Higgins MD, Higgins R (1996) A Geological companion to Greece and the Aegean.
Cornell University Press / Duckworth Publishers, Ithaca, NY / London

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Corinthia and the Argolid

The Peloponnese

The name Peloponnese means 'the Island of Pelops', a mythical king of this region. Although an island in geologically recent times, it has not been isolated from the mainland within human memory, being attached by the narrow Isthmus of Corinth. However, in a sense the Peloponnese became an island in 1893 with the completion of the Corinth Canal.

Like all Greece, of which it is an epitome, the Peloponnese is very mountainous: mountains encircle the central district of Arcadia, where they attain a height of around 2,300 m, and radiate outwards till they reach the sea in almost all directions. The ancients compared its shape to that of the leaf of a plane tree. Perhaps a better comparison would be with an outstretched hand, with one finger missing. The thumb is the Argolid and the three fingers are in Laconia and Messenia. The seven modern departments of the Peloponnese correspond closely with the ancient political divisions. They comprise: Corinthia and the Argolid, which will be considered in this chapter; Laconia and Messenia (Chapter 6), and Elis, Achaea and Arcadia (Chapter 7).

Corinthia and the Argolid

The geological basement of Corinthia and the Argolid is dominated by rocks from two isopic zones (Fig. 5.1). Most of Corinthia and the eastern part of the Argolid is underlain by rocks of the Sub-Pelagonian zone, a band of rocks that were originally part of an old continental margin. This zone is characterised by ophiolite suite rocks and associated sediments such as Triassic to Jurassic grey limestones. West of the Gulf of Argos and the Argive plain the Pindos zone is represented by thin-bedded limestones and flysch sediments. These rocks were deposited in a small ocean basin. During Alpine compression, the Sub-Pelagonian zone was thrust westwards over the Pindos zone.

The topography and geology of this area have been profoundly affected by the Neogene extension of the crust in the Aegean region. This stretching has created many grabens, of which the Gulf of Corinth, together with the lowlands to the south and its extension to the east in the Saronic Gulf, is a classic example. The Argolid is another graben, now separate, but originally connected to the early Corinthian graben (see Chapter 2).

Minor volcanism, part of the South Aegean volcanic arc, produced dacite lavas and small intrusions east of the Corinth Canal mostly near Sousaki about 4-2.7 million years ago,[94] as well as the Aegina and Methana volcanos (see Chapter 4). Hot springs associated with the Sousaki lavas are not heated by the volcanism, as it is too old, but are probably guided up the same faults as were used by the magmas.

Corinthia

Situated on the isthmus which bears its name, Ancient Corinth possessed two excellent harbours: Kenchreai on the Saronic Gulf and Lechaion on the Gulf of Corinth. So a strong Corinth would be able to control not only north/south land traffic, but also east/west sea traffic. And that is why, although the soil is very poor and earthquakes are all too common, there has been a settlement here or hereabouts for the last 7,000 years.

