

A DROUGHT IN THE LATE EIGHTH CENTURY B.C.

THE EXCAVATIONS in the Athenian Agora have brought to light some thirty wells which can be dated to the Geometric period. They have been found throughout the excavations and their chronological distribution suggests a pattern of steadily increasing population in the area north of the Acropolis. The first century and a half (900–760 B.C.) is represented by 14 wells, whereas the last half century alone (760–710 B.C.) accounts for the remaining 16, an increase of significant proportions.¹

It was noted by E. Brann in her publication of the late Geometric pottery from the Agora that an unusually large number of these wells were closed at the end of the 8th century. In fact, all the wells in use in the latter half of the century seem to have gone out of use in the years around 700 B.C.² This is a notable development, unparalleled for any other period among the 400 wells excavated thus far in the Agora, except among the Archaic wells closed as a result of the Persian sack of Athens in 480 B.C. It was suggested that either a drought or war was responsible for these earlier abandonments. The war proposed was with Aigina (Herodotos, V.86–88), though its date is uncertain; it has been dated to the end of the 8th century by Dunbabin and Bradeen, though more recently Coldstream proposed a date some fifty years earlier.³ In point of fact the date is irrelevant for our purposes, given the nature of the war. Herodotos writes that Athens attacked Aigina and the outcome was the destruction of the Athenian fleet at Aigina. There is no reference to any action in Athens, and the only victim known to have died on Attic soil was the unfortunate sole survivor of the engagement at Aigina. He brought back news of the disaster and was set upon by the enraged widows who stabbed him to death with their dress-pins. Furthermore, destruction debris of the sort which would result from the violent sack of the city was not recovered from any of the wells. In short, whatever the effect and date of the war with Aigina, it seems unlikely to have contributed directly to the abandonment of so many Athenian wells.

A priori a drought would seem the most reasonable explanation for the simultaneous filling of numerous wells. Repeated years of below-average rainfall would result in a drop in the water table so that the wells ceased to produce water.⁴ The owner then had the option of digging deeper or abandoning the well and filling it in. An unproduc-

¹For the wells, see E. Brann, *Agora*, VIII, *The Late Geometric and Protoattic Pottery*, Princeton 1962, pp. 125–131. Also N. Coldstream, *Greek Geometric Pottery* (= *GGP*), London 1968, pp. 360–362.

²Brann, *Agora* VIII, p. 108. The wells are Agora deposits M 11:1, N 11:3, N 11:4, N 11:5, N 11:6, P 7:3, Q 8:9, R 9:2, S 18:2 and two unpublished wells: R 10:5 and R 12:2. These are 11 of the 16 late Geometric wells: the other 5 were filled somewhat earlier.

³T. J. Dunbabin, *BSA* 37, 1936/37, pp. 83ff. D. W. Bradeen, *TAPA* 78, 1947, pp. 223ff. Coldstream, *GGP*, p. 361, note 10 and *Geometric Greece*, London 1977, p. 135.

⁴Such an event is recorded for the year 361/0 when, according to Demosthenes (L.61), water dried up in the wells. During a dry spell in 1977 the water level in an unused well in the village of Ancient Corinth dropped 2.65 m. between February and October.

tive well left open was an unnecessary hazard and could be filled conveniently with refuse from the house. It would appear that this is what happened in most instances. Two of the wells (P 7:3 and Q 8:9) were dug to a depth of over eleven meters, more than double the average depth of *ca.* 5.35 m., but these too were abandoned and filled in. Thus the Agora wells suggest a prolonged, severe drought in the second half of the 8th century B.C.

Further archaeological evidence may be cited to support this suggestion. According to the testimony of Pausanias (I.32.2), there was a sanctuary of Zeus Ombrios, the bringer of rain, on Mount Hymettos. The sanctuary was located and excavated earlier in this century by C. Blegen and R. Young, and the material has recently been published by M. Langdon.⁵ It has been argued that the shrine was the object of particularly intensive worship whenever the need for rain was great. The chronological distribution of the votive offerings recovered in the excavations is therefore of interest:

Late Proto-Geometric	69 vases
Early Geometric II	25 vases
Middle Geometric I (875–800 B.C.)	
Middle Geometric II (800–760 B.C.)	91 vases
Late Geometric I (760–735 B.C.)	82 vases
Late Geometric II (735–700 B.C.)	294 vases
7th century	589 vases
6th century	109 vases
Post 6th century	slight scattering

The figures speak for themselves. A sharp increase in the use of the sanctuary would seem to imply a shortage of rainfall in the late 8th and 7th centuries B.C., just that period for which the Agora wells indicate a drought.

That there was a drought seems clear, and for it to result in a drop in the water table sufficient to lead to the abandonment of numerous wells it must have been severe and prolonged.

The inevitable result of drought is famine; a common product of these two is epidemic disease. There are numerous instances of this in antiquity, as is clear from the following examples:

Herodotos (VII.171) on the Cretans:

After this they returned from Troy and they and their cattle were afflicted with famine and pestilence, until Crete was once more left desolate. (Loeb translation)

⁵*AJA* 28, 1924, pp. 337ff., 38, 1934, p. 10, 44, 1940, pp. 1–9, and M. K. Langdon, *Hesperia*, Suppl. XVI, *A Sanctuary of Zeus on Mount Hymettos*, Princeton 1976. In note 49, pp. 89–90, of Langdon's study there is reference to the likelihood of a prolonged drought in the 8th and 7th centuries, and the evidence of the Agora wells is cited. The sanctuary on Mt. Parnes, used for sacrifices to Zeus Ombrios (Paus., I.32.2), has been excavated but not published: brief reports include *AJA* 64, 1960, p. 269; *BCH* 84, 1960, p. 658; and *JHS-AR* 1959–60, p. 8 and 1960–61, p. 5.

Strabo (XVII.3.10) on Aithiopia:

therefore pestilences often ensue because of droughts, and the lakes are filled with mud, and the locust is prevalent. (Loeb translation)

Dionysios of Halikarnassos (I.23.2–3) on the Pelasgians:

The first cause of the desolation of their cities seemed to be a drought which laid waste the land, when neither any fruit remained on the trees until it was ripe, but dropped while still green, nor did such of the seed corn as sent up shoots and flowered stand for the usual period until the ear was ripe, nor did sufficient grass grow for the cattle; and of the waters some were no longer fit to drink, others shrank up during the summer, and others were totally dried up. And like misfortunes attended the offspring both of cattle and of women. For they were either abortive or died at birth, some by their death destroying also those that bore them; and if any got safely past the danger of their delivery, they were either maimed or defective or, being injured by some other accident, were not fit to be reared. The rest of the people also, particularly those in the prime of life, were afflicted with many unusual diseases and uncommon deaths. (Loeb translation)

This vivid ancient example can be supplemented by more recent accounts; this, from a 19th-century drought in northeast Brazil, is strikingly similar to the account of Dionysios:

During the great famine of 1877 epidemic disease killed 50% of the population, a matter of half a million persons. Even in fairly normal periods the effect of drought will eliminate half of the newborn children within their first—and only—year of life. When the drought persists in strength through three consecutive years, the inhabitants have so little prospect of survival that they emigrate in great numbers to climatically more fortunate regions.⁶

These examples will perhaps suffice to indicate the close relationships of drought and famine to disease.⁷ If the drought were severe enough to cause the abandonment of wells then it might easily have been accompanied by an epidemic. If so, its effect on the population may well have been devastating. The plague of 429 B.C., according to Thucydides, killed between a quarter and a third of the army; Diodoros, writing of the city as a whole, put the number of dead at close to 15,000.⁸ A similar loss, or perhaps a greater one, may have been experienced in this postulated earlier catastrophe.

