architecture*, pp. 9, 141, etc.

## APPENDIX.

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### I.

#### RELATIONS OF MODERN TO ANCIENT LIFE.

TO an intimate knowledge of Greek civilization, derived from the material remains of antiquity and from the passages of classic literature bearing upon them, archæological science should add a feeling of immediate, and, so to speak, personal acquaintance with the life of the ancients. In the endeavor to gain this, there can be no greater aid than that resulting from a thoughtful observation of the Greeks of to-day, — notably from a comparison of the Romaic with the Hellenic peasant, — certain primitive conceptions and customs having been retained by the country people, under peculiarly favorable circumstances, through unbroken traditions. Among the modern representatives of the Greek race, debased as it has been by centuries of Byzantine ecclesiasticism, and by subjugation to Tartar conquerors, we have an occasional glimpse of the well-known figures of antiquity, — not as historical abstractions, but as living beings, dwelling beneath the same clear sky, their horizon bordered by the same sharp outlines of volcanic crests.

In none of the lands occupied by the ancient Greeks have the peculiar features of their daily life been better preserved than on the islands of the Archipelago and the coasts of Asia Minor. The Turks of the fifteenth century, landing upon the Sporades to enforce tribute, saw the inhabitants scamper away to the mountains, without an attempt at resistance, and called them *taushan-lar* (hares), by which name the Rayahs are still derided. Yet this very timorousness, this bending of the weaker but more supple

race before the stronger,—of the reed before the storm-wind,—has saved the civilization of the Byzantine Greeks from being altogether swept away before the resistless advance of the Mohammedan power. Communities such as those in the interior of Lemnos, or upon the remote height of Samothrace, continued to exist in an almost entire seclusion long after Turkish arms had subjugated the southern coast of the Mediterranean, and had even appeared beneath the walls of Vienna. The self-centred life of the Greek peasants in these forgotten corners may be compared to an eddy at the side of some great stream, keeping within its slowly revolving circles vestiges of materials, of which the mass was long since borne down by the main current.

The exceptionally favorable character of the Sporades, and of the northern coasts of Asia Minor, in this respect, has often attracted notice. As early as 1677, Georgirenes, Archbishop of Samos, remarked, in the words of his English translator: "Scarce any part of Greece has less intermixture with the Turks than these isles, where the Greek language and religion is less intrench'd upon."<sup>1</sup> Douglas<sup>2</sup> thought that pure Greek blood was more generally to be found on the islands of the Archipelago than on the continent of Europe. Wachsmuth<sup>3</sup> compares the Sporades, and that portion of Asia Minor which has retained its Greek population, with the fastnesses of Maina; while Schmidt<sup>4</sup> declares the civilization of these districts to be more free than that of the Peloponnesos from the influence of Albanian and Bulgarian immigrants, and in support of his position offers various proofs derived from etymological comparisons.

The maintenance of Byzantine traditions on the shores of the Gulf of Adramyttion is attested by the numerous contributions to Greek folk-lore which have been derived from these districts.

<sup>1</sup> Georgirenes (Joseph), *A Description of the Present State of Samos, Nicaria, Patmos, and Mt. Athos*. London, 1678. There appears to be no Greek original of this valuable tract.

<sup>2</sup> Douglas (Frederic Sylvester North), *Essay on certain Points of Resemblance between the Ancient and Modern Greeks*. Second edition. London, 1823.

<sup>3</sup> Wachsmuth (Curt), *Das alte Griechenland im Neuen*. Bonn, 1864.

<sup>4</sup> Schmidt (Bernhard), *Das Volksleben der Neugriechen und das hellenische Alterthum*. Leipzig, 1871.

Three of the Märchen in Hahn's collection<sup>1</sup> were told in Aivaly,<sup>2</sup> almost within sight of Assos; and two of the shorter tales given by Schmidt<sup>3</sup> are from Mytilene.

#### LANGUAGE AND SUPERSTITIONS.

The Greeks of the Asiatic continent maintain a most creditable pride in their national traditions and language, even in cases where the Romaic idiom has been in great measure lost. The villagers on the southern slope of the range of Ida, between Assos and Adramyttion, speak a curious jargon, the names for objects in every-day use being chiefly Turkish. Traces of the Genoese occupation of the Lesbian principality are also apparent. The Rayah peasants, when asked the name of some rude agricultural implement, would almost invariably reply by a Turkish word; but they would not fail to speak of themselves as *ἡμεῖς τὸ Ἰπέκο!*

In the interior the case is often still more striking. A friend of the writer, a Frank engaged by the Porte as a civil engineer, on a journey through the province of Hodavendigiar,<sup>4</sup> came to a small town, so completely severed from communication with the Greek population of the coast that its inhabitants, though of Greek descent, had, after six centuries of subjugation to the Turks, altogether forgotten their native language. The visitor was waited upon by a deputation of the chief men of the place, who asked him, in Turkish, to do them the favor of conversing in Greek with their new schoolmaster, that he might be able to tell them whether this person spoke a good dialect, and was competent to teach their

<sup>1</sup> Hahn (J. G. von), *Griechische und Albanesische Märchen. Gesammelt, übersetzt und erläutert.* Leipzig, 1864. Numbers 49, 50, and 72. The second of these is, however, not a true Märchen, but a reminiscence of the novel of Apollonius of Tyre. Attention has been called to this origin of the tale by Liebrecht, in the *Heidelberger Jahrbücher*, Jahrgang 1864, No. 14. It should be particularly observed that the tenure of Byzantine civilization in the modern town of Aivaly is wholly dependent upon the Greek inhabitants of the island of Mytilene and the neighboring Adramyttion.

<sup>2</sup> On the site of the ancient Herakleia.

<sup>3</sup> Schmidt (Bernhard), *Griechische Märchen, Sagen und Volkslieder.* Leipzig, 1877. Märchen No. 22, and Sage No. 2.

<sup>4</sup> Comprising the greater part of ancient Mysia.



children well. It appeared that these men, being possessed of some little property, had, in order that their descendants might again become Greeks, sent for a schoolmaster from Athens, with whom they were themselves unable to talk.<sup>1</sup> So deeply rooted are the national sympathies, even in those Rayahs among whom the traditions of Byzantine culture have been lost for twenty generations! It would be impossible to find, in modern times, a better illustration of those sentiments of the inhabitants of ancient Poseidonia, described by Aristoxenos: "For it happened to them, who were originally Greeks, that they were utterly barbarized, becoming Tyrrhenians or Romans, so that they changed their language and all their customs. But even at the present day they observe one Hellenic festival, on which occasion, coming together, they call to memory their ancient names and usages, bewailing them one to another; and having wept for the loss of them, they separate."<sup>2</sup>

The Christian communities in the vicinity of the Gulf of Adramyttion retain many of those reminiscences of the religious observances of the Pagans which have so often been referred to by writers upon the origin of the rites of the Church. On festival days the churches of the modern, like the temples of the ancient Greeks, are decked with leaves and flowers; ever-burning lamps are still placed before the sacred images; offerings of cakes, still known as *κόλλυβα*, are laid upon the altars; and even to-day the country people parade saintly relics from field to field, to drive away the enemies of the harvest. In districts remote from the great commercial centres, exorcism is practised with rites singularly resembling those of classical antiquity. Not only human beings, but flocks and herds, even fields of grain and orchards of olives, are believed to be liable to the baneful influence of bewitchment and demoniacal possession. During the summers of 1881 and 1882 the inhabitants of Eren-Kieui,<sup>3</sup> one of the few villages of the Troad

<sup>1</sup> The Greeks throughout the interior of Asia Minor, parts of Kappadokia alone excepted, have lost their language, and are now making the most strenuous efforts to regain it. Their success is remarkable. In Konia, for instance, all the Greek children under fifteen years of age speak Romaic well, while their parents know only Turkish. — J. R. S. S.

<sup>2</sup> Quoted by Athenaios, XIV. 31.

<sup>3</sup> Close to the site of the ancient Ophryneion.

populated exclusively by Greeks, went in solemn procession through all the fields of the neighborhood. They were led by a priest, who bore aloft certain relics, brought from the island of Lemnos, which were considered efficacious against the swarms of locusts then devouring the young wheat.<sup>1</sup> So firm was the belief of the villagers in the potency of this charm, that they went to considerable expense in order to obtain the sacred remains for such occasions. The same desire to ward off these pests induced the dwellers on Mount Oite, two thousand years ago, to invoke the aid of Herakles Kor-nopion,<sup>2</sup> — the locust-scarer, — and even the Athenians of the time of Perikles to erect, near the Parthenon, a statue of bronze dedicated to Apollo Parnopios.<sup>3</sup>

#### NAMES AND PERSONAL CHARACTERISTICS.

As was customary in the days of Homer, the Greeks of the lower classes are usually known by one name only. When a more exact designation is necessary, either the paternal name or that of the native place is added. The latter combination is the more frequent. Thus, the Christian name John being particularly common, almost every village in the vicinity had its representative at Assos, called Jani-Chipni, -Stypsis, -Skamnia, etc. So entirely lost are the higher forms of the language, that the genitive is in Asia Minor never employed in these additions.

Among the workmen the well-known names of classical antiquity were not wanting. In one of the gangs there was a Themistokles and a Perikles; in another, a very degenerate Aristides.<sup>4</sup> The laundress of the expedition, a woman of Mytilene, was known as Eriphyle, — a name of especial interest because its rare occurrence

<sup>1</sup> The similar employment of a picture of the Virgin, brought to the coast of Asia Minor by a monk of Leros in order to charm away the locusts which were devouring the grape-vines, is related by Ross (Ludwig), *Reisen auf den Griechischen Inseln des Aegäischen Meeres*, vol. ii. p. 117. Stuttgart, 1840-43.

<sup>2</sup> Strabo, p. 613.

<sup>3</sup> Pausanias, I. 24. 8.

<sup>4</sup> An extended, but still very incomplete list of the names of classical antiquity which have survived among the Greeks of to-day is given by Boltz (August), *Die Hellenischen Taufnamen der Gegenwart, soweit dieselben antiken Ursprungs sind*. Leipzig, 1884. The consideration of these names is not without philological importance.

in classic literature may almost be taken as a proof of its having been retained in unbroken tradition from the earliest ages of Hellenic culture, from the legends of the necklace of Samothracian Harmonia, or those of the house of Theban Cadmus. At least three generations of her family, natives of the interior of the island, had borne this name. They were illiterate people, and could not have chosen it from books. Moreover, the words of Odysseus, "Hateful Eriphyle, who accepted precious gold for her dear husband,"<sup>1</sup>—the only passage of ancient literature containing this name to which even the most learned Mytilenean of the last century could have had access,—are hardly such as to make it attractive.

As was the case also in ancient times, the men were known on all hands by nicknames, generally derived from their personal appearance. One hard-working and good-natured giant, for instance, was invariably called *σπανός*,—the poorly-whiskered. Any scantiness of the hairy covering of the face is held in great disfavor by the modern Greeks. Thus the puny tailor of our nursery tale, who kills seven flies at one stroke, becomes sufficiently contemptible in the Romaic<sup>2</sup> rendering of this Indo-European myth through being called "the beardless one." The extreme aversion felt for this defect appears, however, of Mohammedan or of Slavonic rather than of Hellenic origin, and is to be traced in legends which cannot have been derived from classic sources. The pride taken by the Turks in a full and flowing beard may also have influenced the views of the Rayahs in this regard.