The first recorded inhabitants were Dorian

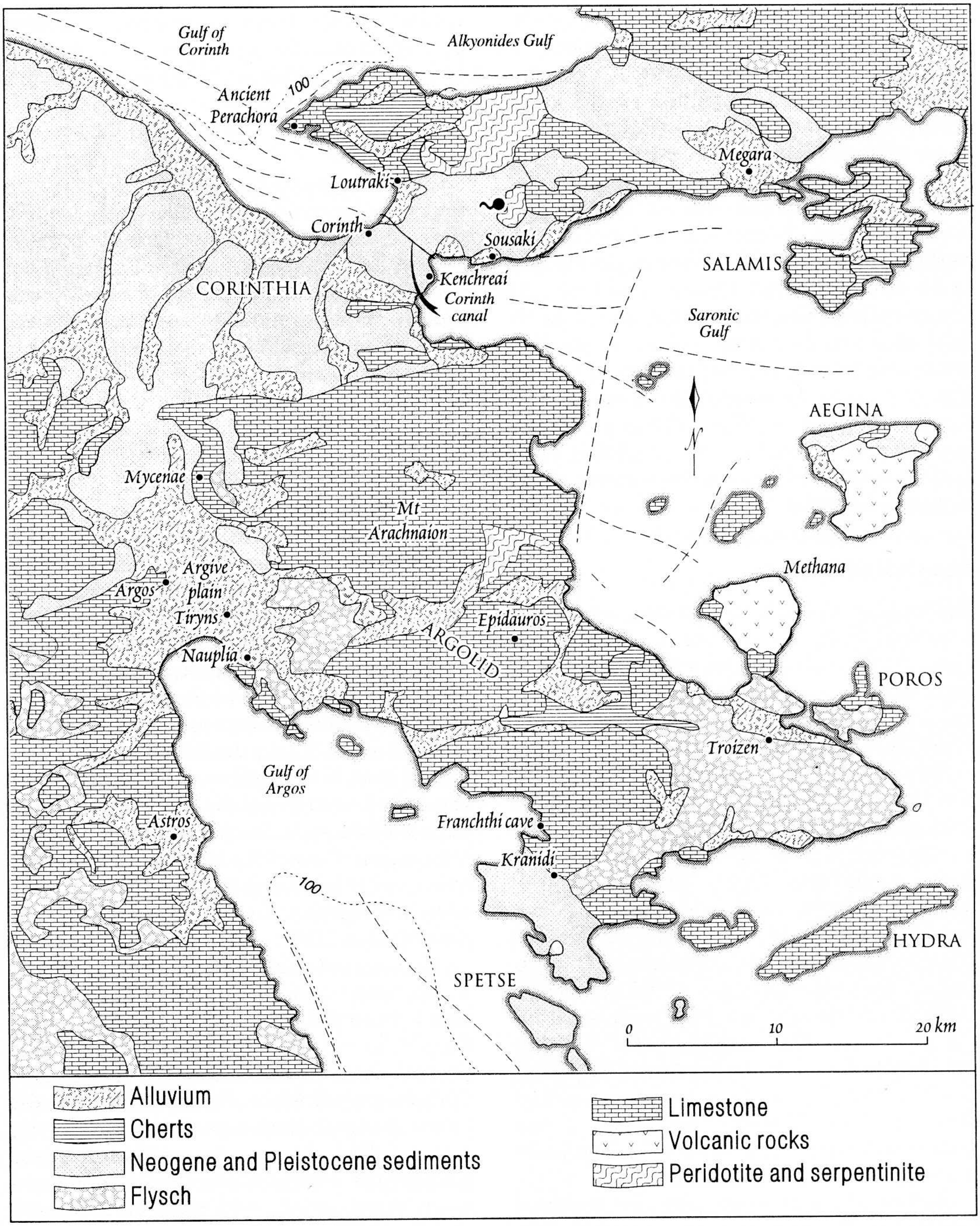

Fig. 5.1. Corinthia and the Argolid.

Greeks who united within their territory the two harbours and the citadel of Acrocorinth. In the sixth and seventh centuries BC the city gained importance and in 550 BC the great Temple of Apollo was built. Corinth continued as a artistic and commercial centre until 146 BC when the Romans destroyed the city. It was refounded in 44 BC and soon regained its previous stature, becoming a byword for worldliness and vice. Nonetheless, Corinth became the centre of the new religion of Christianity in Greece and was visited by St Paul. In the sixth century AD Corinth was laid low by two terrible earthquakes. Eventually a new city arose, to become the centre of the Greek silk industry. When this city was destroyed by an earthquake in 1858, New Corinth took its place and Old Corinth virtually ceased to exist.

The Gulf of Corinth

The Gulf of Corinth is a graben which has developed gradually over the last 5-10 million years.[125, 276, 66] It is a complex structure as movement has not been confined to two faults, but has occurred along a whole series of parallel faults, creating a series of huge steps parallel to the gulf. In addition the settling of the central part has been asymmetric, with much more subsidence towards the south, rather like a trap-door.[114] Initial faulting was confined to the region south of Corinth, extending all the way to the Argolid and a shallow sea or lake developed there. Sediments deposited there are now exposed in the walls of the Corinth Canal, in outcrops of the bed-rock in ancient Corinth and in the low hills that separate Corinthia and the Argolid. Later faulting switched to the north into the present Gulf of Corinth, and the southern area was uplifted above sea-level. The total subsidence of the graben floor during the last 5-10 million years is about 3 km and still continues.[256]

Before 250,000 years ago the Gulfs of Corinth and Patras were a lake, sealed off from the sea by a barrier that included the islands of Kephellinia and Zakinthos.[220] Rivers feeding this lake made large deltas that now survive as terraces, such as that on which Ancient Corinth stands. Similar terraces are present around Patras. Since movements of the land have opened up this region to the sea, though periodically the Rion straits north of Patras acted as a barrier and the Gulf of Corinth became a lake.

Three major earthquakes occurred in 1981: they were centered on an important fault that runs under the Alkyonides Gulf, but movements also occurred on faults on land on either side of the gulf. Earthquakes of this magnitude probably occur every 300 years in this area.[276] The Gulf of Corinth is also very susceptible to tsunamis produced by earthquakes (see Chapter 7).

The Corinth Canal

The Isthmus of Corinth, dividing mainland Greece from the Peloponnese, is only 6 km wide. Several attempts were made in antiquity to dig a canal across it, which would have saved a journey round the Peloponnese of some 300 km. On the last occasion, in AD 67, the Emperor Nero started digging operations, using 6,000 Jewish prisoners of war, but he was called away by troubles in Rome, and the work was stopped on his death the following year. As a second best, in the sixth century BC the Corinthians had constructed the Diolkos, a tramway cut out of the rock, for carrying warships, and the cargoes of merchant ships, across the Isthmus on wheeled transporters. After an interval of nearly 2,000 years the canal was finally completed in 1893.