⁶P. Joffroy, *Brésil* (Collection Petite Planète), Éditions de Seuil, Paris 1958, cited by R. Carpenter in *Discontinuity in Greek Civilization*, Cambridge 1966, p. 69. The abortions and high infant mortality rates noted in this passage and that of Dionysios are of some interest; see footnote 11 below.

⁷Hippokrates refers to the association and both Galen and oracles from Klaros attest the correlation in the Roman period. Hippokrates: *περὶ ἀέρων, ὑδάτων, τόπων*, 10 and *Aphorisms* III.7; Galen: VII, 620, 623, 686K, and 749–752K (= *Corpus Medicorum Graecorum* V 4, 2, 305, 307, 347–349, 389–391); oracles from Klaros: for Pergamon, *IGRR* IV, 360 and for Trocetta, south of the Hermos, *IGRR* IV, 1498, both of the 2nd century after Christ.

⁸Thucydides, III.87.3 (with commentary by Gomme) and Diod. Sic., XII.58.2. A. Gomme (*The Population of Athens in the 5th and 4th Centuries B.C.*, Oxford 1933, p. 26) estimated that the population of Athens in 431 B.C. was 315,500; for 425 B.C. the estimated total is 218,000. The plague of 429 has been variously identified as smallpox, typhus, or measles and was not, apparently, caused by insufficient water supply, though there was some question in antiquity: Thuc., II.48. For the plague see *TAPA* 100, 1969, pp. 261–275 with earlier bibliography, to which add *GRBS* 5, 1964, pp. 101–112.

There are several possible diseases for the earlier epidemic, particularly the various forms of enteritis

Evidence is hard to arrive at, but once again the archaeological record may shed some light. The numerous late Geometric graves in Athens and throughout Attica have been cited as evidence of increased population.⁹ But numerous graves can mean not so much that more people were living then, but rather that they were dying. If one looks further, there is an interesting gap. Where are all these people in the first half of the 7th century? The figures from several Attic cemeteries are worth considering. From the Agora there are 28 graves of the second half of the 8th century and only 4 from the first half of the 7th. At the Kerameikos there are 50 graves of the second half of the 8th century and 12 from the first half of the 7th. And at Eleusis there are 12 from the second half of the 8th and two from the first half of the 7th.¹⁰ Thus the evidence from these three cemeteries points to a substantial drop in population in the last half of the 8th century. The 7th-century cemetery at Phaleron is made up largely of infant pithos burials, which is exactly what one would expect from a population afflicted by drought and disease, as suggested by the descriptions cited above.¹¹

The statistics of the Agora wells can also be brought to bear on the problem, though the evidence is ambiguous. There were some 20 wells in use in the period

(the third leading cause of death in the United States as recently as 1900 according to the National Center for Health Statistics). Once the disease had begun, drought conditions would abet its spread as basic hygiene deteriorated with too many people using whatever few sources of water remained. It should be noted that the epidemic may well have been restricted largely to Attica (though note the passage concerning Corinth, below, pp. 408–409). Thucydides relates that the plague of 429 was so restricted, though Pausanias cites monuments that suggest otherwise (footnote 28 below).

⁹N. Coldstream, *GGP*, pp. 360–362, and A. Snodgrass, “Archaeology and the Rise of the Greek State” (An Inaugural Lecture), Cambridge University Press, March 1977, pp. 10–13.

¹⁰Agora cemetery: *Agora VIII*, pp. 125–131; Kerameikos: K. Kübler, *Kerameikos V and VI*, i, Berlin 1954 and 1959; Eleusis: G. Mylonas, *The West Cemetery of Eleusis II*, Athens 1975, table D, p. 256 and p. 328. These cemeteries reflect a ratio of about five to one between the two periods. It may be questioned whether there is enough of a sampling for the figures to be significant, but at present from Attica there clearly seem to be far more earlier burials. I had hoped at the outset to compare total numbers of graves known from the two periods. Regrettably this has not proved possible. The Geometric period has been studied over the years and recently drawn together by N. Coldstream in his monumental *Greek Geometric Pottery* (footnote 1 above) and *Geometric Greece*, London 1977. As of 1976 some 408 late Geometric graves were known from Attica: Snodgrass, *op. cit.* (footnote 9 above), p. 12 and note 6. No such precision is possible for the 7th century; the material is largely unpublished and has not received the same attention as the earlier graves. For the bibliography see Kübler, *Kerameikos VI*, i, pp. 95ff. and note 32, J. Boardman and D. Kurtz, *Greek Burial Customs*, London 1971, pp. 351–352, and D. Schilardi in *’Εφ’Αρχ.*, 1975, pp. 66ff.

That the population of Athens increased in the 8th century is not questioned; it would appear, however, on the basis of present evidence as though the growth was not sustained into the 7th but fell off sharply.

Further research in skeletal analysis will perhaps add useful information. Though the disease itself probably would not leave any traces, the ratios of adult to child to infant burials could well be significant. For the sort of research possible given sufficient material see J. L. Angel, “The Basis of Paleodemology,” *American Journal of Physical Anthropology*, N.S. 30, 1969, pp. 427–438. According to Dr. Angel the present state of analysis of the skeletal material is not advanced enough either to confirm or to refute the theory of an epidemic.

¹¹Phaleron cemetery: *Δελτ* 2, 1916, pp. 13–64 and *AJA* 46, 1942, pp. 23–57, esp. note 8 on p. 24. See also footnote 51 below.

760–700 B.C.; for the entire 7th century there are only 14.¹² While this may reflect the same drop in population postulated above on the basis of the graves, it might also merely reflect the severity of the drought and the time it took the water table to recover. Whatever the cause, the water table or population had recovered by the next century; there are 35 wells around the Agora which date to the 6th century B.C.