By far the greater part of the conceptions and customs of the modern Greeks are, however, such as were introduced by Christianity. The names of the saints and fathers of the Eastern Church are to-day much more numerous than those of classic origin. These latter are limited, on the one hand, to the most humble of the country people,—who, being entirely illiterate, have retained them through persistent family traditions,—and, on the other, to the educated and unbelieving classes, who adopt them through an affected archaism. Between these extremes, almost all the names are Christian. A characteristic instance is that of our friend, the wealthy valonea merchant, the official Commissioner of

<sup>1</sup> Homer, *Od.*, XI. 325.

<sup>2</sup> Hahn, *Märchen*, quoted above, No. 18.

the third year. He himself was christened Nikolaos Hadji Christos, — perhaps in honor of that eminent leader of the Servian and Bulgarian cavalry who fought against Ibrahim at Krommydi in 1825 ; but his sons, enjoying the advantages of an academic education in Athens, bear names famous in the fifth century before Christ.

Among the Turkish workmen were examples of nearly all the well-known names of Ottoman history, — Osman, Ali, Hassan, Houssein, Veli, Mehmet, and others. Omer, the foreman of his gang, a native of Behram, and a typical representative of his powerful and noble race, was known as Choush, he having been a sergeant in the Turkish army during the late war with Russia. From the first until the last day of the excavations he was regarded, without question, as a leader, and fully justified the steadily increasing confidence which was reposed in him. Ahmet Sudji, the water-carrier, was equally faithful in service, as were, indeed, all the other Turkish villagers who were employed. Their energy and ability, their unvarying faithfulness and personal attachment, inspired a high opinion in regard to the physical and moral nature of the uncorrupted Turk. One would hesitate in bestowing commendation upon men of such simple dignity, were it not improbable that these words should ever come to their knowledge. Not one of the Turks, and only two among the sixty Greeks, who from time to time worked for the expedition, could read.

The Rayahs were, in general, found to be more active, but less enduring ; more ambitious, and generally more intelligent, but far less trustworthy, than the Turks. They are characterized by the same elasticity of body and mind which was so prominent a trait of the ancient Greeks, — by the same fickleness, and the same pride in superior cunning and dissimulation. Throughout Greece the exclamation, *Ψεύματα λέγεις* / is merely a cajoling flattery, quite free from the insulting rudeness of its English equivalent ; and the Romaic, like the Hellenic Greek, acts in perfect conformity with the famous apophthegm of Theodoros,<sup>1</sup> that a man ought to appropriate all he can, but ever to sing the praises of justice and moderation. During the course of the work two exceedingly efficient Greek foremen had to be dismissed, for deceit and for theft,

<sup>1</sup> In Athenaios, III. 94.

although they had only been promoted to their positions of trust after long and intelligent service.

All the men were hard workers. The ruins were not often protected by a deep soil, and much time and labor had to be spent in disengaging and rolling away the large building stones, which lay as they had been overthrown. The late Atrium of the lower town was the structure most deeply buried, by earth carried down upon it from the terraces above. Calculations made at this point, and at the great chute beneath the retaining wall of the Agora, showed that the average work of the men compared favorably with the seven cubic meters of gravel which the convicts of Siberia are daily required to move.

#### WAGES AND COST OF LIVING.

During 1881 the number of men employed was so small, that it was found expedient to pay all of them at the uniform rate of one half a medjid a day. The digging of the first season was not begun until August, when it is always more difficult to obtain workmen than in the earlier summer and spring. The crop of valonea, the all-important staple of the Troad, requires no care whatever during the greater part of the year, but in the autumn attracts laborers even from the olive gardens of Mytilene. At the beginning of the second year's work, in March, 1882, there was no lack of hands. Every one of the Turks who had been employed during the preceding year, and the majority of the fickle Greeks, though often living at a considerable distance from the site, returned to ask for re-engagement. In the dull season, after the Easter holidays, over one hundred applicants presented themselves.

Favored by this state of the labor market, the wages were generally reduced. At the same time, the employment of a more numerous force rendered it advisable to grade the amounts paid, according to the efficiency of the individuals. New hands, show-ellers or barrow-trundlers, received thirteen piasters cherouk,<sup>1</sup> or

<sup>1</sup> *Cherouk*, or long money, signifies that the medjid is divided into thirty-three piasters, in contrast to *gera*, according to which it is divided into twenty. The distribution of these two systems in the various provinces of the Ottoman Empire is very peculiar, adjoining towns often employing the same coins at

\$0.32,<sup>1</sup> a day; the original wages of one half a medjid (sixteen and a half piasters cherouk), or \$0.40, being allowed only to the carpenter and one or two chief pickmen, whose reliability had been proved during the first season, and who were held responsible for the work of their gang when employed in positions which rendered a constant supervision impossible.

Small as these sums may seem to persons unacquainted with Oriental values, they were nevertheless a fair return even for the hard ten hours' work required. The cost of living at Behram, for a single man, was but about thirty piasters cherouk per week, this providing the simple food and paying the bakhhal or cafédji for the privilege of sleeping under shelter. Thus, unless the outlay was increased by an unreasonable consumption of tobacco, — to be had, contraband, for about twelve cents a pound, — the workmen might easily lay by from one half to two thirds of their earnings.

An interesting comparison may be made between the wages paid during the excavation of Assos and those customary in Greek antiquity, the value of both being expressed in the necessaries of life. Considering that such a parallel between the economics of the ancient and modern Greeks has not hitherto been made, — so far as the writer is aware, — and that the disbursements of the expedition and the expenses of the workmen at Behram provide an excellent basis, a detailed examination of the question will not be without importance.<sup>2</sup>

It cannot involve any considerable error to assume, in the computation of ancient prices, the sum of four obols (13 cents metallic value) as the average daily pay of a common laborer two thousand years ago. Lucian,<sup>3</sup> referring to the age of Timon the misanthrope, different valuations. The complication is increased by the maintenance of other systems still, for official customs, banking calculations, etc. The accounts of the expedition in Turkish money, begun in Mytilene where *gera* is universal, were continued in that reckoning, although at Behram *cherouk* is alone in use.

<sup>1</sup> In this calculation the Turkish pound (lira) is reckoned at its gold value, \$4.37, and the medjid consequently at about \$0.81.

<sup>2</sup> I scarcely need to remind the reader of the words of Adam Smith: "Labor alone, never varying in its own value, is the ultimate and true standard by which the value of all commodities can at all times and places be estimated and compared. It is their real price; money is their nominal price only."

<sup>3</sup> Lucian, *Timon*, VI. It is of little moment, in the present consideration, whether the writer be assumed to state here the wages of his own day, or those which were customary at the earlier period.

speaks of the wages of a digger with the spade as equal to this amount, and the same also appears as the daily earnings of a porter in a fragment of Aristophanes.<sup>1</sup>

The stone-cutters who sawed the beams of the coffered ceiling of the Erechtheion were paid at the rate of one drachma, or six obols, a day,<sup>2</sup> while the carpenters who framed the roof of the same building had five obols.<sup>3</sup> This is but one half and one quarter as much again, respectively, as the average amount assumed for a day laborer. Moreover, throughout antiquity, the expenses of living were greater in Athens than elsewhere,<sup>4</sup> — even as at the present day the necessaries of life, and consequently also the wages, rule somewhat higher in large towns than in the country. It is difficult to account for the exceedingly small pay of these thoroughly trained artificers, one might almost say artists.<sup>5</sup> The salaries paid to the architect and the clerk of the works were little more than nominal, the former receiving no more than a stone-sawyer, one drachma a day; the latter no more than a carpenter, five obols.<sup>6</sup>

Of greater importance in the present calculation than the wages of such skilled hands, is the hire of marines and mercenary soldiers. The pay of common sailors in the navies of Greece and Persia, shortly before the beginning of the fourth century before Christ, seems to have been three obols a day.<sup>7</sup> This was in time of war, when able seamen were in great demand, and when, as is evident from the extraordinary

<sup>1</sup> Preserved by Pollux, VII. 133 (XXIX.). Aristophanes elsewhere (*Ekkles.*, 310) mentions wages of three obols a day.

<sup>2</sup> *Corpus Inscript. Attic.*, No. 324.

<sup>3</sup> Compare upon this point the restoration of the inscription given by Rhizos Rhankabes (Rangabé, Alexander), *Antiquités Helléniques*, vol. i. p. 68, § 2. Athènes, 1842-55. His conclusions are accepted by Boeckh (August), *Die Staatshaushaltung der Athener*, vol. i. p. 165. Second edition. Berlin, 1851.

<sup>4</sup> The authorities for this statement have been collected by Boeckh, *Ibid.*, vol. i., quoted above.

<sup>5</sup> These low salaries can hardly be explained by supposing that the honor which labor upon the noble monuments of the Athenian Acropolis might imply was regarded as a compensation, as might possibly be inferred from the statement that the very beasts of burden which had borne the stones employed in the building of the Parthenon were thereafter freed from all labor, and permitted to graze at liberty for the rest of their lives. Plutarch, *Cato Maj.*, V. 5.

<sup>6</sup> See the explanation of this interesting passage given by Rangabé, *Antiquités*, quoted above, vol. i. p. 67, § 14, and p. 78, § 4.

<sup>7</sup> Plutarch, *Alkib.*, XXXV. 5.

gratifications obtained for his men by Lysander,<sup>1</sup> every effort was made to render the service attractive. It is, of course, to be borne in mind that no expense was here incurred for food and lodging, and that, consequently, fully half as much again is to be added in computing the pay of those living under ordinary circumstances. In accordance herewith, the usual hire of soldiers maintaining themselves was fixed at four obols a day.<sup>2</sup> So general and so long continued was this rate, that the phrase *τετρωβόλου βίος* became proverbial for a trooper's life.<sup>3</sup> The lines of the Stratiotites of Theopompos,<sup>4</sup>

Καίτοι τίς οὐκ ἂν εἰκός εὖ πράττοι τετρωβολίζων,  
Εἰ νῦν γε διώβολον φέρων ἀνὴρ τρέφει γυναῖκα,

are of especial interest, not only as showing that four obols a day was an average wage, — the hire of the mercenary necessarily having been made equivalent to the ordinary pay of the agricultural laborer, — but that the expenses of living for a single individual during antiquity<sup>5</sup> stood in the same relation to his earnings as that which obtains to-day among the Greek peasants.

It is more difficult to arrive at a precise estimate of the price of grain during antiquity. One of the inscriptions found at Assos,<sup>6</sup> relates to this very subject, but the stone in question is, unfortunately, mutilated, and the text so incomplete as to afford almost no direct information concerning the most important point. Could one more letter be deciphered at the beginning of the eighth line, it would be possible to determine the price asked for the imported grain sold at Assos by the benefactor of the town in whose honor this stele was erected. A calculation of the gap, according to the restoration of Professor Ramsay,<sup>7</sup> who assumes that four or five letters only are missing from the left side of the stone, would indicate

<sup>1</sup> Plutarch, *Lysand.*, IV. 4, and the passage quoted in the preceding note.

<sup>2</sup> Eustathios, on *Iliad*, XIII. 636, Leipzig edition, vol. iii. p. 178, l. 10.

<sup>3</sup> Pausanias, quoted by Eustathios, *Od.*, I. 156, vol. i. p. 41, l. 23.

<sup>4</sup> Preserved by Pollux, IX. 64 (VI.).

<sup>5</sup> Two obols each, a day, was also the amount set apart by the inhabitants of Troizen for the maintenance of the Athenians who had taken refuge with them during the Persian invasion. (Plutarch, *Themist.*, X. 3.)