A series of faulted Pliocene-Pleistocene marls, limestones, sandstones and conglomerates is beautifully exposed in the sides of the Canal (Fig. 5.2, Plate 5).[174, 41] These rocks were formed early in the history of the Gulf of Corinth graben when the southern part was below sea-level; they were uplifted relatively recently. The oldest rocks are best exposed towards the middle of the canal. They are a series of pale marls, with minor brown sandstones and conglomerates, and are Late Pliocene in age. These rocks were uplifted, eroded and then returned below sea-level for the deposition of the next series, the Pleistocene 'Tyrrhenian deposits'. These are

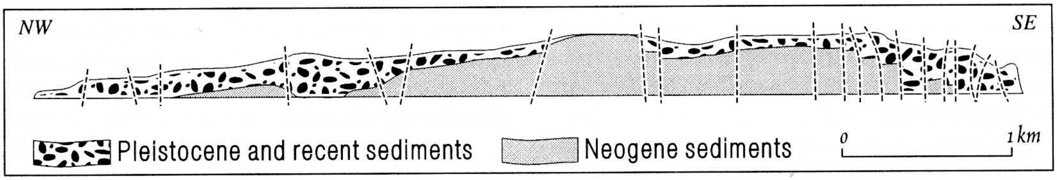

Fig. 5.2. The Corinth Canal (after 174).

conglomerates, sandstones, limestones and minor marls. The limestones make good building materials and were used in the construction of ancient Corinth (see below). Finally this whole package was raised above sea-level along a series of east/west faults.

These steeply inclined normal faults can be seen every few hundred metres along the canal (Fig. 5.2). The movement on these faults is symmetrical about the middle of the canal, which contains the oldest rocks. Therefore, the isthmus here has the form of a horst, as would be expected. Movement on each fault is relatively small, a few metres in most cases, and could have been accomplished in a single, large earthquake or at most very few.

The western end of the Diolkos is exposed near to the entrance to the canal (Plate 6A). It is partly covered with up to 30 cm of beach-rock, which has accumulated some time during the last 2,500 years, showing how fast these rocks can form. The beach-rock formed after the construction of the Diolkos, when the region was submerged by 80 cm, probably following an earthquake.[183] Subsequently the area was lifted up to close to its original level, exposing the beach-rock that we see today.

Ancient Corinth

The ancient city of Corinth lies on a terrace broadly parallel to the Gulf of Corinth (Fig. 5.3). The origin of this terrace is problematic, but it is probably a beach on the top of a delta formed in the Gulf of Corinth lake about 250,000 years ago.[220] The city was constructed on and largely of Pleistocene sandy limestones similar to those exposed in the upper parts of the walls of the Corinth Canal at either end. Outcrops of these rocks on the ancient site have well-developed beds which have the form of ancient dunes. A good example can be seen on the side of the Fountain of Glauke.

Although the local stone is rather weak it does not have many joints as it has never been deeply buried, and hence could be extracted in huge blocks. Such blocks, faced with stucco, were used for the seven-metre columns of the Temple of Apollo. The quarry for these columns was adjacent to the temple and the city was subsequently constructed within it. Smaller columns and facings were made of imported

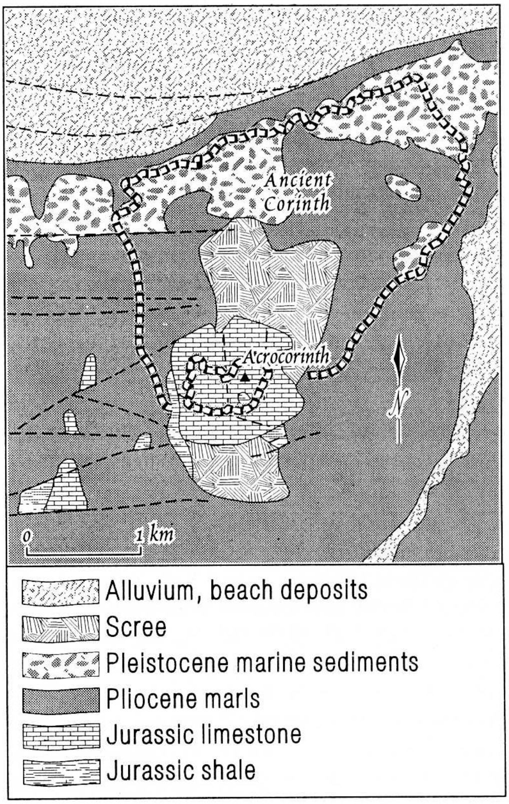

Fig. 5.3. Ancient Corinth and Acrocorinth.

stones, such as Cipollino (from Euboea), white/grey marble and a pink limestone breccia, which may be from the hill of Acrocorinth above the city.

There is a spring within the ancient city, the Lower Peirene Fountain. It has been extensively remodelled and cisterns have been excavated behind, but it is a natural spring, and now supplies water for the modern community around the site. The name links it with the Upper Peirene Fountain on Acrocorinth; both ultimately derive their water from rain that falls on the hill of Acrocorinth. The water descends within the hill and flows southward towards the spring within the scree deposits shed from the hill. Finally its passage is blocked by a fault that has brought down impermeable Pleistocene marls. The water then rises along this fault to the surface.