Further archaeological evidence may perhaps be adduced from the history of Athenian trade and ceramics. Coldstream's study of the Geometric pottery of Greece has shown that Athenian Geometric was the dominant style until the middle of the 8th century. After that time, however, Athenian potters no longer strongly influenced their counterparts elsewhere in Greece, and Attic Geometric, so heavily exported before, is rarely found outside Attica.¹³ This same decline continues into the early years of the 7th century, and the picture of Athenian ceramics as painted by Dunbabin is gloomy indeed:

The general state of Athenian pottery in the first half of the seventh century, and particularly its distribution, suggests that Attica was backward and in decline. . . .

Attic pottery of the late eighth and early seventh century is backward when compared with Protocorinthian. . . . Their weakest period, artistically and commercially, is the first quarter of the seventh century; . . .¹⁴

Athenian potters had been dominant before and were to become so again with the full development of the black-figure style; recovery began as early as the middle of the 7th century and was swift.¹⁵ It seems unjustified to lay the blame for this depressed period in Athenian ceramics on a lack of skill or inventiveness on the part of her potters; indeed, a handful of magnificent individual pieces from this time survives. Rather the general decline should perhaps be attributed to the disruptive effects of the drought and epidemic postulated for just this period.

One might hope for literary confirmation of this catastrophe as well. The use of traditions from these early periods is always difficult, and it should be kept in mind that we know very little about early Athens from the literary or historical records. Silence from this quarter need not trouble us unduly, and the following instances are presented only to preclude the possible objection that so great a disaster was not remembered in any way.

In this connection, the foundation of the cult of Artemis at Brauron is of some interest. According to the legend, Artemis, angered at the killing of a pet bear, sent a plague or famine to torment the Athenians; in order to assuage the goddess' anger the Athenians instituted the cult at Brauron. Some of the sources record that Athens was

¹²*Agora VIII*, pp. 125–131. To the sixteen late Geometric wells add D 11:5, F 15:4, J 15:1, and N 11:4, which were all apparently in use late in the 8th century.

¹³Coldstream, *GGP*, pp. 348–351. Also Coldstream, *Geometric Greece*, p. 132: "After 730 B.C. Athens rapidly loses her artistic initiative."

¹⁴*BSA* 37, 1936/37, pp. 88 and 91. More recently, Boardman and Kurtz (*Greek Burial Customs*, p. 68): "Its beginning (the Archaic period) is marked by some degree of recession just after the Geometric period."

¹⁵T. J. Dunbabin, *BSA* 45, 1950, p. 201.

afflicted by a famine (λιμός), while others record that it was a plague (λοιμός).¹⁶ This is a common confusion in antiquity, presumably because of the similarity in spelling, though some of the confusion may be due to the fact that, as noted above, the two in reality often go hand in hand.¹⁷

The sanctuary at Brauron was excavated by I. Papademetriou in the 1940's and 1950's and has yielded numerous rich votive offerings. The earliest of these, presumably going back to the time of the foundation of the cult, date to around 700 B.C. and were found at the sacred spring, just west of the temple.¹⁸ Thus the literary record, supplemented by the archaeological evidence, suggests that the cult of Brauronian Artemis was founded at the time of a famine and/or epidemic in the closing years of the 8th century.

Other traditions record that a famine or plague was the reason for the introduction of the cults of Dionysos¹⁹ and the Mother of the Gods,²⁰ the sacrifice of the daughters of Leos,²¹ the institution of the Diipoleia,²² the institution of the *eiresionai*, agricultural sacrifices carried out by the Athenians on behalf of all Greeks,²³ and the foundation of the Field of Famine (λιμοῦ πεδίου), a plot of land dedicated to the gods on the north slope of the Acropolis.²⁴

¹⁶Schol. Aristophanes, *Lysistrata* 645 and Souda Lexicon: "Ἄρκτος ἡ Βραυρωνίους and "Εμβαρὸς εἶμι.

¹⁷Whether or not the two words would sound the same when spoken in antiquity is uncertain; they do according to modern Greek pronunciation. Note also the confusion over the words of the well-known oracle at the time of the plague of 429 B.C.: Thuc., II.54. See also W. S. Allen, *Vox Graeca*, p. 77.

¹⁸I. Papademetriou, "The Sanctuary of Artemis at Brauron," *Scientific American* 208, 1963, pp. 110-120. Final publication of the ceramic material is forthcoming and will perhaps suggest a somewhat earlier date for the foundation.

¹⁹Schol. Aristophanes, *Acharnians* 243, and Paus., I.2.5. For the introduction of wine to Athens: Aelian, fr. 73.

²⁰Julian, VIII (V).1ff.; Souda Lexicon, βάραθρον; Photios, Μητραγύρτης; Apostolius, XI.34; schol. Aischines, III.187. For the Metroon in the Agora, R. E. Wycherley, *Agora*, III, *The Testimonia*, Princeton 1957, pp. 150ff.

²¹The literary testimonia are conveniently assembled in *Agora*, III, nos. 317-338, pp. 108-113. The truth of the legend has been questioned by S. Brunnsäker, *Opuscula Atheniensia* 8, 1968, pp. 77-86. If one accepts the sacrifice as genuine, there is still the problem of the date. The sources which refer to the Eponymous Hero and the story of the sacrifice of his daughters give no date: Strabo, IX.1.17; Aelian, *Var. Hist.* XII.28; Diod. Sic., XVII.15; Aristides, XIII (Dindorf, p. 191); Demosthenes, LX (Epitaphios) .29; Cicero, *de natura deorum* 3.50; and Paus., I.5.2. (It is uncertain whether the Eponymous Hero is to be associated with the treacherous herald of the same name who came to Theseus' aid at the battle of Pallene: Plutarch, *Theseus* 13 and Steph. Byz., "Ἄγνους. See U. Kron, *AthMitt*, Suppl. V, *Die zehn attischen Phylenheroen*, Berlin 1976, pp. 194-201.) Traditions of human sacrifice in early Greek religion are common, and I can see no reason to doubt that it was resorted to in times of trouble such as drought, famine, plague, or war. In addition to Athens, the practice is recorded in Arkadia at Mt. Lykaion (Theophrastos in Porphyry, *de abst.* II.27, and Eusebios, IV.16.10), in Achaia at Patras (Paus., VII.19.4, 7), at Sparta (Paus., III.16.6-7), at Elis (Lykophron, *Alexandra* 159ff. and schol.), and at Potniai, near Thebes (Paus., IX.8.2). See also F. Schwenn, *Die Menschenopfer bei den Griechen und Römern*, Giessen 1915.

²²Porphyry, *de abst.* II.29.

²³For the *eiresionai* and *proerosiai*: Souda Lexicon, εἰρεσιώνη; schol. Aristophanes, *Knights* 729 and *Plutus* 1054; Souda Lexicon, προηροσία; and Lykourgos, *vs. Menesaichmos*, fr. 2. Also Harpokration, s.v. "Ἀβαρς and scholion to *Knights* 725.