<sup>6</sup> Assos Inscriptions, No. XXV.

<sup>7</sup> Ramsay (William M.), *Notes and Inscriptions from Asia Minor*. VI. *The Inscriptions of Assos*. *American Journal of Archaeology*, vol. i. p. 149. Baltimore, 1885.



a number expressed by two letters,—that is to say, the sign for some number greater than ten. It is certainly more probable that the medimnos of wheat was sold for six than for eleven drachmas. But this method of determination is altogether too uncertain to form the basis of any further calculation. Moreover, the gratuitous distribution of food among the populace, and the sale of ten thousand drachmas' worth of grain at a rate so low as to be put on record as a public benefit, makes it almost certain that the inscription refers to a time of dearth. Hence the prices obtaining under such exceptional conditions could not have a direct bearing on the present question, even were the numeral known with certainty. A case strikingly parallel to the public-spirited action commemorated by the Assos inscription is that of certain clients of Demosthenes.<sup>1</sup> The orator relates that, in order to relieve the suffering of the poorer classes during the general distress occasioned by the assault of Alexander upon Thebes, Chrysippos and his partner, wealthy merchants of Athens, had sold a large quantity of grain at the usual price,<sup>2</sup>—five drachmas the medimnos,—although it had then risen to sixteen drachmas. The grain market of the ancients, still more than that of the moderns, was subject to great fluctuations, dependent upon the yield of the harvest, the effects of wars and blockades, and, in particular, the artificial values resulting from speculation and usury. Thus a passage in Pollux<sup>3</sup> refers to the payment of thirty-two drachmas for the medimnos of wheat,—apparently in connection with the "corner" which resulted from the infamous commercial operations of Kleomenes. Such prices can enter as little into a calculation of the normal value of cereals, as can the fabulous sums paid for small quantities of grain in besieged towns. The six or more drachmas for which the medimnos of wheat was sold to the Assians, if the proposed restoration of the inscription be correct, would thus be ruled out by the same principle which excludes the two hundred drachmas paid for the medimnos of grain by the inhabitants of Praeneste when be-

<sup>1</sup> Demosthenes, *Adv. Phorm.*, XXXVIII. (918).

<sup>2</sup> The words of Demosthenes, *καθεστηκυῖα τιμή*, can in this case only be taken to signify the normal price. Boeckh (*Staatshaushaltung*, vol. i. p. 132), at all events, refutes the assumption of Letronne (*Considerations*, p. 113), who translates the phrase in question "prix taxé."

<sup>3</sup> Pollux, IV. 165. Compare Boeckh's note (*Staatshaushaltung*, vol. i. p. 135) on the reading of this passage.

sieged in Casilinum by Hannibal,<sup>1</sup> the three hundred drachmas paid by the Athenians during the attack of Demetrios upon their city,<sup>2</sup> or the thousand drachmas said to have been paid during the siege of Athens by Sulla, when the inhabitants were reduced to eating their leather bottles, and even their shoes.<sup>3</sup>

It is thus necessary to base the present calculation upon the references concerning the value of grain in Greece during times of peace and plenty, which are to be derived from the writings of the ancient authors, and from inscriptions. A comparison of many such indications, though often widely divergent, leads to the belief that the price of wheat, during the last four centuries before Christ, maintained an average of three drachmas a medimnos, — that is to say, \$0.585 (metallic value) for 52.35 litres, or \$11.17 the stere.

Only the more important passages which have led to this conclusion need here be quoted. In the *Ekklesianousai*<sup>4</sup> we hear Blepyros complaining of having failed to receive a hectos of wheat, which he refers to as the equivalent of a triobolon, — thus estimating it at three drachmas the medimnos. This value is quite in accordance with the price of barley at about the same time. We learn from passages of

<sup>1</sup> Strabo, p. 249. The present writer has followed Boeckh in rejecting the emendation of Casaubon, who would read *μύδς* for *μεδίμνον*, — a conjecture adopted by many editors. No serious difficulty is presented by the mention of the measure, without further specification; and it is evident that, while the buyer may have saved himself from dying of hunger, during the continuation of the siege, by the consumption of a bushel and a half of grain, it is scarcely possible that he could have supported life upon a mouse! Nevertheless, the tale was widely circulated throughout antiquity, that, during this siege, a mouse was sold for a large sum: stated as two hundred denarii by Pliny (VIII. 82) and by Valerius Maximus (VII. 6. 3), and as one hundred by Frontinus (*Strategemata*, IV. 5. 20). The identity of these traditions with that given by the Greek writer is evident from the repetition of the same phrases. In view of these objections, it can only be assumed that the manuscripts of Strabo have preserved the true account of a transaction which the Latin authors have misrepresented.

<sup>2</sup> Plutarch, *Demetr.*, XXXIII. 2. Boeckh's emendation, *μῆδιμος* for *μῆδιος*, is adopted in the text; otherwise the price of grain would have been nearly double that which obtained during the much greater famine caused by the siege of Sulla. It is doubtless owing to a misprint that Boeckh's remark (*Staatshaus-haltung*, vol. i. p. 135) reads "*μῆδιος* statt *μεδίμνος*."

<sup>3</sup> Plutarch, *Sulla*, XIII. 1.

<sup>4</sup> Aristophanes, *Ekkles.*, 547.

Plutarch<sup>1</sup> and of Arrian,<sup>2</sup> relating to the time of Sokrates, that the latter grain cost one obol the half-hektos, or two drachmas the medimnos; barley being without doubt considered in Attica, as elsewhere throughout the ancient world,<sup>3</sup> to be worth two thirds as much as wheat. The same estimate for barley may be derived from Diogenes Laertios,<sup>4</sup> who speaks of the choinix as selling at two chalkoi, — certainly cheap for so late a period, as we learn from a passage of pseudo-Aristotelian *Economics*<sup>5</sup> that four drachmas the medimnos was a not uncommon price for pearl barley at Lampsakos, on the highway of the grain trade from Scythia to the Peloponnesos, and that the price was raised by the state, in an exceptional case, to half as much again.

The most important of the inscriptions bearing upon this point is a tariff of the income of certain Attic priests, dating from the first quarter of the fourth century before Christ.<sup>6</sup> In this interesting document the price of the hemihektos of wheat is fixed at three obols; but in consideration of the small quantity sold, and the practice of privileged dealers in sacrificial requisites at all periods, it is not too much to assume, with the learned editor, that the profit taken was large, — at least one hundred per cent, if we may trust the indications derived from the passages before quoted. Calculations based upon Köppen's celebrated inscription<sup>7</sup> show the medimnos to have been sold, among the Borysthenians, in the last half of the third century before Christ, for two and for four drachmas. Still, little weight can be attached to the inscription in this respect, as, unless the reading of the lines be at fault, similar calculations lead to prices possible only under exceptional conditions.

It is evident that, from the time when barter was first superseded

<sup>1</sup> Plutarch, *De Tranquillitate Animi*, X.

<sup>2</sup> Stobæus, *Flor.*, XCVII. 28.

<sup>3</sup> Compare the Sicilian prices given by Polybios, XXXIV., apud Athen., VIII. 1.

<sup>4</sup> Diogenes Laertios, VI. 2. (35).

<sup>5</sup> Aristotle, *Oecon.*, II. 7.

<sup>6</sup> Published by Boeckh, *De Inscriptione Attica Res sacras spectante*, in the *Verzeichniss der Vorlesungen der Berliner Universität*, 1835-36. Berlin, 1836. Reprinted in his *Gesammelte kleine Schriften*, vol. iv. Leipzig, 1874.

<sup>7</sup> Köppen (Peter von), *Olbisches Psephisma zu Ehren des Protogenes*. Wien, 1823. *Corpus Inscript. Græc.*, No. 2058.

by the use of coined money, and when Solon fixed the price of the medimnos of wheat at one drachma,<sup>1</sup> the value of grain relative to that of the precious metals steadily continued to increase. Letronne,<sup>2</sup> in his admirable investigations concerning the coinages of antiquity, reaches the conclusion that the average price of the medimnos of wheat, at the end of the fifth century before Christ, was two and a half drachmas. He estimates the value of wheat, compared with silver, weight for weight, to have been enhanced from 1 : 3146 in 400 B. C. to 1 : 2681 in 50 B. C. This increase is only between five and six per cent for each hundred years, and though Letronne's assumption of two and a half drachmas the medimnos may be a fraction too small, even for the eminently productive period preceding the outbreak of the Peloponnesian war, it is impossible to adopt for any subsequent age, under normal conditions, a higher estimate than three drachmas the medimnos.

This argument is borne out by an examination into the price of cereals in Rome and its dependencies. The value of wheat cannot have differed greatly in Italy and Greece, supplied as both these countries were by importation. In Rome we find, at the same period, an average price of three sesterces the modius, that is to say, \$0.127 (metallic value) for 8.72 litres, or \$14.49 the stere. The difference between this price and that which resulted from a comparison of the passages of the Greek writers before quoted is fully explained by the later dates of most of the Latin accounts entering into the estimate. The best authority is Cicero, who states that in Sicily, in his time, the modius of wheat was valued by law at three sesterces. The orator also refers to the price having, in some cases, been as low as two and two and a half sesterces,<sup>4</sup> but it should be borne in mind that this was in an exceptionally fertile and well-cultivated country, which supplied a great part of Italy with grain.<sup>5</sup> Moreover, we learn from

<sup>1</sup> Plutarch, *Solon*, XXIII. 5.

<sup>2</sup> Letronne (Jean Antoine), *Considérations générales sur l'Évaluation des Monnaies Grecques et Romaines*. Paris, 1817.

<sup>3</sup> Cicero, *In Verrem*, Act. II. Lib. III. 75, *et seq.*

<sup>4</sup> *Ibid.*, 74.

<sup>5</sup> How great weight is to be attached to this consideration is evident from the fact, that in Cisalpine Gaul—a province extraordinarily fertile, and so remote from the great grain markets of antiquity that the produce could not be transported to them—the medimnos of wheat was sold in the time of Polybios (II. 15) for the equivalent of four obols.

the same authority that four sesterces the modius was paid by the government for a quantity of wheat furnished in compliance with a levy.<sup>1</sup> In subsequent ages, under Nero, the price of three sesterces was considered remarkably low,<sup>2</sup> the value of the Roman coinage being only seven eighths of that in use before the imperial epoch.

According to the two averages thus obtained, the pay of the common laborer of antiquity, determined above, would be equivalent to a daily wage of 11.6 or of 9 litres of wheat, the mean being 10.3 litres.

From 1881 to 1883 the price of wheat at Behram varied from one and a quarter to one and a half medjids the kilo (a Turkish measure of capacity equal to 35.266 litres), that is to say, from \$28.72 to \$34.17 the stere. The sum of thirteen piasters paid by the expedition to the commonest laborers was thus equivalent to a daily wage of from 9.26 to 11.1 litres, the mean being 10.18 litres.

A comparison between these results shows that the average earnings of ancient and modern workmen, upon the same soil, differ only about one per cent: a fraction which in a calculation of this kind is not worthy of consideration. There could be no more striking illustration of the unvarying standard of human productivity maintained under circumstances almost identical.<sup>3</sup>

<sup>1</sup> Cicero, *In Verrem*, Act. II. Lib. III. 70.

<sup>2</sup> Tacitus, *Annales*, XV. 39.