Ancient Corinth was an important centre for ceramic production.[289] The potter's quarter was situated about 3 km west of the city, on the edge of the Ancient Corinth terrace. A low-firing clay for fine ceramics may have been extracted nearby from beneath a layer of conglomerate that here caps the terrace. The clay used to make enormous quantities of transport amphorae must have been derived from another source. Analysis suggests that it may have been from a deposit associated with lignite, such as that at Nikoleto and Solonos, 3 km to the south-west and south-east of Ancient Corinth respectively. However, no quarries have been recognised. Another possible source of clay was terra rossa soil, produced by the weathering of hard limestone. The clay extracted by washing this soil gives pink ceramics.

Acrocorinth

The fortress of Acrocorinth stands on a barren, steep-sided hill (575 m) south of Ancient Corinth (Fig. 5.3). The ruins span many ages and different styles of construction: Archaic, Hellenistic, Byzantine, Frankish and Venetian. The hill is made of Mid-Jurassic limestone and minor shale, an eroded remnant of a layer of limestone now mostly seen in the hills to the south. During the Pliocene Acrocorinth stood out as a island in the Corinthian gulf, then much wider. At this time the marls that now lie around the hill were deposited in the shallow waters.

The natural outcrops on the hill give the impression that it is made up entirely of limestone, but artificial exposures, such as roadcuts, show that there is also green and red shale. These shales erode much more easily than the limestone, and hence generate a soil which hides the parent rock. The colour of the shale reflects the chemical state of the iron in the minerals of the rock: red shale contains oxidised haematite but in the green shale the iron is present as black magnetite and the green of the other minerals shows through. Some of the silts have not formed individual beds, but have cemented together limestone breccias that were formed by the collapse of caves.

An important feature of this fortress was the presence of a water source within the walls. The Upper Peirene Fountain is about 5 m below present ground level in a small saddle towards the south-east of the summit. It is fed by rainwater seeping into the limestone of the higher ground on either side. From there it seeps downwards until its passage is blocked by a layer of shale. The water returns towards the surface along a north-south fault that bisects the hill. Preferential erosion of rocks adjacent to this fault has produced the saddle.

Kenchreai

In antiquity Kenchreai was the eastern port of Corinth, on the Saronic Gulf (Fig. 5.1). In classical times it was very active, but was abandoned around the sixth century AD, probably because of subsidence of the land.[33] This subsidence appears to have occurred over a period of at least 1,000 years: A classical sanctuary is now 150 m offshore in 2 m of water, whereas a Hellenistic building and an early Christian church are only slightly submerged.

Loutraki

The cliff behind the town of Loutraki is partly, at least, a recent fault scarp, which is why it is so steep (Fig. 5.1). The fault is exposed at the base of the cliff and inclines steeply towards the water. It is this fault that has channelled hot, deeply circulating rainwater towards the surface and produced the famous hot springs of this town. The main spring is slightly saline and sulphurous and has a temperature of about 29 to 32°C.[1] The spring area has been rather extensively altered, but there are traces of travertine in the area, though the spring no longer deposits this rock. Many other, smaller hot springs can be seen venting straight into the sea adjacent to the spring house.

Perachora

The peninsula north of Corinth terminates in a point near the ancient site of Perachora (see Fig. 5.1). Here, the sanctuary of Hera descends to a very small, charming bay.

A number of ancient sea-level stands can be seen in the cliffs around the Perachora peninsula.[224] The oldest is 3.1 m above present sea-level and formed before 4000 BC. The youngest sea-level stand, at a height of 1.1 m, formed during a period of a few thousand years until about 300-400 AD when this area was lifted up to its present level. These dramatic variations in sea-level reflect the extremely active nature of the Gulf of Corinth graben.

The Argolid

The Argolid is the north-easternmost of the promontories of the Peloponnese (Fig. 5.1). It is bounded on the north by the mountains which separate it from the Corinthia, on the east by the Saronic Gulf, on the south by the Gulf of Argos, and on the west by the mountains of Arcadia. Mt Arachnaion divides the Argolid into two sections: first, the tip of the promontory, with the ancient cities of Epidauros, Troizen and Hermione; secondly, the triangular Argive Plain. The rich alluvial soil is very fertile, and water is available from wells. In addition to the usual olives, figs and vines, cereals and citrus fruits are grown. Harbours are scarce; the only really safe one is at Nauplia.

Thanks to its fertility the Argolid was settled at a very early date. The Franchthi Cave was inhabited from the Late Palaeolithic, about 8000 BC, into the Neolithic. At Lerna both the Neolithic and Early Bronze Age (3000-2000 BC) are well represented. This world came to a violent end around 2000 BC with the arrival of less civilised newcomers, probably the ancestors of the Greeks. They gradually settled down and by 1700 BC were in a position to trade with Minoan Crete, and also with Egypt, Syria and Asia Minor. Thus arose the impressive civilisation, based on Mycenae, which we call Mycenaean. This age, which ran from 1600 to 1100 BC, was the inspiration for the legends of Classical Greece and the Homeric poems. When it came to a violent end about 1100 BC, the Argolid was gradually overrun by Dorian Greeks, who ruled it from Argos. But Sparta always had her eye on this desirable land, and in the sixth century BC the Spartans defeated the Argives so profoundly that the district sank into an obscurity from which it never emerged.