²⁴For the Field of Famine: Bekker, *Anecdota Graeca* I.278.4; Diogenianos, VI.13; Hesychios: λιμοῦ

The accounts are often confused and, with the possible exception of the cult of Artemis at Brauron, cannot be dated with any degree of accuracy. Nonetheless they serve to demonstrate that there was a tradition in early Athenian history of famine and epidemic.²⁵ I would suggest that some, if not all, of the instances cited carry a recollection of the drought/famine and epidemic postulated above on the basis of archaeological evidence.

It has been pointed out that there was something of a renaissance in religious activity in the second half of the 8th century B.C. New temples of the Olympian gods were founded and there was considerable interest in local hero cults.²⁶ It has been argued that such activity may be regarded as evidence of increased wealth, expansion, and prosperity, elements which would seem to contradict the somewhat grim picture outlined in the present study. I would suggest that increased religious activity is in no way inconsistent with the notion of a prolonged drought and its effects. Man's interest in the divine is all too often the direct result of need, and times of trouble might be expected to produce religious fervor. Examples can be cited from throughout Greek history when a cult was founded, a temple built, or a statue erected either to avert a calamity or as a thank offering for deliverance. From earliest times, one might cite the foundation of the great cult of Demeter at Eleusis during a famine, or the foundation of the cult of Zeus Panhellenios on Aigina at the time of a drought.²⁷ The plague of 429 left its mark in the form of religious monuments throughout Greece; the best known and most impressive is the temple of Apollo at Bassai, near Phigaleia, and other temples or statues are attested at Athens, Kleonai, Elis, and Troizen.²⁸ In the Roman period, when famine and plague struck the eastern empire during the reign of Marcus Aurelius, the city of Trocetta set up a statue of Apollo Alexikakos, the city of Kallipolis dedicated one to Apollo Toxophoros, and Pergamon instituted sacrifices to the tutelary deities of the city, all at the urging of the oracle of Apollo at Klaros.²⁹ Ancient sources

πεδίων; Apostolius, X.69; Makarios, V.64; Zenobios, IV.93; and Plutarch, 30 (E. L. Leutsch, *Paroemiographi Graeci* I, p. 326).

²⁵Other sources as well refer to natural disasters in Athens, though not in connection with cult: Philochoros, *FGH* 328, fr. 169 and Androtion, *FGH* 324, fr. 55 record that a shortage of cattle led the Athenians to restrict live sacrifices. The use of *φαρμάκοι* (scapegoats) in time of trouble is attested as well: schol. *Frogs* 720, schol. *Knights* 1136, schol. *Plutus* 454, and Tzetzes, *Hist. var. chil.* 5, 726ff. Other indirect references to disasters: Plutarch, *Moralia* 523A-B; Oenomaus in Eusebios, *praeparatio evangelica* V.30; and schol. Aristophanes, *Plutus* 818 (Tzetzes).

²⁶Snodgrass, *op. cit.* (footnote 9 above), pp. 25–26 and Coldstream, *Geometric Greece*, pp. 109–139. The following remarks apply largely to the cults of the Olympian gods. Many of the hero-cults seem to reflect a new awareness of their past on the part of Greeks in the late 8th century: Coldstream, *JHS* 96, 1976, pp. 8–17.

²⁷Demeter at Eleusis: *Hymn to Demeter*, lines 305–333, Paus. VIII.42, and Diod. Sic., I.29, V.68. Zeus Panhellenios on Aigina: Isokrates, IX.4.5; Paus., I.44.9, II.29.7; Marmor Parium, *FGH* 239f., A 19; Diod. Sic., IV.61.1; and Ovid, *Met.* VII.469, 523ff.

²⁸Phigaleia: Paus., VIII.41.8–9; Athens: Apollo Alexikakos (Paus., I.3.3) and Herakles Alexikakos (schol. Aristophanes, *Frogs* 501); Kleonai: Apollo (Paus., X.11.5); Elis: Apollo (Paus., VI.24.6); and Troizen: Pan (Paus., II.32.6). Note also for Athens the purification of Delos and the reinstitution of the Delia in honor of Apollo: Thuc., III.104 and Diod. Sic., XII.58.

²⁹Trocetta: *IGRR* IV, 1498 and Buresch, *Klaros*, Leipzig 1889, pp. 1–29, 67–68; Kallipolis and

attest numerous other instances brought on by the triad of disasters: drought, famine, and plague.³⁰ With abundant examples from the historical period is there any reason to doubt that such an association existed in earlier periods? If anything, it might be argued that the more primitive the society, the closer the connection between religious activity and natural disasters.

We have seen reason to believe that the early drought and/or epidemic affected both the artistic and religious development of ancient Athens. We might go a bit further still and speculate briefly as to the possible effect on the political development of the city as well. Historians of early Archaic Athens have long noted her tardiness in two of the characteristic features of the 8th and 7th centuries: colonization and tyranny.³¹ In broad general terms, both can be said in many instances to represent solutions to the same problem; a large population settled on an insufficient agricultural base. In the case of colonies the search for new land is often the principal motivation.³² In the case of tyrannies, discontent and factional strife may well have been exacerbated by overpopulation.³³ If one accepts the outbreak of disease and a substantial drop in population, as argued above on the basis of the cemeteries, then the epidemic can perhaps be used to explain Athenian quiescence both internally and in foreign affairs throughout the 7th century. With a large land area and a severely reduced population there would have been no great political pressures at work until the population had recovered.³⁴ An attempt at a tyranny was made with Megarian assistance in about 632 B.C. and failed,³⁵

Pergamon: G. Kaibel, *Epigrammata Graeca*, nos. 1034 and 1035. For general discussions of the famine and plague in the 2nd century see J. Gilliam, *AJP* 82, 1961, pp. 225–251; C. A. Behr, *Aelius Aristides and the Sacred Tables*, Amsterdam 1968, pp. 96–98, notes 8, 11–12 and pp. 166–167, notes 13–15; and J. Wiseman in *Studies in the Antiquities of Stobi* I, J. Wiseman, ed., Belgrade 1973, pp. 143–183.

³⁰In addition to the sources listed above for Athens (footnotes 16, 19–24), the following instances of religious activity associated with disasters may be noted. Drought: Argolid (Paus., II.25.10), Athens (Paus., I.24.3), Boiotia (Paus., IX.40.1) and Kea (below, footnote 47). Famine: Epidauros (Herodotos, V.82.1), Phigaleia (Paus., VIII.42.5), and Tegea (Paus., VIII.53.3). Plague: Orchomenos (Paus., IX.38.3), Sparta (Paus., III.16.6–7), Tanagra (Paus., IX.22.1), and Thessaly (schol. Aristophanes, *Plutus* 179). Famine and plague: Achaia (Paus., VII.19.4, 7) and Peloponnese (Phlegon of Tralles, *FGH* 257, fr. 1).