<sup>3</sup> It is evident that the comparison must be strictly limited to these conditions. The differences between the modes of life in Asia Minor and in our own country to-day are infinitely greater than are those between the circumstances of the ancient and of the modern agricultural laborers in Greek lands. In the social economy of the United States and of Northern Europe we meet with factors which have no parallel in the sparsely populated tracts of the Orient,—factors which, like the high rents of dwellings and fields in congested districts, are of the utmost importance in every estimate, and forbid a comparison based upon any single item. Thus the expression of the average wages in the amount of grain for which they are exchangeable, would here be altogether misleading.

The English laborer, for instance, compared with the leisurely tiller of the Trojan plain, is forced to a much more grinding toil, while obtaining a more scanty and precarious livelihood. In Great Britain, as is well known, 10,000 landlords receive from the soil an income equal to more than twice the wages paid to their 850,000 servants. Nothing can be more certain than that the English workman is underpaid. Yet, judging from the item of bread alone, he receives nearly half as much again as does the Turk or Greek. The laborers at Assos who earned least had the equivalent of 4.74 kilograms of bread,—the oke costing three and a half piasters *gera*, or \$0.086. The poorest farm

A similar correspondence becomes evident from a comparison of the ancient and the modern prices of wine, which, as an article of consumption grown upon the soil, is, for comparison, second in importance only to the cereals. During the ages of antiquity for which the preceding calculations were made, the ordinary cost of native wine seems to have been about four drachmas the metretes, or, expressed in metallic value, two cents the litre. In the speech against Phainippos, the speaker tells us that the price, which had then risen to thrice the usual amount,<sup>1</sup> was twelve drachmas the metretes.<sup>2</sup> This is a fair average between, on the one hand, the excessively low values of Upper Italy<sup>3</sup> and Sicily,<sup>4</sup> where the metretes was sold for two obols and for one drachma respectively, and, on the other, the exceptionally fine and expensive varieties,<sup>5</sup> such as the vintage of Chios, sold at Athens, even as early as the time of Sokrates, for one mina the metretes.<sup>6</sup> The laborer of antiquity, for his four obols a day, would thus have received six litres and a half of wine. The same quantity would be equivalent, also, to the average daily wages of the workmen employed in the excavation of Assos. The fluid oke of Tenedos or Mytilene wine was sold, in 1883, for one piaster and a half *gera* (three fortieths of a medjid), — that is to say, for about six cents the litre. Six litres and a half would consequently have cost somewhat less than half a medjid.

The relative cost of meat cannot be so accurately determined ; still it is sufficiently evident that in this article of food, as in grain and wine, there was a general agreement between the ancient and modern values. No beef is now to be had in the Troad, cattle being kept

laborers in Essex, Suffolk, and Norfolk, hired for twelve shillings a week, and buying the quartern loaf for fivepence, or, as at present, for fourpence, receive 6.9 or 8.6 kilograms a day. Notwithstanding this, the latter is decidedly the worse off.

<sup>1</sup> Demosthenes, *Adv. Phaen.*, XXXI. (p. 1048. 24).

<sup>2</sup> *Ibid.*, XX. (p. 1045. 4).

<sup>3</sup> Polybios, II. 15.

<sup>4</sup> *Ibid.*, XXXIV., apud Athen., VIII. 1.

<sup>5</sup> A fragment of Alexis (in Athenaios, III. 86) shows the chous to have been retailed at ten obols. At this rate the metretes would have cost twenty drachmas. But this price is given by the play-writer as an instance of the extortionate charges of the Athenian cooks; moreover, it was asked for wine provided at a banquet, and doubtless of superior value.

<sup>6</sup> Plutarch, *De Tranquillitate Animi*, X.

solely for the purpose of drawing the plough and treading out the grain. The ample information possessed concerning the value of oxen, in ancient times, is thus not directly available for this comparison. The flesh of goats is that most commonly eaten by the present inhabitants; but the passages of the classic authors referring to the price of these animals do not afford a basis for trustworthy calculation. As to sheep, a laborer can to-day earn a fine animal, costing about three medjids and a half, by the work of from seven to nine days. This would lead us to expect the value of a sheep to have been, in ancient times, between five and six drachmas. About the same amount results from computations based upon the exceptionally low prices obtaining in Greece in the age of Solon,<sup>1</sup> and in Lusitania at a later period,<sup>2</sup> if we may suppose these values to have compared with those of the fourth century, under normal circumstances, in the same ratio as did the prices of cereals. The estimates based upon these values, recorded by Plutarch and Polybios, agree perfectly; they are more applicable to the present case than are such of the prices given in ancient literature as refer to exceptionally fine animals, to be offered upon the altars of the deities. It does not conflict with the assumption of an average cost of between five and six drachmas, that, for instance, in a fragment of Menander,<sup>3</sup> the price—and, let it be observed, the maximum price—of a sacrificial sheep is estimated at ten or twelve drachmas.

The expense of clothing, extremely small in both cases, seems to be even less in modern than it was in ancient times. According to a passage preserved in Pollux,<sup>4</sup> a chlamys cost the weight of three (silver) staters,—that is to say, twelve drachmas; a mantle is referred to by Aristophanes<sup>5</sup> as worth four staters,—sixteen drachmas; and Sokrates<sup>6</sup> thought ten drachmas cheap for a workman's sleeveless exomis. But these are only portions of the ancient dress, and the gala costume of a Mohammedan potter of Chanak Kalessi,<sup>7</sup> strik-

<sup>1</sup> Plutarch, *Solon*, XXIII. 5.

<sup>2</sup> Polybios, XXXIV., apud Athen., VIII. 1.

<sup>3</sup> In Athenaios, IV. 27, and VIII. 67.

<sup>4</sup> Pollux, VI. 165 (XXXVII.).

<sup>5</sup> Aristophanes, *Ekkles.*, 413.

<sup>6</sup> Plutarch, *De Tranquillitate Animi*, X.

<sup>7</sup> For a photographic illustration of this costume see Hamdy Bey and De Launay, *Costumes populaires de la Turquie en 1873*, Part. 2, Plate III. Con-

ing and even magnificent as it is, costs, all in all, only about three medjids and a quarter (\$2.63). If the peasant of ancient Attica could earn one of his garments by the work of two or three weeks, the modern inhabitant of the Troad can procure his serviceable and picturesque suit by the work of little more than eight days. It is true, the costume of the fashionable Greek of Mytilene,<sup>1</sup> with its rich embroidery, is rather more expensive, costing about ten medjids, but this is a far more elaborate dress than the simple garb which the *palikaria* wore while at work, and is treasured up in chests of cypress-wood, to be displayed only on saints' days and wedding feasts.

#### DRESS, FOOD, AND MODES OF LIFE.

The costumes of the Turkish workmen were bright in color, and gracefully worn. The sway of changing fashion is unknown in the East, and the garments and accoutrements of the country people are still the same as those engraved by Manno, three centuries ago.<sup>2</sup> The turban is reduced in size, and is now worn only by old men; but the red fez is generally wound around with some wisp of colored stuff. A good Mohammedan never bares his head in public, — the only exception on record being the act of Selim I. after the conquest of Cairo, — and the Turk has certainly found in the fez and turban cloth the most becoming, as well as the most comfortable covering.

So great has been the influence of the conquering race upon its cringing subjects, that the dress of the Greeks is now of the same general character as that of the Turks. Few reminiscences have been retained of the costumes of the Byzantine Empire, or of those of the Frankish occupation of Mytilene.

In respect to one article, however, the Greeks have preserved stantinople, 1873. The expense of the suit is here estimated at fourteen franca. As usual, the dress of the potter's wife, more richly ornamented, costs considerably more than his own.

<sup>1</sup> *Ibid.*, Plate VIII. The writer must admit that he has never known a Greek of Mytilene, or indeed of any of its neighboring islands, to wear such a fustanella as that shown in this photograph. Notwithstanding this, the estimate of the cost of the gala dress may be admitted without question.

<sup>2</sup> These engravings, published in Denmark and signed F. Manno, are dated between 1570 and 1582.



a manner of make well known in classical antiquity. While the Turks depend altogether upon cobblers for their shoes,—the pointed and turned up toes of which are characteristic of a derivation from the Far East,—every Greek workman makes his own foot covering; forming, from a single piece of untanned ox-hide, the same brogues as those described by Hesychios<sup>1</sup> as ἀγροικικὸν ὑπόδημα μονόδερμον,—which froze to the feet of Xenophon's soldiers,<sup>2</sup> and are referred to in the Pastorals of Longos<sup>3</sup> as having been worn by the peasants of this very neighborhood. These sandals, to-day called τζαρούγια, are the καρβατίνας of the ancients. The skin, after being thoroughly dried, is soaked in oil until it is pliable; the edges are turned up at the sides of the foot, perforated, and laced into position with thongs of the same material, the ends of which are long enough to be wound around the ankle and lower leg. The hair is left upon the outside, curiously enough, and soon wears off from the sole. Such simple articles of daily use, made by the common people according to traditional forms, are much less liable to the innovations of improvement than are the manufactures of trained workmen. This peculiar foot covering offers one of the best instances of the continuity of ancient customs among the modern Greeks.

In October, all the men, Turks as well as Greeks, began to knit diligently upon their stockings of coarse undyed wool, spending their evenings, and even the shorter pauses of the day, in this employment, which naturally called to mind the fact that many varieties of work now considered fit only for women—such as embroidery<sup>4</sup>—were, in Greek antiquity, practised by men.

The Greeks of this unfrequented coast are, indeed, as a writer of the time of James I. has described them: "A happie people that liue according to nature; and want not much, in that they couet but little. Their apparrell no other than linnen breeches; ouer that a smocke close girt unto them with a towell; putting on sometimes long sleeuelesse coates of homespun cotten. Yet their backs

<sup>1</sup> Hesychios, *sub voce καρβατίνον*. Compare also the definitions given by Photios *s. v. καρβατίνη*, and Pollux, VII. 88.

<sup>2</sup> Xenophon, *Anab.*, IV. 5. 14.

<sup>3</sup> Longos, II. 3.

<sup>4</sup> Aischines, *In Timarch.*, XL.

need not enuie their bellies: Biscot, Oliues, Garlicke, and Onions being their principall sustenance. Sometimes for change they will scale the rocks for Sampier, and search the bottome of the lesse deepe seas for a certaine little fish (if I may so call it) shaped like a burre.<sup>1</sup> Their ordinarie drinke being water: yet once a day they will warme their blouds with a draught of wine, contented as well with this, as those that with the rarities of the earth do pamper their uoracities."<sup>2</sup>

The food of the workmen has been referred to in the First Report,<sup>3</sup> where it was pointed out how closely the present ways of life resemble those of antiquity. The alimentary resources of Behram are scant, even for Asia Minor. The chief meat is the stringy flesh of goats. The sheep of the country, which are of the *κοιριούκα* or fat-tailed variety (*Ovis steatopygos*), are not to be had at all seasons. In classic times Assos was famed for its enormous swine;<sup>4</sup> but, owing to the religious prejudices of the Turks, there are now no tame pigs in the Southern Troad. The Turkish husbandmen on the upper Touzla kill great numbers of the wild boars which descend from the wooded heights of Ida to ravage the cultivated fields; yet the savory meat is never eaten, and the bodies are left as they fall. Occasionally, Greek villagers were induced to bring the young and tender boars to the port,—a task which they undertook with many precautions. But during the second year an unfortunate incident altogether stopped this supply. A small animal was brought at night to Behram, and left for some hours in the shop of a Greek bakhali. Here it was discovered by an orthodox Mussulman, and for some time thereafter the premises which had harbored the unclean flesh were avoided by all the Turks of the neighborhood. It resulted from this species of boycotting that the *corpus delicti* was the last eaten at Assos by the explorers.