The Argive Plain and Lake Lerna

The Argive Plain is a Neogene graben (see Fig. 5.1). The hills to the west are mostly made of Late Cretaceous limestones and to the north-east Triassic and Jurassic limestones predominate. These rocks are resistant to erosion and produce the high, rounded hills. The jagged hills immediately to the east are dominated by flysch sediments.

About 20,000 years ago, when the Ice Age was at its maximum, sea-level was about 120 m below the present level and the ancient shoreline was about 10 km further south.[83] Neolithic people probably lived on this coastal plain, but their remains have been buried by rising sea-levels and sedimentation. Melting of the accumulated ice caused sea-level to rise, and the coastline to advance north, until it stabilised during the Early Bronze Age at a height close its present level. At that time the sea was only 250 m from Tiryns, and the settlements of Temenion, Magoula and Lerna were beside the water.

While the east part of the Gulf of Argos was a sickle-shaped bay, the west half consisted of a beach barrier with a freshwater lagoon be-

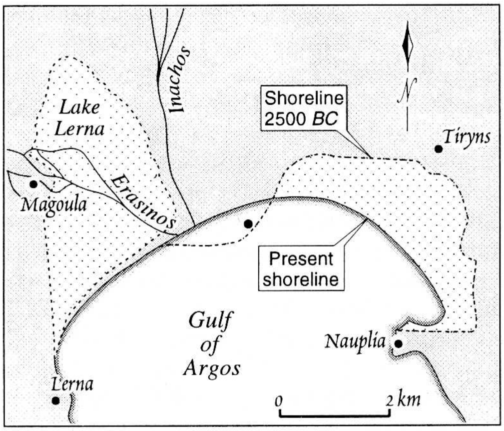

Fig. 5.4. The Lower Argive plain and ancient coastlines (after 83).

hind it (Fig. 5.4). This was the Lake Lerna that figures in Greek mythology: it was here that Herakles fought the Hydra. The maximum size of this lagoon was about 2 by 5 km and was assumed in antiquity to be bottomless. However, it was in fact quite shallow, about 6 m, like many other 'bottomless' lakes.

About 2500 BC the coastline changed from one dominated by erosion to one of deposition of sediments.[226, 271] It is not clear why this occurred, but it could have been caused by a shift in the place where the sediments were deposited from the deeper part of the ocean to the plain, by climatic changes and the resulting changes in vegetation or by human intervention.[83, 271] At this time the plough was introduced into Greece and the increase in agricultural productivity led to an increase in population. These developments could have led to an increase in soil erosion. Similar phases of soil erosion also occurred about 300 BC to AD 50 and AD 1000.

Sediments deposited by the rivers filled in the shallow bay, forcing the shoreline to the south until it was close to its present position in about 1100 BC. However, not all the land behind the coastal dunes was dry: paradoxically Lake Lerna in the west increased in size in Hellenistic to Roman times, but subsequently became marshy. To the east there were also marshes between Tiryns and the coast that remained until recently when they were artificially drained.

The shape of the land in the Argive Plain is now controlled by the deposition of sediment from the streams and by the activities of man. The Inachos river in the west (Fig. 5.4) and the Megalo Rema river north of Nauplia (Fig. 5.6) are usually dry, but tend to flood every 15-25 years. These floods can move huge amounts of sediment and have produced ridges on either side of the stream bed (levees). In contrast, the Erasinos river is perennial and one of the largest streams in the Peloponnese, but does not deposit any sediment, because it is fed from springs (see below).

Mycenae

Mycenae, the city which has given its name to the illustrious Greek civilisation of the Late Bronze Age, lies on a low knoll, protected by hills to the north and south. This situation controls the pass connecting the Gulf of Corinth with the Gulf of Argos. It was the greatest and wealthiest city in the Argolid from 1600 to 1100 BC, called by Homer 'Rich in Gold', and the centre of many of the best known Greek legends. It was from here that Agamemnon departed to Aulis to lead the expedition against Troy to recapture the beautiful Helen, and here he was murdered on his return by Klytemnestra. Mycenae was burnt down in 1200 BC and again in 1100 BC. It was never again important.

Mycenae lies on the hills that make up the eastern wall of the Argos graben (Fig. 5.1, 5.5). The knoll on which it is built is made of Late Triassic to Middle Jurassic limestones, similar to those that underlie the small steep hills to the north and south and the mountain range to the east. The walls of the city were built of this limestone which was quarried from the adjoining hills.