³¹For the notion that Athenian development was normal, but delayed: P. N. Ure, *The Origins of Tyranny*, Cambridge 1922, pp. 33–34, A. Andrewes, *The Greek Tyrants*, London 1956, pp. 22, 83–84, M. I. Finley, *Early Greece*, London 1970, pp. 120–121, R. J. Hopper, *The Early Greeks*, London 1976, pp. 176, 184–185, and L. Jeffery, *Archaic Greece*, London 1976, pp. 85–87.

³²Footnotes 39 and 54 below.

³³For tyrannies see Ure, *The Origins of Tyranny*, and Andrewes, *The Greek Tyrants*. At least seven city-states had tyrants a generation or more before the Peisistratid tyranny in Athens: Argos, Corinth, Epidauros, Megara, Miletos, Mytilene, and Sikyon. For recent views on the rise of tyrannies and especially their relationship to hoplites see P. Cartledge, *JHS* 97, 1977, pp. 21–22 and J. Salmon, *JHS* 97, 1977, pp. 84–101. In addition to the public works projects which were a feature of many tyrannies, there are specific ancient references to the benefits the poor obtained: Aristotle, *Ath. Pol.* XIII.4–XIV.1, XVI.2 (Athens) and *Politics* V.4.5 (Megara).

³⁴Note that Athenian recession in ceramics and the increased religious activity can be attributed to the drought and famine, whereas the political quiescence is dependent on the epidemic with the resultant drop in population. Note also that severe epidemic is proposed for Athens alone; it will be argued below that other city-states affected by the drought sent out colonies to relieve their over-population.

³⁵Herodotos, V.71; Aristotle, *Ath. Pol.*, fr. 8; Thuc., I.126; and Plutarch, *Solon* 12. See also M. Lang,

perhaps in part because conditions were not yet ripe. The time would come. By the 6th century Athens had fully recovered; the tyrant Peisistratos arose, and from the early 6th century on colonization or annexation was an important feature of Athenian foreign policy.³⁶ I would suggest that the postulated epidemic of the second half of the 8th century was in part responsible for this delay in Athenian political development.

Such a drought and consequent famine should not have gone unnoticed in the areas around Athens, and it remains to consider its possible effect on the city-states in the immediate vicinity. The relationship between famine and migration is attested as early as the Late Bronze Age in Greek literary traditions. According to Lykourgos (vs. *Leokrates* 83) the Peloponnesians who attacked Athens were on the move because of a famine at home:

Remember the reign of Kodros. The Peloponnesians, whose crops had failed at home, decided to march against our city and, expelling our ancestors, to divide the land amongst themselves. (Loeb translation)

And the Dorian settlers of Rhodes, also from the Peloponnese, were known as the famine-Dorians, according to Hesychios (Λιμοδόρῃεις):

Famine-Dorians: thus were those called from the Peloponnese who, there being a severe dearth there, emigrated because of this reason, and settled in Rhodes and Knidos.³⁷

The relationship can be more clearly understood from another, more recent, example. From Herodotos³⁸ we learn that the island of Thera suffered from a severe drought for seven years, until every tree on the island but one had died. The Therans consulted the oracle at Delphi and were told to found a new colony. Faced with starvation, the islanders required one of every pair of brothers to take part in the new venture, which led eventually to the foundation of Cyrene in North Africa in about 630 B.C.

With these examples in mind, it seems worth considering the possible relation of a drought to the great colonizing movement of the late 8th and early 7th centuries.³⁹ It

CP 62, 1967, pp. 243ff. Note Megarian success generally against Athens in the 7th century, perhaps a further indication of weakness in the latter?

³⁶Sigeion was occupied by about 600 B.C. (Strabo, XIII.1.38–39 and Herodotos, V.94–95) and the Chersonnese in the late 7th century (Herodotos, VI.34ff. and Meritt, Wade-Gery, McGregor, *The Athenian Tribute Lists*, Princeton 1950, III, p. 289, note 75). Cleruchies became a standard institution of Athenian imperialism: P. A. Brunt, "Athenian Settlements Abroad in the Fifth Century B.C.," *Ancient Society and Institutions* (Ehrenberg Studies), Oxford 1966, pp. 71–92, and A. H. M. Jones, *Athenian Democracy*, Oxford 1969, pp. 168–174.

³⁷These two traditions have not, so far as I know, been cited in discussions of Carpenter's theory of climatic change as the reason for the collapse of the Mycenaean civilization: *Discontinuity in Greek Civilization*. Others may be noted briefly: a) Theopompos, *FGH* 115, fr. 357 (Oenomaus in Eusebios, *PE* V.20); b) Herodotos, VII.171; c) Demon, *FGH* 327, fr. 17 and Photius and Souda (ἔσχατος Μυσῶν); d) Timaios, *FGH* 566, fr. 146 (Aelian, fr. 47 and Apollod., *Epit.* VI.22); e) Plutarch, *Moralia* 296B; f) Paus., IX.40.1; g) Diod. Sic., V.53; and h) Herodotos, I.94.4.

³⁸Herodotos, IV.153, 156; also Meiggs and Lewis, *Greek Historical Inscriptions*, Oxford 1969, no. 5.

³⁹For the colonizing movement generally: Dunbabin, *The Western Greeks*, Oxford 1948, esp. Appendix I, pp. 435–471, for the foundation dates. Also A. J. Graham, *JHS* 91, 1971, pp. 35–47, J. Bérard, *L'expansion et la colonisation grecque jusqu'aux guerres médiques*, Paris 1960, R. M. Cook, *JHS* 66, 1946, pp.

can be noted, for instance, that the principal colonizing states were Achaia, Corinth, and Megara to the west of Athens, and Euboia and the islands of the Aegean to the east. A severe and sudden loss of agricultural production caused by a drought in central Greece may well have been the major impetus for many of the colonies sent out from the region at this time. A brief survey of the individual states may be instructive.

The island of Euboia, with the two great states of Chalkis and Eretria, was a major colonizer. The earliest Italian and Sicilian colonies were all founded from here: Pithekoussai, Kymai, Naxos, and Zankle. Of the greatest interest for our purposes, perhaps, is the account of the foundation of Rhegion, at the toe of Italy. The new city was founded from Zankle, across the straits of Messina, with refugees from Messenia and from Chalkis, the metropolis of Zankle. The date of the foundation of the city coincides with the first Messenian war, that is to say, in the last third of the 8th century. It is worth quoting from Strabo's account of the foundation (VI.1.6):

κτίσμα δ' ἐστὶ τὸ Ῥήγιον Χαλκιδέων, οὓς κατὰ χρησμὸν δεκατευθέντας τῷ Ἀπόλλωνι δι' ἀφορίαν, ὕστερον ἐκ Δελφῶν ἀποικῆσαι δεῦρό φασι, παραλαβόντας καὶ ἄλλους τῶν οἴκοθεν.