<sup>1</sup> The edible sea-urchin (*Echinus esculentus*), a favorite food of the ancients. Compare the passages collected in Stephanus's *Thes.*, s. v. *ἐχίνος*.

<sup>2</sup> Sandys (George), *A Relation of a Journey begun 1610. Foure Bookes. Containing a Description of the Turkish Empire, of Ægypt, of the Holy Land, and of the remote Parts of Italy and Islands adjoining.* (First edition.) London, 1615. This well-known and once popular book went through four editions during the reign of Charles I.

<sup>3</sup> *Report*, p. 26.

<sup>4</sup> Ptolemy VII., *Physkon*, quoted in Athenaios, IX. 17.

Fresh and salted fish are to be had in abundance, and are still as important an article of food as in classical antiquity. On two occasions, during the stay of the expedition, great schools of fish played along the coast, so closely crowded together that they could actually be caught by hand. The villagers, lounging in the cafés and shops of the little port, were informed by a general clamor of the appearance of the prize, and rushed into the water waist-deep, using their garments as casting nets, and dragging the fish on shore by hundreds. Naturally, the Gulf of Adramyttion is much frequented by fishermen, craft coming to it even from Apulia and Malta. The variety of the fish caught within sight of Assos is very great; investigations made in this region by a scholar as learned, in the present state of science, as was Belon in the sixteenth century, or Sibthorp a hundred years ago, could not fail to throw much light upon the ichthyology of the ancients.

Not only can we trace the classic origin of almost all the names by which the fish are still called, but we may recognize, in the means employed for their capture, those in use among the ancients. The methods of the modern fishermen form in many ways an interesting commentary on the Halieutics of Oppian, of Pankrates, and of Ovid.<sup>1</sup> At nightfall, in calm weather, the fishing boats left the little port, each having, in a cresset projecting beyond the prow, a bright fire of resinous wood. Attracted and dazed by the glare, the fish were speared in great numbers. The boats were kept near to the shore, and the flames lighted up the field of ruins upon the slope towards the sea. Far in the distance could be seen the fires kindled by the fishermen of Mytilene and of Aivaly. This spearing by torchlight, now known as *περιφάνευμα*, was customary in antiquity, served Plato as an illustration in one of his Dialogues,<sup>2</sup> and has been described by Oppian.<sup>3</sup>

The wholesale poisoning of fish, which excited the repugnance of the poet, and gave occasion to one of his finest similes,<sup>4</sup> is also

<sup>1</sup> Tchihatchef (*Asie Mineure*) remarks, with great truth: "Les opérations des pêcheurs de l'Anatolie sont encore au point où elles se trouvaient il y a plus de seize siècles (du temps d'Ælien)." Unfortunately, the work of the great Russian naturalist and explorer does little more than record a few disconnected observations concerning this subject.

<sup>2</sup> Plato, *Sophist.*, V. (p. 221, d.).

<sup>3</sup> Oppian, *Hal.*, IV. 640-643.

<sup>4</sup> *Ibid.*, IV. 644-693.

practised to-day, although more frequently in the mill-races of the Touzla than in the open sea. The plants employed for the purpose are those whose fish-poisoning qualities were known to the ancients: a kind of mullein (*Verbascum phlomoides* ?), referred to by Aristotle;<sup>1</sup> and the spurge<sup>2</sup> (*Euphorbia characias* ?), seven varieties of which are described by Dioskorides.<sup>3</sup> The first of these is still called φλομό by the common people. That this method of killing fish has been handed down from ancient times in unbroken tradition is proved by the occurrence of the expression φλομομένω ψάρη in the Byzantine version of the novel of Apollonius of Tyre,<sup>4</sup> dating, according to Hagen,<sup>5</sup> from the thirteenth century.

The vertebrae of sharks were often found among remains referable to the classic period. One specimen, taken together with various playthings from the tomb of a child (sarcophagus No. 97), was cut to serve as the hub of a wheel for a toy cart. This whit-

<sup>1</sup> Aristotle, *Hist. Animal.*, VIII. 20α (13).

<sup>2</sup> Schliemann states, in his *Reise in der Troas im Mai 1881*, Leipzig, 1881 (translated and reprinted in his *Troja*, London, 1884, Appendix I.), that his horses, when crossing the range of Ida, were muzzled to prevent their cropping the herbage by the wayside. He gathered that this was on account of a mysterious plant, known as *Agöl*, which within a few hours causes the death of any animal eating of it, but which is harmless after flowering in the month of July. It may be observed, in reference to this "hochwichtige Thatsache," that the Turkish word *Agöl* signifies spurge. As animals instinctively avoid this plant, no fear of poisoning is entertained by herdsmen of experience. Moreover, the plants of the genus *Euphorbia* have the same qualities in the autumn as in the spring. Schliemann's statement, upon the authority of his guide, that no animals whatever are allowed to graze on the heights of Ida before the middle of July, is, at all events, incorrect. Great herds are driven to the mountain pastures long before that season.

<sup>3</sup> Dioskorides, CLXII., ed. Kuehn, 162.

<sup>4</sup> This work, reminiscences of which are still to be traced in a popular tale of the Gulf of Adramyttion (compare p. 003, note 1), has been accessible to the writer only in the form of a chap-book, printed at Venice in 1778. A copy of the original edition, in the library of Munich, which Dr. A. Emerson had the kindness to examine, bears the title, *Διήγησις ἑρρωσμένη, Ἀπολονίου* (so written throughout) *τηῦ* (sic) *ἐν Τύρω, βιβλίον*, and concludes, "Stampato in Vinegia per Christoforo Zanetti, MDLIII." The passage in question, line 896 of the poem, reads, *καὶ ἐβίβαν εἰς τὸ πέλαγος σὰν φλομομένω ψάρη*, — "And he came up to the surface like a poisoned fish."

<sup>5</sup> Hagen (Hermann), *Der Roman vom König Apollonius von Tyrus, in seinen verschiedenen Bearbeitungen*. Berlin, 1866.

ting of an Assian father is now preserved in an archæological museum, after having lain with the ashes of the dead for more than twenty centuries. The investigations of Reichert and Peters<sup>1</sup> have shown that sharks formed a common article of food in the northern Troad, during the earliest ages of antiquity; but the modern Greeks expressed abhorrence at the idea of eating this fish.

There can be no doubt, on the other hand, that the *μέγα κῆτος* which devoured the unfortunate Thrasis in these waters<sup>2</sup> was a shark. A pointed fin was occasionally seen above the surface, unpleasantly near the bathing-place of the expedition; and, within the memory of the present generation, sponge divers have been killed by sharks. A case in point, which happened off the neighboring Tenedos, is related by Ross.<sup>3</sup> Still, the divers seem to apprehend no danger, although the light rubber armor with which they are now generally provided could afford no adequate protection.

Few sponges are to be gathered on the northern coast of the Gulf of Adramyttion, and only once during the stay of the expedition was a professional diver seen at Behram. His visit was brought about by an accident which attracted the entire population of the village to the shore, but this was of a more harmless nature, and of a happier issue than those before mentioned. The case was as follows. In the summer of 1882 a Turk of Behram, in charge of a small coasting vessel, returned from Smyrna with the money of his employer, received in payment for a cargo of valonea. Fearing that his gold pieces might be stolen, he had tied them in a bag and stowed them away among the stones of his ballast. By some neglect this bag was left in its hiding-place after coming into port, and was cast out with the stones. Now, because of the increasing shallowness of the little port, the leading men of Behram enforce a rule that nothing shall be thrown overboard within the mole. The vessels have consequently to be rowed outside, in order to discharge ballast. Thus it came about that the gold was sunk at a great depth. The sum, eighty pounds, was a fortune to the

<sup>1</sup> In Virchow (Rudolf), *Beiträge zur Landeskunde der Troas*. Berlin, 1880.

<sup>2</sup> Leonidas, in *Anthol. Palat.*, VII. 506.

<sup>3</sup> Ross (Ludwig), *Reisen auf den griechischen Inseln des ägäischen Meeres*, vol. ii. Stuttgart and Tübingen, 1840-43.

poor captain. After desperate attempts to pull himself down to the bottom by means of an anchor chain, he rowed at night to Aivaly, in search of help. There he fortunately found a diver, who came to Behram on the following day, bringing with him all the apparatus of his profession. The search was rendered difficult by the depth of the water, but in about an hour the precious bag was found. Those who were with the Turk in the vessel, and shared his anxious expectation, will not forget the expression of his face, and his joyful outcry, when the diver, looking in his armor like some monster of the sea, rose to the surface with the gold in his hand.

On days when there was no work the Greeks diligently gathered a species of acephalous mollusk, undoubtedly the same *Ascidia* described by Aristotle,<sup>1</sup> and used as food in the time of Homer.<sup>2</sup> Heaps of shells among the refuse thrown outside the city walls during ancient times show that the oysters of the Hellespont—so highly praised by Arcestratos,<sup>3</sup> that Hesiod of epicures, and famed as late as the time of Virgil<sup>4</sup>—were appreciated by the ancient inhabitants of Assos as well as by those of Ilion and Thymbra.<sup>5</sup> But, as the Turks eat no shell fish of any kind, the beds are little cultivated, and oysters are not now to be had in the Southern Troad.

The bread was always good, — as might naturally be expected in a district which from the earliest ages has been celebrated for the superior quality of its cereals. So highly prized was the wheat of Assos, that it was chosen from among all the varieties of the East-

<sup>1</sup> Aristotle, *Hist. Animal.*, IV. 6.

<sup>2</sup> Homer, *Il.*, XVI. 747. Notwithstanding the direct testimony of Athenaios (III. 39) and Suidas (*sub voce*) there can be little doubt that the *τῆθος* of Homer is not, as commonly rendered, the oyster, but is identical with the mussel described by Aristotle.

<sup>3</sup> Arcestratos, in Athenaios, III. 44.

<sup>4</sup> Georg. I. 206:

“ . . . in patriam ventosa per aequora vectis  
Pontus et ostriferi fauces tentantur Abydi.”

<sup>5</sup> The *Ostrea cristata*, or *plicatula*, was found at Hanai-Tepeli; the *Ostrea lamellosa*, at Hissarlik. An interchange of these names in Appendix IV. of Schliemann's *Ilios* is corrected by Virchow (Rudolf), *Alltroyanische Gräber und Schädel*. Berlin, 1882.

ern world to supply the table of the luxurious kings of Persia, and was exported even to Susa,<sup>1</sup> a distance, by sea and land, of over two thousand miles, — enormous for the commercial relations of the time. The fields which now produce the finest wheat are those upon the north of Behram, just beneath the walls of the ancient city, in the alluvion brought down by the little river from the detritus of the limestone and volcanic formations of Ida. The celebrity of the harvests of Assos was shared by those of the neighboring Gargara, its colony, the fertility of this country having been renowned even in distant Italy: —

“ Hinc grata Cereri Gargara, et dives solum,  
Quod Xanthus ambit nivibus Idæis tumens.”<sup>2</sup>

Equally renowned in antiquity was the grain of the opposite island, by which the supply of the ill-cultivated Troad has now to be eked out. Chief among the bounteous gifts of Demeter, Arcestratos<sup>3</sup> reckoned the bread of Lesbos, made of flour whiter than driven snow; such were the loaves of which the gods themselves did eat, obtaining them through Hermes, their steward and their messenger.