Most of the valley between the hills and the ridge which runs from west of the citadel towards the south is made of very different rock: marls and conglomerates were deposited here by rivers and streams that flowed into the graben during the Late Pliocene to Pleistocene periods. The upper parts of this ridge contain a

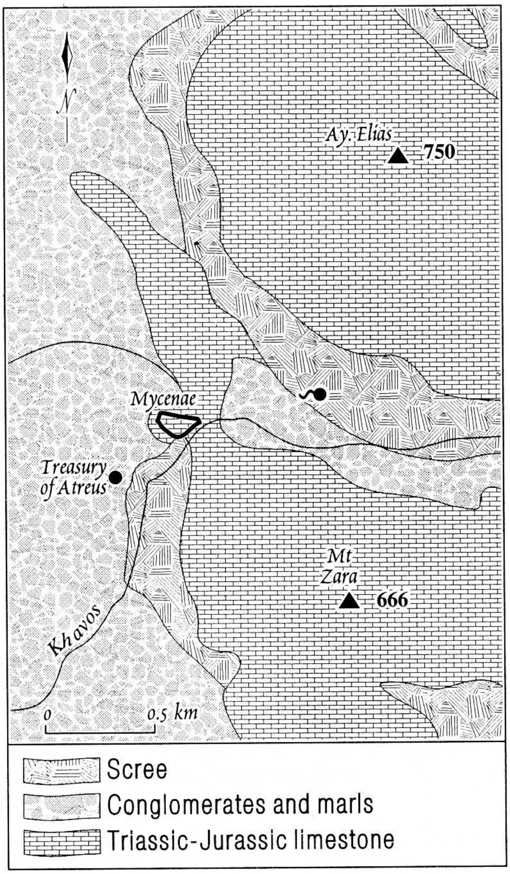

Fig. 5.5. Mycenae.

very well-cemented conglomerate that was used extensively in the citadel and the best of the beehive tombs. This conglomerate has much more widely spaced joints than the limestones, as it has never been deeply buried, and hence was available in much larger blocks. These were used for lintels and door-posts, where the limestone could not provide sufficiently large blocks. Some of the largest blocks, such as those seen in the Treasury of Atreus, may be close to the original thickness of the beds.

The deep ravines around the citadel were excavated as a result of the rapid subsidence of the graben: the steep gradient of the water in the stream enabled rapid erosion. They probably follow minor faults.

There is a spring 200 m east of the citadel, at the base of Mt Ayios Elias. It is fed from water that falls on the hill and descends underground. Its passage is blocked by Pleistocene marls that fill the valley bottom and it reaches the surface though ancient scree deposits shed from the hill. In Mycenaean times it was piped or channelled underground to the 'Secret Cistern' at the east end of the citadel beside the walls. It has supplied Mycenae ever since.

Tiryns

Though not nearly as rich in legend as Mycenae, the citadel of Tiryns presents an even grander prospect today. It has been suggested that in the Bronze Age Tiryns was not an independent kingdom, but was the port of Mycenae, which is not far away. It was inhabited from Neolithic times, but what we see today belongs almost without exception to the Mycenaean period, 1600-1100 BC. More than Mycenae, it is a sort of textbook of Mycenaean architecture, with its outer gateway, ceremonial entrance, forecourt, and palace. The citadel was destroyed about 1200 BC and again a century later.

The citadel stands on a small knoll of Early Cretaceous limestone that protrudes from the geologically recent alluvial deposits of the plain (Fig. 5.6). The hills a few kilometres to the east and south-east, both called Ayios Elias, are geologically similar and were quarried by the builders of Tiryns for material for the walls. These grey limestones contain marly layers and minor breccias cemented by marls. A conglomerate was used for the door-posts and lintels as it is has few joints and hence was available in large blocks. It was probably quarried from layers in the upper parts of the limestone of Ayios Elias or from flysch sediments in the low hills further east.

Like Mycenae, Tiryns had a secret water-supply for use in times of siege. Two corbelled stone galleries pass under the walls and run downwards and almost parallel in a westerly direction for some 30 m. The ends of the galleries descend below the water-table, hence the water sources are wells.

The position of the coastline has changed

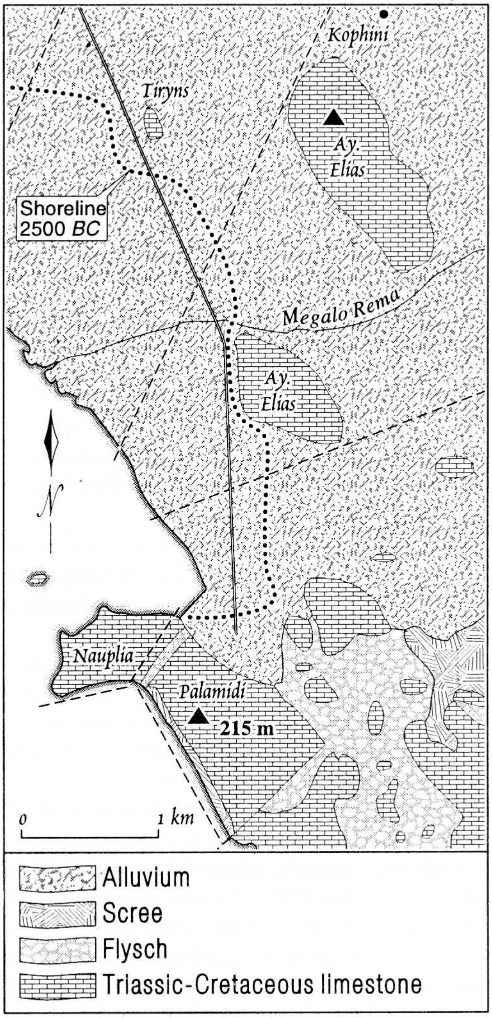

Fig. 5.6. Nauplia and Tiryns.