Rhegion is a foundation of those Chalkideans who, according to an oracle, were dedicated to Apollo—one man out of every ten—because of a failure of the crops; they say that later they emigrated hither from Delphi, taking still others from home.

The same tradition of famine at Chalkis is recorded also by Herakleides Lembos (*de reb. publ.* 25):⁴⁰

Ῥήγιον ᾤκισαν Χαλκιδεῖς οἱ ἀπ' Εὐρίπου διὰ λιμὸν ἀναστάντες . . .

Chalcidians who left the Euripos because of famine founded Rhegion . . .

There are of course other causes of crop failure and famine, but I would suggest that the circumstances of the foundation of Rhegion serve as indirect evidence of a drought afflicting nearby Athens at just this period.

On the west coast of Euboia, between Chalkis and Eretria, there lies the prehistoric site of Lefkandi, partially excavated in recent years by members of the British School of Archaeology.⁴¹ It is clear from those excavations that the site was abandoned in the late 8th century B.C. It is not clear, however, whether the site was destroyed first or simply deserted, and more will have to be excavated before it is possible to say for certain. It seems not improbable that the city was abandoned because of an insufficient water supply.⁴² No reliable source of water was recognized by the excavators. The site is on a

67–98, Jeffery, *Archaic Greece*, pp. 50–59, and J. Boardman, *The Greeks Overseas*, Baltimore 1964, esp. pp. 176–180.

⁴⁰See G. Vallet, *Rhegion et Zancle*, Paris 1958, pp. 47–80, esp. pp. 66–71.

⁴¹M. Popham and L. H. Sackett, *Excavations at Lefkandi, Euboia, 1964–66*, London 1968, pp. 33–35, and *Archaeology* 25, 1972, pp. 8–19.

⁴²It goes almost without saying that a site with no dependable water supply would quickly become uninhabited. There are parallels in the historical period for such abandonments. Pausanias (IX.38.9) writes that the site of Aspledon in Boiotia was abandoned because of a lack of water; and in Arkadia (VIII.26.3) he expresses surprise at finding the site of Melainai deserted since it was still well supplied with running water in his day. The excavators of Lefkandi have been inclined to associate the end of the site with the

low hill right by the shore and if the water table fell at all any wells would produce brackish water. If any other source being used gave out because of the drought then the inhabitants may well have been forced to migrate. Perhaps the modern name of the site, Xeropolis (the dry city), has early antecedents.

Somewhat to the southeast of Euboeia lies Andros. Little is known of the early history of the island, though she was an active colonizer in the second quarter of the 7th century, when she settled the eastern prong of the Chalkidic peninsula with the sites of Sane (with Chalkis), Akanthos, and Stageira (Plutarch, *Quaestiones Graecae* 30 = *Moralia* 298). These would seem to be a bit late to have been directly affected by the drought, though local conditions on the island may have delayed her entry into colonization.

On the southwest coast of Andros is the Dark Age site of Zagora. This, one of the first such settlements to have been discovered, has recently been excavated.⁴³ The entire site, with the exception of the temple, was abandoned at the end of the 8th century and never reoccupied. The excavations have made it clear that the site was abandoned and not destroyed. Once again the excavators failed to find a convenient abundant water supply, and it seems possible that a drought in the second half of the 8th century rendered the city uninhabitable.

Other islands in the Aegean may also show signs of having been affected. Naxos, for instance, was colonizing in Sicily in the third quarter of the 8th century.⁴⁴ Just to the east of Naxos lies the small islet of Donoussa. Recent excavations at this dry rocky site show that it was occupied in the 8th century B.C. and, like Zagora, was apparently abandoned in the second half of the century.⁴⁵ Once again a prolonged drought, resulting in the drying up of any water supply, would perhaps seem the most reasonable explanation for the abandonment.

Paros, just west of Naxos, was colonizing to the north in the late 8th and early 7th centuries.⁴⁶ Archilochos was active during this period and one small fragment of his poetry is particularly tantalizing (fr. 125):

κακήν σφιν Ζεὺς ἔδωκεν αὐόνην
Zeus gave them an evil drought

If, as is often the case in his verses, Archilochos is referring to an event within his personal experience rather than a mythological event, then we may have here a contemporary reference to the drought.

Lelantine War. For the latest views of this difficult problem: Jeffery, *Archaic Greece*, pp. 64–67 and notes 2–4 on pp. 69–70, and N. Coldstream, *Geometric Greece*, pp. 200–201.

⁴³*Ergon* 1967, pp. 75–82, Πρακτικά 1967, pp. 103–111, and A. Cambitoglou, *Zagora I*, Sydney 1971, esp. pp. 9 and 11 on the problem of water supply. More recently P. Themelis has suggested that the site was a cemetery (rather than a city): 'Εφ'Αρχ., 1975, pp. 230–266.

⁴⁴Thuc., VI.3 and Hellanikos, *FGH* 4, fr. 82.

⁴⁵Δελτ 22, B', 1967, p. 467; 24, B', 1969, pp. 390–393; 25, B', 1970, pp. 426–428; and 26, B', 1971, pp. 465–467. Also *AAA* 4, 1971, pp. 210–216, 6, 1973, pp. 256–259.

⁴⁶Parion in ca. 710–708 B.C. (Strabo, 588, A. J. Graham, *JHS* 91, 1971, p. 41, note 50) and Thasos in the 680's.

Finally, the city of Iulis on the island of Kea devised an effective alternative to colonization for the control of population. According to Strabo (X.5.6) all those over sixty were required to commit suicide by drinking hemlock in order that there should be enough food for the others.⁴⁷

To the west of Athens, Megara, hemmed in on either side by much larger states, was an active colonizer, founding Megara Hyblaia in Sicily in the 8th century (ca. 728 B.C.) and Chalkedon, Selymbria and Byzantion in the Propontis in the early years of the 7th.⁴⁸

In the mountains above Megara, Pausanias (I.44.9) reports a sanctuary of Zeus Aphesios. The passage is somewhat confused, but it seems clear that Pausanias interpreted the epithet "Aphesios" as that of a rain god, first used when Zeus stopped a drought at the time of king Aiakos of Aigina:

ἐπὶ δὲ τοῦ ὄρους τῇ ἄκρᾳ Διὸς ἐστὶν Ἀφεσίου καλουμένου ναός· φασὶ δὲ ἐπὶ τοῦ συμβάντος ποτὲ τοῖς Ἑλλήσιν αὐχμοῦ θύσαντος Αἰακοῦ κατὰ τι δὴ λόγιον τῷ Πανελληνίῳ Διὶ ἐν Αἰγίνῃ ὕσαντά τε ἀφείναι καὶ διὰ τοῦτο Ἀφέσιον καλεῖσθαι τὸν Δία.