The wheat grown in the valley of the Touzla is mostly ground in a mill of primitive construction, the overshot wheel of which is turned by the stream. Handmills are, however, still in use, and a number of saddle-queens, found beneath the pavement of the temple during the course of the excavations, were carried off by the Turkish villagers to be again put to the use for which they were roughly hewn in prehistoric ages.

The dairies of the country are almost altogether in the hands of the Yuruks, a nomadic race whose tents were pitched in all parts of Asia Minor,<sup>4</sup> and who, attracted by the wide expanses of uncul-

<sup>1</sup> Strabo, p. 735. Strabo probably derived his information concerning the habits of the Persian kings from Poseidonios. The latter is quoted by Athenaios (I. 51) as stating the facts in regard to the wine of Chalybon, which are also mentioned by the geographer.

<sup>2</sup> Seneca, *Phœn.*, IV. 608. Compare also the lines of Virgil, *Georgics*, I. 102, 103.

<sup>3</sup> Arcestratos, in Athenaios, III. 77.

<sup>4</sup> A picturesque account of the Yuruks is given by Choisy (Auguste), *L'Asie Mineure et les Turcs en 1885*. Paris, 1876.

tivated land and the excellent pasturage of Mount Ida, are particularly numerous in the Troad.<sup>1</sup> Although undoubtedly of Tartar origin, they are quite distinct from the Osmanlis, who look down upon them as an inferior race.

The Greeks eat little butter, and, like their ancestors, regard it rather as a medicine than as a food.<sup>2</sup> Its place upon the table, and especially in the cuisine, is taken by olive oil. This was also true of the ancients, being in great measure due to the exigencies of the climate. As in antiquity, butter is looked upon as an aliment peculiar to the barbarians, — to the Turks of the present, as to the Scythians of former times, — and among them its use, to repeat the words of Pliny,<sup>3</sup> still distinguishes the rich from the poor. The Yuruks, at least in the Troad, themselves consume but little of this much-esteemed fat, which is produced in small quantities, and is taken by the wealthier villagers in exchange for the few manufactured articles required by these primitive tribes.<sup>4</sup> It is at best only to be had during the early months of the year. The fierce heat of summer so completely destroys the herbage, that the cattle would perish of starvation were they not driven from the arid plains to the cool and green heights of Ida. Among the Yuruks the churning is effected by means of a goat-skin, which, being filled with milk and securely tied, is rocked about until the globules are deposited upon its sides.<sup>5</sup> The butter thus obtained is scraped from the skin, mixed with an excessive quantity of salt, and melted into earthenware pots. From these it can be generally poured, and eaten rather as a liquid than as a solid.

Far more appetizing is the *yaourt*, or curdled milk, the *δξίγαλα* of the classics, which is one of the chief articles of food of the

<sup>1</sup> Photographs of Yuruks of the Troad are given in Hamdy Bey and De Launay, *Costumes*, Part. 2, Plates IV. and V.

<sup>2</sup> Compare the references in Dioskorides, II. 81, ed. Kuehn, p. 200; and in passages of Galen, too numerous to quote.

<sup>3</sup> Pliny, *Nat. Hist.*, XXVIII. 35: "E lacte fit et butyrum barbararum gentium lautissimus cibus, et qui divites a plebe discernat."

<sup>4</sup> The chief employment of butter, by the Turks of Asia Minor, is in the cooking of the *pilaf*, or *bulgur*, a dish of unsweetened rice which forms a staple article of food.— J. R. S. S.

<sup>5</sup> These skins are in some cases suspended, and the churning is then done with an upright dasher.— J. R. S. S.



Turks, as it was of the ancient Persians<sup>1</sup> and Scythians.<sup>2</sup> The two methods of making it practised by the Yuruks are precisely the same as those known in antiquity.<sup>3</sup> Actual delicacies are the *mysithra*, or fresh cream-cheese, and the *kaimak*, or clotted cream. The secret of these preparations, which apparently were unknown to the ancients, and are unequalled by the products of the most renowned dairies of Europe, must have been brought by the Turks from their original homes in the far interior of Asia.<sup>4</sup> The *kaimak*, at all events, is described by a hungry traveller in this country, a generation before the Mohammedan conquest of Constantinople.<sup>5</sup> During the past five centuries the customs of the Turks have changed even less than those of the Greeks.

The wine of this district was famed throughout antiquity equally with its wheat; the produce of the parent city, and of the colony of Assos, being classed together by Ovid in an extravagant parallel:

“Gargara quot segetes, quot habet Methymna racemos,  
Aequore quot pisces, fronde teguntur aves,  
Quot caelum stellas, tot habet tua Roma puellas.”<sup>6</sup>

The praises bestowed by the ancients upon the wine of Lesbos were endless, and exhaust the commendatory adjectives of the classical dictionary.<sup>7</sup> The vintage of Methymna, in particular, was

<sup>1</sup> Plutarch, *Artax.*, III. 1; and also Ctesias, *Ind.*, XXII., ed. Lion, p. 193.

<sup>2</sup> Strabo, p. 311.

<sup>3</sup> Pliny, *Nat. Hist.*, XXVIII. 36. The more common of these methods is mingling a portion of old curds with the fresh milk.

<sup>4</sup> The best *kaimak* is made from sheep's milk, which is boiled for several hours while being constantly stirred. A considerable part of its water is thus evaporated. It is then permitted to cool very gradually, and the cream is removed by skimming.

<sup>5</sup> La Brocquière (Bertrandon de), *Voyage d'Outremer et Retour de Jérusalem en France par la Voie de Terre, pendant 1432 et 1433. Ouvrage extrait d'un Manuscrit de la Bibliothèque Nationale, remis en Français moderne.* Par Le-grand d'Aussy. In Hakluyt (Richard), *Collection of Early Voyages, etc.*, vol. iv. New edition. London, 1809-12.

<sup>6</sup> Ovid, *Ars Amandi*, I. 56-58.

<sup>7</sup> Many references of ancient authors to the wine of Lesbos are given by Plehn (Severus Lucianus), *Lesbiacorum Liber*, Berolini, 1826. The verdict of antiquity may be summed up in the words of Alexis (in Athenaios, I. 51):

Λεσβίου πάματος  
Οὐκ ἔστιν ἄλλος οἶνος ἠδίων πιεῖν.

regarded as one of the choicest;<sup>1</sup> and the grapes of this town were extolled even by Virgil,<sup>2</sup> whose testimony in their favor is of especial interest, as that of a tiller of the fertile soil of Italy.

There can be little doubt that, during antiquity, the vine was extensively grown on the slopes of Assos. The importance of this cultivation, on the continent as well as on the island, is attested by the wide repute of the extract of vine leaves made in the neighboring town of Adramyttion.<sup>3</sup> The nature of this preparation is not fully known, but it was believed by the ancients to be good for the stomach, and to have the admirable effect of keeping the mind clear. As Edremit has a considerable Greek population, the vineyards in that neighborhood are still of great extent; but Behram is altogether dependent upon the opposite coast for grapes and wine. The change of race which is gradually taking place throughout the Troad is destined to effect a revolution in the agricultural conditions of the country.

Asia Minor is so mountainous that few of its larger towns are without a supply of snow, which is used, as in antiquity,<sup>4</sup> to cool the wines of the Greeks, and the sherbet, milk of almonds, and other sweet drinks of the orthodox Turks.

Near the highest peaks of Ida the writer has seen, as late in the season as the middle of September, great quantities of snow, stored in enclosures of stone and brushwood, and covered with thick layers of leaves and earth. A fragment of a contemporary history of the campaigns of Alexander<sup>5</sup> shows that this was the very method of preserving snow practised by the Greeks during the siege of the Indian city of Petra. This snow, packed in great saddle-bags of felt, is carried upon the backs of mules from the heights of Ida

<sup>1</sup> Galen ranks the wine of Methymna second only to that of Eressos, *Method. Medend.*, XII. 4, ed. Kuehn, vol. x. p. 832.

<sup>2</sup> *Georgics*, II. 89:

“Non eadem arboribus pendet vindemia nostris  
Quam Methymnaeo carpit de palmite Lesbos.”

<sup>3</sup> Athenaios, XV. 38.

<sup>4</sup> The custom of cooling wine with snow is referred to by Xenophon (*Mem.*, II. 1. 30), and by a host of authors quoted in Athenaios (III. 97-99). Thus we learn from a fragment of Euthykles (*loc. cit.*) that snow was regularly sold as a commodity.

<sup>5</sup> Chares of Mytilene, in Athenaios, III. 97.

to the market-places of Edremit and Bergama. Its gathering and removal is a business of such importance that rude huts are built, high above the timber line, for the shelter of those engaged in the work; while beacons of stone are erected to mark the site, which would otherwise be trackless after the autumn storms have covered the earth. But there was not sufficient demand for snow among the poor villagers of Behram, or indeed in any part of the Troad, to repay its transportation from the Qaz-dagh towards the west. The workmen, unable to obtain the luxuries of Alexander, resorted to the method of cooling known to King Antiochus.<sup>1</sup> The water was kept in vessels of porous earthenware, sprinkled from time to time, and placed by day in the shadow of some great stone near the working-place, and by night upon the house-tops, where a light breeze was generally stirring. The evaporation kept the contents so cool that on very dry and windy days the water seemed almost to have been iced.

None of the Greek workmen lived in the village. They were all immigrants, and found more congenial company among the bak-hals, petty traders, and fishermen at the port. Accommodations were provided by the four small houses at the water side, which were at the same time cafés, shops, and bakeries. Here the Mytileneans hung up the bags of goat-skin containing their Sunday apparel; and here, during the colder months of the year, they slept, closely packed together upon the dais of the cafés, or stowed away upon the shelves of the grocers and bakers.

In midwinter this life was decidedly uncomfortable. The cold was bitter, and the winds searched through the badly built houses. Although one of the two rooms occupied by the expedition had the exceptional advantage of glazed windows, it was still found impossible to warm it by means of the *mangal*, — a modern representative of the charcoal brazier held by Skiron in the relief upon the Tower of the Winds.<sup>2</sup> In February, 1883, the dwelling was so cold that

<sup>1</sup> Protagorides, in Athenaios, III. 98.

<sup>2</sup> A chapter in Rigler (*Die Türkei*, Erster Theil) deals with the *mangal*, and with the *tandur*, — an arrangement of wadded blankets, like a gigantic tea-cosey, used in connection with it. The work of this eminent physician, long a resident of Constantinople, gives one of the best accounts of Turkish customs ever published. It is, however, not entirely free from plagiarism; the author has copied extensively from the very books which he criticises with so much asperity.

it was impossible to write or to draw for any length of time. At this season the digging itself was delayed through hardships which would seem rather in keeping with an Arctic than with an Oriental expedition. Great fires were kept up during the day within the Atrium, which was then being freed from earth, and the men ate their midday meal at the bottom of a large trial pit, singeing the hair upon their sandals in the endeavor to keep warm. At night-fall they huddled around the baker's oven, a comfortable lounging-place corresponding to the "seat at the smith's forge," against whose temptations Hesiod warns the country laborer.<sup>1</sup>

In the summer time these uninviting quarters were exchanged for the flat house-top of the oldest café. But as its timbers were weak, and sagged in a threatening manner under the weight, the number of sleepers was strictly limited by the proprietor. Those excluded from the roof lay around the fountain, and between the houses and the shore. As they were here liable to be disturbed by sniffing dogs, or by a troop of camels on a stampede, they would often, in the middle of the night, steal upon the roof from the slope behind, and for a while sleep peacefully with their fellows. Presently a cracking of the timbers would alarm the *café*dji, who, becoming aware that the number of those licensed to lie upon his house-top had been exceeded, would drive off the intruders with imprecations and blows. In the clamor which ensued, the chorus of dogs played an important part, appearing promptly upon the scene, and continuing its noisy discourse long after the original interlocutors had been silenced.