since antiquity. Its most landward position was at about 2500 BC, during the Bronze Age, when the sea was only 250 m from Tiryns. By 1100 BC the shoreline resembled its present appearance.[83] Another event also occurred at this time: catastrophic flooding of a stream near Tiryns resulted in the rapid deposition of about 5 m of sediments. This catastrophic event may have led to the construction of a dam a few km to the east near Kophini (Nea Tiryns) to prevent further flooding.

Argos

Argos lies 5 km from the sea, at the foot of two hills, both of which were used as acropolises: Larisa (276 m) and Aspis (80 m). It has good supplies of water. Although traditionally the oldest city in Greece, Argos was evidently not of the first importance for a long time; in the Mycenaean period it was certainly inferior to Mycenae and Tiryns. Under the Dorians, who arrived about 1000 BC, Argos was the first city of the Argolid for over 400 years.

The city is situated on the western edge of

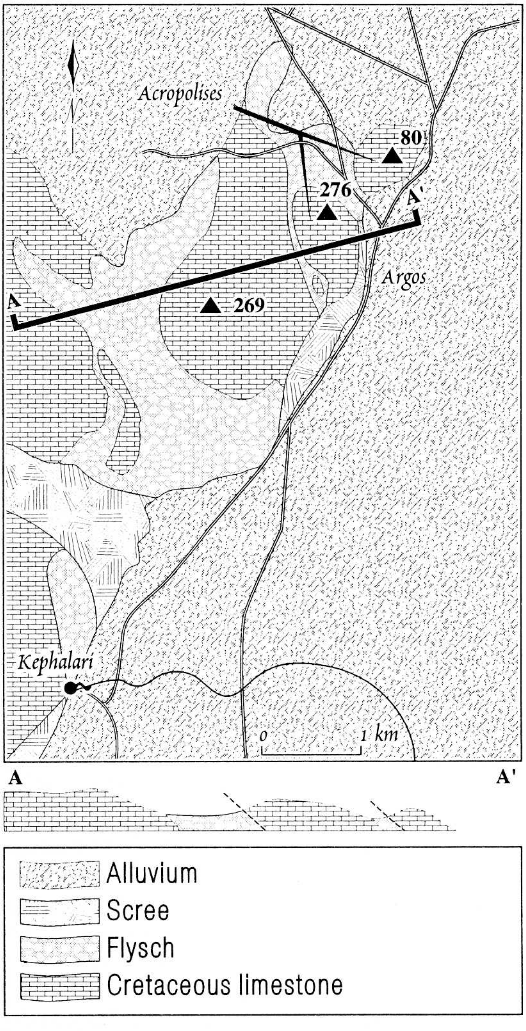

Fig. 5.7. Argos and Kephalari.

the Argos graben, just east of a promontory that projects into the Argive plain (Figs. 5.1, 5.6). This block of rock is bounded to the north by a fault that runs to the north-west along the valley of the Inachos torrent, and to the south by a fault follows the edge of the plain south-west past Kephalari. Both faults are related to the Argos graben. To the west rise hills of Late Cretaceous limestone and minor flysch, and behind these lie the plains of Arcadia.

The low-lying parts of the promontory are underlain by readily-weathered flysch, but the higher land is Triassic and Cretaceous limestone. The two acropolises are both blocks of resistant Mid-Cretaceous limestone that have been thrust over younger flysch sediments and isolated by erosion.

Kephalari and other karst springs

The source of the perennial Erasinos river is at Kephalari just south of Argos (Fig. 5.7). Major springs issue from in front of two caves to feed the river for its short journey to the sea, 6 km away. The caves have a long history of use, starting in Neolithic times. Later they were sacred to Pan and Dionysos and are now modified for use as chapels.

The spring water was traditionally thought to come from Lake Stymphalos, 51 km to the north-west, but water-tracing experiments show that it in fact originates from sink-holes that drain poljes at Alea and Scotini, just south of the lake (see Fig. 7.4).[182] The water flows underground through a series of fissures and caves until it reaches Kephalari. Here the flow of the water is blocked by a layer of less permeable flysch sediments exposed to the north, but also underlying the plain, and is forced to the surface along the fault that here defines the edge of the Argos graben. The flow of this spring is very variable, and has been known to dry up completely.