On the top of the mountain is a temple of Zeus surnamed Aphesius (Releaser). It is said that on the occasion of the drought that once afflicted the Greeks Aeacus in obedience to an oracular utterance sacrificed in Aegina to Zeus God of all the Greeks, and Zeus rained and ended the drought, gaining thus the name Aphesius. (Loeb translation)

The sanctuary was discovered and excavated in the last century. The earliest material from the site seems to go back to the Geometric period.⁴⁹

Corinth's great colony was Syracuse, founded in about 733 B.C. A tradition preserved in Plutarch (*Moralia* 773A-B) records that Archias left to found Syracuse at a time when there was a drought and plague in Corinth:

μετ' οὐ πολὺ δ' αὐχμὸς καὶ λοιμὸς κατελάμβανε τὴν πόλιν· καὶ τῶν Κορινθίων περὶ ἀπαλλαγῆς χρωμένων, ὁ θεὸς ἀνείλε μῆνιν εἶναι Ποσειδῶνος οὐκ ἀνήσοντας, ἕως ἂν τὸν Ἀκταίωνος θάνατον μετέλθοιεν. ταῦτα πυθόμενος Ἀρχίας, αὐτὸς γὰρ θεωρὸς ἦν, εἰς μὲν τὴν Κόρινθον ἐκὼν οὐκ ἐπανήλθε, πλεύσας δ' εἰς τὴν Σικελίαν Συρακούσας ἔκτισε.

Not long afterwards drought and plague laid hold of the city and, the Corinthians consulting the oracle about relief, the god replied that the anger of Poseidon would not relax until the death of

⁴⁷There is, unfortunately, no way of dating this remarkable law, and it cannot be definitely associated with difficulties at the end of the 8th century. It is perhaps worth noting also from Kea the tradition of an altar of Zeus Ikmaios (damp), founded when the etesian winds failed and drought and famine ensued. The foundation of the cult is attributed to Aristaios, a mythological figure: Herakl. Pont., 9.1 (FGH II, 214, Müller); Apollonios Rhodios, II.519ff. and scholion II.498ff.; Theophrastos, *de Vent.* 14; Clem. Alex., *Strom.* 6.3 (753); Hyginus, *Poet. astr.* 2.4; Pliny, *N.H.* 4.62; and Hesychios, sv. "Υδροῦσα.

⁴⁸E. Highbarger, *History and Civilization of Ancient Megara*, Baltimore 1927, pp. 109ff. and K. Hanell, *Megarische Studien*, Lund 1934, pp. 119f.

⁴⁹H. G. Lolling, 'Εφ' Αρχ, 1887, pp. 213ff. and 1890, pp. 55ff.; D. Philios, 'Εφ' Αρχ, 1890, pp. 35ff. The sanctuary is identified on the basis of an inscribed sherd. A full excavation report never appeared, and so the exact date of the Geometric pottery cannot be determined, though published examples are late. For interpretations other than Pausanias' as to the meaning of the epithet Ἀφέσιος, see Langdon, *op. cit.* (footnote 5 above), p. 82.

Aktaion was avenged. Learning this, for he was one of those consulting the oracle, Archias willingly did not return to Corinth but, sailing to Sicily, founded Syracuse.

It should be noted that the tradition specifically uses the word for drought (ἀνχμός) as the trouble afflicting Corinth along with plague (λοιμός), rather than the more common famine (λιμός).⁵⁰

Finally, the people who inhabited Achaia, the narrow strip of land between the mountains of the Peloponnese and the Gulf of Corinth, were also active colonizers, choosing the rich agricultural sites of Sybaris, Kroton, and Metapontion in South Italy in the late 8th and early 7th centuries B.C.⁵¹ Sybaris was founded with colonizers from Troizen as well, and it should be noted that the east coast of the Peloponnese also may well have been affected by the drought; from Herodotos we learn that some years before the Athenian war with Aigina Epidauros was struck by famine.⁵² Just west of Epidauros lies Mount Arachnaion, about which Pausanias records the following (II.25.10):

ἐστι δὲ ὄρος ὑπὲρ τῆς Λήσσης τὸ Ἀραχναῖον, . . . βωμοὶ δὲ εἰσιν ἐν αὐτῷ Διὸς τε καὶ Ἥρας· δεήσαν ὄμβρον σφίσιν ἐνταῦθα θύουσιν.

Above Lessa is Mount Arachnaeus, . . . On it are altars to Zeus and Hera. When rain is needed they sacrifice to them here. (Loeb translation)

Though the altars have never been excavated they have recently been located. Surface pottery found in the area suggests that the altars were founded in the late 8th century B.C.⁵³

⁵⁰In the case of traditions of this sort, containing the progression: crime-disaster-oracle-expiation, I would, of course, argue that the element in the formula most likely to be true would be the disaster.

Some additional evidence may perhaps be adduced from Strabo (380) who writes that the colonizers of Syracuse came from the town of Tenea in the hills south of Corinth. If the Corinthia were afflicted by a drought, the inland people would presumably be hardest hit, rather than those in the large plain to the north. For Tenea: Stillwell, *et al.*, *Princeton Encyclopedia of Classical Sites* (J. Wiseman), pp. 892–893.

⁵¹Sybaris: Strabo, 263 and Diod. Sic., XII.9; Kroton: Strabo, 262 and 387, Dionysios of Halikarnassos, II.59, and Diod. Sic., VIII.17; and Metapontion: Strabo, 265.

In the tradition of the founding of Kroton (*ca.* 708 B.C.), a certain Myskellos of Rhype, in Achaia, went to consult the oracle because his wife was not bearing children. The advice of the oracle was to found Kroton: Diod. Sic., VIII.17, Strabo, 269, Aelian, fr. 316 (Souda Lexicon: Μύσκελλος). It should be emphasized, of course, that there is no way of telling whether Myskellos' and his wife's difficulties were widespread in Achaia at this time, but note the connection of abortions and high infant mortality rates with drought and epidemics: Hippokrates, *Epidemics* I.16, and above p. 400 and footnote 11.

⁵²For the famine at Epidauros: Herodotos, V.82.1, and footnote 3, above, for the date. For the Troizenians at Sybaris: Aristotle, *Politics* V.2.10. Troizen also has a tradition of drought, not readily datable. Pausanias (II.31.14), in his account of the city, records having seen the Golden Stream, the only source which did not dry up when Troizen suffered a drought of nine years.

⁵³Langdon, *op. cit.* (footnote 5 above), pp. 107ff. and D. Rupp, *Journal of Field Archaeology* 3, 1976, pp. 261–268, esp. p. 265. In all, five mountaintop shrines sacred to Zeus as a rain god may be noted in the area putatively afflicted by the drought: Hymettos and Parnes in Attika (above, p. 398 and footnote 5), Sta Marmara at Megara (above, p. 408 and footnote 49), Arachnaion, and Oros on Aigina (Paus., II.29.6, Langdon, *op. cit.*, p. 81 and note 12). Oros seems to have its origins in the Bronze Age and Parnes has not been published; the other three all seem to begin or show signs of particularly intense worship in the years around 700 B.C.