Indeed, the dogs generally whined and howled the whole night long, giving warning of the approach of any stranger by especially savage barks. The plaintive grumbling and spluttering of the camels, of which no less than sixty or seventy were often to be seen together at the port, the bleating of tightly packed ship-loads of sheep and goats, awaiting in extreme discomfort a wind favorable to their passage across to Skamnia, and the occasional shriek of an owl or howl of a jackal from the ravines above, united with the hoarse voices of the dogs in a most discordant nocturne.

<sup>1</sup> Hesiod, *Works and Days*, 493. That the brazier's forge was even regarded as an inn, in the earliest ages, is evident from the words addressed to Odysseus by Melantho, Homer, *Od.*, XVIII. 328.

One might suppose that this ceaseless disturbance would render the dogs useless as a watch. The experience of the natives throughout the East has, however, taught them otherwise. There is a well-known Turkish saying, that a dog does not whine and sleep at the same time; moreover, the fury of his bark, and the entire change of its tone, when a suspicious person does approach, is quite sufficient to warn the entire community. There is nothing really startling in the usual vociferations of the Turkish dogs, and the villagers think it well that whoever may be prowling around their dwellings by night should be informed afar off that these sentries are awake. Their ordinary whine is nothing more than a continual report to the garrison that all is well. The student of history will recollect that it was through this very change of tone in the voices of the dogs that the citizens of ancient Messene became aware of the presence of the Lakedaimonians within their walls.<sup>1</sup>

The breed of ownerless and half-wild dogs in the Troad is the same as that of Constantinople, so often described. Still, the difference in the appearance of the animals is astonishing. The wretched curs who are kicked aside in the dirty streets of Galata are spiritless and pitiful; but in the interior of Asia Minor, where the dogs are esteemed as the guardians as well as the scavengers of the village, they are fierce and upright of bearing, although usually half famished.

#### FLORA AND FAUNA.

The admirable contributions of Webb, Tchihatchef, and Virchow to our knowledge of the natural history of the Troad leave little to be said by the non-professional writer concerning the animals and plants of this district. Still, the field is so extensive, and of such exceptional interest, that much remains to be done by well-equipped specialists. The American expedition esteemed itself fortunate in being able to entertain at Assos, for some weeks during the spring of 1883, Mr. Paul Sintenis, a gentleman sent out by the Botanical Museum of Berlin to make a thorough investigation

<sup>1</sup> Pausanias, IV. 21. 1.

of the flora of the Troad.<sup>1</sup> The publication of his reports, and of the descriptions of his extensive collection, will throw more light upon the botany of this part of Asia Minor than do all the works relating to this subject which have been cited and compiled by Ascherson.<sup>2</sup>

The long sojourn of the American explorers in the country gave them, however, the opportunity of observing a number of wild beasts, — such as boars and bears, — which, as they are seldom to be seen in the lowlands except when driven from their native forests by extreme cold, did not come under the notice of the writers before referred to, most of whom made but a comparatively short stay in the Troad, visiting the remote and sparsely populated districts only during the pleasant months of the year. Some observations concerning the wild boars, which still roam the upper valley of the Satnioeis in great herds, have been made in connection with the representations of this animal upon the reliefs of the chief temple of Assos. The bears of the Ida range, “mother of wild beasts,”<sup>3</sup> seem to have escaped notice by modern travellers. Two fine specimens, a she bear and her cub, were met with by the writer in the autumn of 1882, near the headwater of the Qoja Tchai.<sup>4</sup> They were of the common brown variety, and appeared to differ in no respect from the shaggy and short-snouted animals which are led through Hungary and Lower Austria by strolling players. During the later ages of antiquity these bears of the Troad were renowned for their fierceness and strength, and were especially prized by those great showmen among the ancients, the contractors of the amphitheatre, whose task it was to supply the savage beasts baited in the arenas. One of the letters of Libanios<sup>5</sup> expresses the intense interest felt by that distinguished sophist in an attempt made by his fellow citizens to obtain from Mount Ida a number of bears for a gladiatorial combat to be held at Antioch.

<sup>1</sup> A preliminary notice of the researches of Mr. Sintenis is given in the *Verhandlungen von dem botanischen Verein für die Provinz Brandenburg*, vol. xxv. Berlin, 1884.

<sup>2</sup> Ascherson (Paul), *Catalogue of the Plants hitherto known in the Troad*. Appendix VI. to Schliemann's *Ilios*.

<sup>3</sup> Ἰδην δ' ἕκαστον πολυπίδακα, μητέρα θηρῶν. *Il.*, VIII. 47.

<sup>4</sup> The ancient Aisepos.

<sup>5</sup> Libanios, *Epist.*, 1454, ed. Wolfius, p. 665.

A kind of large black snake, common at Assos, has been identified as the *Coluber acontistes*. Two specimens, killed by the men while at work, were found to measure not less than two and two and a half meters in length. Although not poisonous, they were much dreaded by the Greek laborers, and it was undeniably disagreeable to the surveyor, occupied with a large drawing-board upon his lap, to have one of these enormous reptiles glide forth from a heap of ruins beneath him, and across his leg. These serpents are without doubt the same as those of Pella, described by Lucian<sup>1</sup> as having been employed with success in the juggling tricks of Alexander of Abonouteichos. Although not tamed, as in ancient times, they still come without fear into the houses, which are overrun with rats and mice, and join in the destruction of these pests with the great weasel, or stoat. It is a curious fact concerning this weasel, that it changes the color of its fur in winter, — even as do its relatives inhabiting more northern latitudes. This change has generally been attributed to some harmonious relation between the lighter color of the animal in winter and that of its environment of snow, and the conformity to this law in the case of the weasel of the Sporades — where snow never lies upon the ground — is certainly worthy of remark as an indication of the northern origin of the genus. Inquiry among the country people of Samos and Chios proved the difference between the winter and the summer coat to be quite as marked in those islands as it is in the colder Troad.

The size of the serpents killed at Assos is, however, as nothing to that of a species which is said occasionally to make its appearance in the upper valley of the Satnioeis. The Turks of Avdjylar<sup>2</sup> tell of a reptile killed in this region some years ago, the body of which was "as large round as a man's waist," and measured sixteen piks (nearly eleven meters!) in length. Improbable as the tale may sound, the existence of such latter-day pythons on the coasts of the Aegean is well authenticated. Dr. Erhard, long a resident of the Greek islands, in his work on the fauna of the Cyclades<sup>3</sup> gives several instances in point. One of these — which may well serve

<sup>1</sup> Lucian, *Alex.*, VII.

<sup>2</sup> Near the site of the ancient Antandros.

<sup>3</sup> Erhard (Dr.), *Fauna der Cycladen*, Theil I. Leipzig, 1858.

as a parallel to the great deed of Apollo Pythios — relates to a serpent of enormous size that had taken up its abode on a mountain of Kephallenia, and had rendered the district literally uninhabitable for miles around. Two brothers, armed with spears and axes, attacked and killed the monster, and were rewarded for this performance by a remission of taxes during lifetime, and by having the mountain renamed in their honor; these privileges being set forth and assured by a document drawn up by the civil authorities. It is characteristic of the degenerate spirit of modern days, that these heroes are reported to have long watched the reptile, and to have fallen upon him while asleep.

#### LANDSCAPE AND CLIMATE.

A short distance inland, at the north of Assos, is an extensive tract of hilly country, traversed by none of the Turkish bridle-paths, and hitherto unvisited by any of those travellers who have given accounts of the Southern Troad. Lying between the towns of Neandreia, Larissa, Assos, and Kebrene, this tract is a blank upon the ancient map, and was evidently as sparsely populated in antiquity as it is to-day. It still remains in a condition almost primeval: it has been alike spared by the conquerors, and neglected by the settlers of the fertile valleys of the Kebren and the Satnioeis. Its arid heights are covered with a stunted growth of ilex, oak, and coniferæ. Along its scant water-courses grow the wild fig, the wild almond, and the wild olive, the gray green of whose foliage is relieved in the early spring by the bright pink of the oleander, and the delicate violet-blue of the *agnus castus*, "ancient garland of the Carians."<sup>1</sup> Here sing at evening an endless choir of nightingales, so fearless of man that they might almost be taken by hand. Here are found flocks of wild doves, and occasionally the shy roller-bird (*Garrulus glandarius*) is seen, the brilliancy of whose plumage, streaked with the colors of ultramarine beryl and changeable fawn, no pigments can represent. Every aspect of nature is the same as it must have been to that band of Cretan Teukrians, who,

<sup>1</sup> Nicainetos, in Athenaios, XV. 14. The myth which was adduced in explanation of this custom is related by Menodotos of Samos, quoted in Athenaios, XV. 13.



following the oracle of Apollo, wandered through this land until, attacked by the hordes of earth-born mice, they rested upon the appointed site of Hamaxitos.<sup>1</sup>

Throughout the greater part of its extent, this region is without streams and springs, and during the heat of summer the appearance of many a wide expanse is that of a desert. There is an almost entire lack of one all-important family of plants, the grasses, which on the heights of Ida, and in the meadows watered by the chief streams descending from it, provide nourishment for great herds of cattle and flocks of sheep. A few stalks of the *Cynodon* or *Panicum* species spring up from the rocky soil, as if to prove that it is possible for the Gramineæ to exist, despite unfavorable conditions. But they do not suffice even for the maintenance of omnivorous goats, and cannot satisfy the eye accustomed to the greensward of Northern lands. It is only in favored spots that thin patches of verdure appear for some weeks after the autumn rains have set in. On these wind-swept heights the cold of winter is severe. The range upon the north of the Satnioeis forms a distinct climatic division between the southern coast and the interior of the Troad. At the beginning of March, while the vegetation in the valley of the Scamander, and even in that of the Kebren, shows no sign of recovering from its winter's sleep, — while the lowlands are often covered with snow, — the banks of the river flowing by the walls of Assos are again decked with the brightest green, and with countless varieties of low-growing flowers: the yellow, white, and blue crocus, the saffron, the delicate iris, and many-colored tulips. These high hills seem to mark the northern limit, in Asia Minor, of the wild pomegranate and rhododendron; and it is a point of the greatest importance in the agricultural economy of the Troad, that the olive, which is so wonderfully productive on all the coasts of the Gulf of Adramyttion, does not repay cultivation in the interior, and is but rarely met with along the Hellespont.

At Assos itself the field of ruins is thickly overgrown with the velvety green of an aromatic herb, *Ballota acetabulosa*, which, although common in the Peloponnesos and on the islands of the Aegean, is not to be found in the Trojan plain. This plant gives to the ancient site its most striking and most pleasing floral char-

<sup>1</sup> Strabo, p. 604, following Kallinos.

acteristic. Amidst its soft tufts rises the tall thorny stalk of a poisonous thistle (*Echinops viscosus*), bearing a ball spiked like a mediæval mace, the points of which penetrate leather and tear strips from garments of corduroy ; and in the shady corners of the fortification walls grows the *Arum dracunculus*, its gigantic flower exhaling an odor of carrion so intolerable and so overpowering that it can only be approached with tightly closed mouth and nostrils.