There are a number of other large springs along the western coast of the Gulf of Argos. The water of these springs also comes from the Alea and Scotini sink-holes as well as from the sink-hole that drains Lake Stymphalos (see Fig. 7.4). There is also a major contribution from the sink-holes that drain the northern Tripolis polje, such as Kapsia, Milia, Kanatas and Nestani.[182] Some of the springs are brackish, from entrained seawater (see p. 102).

A number of springs debouche under the waters of the Gulf of Argos. The Kiveri spring group rises 15-50 m offshore, but has a low salt content. A retaining wall has been built so that these waters can be used for irrigation. Further south a large spring issues about 300 m offshore from Anavalos. The flow is so strong that it rises slightly above the level of the sea, forming two circles, known locally as *Lili to Mati* ('The Eyes of Lili'). The spring is fed uniquely from the sink-hole in the former Lake Taka, south of Tripolis.[182]

Nauplia

Nauplia is the safest harbour in the Argolid; it was occupied from a very early date, and served as a port in Mycenaean times. The Homeric hero Palamedes was associated in legend with Nauplia, and has given his name to the higher of the two hills that overlook the harbour, Palamidi (215 m). The other hill, Acronauplia, was preferred in antiquity as an acropolis, being easier of access. In 628 BC Nauplia became the official port of Argos, but soon faded into insignificance. It recovered under the Venetians (AD 1388 to 1540) and was briefly the capital of newly liberated Greece.

Nauplia is situated on the northern edge of a 10 by 4 km tectonic block that projects into the Argos graben (Figs. 5.1, 5.6). The main graben fault runs north-west/south-east, about 4 km to the east of the city. This block has been lifted up, with respect to the graben floor, along a series of faults that are buried in the plain just to the north of the city. This block is dominated by Triassic to Cretaceous limestones.

Both Acronauplia and the hill of Palamidi are made of Early Cretaceous limestone, faulted on almost all sides. The steep relief along the coast is due to movements along these faults, as well as differential erosion of the rocks on either side. The saddle that separates the two hills was produced by erosion of a layer of flysch and shattered rock along a fault. The fortified island of Bourtzi to the north is yet another block of Early Cretaceous limestone, again probably fault-bounded.

Epidauros

The Asklepieion at Epidauros is situated in a broad valley in the northern part of the Argolid. About 800 BC Apollo was worshipped here, but by about 400 BC Asklepios had superseded him. The Sanctuary now became a centre of healing and a fashionable spa, and was adorned with suitable buildings. After sacrificing and taking a ritual bath, the pilgrims would sleep in the Sanctuary in the expectation of awaking cured. Every four years a dramatic and athletic festival was held in honour of Asklepios. The theatre for the dramatic contests is in a remarkable state of preservation.

Much of the site of Epidauros is underlain by green volcanic tuff of Triassic age (Fig. 5.8),[207] outcrops of which can be seen both above and below the theatre. This rock is closely jointed and weathers easily to produce the gentle slopes and low relief of the site. The hills behind the theatre are made of Triassic yellowish cherty limestone, which overlies the tuff and is more resistant to weathering. The view to the north-west is dominated by the distant hills of resistant Triassic to Jurassic limestone.

The Asklepieion was supplied with water from a number of wells and springs. The springs are fed by rain that falls on the surrounding limestone hills and disappears underground into caves and fissures. These waters descend until they reach the tuff, which is less permeable because of its clay content. They are then channelled horizontally until they emerge close to the upper surface of the tuff as springs. They are now dry in summer, possibly as a result of changes in land use that has increased run-off of rainwater, and possibly because of a change in climate.

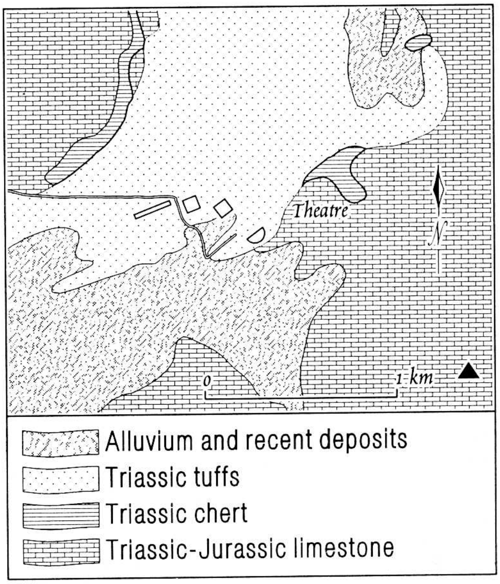

Fig. 5.8. Epidauros.

The foundations of many of the buildings were made of a poorly-cemented limestone, possibly from a local layer of caliche. This rock has not withstood the high moisture levels in the foundations and has frequently disintegrated, causing the collapse of the building. The upper parts of the buildings and the theatre were made of grey and red limestone. The seats of honour in the theatre were made of a limestone breccia, with clasts of both red and grey limestone. This breccia probably was formed in caves by the collapse of the roof, and the cementation of the debris.