It was argued long ago and has now generally been accepted that the principal motivation for much of the colonization of the 8th and 7th centuries was land hunger, brought on by a large population settled on an insufficient agricultural base.⁵⁴ With the recognition of a severe drought in the area of the mother cities in the second half of the 8th century, I would suggest that we can now refine that general view somewhat. Many of the colonies may well have been sent out not so much because of a gradual increase in population, but rather because a substantial loss in agricultural production caused by the drought sent the colonizers on their way. The example of Thera, though later than the period proposed above, will perhaps serve as a documented case of the sort of occurrence that may well have been common about a century earlier, and in the case of Rhegion this is attested. Silence concerning other foundations may be due to poor records in this early period, or simply to the fact that the cause was not noted, even then. A passage from Aristotle's *Meteorologica* (I.xiv) states the case clearly:

καὶ ταύταις (ἀφορίαις) αἱ μὲν μεγάλαι αἱ δὲ κατὰ μικρόν, ὥστε λανθάνουσι τῶν γε τοιούτων ἐθνῶν καὶ αἱ μεταναστάσεις διὰ τὸ τοὺς μὲν λείπειν τὰς χώρας, τοὺς δὲ ὑπομένειν μέχρι τούτου μέχρι περ ἂν μηκέτι δύνηται τρέφειν ἡ χώρα πλῆθος μηδέν. ἀπὸ τῆς πρώτης οὖν ἀπολείψεως εἰς τὴν ὑστέραν εἰκὸς γίνεσθαι μακροὺς χρόνους, ὥστε μηδένα μνημονεύειν.

Famines may be either immediately destructive or else so gradual that the disappearance of the people affected goes unnoticed; for when the inhabitants emigrate in relays, some leaving, some remaining until at last the land is unable to support any population at all, the time that elapses between the first and last emigration is likely to be too long for memory to cover.⁵⁵ (Loeb translation)

The drought in Athens was clearly severe, perhaps extending from the middle of the 8th century through the first quarter of the 7th. A drought of such duration could well have affected the various regions differently. I have suggested that the areas around Athens were afflicted, but the geography of Greece permits wild fluctuations in local weather conditions within a very small area, so the effect of the drought may well have been perceived more clearly in one area than another. The high degree of localization in weather patterns was recognized in antiquity, as this second passage from the *Meteorologica* (II.iv) illustrates:

ὅτε μὲν οὖν συμβαίνει καὶ τοὺς αὐχμοὺς καὶ τὰς ἐπομβρίας πολλοὺς ἅμα καὶ κατὰ συνεχῇ γίνεσθαι χώραν, ὅτε δὲ κατὰ μέρη· πολλάκις γὰρ ἡ μὲν κύκλω χώρα λαμβάνει τοὺς ὠραίους ὄμβρους ἢ καὶ πλείους, ἐν δὲ τινι μέρει ταύτης αὐχμὸς ἐστίν· ὅτε δὲ τοῦναντίον τῆς κύκλω πάσης ἢ μετρίους χρωμένης ὕδασιν ἢ καὶ μᾶλλον αὐχμώσης, ἐν τι μόριον ὕδατος ἀφθονον λαμβάνει πλῆθος.

Sometimes it happens that droughts or rain occur over a large area, sometimes over only a part; often the country as a whole receives the seasonal rains or more, while in some sections of the area there is drought; sometimes it is the opposite, and the area generally has either slight rainfall or even conditions of drought, while in a given section the share of water is abundant.

⁵⁴A. Gwynn, *JHS* 38, 1918, pp. 88ff., A. Graham, *Colony and Mother City*, Manchester 1964, esp. pp. 5 and 218–223, and Jeffery, *Archaic Greece*, p. 51.

⁵⁵Note that Aristotle is referring to famine caused by lack of production and not famine by over-population: “until at last the land is unable to support any population at all.”

Modern climatic studies have tended to confirm the local character of weather patterns in Greece. In the most recent work, G. Karra has been able to divide the country into no fewer than 29 distinct climatic regions according to the standard system of classification devised by C. W. Thornthwaite. It is perhaps worth noting that the following regions belong to the two driest classifications: Athens, Megara, Corinth, Achaia, and the islands of Euboea, Andros, Kea, and Naxos.⁵⁶

To summarize briefly: the evidence presented in this paper points to a prolonged drought in Athens in the late 8th century B.C., followed by famine and an outbreak of epidemic disease. The picture may change with further study, the pottery may need redating, and excavation may shed more light; at present, however, it appears that Athens suffered a severe drop in population, a phenomenon which may be used to explain Athenian quiescence throughout the 7th century. The neighboring city-states will have also been affected by the famine—though not necessarily the epidemic—and the drought should perhaps be considered a significant factor in the great colonizing movement of the late 8th and early 7th centuries B.C.⁵⁷

JOHN MCK. CAMP II

ATHENIAN AGORA EXCAVATIONS

⁵⁶I am greatly indebted to Dr. D. Lalas, Professor of Meteorology at the University of Athens, for introducing me to the relevant material on the climate of Greece. See G. Karra, *Κλιματική Ταξινόμησης τῆς Ἑλλάδος κατὰ Thornthwaite*, Athens 1973, especially the map at the back. Also C. W. Thornthwaite, "An Approach Toward a Rational Classification of Climate," *Geographical Review* 38, no. 1, 1948, pp. 55–94, esp. pp. 76–79 and 86. The rainfall charts in E. Mariolopoulou and L. Karapipleri, *Αἱ Βροχοπτώσεις ἐν Ἑλλάδι*, Athens 1955, pp. 105–108 and 119–121 are also of interest.

There is no hope, apparently, of enlightenment from paleo-climatology at this point, though important work in this field is being done: *Antiquity* 42, 1968, pp. 123–127 and *Journal of Archaeological Science* 1, 1974, pp. 177–194. Pollen analysis has been carried out in Northern Greece, the Copaic Basin, and Messenia, but not in those areas affected by the drought of the 8th century. I am indebted to Professor G. Rapp of the University of Minnesota for guidance in these matters.

⁵⁷An abbreviated version of this paper was presented at the annual meeting of the Archaeological Institute of America in New York in December of 1976. It has its origins in a study of the water supply of Athens, done as a dissertation for Princeton University. Many colleagues and friends have read several drafts and their comments and advice have proved most helpful. I wish to record my gratitude to the following without tainting them in any way with complicity in, or agreement with, the views expressed: Judith Binder, William Cavanagh, Michael Jameson, Dr. Saul Jarcho, Marian McAllister, Fordyce Mitchel, T. Leslie Shear, Jr., Anthony Snodgrass, Gregory Stanton, Ronald Stroud, Homer Thompson, and Malcolm Wallace.