In October and November the landscape of Assos displays its greatest beauty. The autumn rains have then cleared the air, and cool breezes have swept away the hazy vapor which hangs over the distant peaks of Ida during the summer months. The sharp crests bordering the horizon are iridescent in an atmosphere of limpid purity. The reds, the grays, the purpled steel of these volcanic formations, are veiled in a verdure of every hue and tone, from the sombre shade of cypress groves to the emerald light of fields along the river's bank. Every form and every color varies from hour to hour as the day advances, until at last the summit of Gargaros glows with the reflection of the sun, as it sets behind the great plateau above Palamedeion. Lesbos, like a coquettish beauty, arrays herself in her finest colors at evening. The ravines upon the side of Mount Lepethymnos are marked by deep transparent shadows, and the white houses of its villages gleam across the strait. The island upon which the slopes of Assos continually look is truly, as the Turks have called it, a "Golden Island," — "the Garden of the Ottoman Empire." In antiquity its natural loveliness must have been enhanced by well-cultivated groves of olives, and by the quiet lines of columned stoas and temples, standing in every town and on every picturesque height. The spectacle brings to mind the words by which Cicero characterized this land : "Urbs et natura, et situ, et descriptione aedificiorum et pulchritudine, in primis nobilis ; agri jucundi et fertiles" ;<sup>1</sup> and we join in the admiration felt by Diodoros for Lesbos and her sisters : "Indeed, these islands in richness of soil and plenty of all things did not only excel all neighboring countries in ancient times, but do so even to this day. For the fertility of the soil, the pleasantness of the situation, and the healthfulness of

<sup>1</sup> Cicero, *De Lege Agraria*, II. 16.

the climate is such that they are not without cause called, but are really and in truth, blessed and happy islands."<sup>1</sup>

The effect which the seasons of the year have upon the appearance of the country is wonderful. In the heat of summer, the traveller will fail to recognize many a spot the beauty of which he admired but a month or two before. During July and August, when the thermometer is known to rise to 115° Fahrenheit in the shade, all vegetation in the plains and upon the hillsides is burnt and leafless. At midday the hand can scarcely be borne upon the baked and fissured earth. It is rare that the parched fields are refreshed by a shower between the months of June and October. In 1883, an exceptionally cool season, there were storms of thunder and lightning during the first days of July, yet there was no appreciable fall of rain. Much damage has, however, been known to occur from hail, in midsummer.

A spectacle which frequently presents itself at this time of the year is the mirage, which generally appears at Assos, towards the west, above the strait between Methymna and Lecton. The phenomenon has also been observed upon the western coast of the Troad.<sup>2</sup>

When the summer gales of northern wind — the Etesians of the ancients — were not in force, great relief from the heat was brought by a sea-breeze from the west-southwest, known as the Imbat, which springs up at about two o'clock in the afternoon and continues until nightfall. It was without doubt owing to the influence of these winds, that the level of the tideless sea was varied by an otherwise inexplicable ebb and flow, the difference in height from one day to the other, often being more than half a meter.

In the late autumn the south wind brings heavy rains, which filled our trenches and trial pits, and made outdoor work impossible. This wind, still called by its classical name *Νοτιά* (*Nótos*), is figuratively known to the Greek workmen as a *παλληκάριον*, — a handsome youth of proud bearing. They say that he possesses large bags of skin,<sup>3</sup> which he dips into the sea by means of the

<sup>1</sup> Diodoros, V. 82, Booth's translation. London, 1700.

<sup>2</sup> Fontanier (V.), *Voyages en Orient, de l'Année 1821 à 1829*. Paris, 1829.

<sup>3</sup> The larger size of these skins of pigs and goats, used for the transportation of wine, oil, cheese, and even honey, was known at Assos as *γυτέκιον*; the smaller size, as *τουλούμιον*.

clouds, lifting them, full of water, high up into the air, and carrying them to distant countries where he empties them upon the earth ; either through a small sieve,<sup>1</sup> through a large meshed screen,<sup>2</sup> or without any such medium for dividing the drops,—according as the rain falls in a fine drizzle, in a heavy shower, or in one of those torrents, known only in southern latitudes, in which the water seems to descend in sheets.<sup>3</sup> The personification of the south wind as a graceful and wayward youth, and of the north wind, Boreas, as a fierce and bearded man, is the same as that which prevailed among the ancients. In the reliefs upon the Tower of the Winds in Athens, Notos holds a sprinkler, which corresponds in idea to the sieve of the Romaic peasant. The antique conception of the winds as winged messengers, which was certainly retained in the Middle Ages, seems to be wholly lost. These picturesque myths are more and more forgotten as Occidental literature and ideas are introduced by means of the increasing commercial intercourse with Europe. The popular fairy tales, and even the legends of Byzantine Christianity, are held to be outgrown, and are told only by old women. The coming generation will have little knowledge of this unwritten lore, handed down from generation to generation, the tradition of which still forms a link between the present and the past.

On the whole, it may be said that, in the Troad, more real suffering is caused by the cold of winter than by the heat of summer : this being due to the same lack of provision for excluding chill draughts and for warming living-rooms. At Assos the inclemency of January is to be ascribed rather to the piercing wind, than to a really low temperature. The rivers of the country are frozen over for but a short time, if at all, and the sensitive rhododendrons and pomegranates are rarely injured by frost.

The spring is variable. Calm, clear days in April are sometimes uncomfortably warm, but the north wind may bring a sudden return of the cold. It is the old struggle of the sun and the wind,—

<sup>1</sup> Known at Assos as *σταρκό*, or, more commonly, by its Turkish names, Calbour and Eleck.

<sup>2</sup> Greek *δριμόνε*, Turkish Jiusare.

<sup>3</sup> A myth of the same character, differing only in detail, is still current in Attica. Compare Πολίτης (N. F.), *Δημόδεις Μετεωρολογικοί Μύθοι*. 'Εγ' Ἀθήναις, 1880.

always present to the mind of the Greeks. Upon the north of the range bordering the Satnioeis the alternations of temperature are much greater than in the immediate vicinity of Assos. On the first day of April, 1883, the writer lost his way while riding among the hills near the juncture of the Kebren and the Scamander, on account of the bridle-paths being covered with snow; ice was formed upon standing water in the Trojan plain on the morning of the 8th of April, 1882; and snow has been known to fall heavily along the Hellespont on the 12th of May. Yet the white caps disappear from the peaks of Ida early in June; Schliemann errs in speaking of these heights as covered with eternal snow.<sup>1</sup> This fickleness of the spring is characterized by the Greek peasant in a warning quatrain:

Ὅλο τὸ Μάρτη φύλαγε,  
 Καὶ τ' Ἀπριλιοῦ τὰς δέκα,  
 Κι' ἀκόμη καὶ τὰς δεκοκτὼ  
 Πέρδικα ψόφησε 'σ τὸ αἶγυδ.<sup>2</sup>

Few parts of Asia Minor are of more general interest and more easily accessible than the Troad. The number of visitors to it will, without doubt, increase from year to year. For those who love the sea, who have some knowledge of modern Greek, and who are not in haste, the best way of becoming acquainted with the country is to hire one of the small sail-boats which abound in Mytilene, provision it well, and with two sailors, one of whom may serve as guide, run along the coast from Atarneus (now the port of Pergamon) to Troy,—making leisurely excursions into the interior, on foot, and unimpeded by baggage. The great drawbacks of the journey by land—the bad food and sleepless nights—may thus be avoided. The manner of travelling through the interior on horseback has not changed in any particular since the visit of

<sup>1</sup> Schliemann (Heinrich), *Trojanische Allerthümer. Bericht über die Ausgrabungen in Troja*, p. 15. Leipzig, 1874.

<sup>2</sup> “Be on your watch (against the frost) the whole of March, and (until) the 10th of April (22d, new style), and even (until) the 18th (30th, new style), when a partridge has been known to perish (by freezing to death) on her very eggs.”

The early dates named in this saying seem to show it to have been framed for a warmer latitude, a supposition confirmed by its familiar use in the vicinity of Smyrna. Compare Mommsen (August), *Griechische Jahreszeiten*, No. 440. Schleswig, 1873.

Bertrandon de la Brocquière, in 1432.<sup>1</sup> For such an excursion the months of September, October, and November are by far the most pleasant. The heat of summer has then abated, while showers of rain are neither so frequent nor so heavy as to cause the loss of much time. The weather is cool and bright; and the landscape, covered with a varied vegetation, is seen at its greatest beauty. For a trip of but a few days, horses and a guide can be hired in the town of the Dardanelles at the rate of about one medjid apiece per day. But the independence desirable for a longer journey can only be secured by buying the mounts, care being taken to provide a European saddle. The sturdy and sure-footed little horse of Mytilene and the Troad — so highly extolled in former centuries by Stochove<sup>2</sup> and Sestini<sup>3</sup> — may be bought for eight or ten Turkish pounds,<sup>4</sup> and, if well cared for, sold again at the end of the journey with little or no loss.

A region of much interest, hitherto almost entirely unvisited, is

<sup>1</sup> La Brocquière, *Voyage d'Outremer*. The author gives a most detailed account of all matters relating to travel.

<sup>2</sup> Stochove (Vincent de), *Voyage fait es Anndes 1630-1633*. 1st edition. Bruxelles, 1643.

<sup>3</sup> Sestini (Domenico), *Lettere odepорiche, o sia Viaggio per la Penisola di Cizaico per Brussa e Nicea, fatto l' Anno 1779*, vol. vi. Livorno, 1785.

<sup>4</sup> The price of horses in the Troad is certainly low, not only in comparison with the sums asked for the same animals in Constantinople to-day, but also and especially in comparison with those which are recorded to have been paid during antiquity. It is difficult to account for the difference in the value of horses in ancient and modern times. Isaios (*De Dicaeog. Hered.*, ed. Schömann, XLIII.) speaks of an animal of the poorest kind as worth three minas, — or, in other words, the equivalent of the wages of a laborer for more than a year and a half. That twelve minas was a not uncommon price for a good saddle horse is evident from Aristophanes (*Clouds*, 1224), and especially from Lysias (*πρὸς τοὺς συνουσιαστὰς κακολογίων*, ed. Franz, X.) who tells of this amount having been lent on a horse which had been taken in pawn. The sum last named would not have been earned by the architect of the Erechtheion in four years! Even restricting the parallel to the poorest paid class of day laborers, such prices as these are from ten to twenty times as much as those now ruling in Asia Minor.

It may be remarked, as a curiosity, that Boukephalos was sold for the enormous sum of thirteen talents (Aulius Gellius, V. 2, quoting Chares of Mytilene), — the equivalent of fully \$35,000 to-day, — and yet could have served only to gratify the pride of personal display in the owner, not bringing to him any such income in the shape of prize and entrance moneys as does a modern racer.

that upon the north and northeast of Ida, around the head-waters of the Karesos and the upper course of the Aisepos. The thorough examination of this tract could scarcely fail to increase our information concerning the remains of antiquity, as well as concerning classical topography.

Could the traveller have come to Assos during the excavations of the American expedition, he would have heard, afar off, the chorus of the workmen, as they sang together, sailor fashion, while rolling aside the shaft of some column ; he would have been guided to the site of the ancient temple or theatre by the creaking of the dusty barrow wheels, and by the blows of the heavy hammer breaking some stone too large to be lifted entire. Now the silence of that hillside will be broken only by the roll of the waves upon the beach beneath the cliff, and by the tinkling bells of the goats, as they twist their necks to browse upon the tough shoots of the oak bushes which have again overgrown the ruins of the Greek Bath, the Agora, and the Street of Tombs.

