THE KERKENES DAĞ PROJECT

1998 PRELIMINARY REPORTS

THE 1998 SURVEY SEASON
Geoffrey and Françoise SUMMERS

THE 1998 TEST TRENCHES
Musa Özcan and Geoffrey Summers

THE 1998 SPRING SURVEY IN THE NORTHERN YOZGAT PROVINCE
Geoffrey Summers

Kerkenes Dağ from a favourite view point.

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THE 1998 PRELIMINARY REPORTS
(NOT FOR PUBLICATION)

Web Page

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ACKNOWLEDGEMENTS

The 1998 summer season at Kerkenes was carried out during July and August. There were two parts to the Project: (i) survey of the ancient city under the direction of Geoffrey and Françoise Summers; (ii) test excavations under the Direction of Mr. Musa Özcan, Director of the Yozgat Museum, and Geoffrey Summers. A short spring regional survey took place in May 1998 and was funded by an additional grant from the BIAA. A great debt of gratitude is owed to Mr. Mevlüt Üyümez, the Ministry of Culture Representative from Afyon Museum, who participated in various aspects of the expedition's research, especially the geophysical survey, and who greatly contributed to the smooth running of the expedition. We would particularly like to express our thanks and appreciation to the Vali of Yozgat, Mr. İ. Fuat Uğur, the Yozgat Director of Culture, Mrs. Selime Doğan and the Kaymakam of Sorgun, Mr. Mustafa Dündar, for enthusiastic help and advice. Mr. Dündar, also arranged for the provision of transport from the Aydıncık, Çiğdemli, Doğankent ve Eymir Belediyeleri, to whom we extend our thanks, for the Friday visits to other archaeological sites in the region. The village of Şahmuratlı and its Muhtar, Mr. Osman Muratdağı, again extended his hospitality and the expedition house offered the facilities and friendly atmosphere essential to the good progress of work. Special thanks are due to the house staff without whom running the expedition would have been an impossible task and especially to Memiş Gençarslan who takes care of the house all year round. İbrahim Kars, also from Şahmuratlı, has become a key member of the geophysical survey team.

The main funding Institutions for the 1998 season were the British Institute of Archaeology at Ankara and National Geographic Society. Additionally, we received a grant from the Anatolian Archaeology Research Foundation and a number of generous private donations and contributions without which the 1998 season would have been very significantly reduced. Walkie Talkies were generously donated by the Electronic Times and the Southern California College. The monthly grant for research assistance from Yibitaş Lafarge was extended for a further two years. The Faculty of Architecture at METU has recently provided office space which is greatly facilitating the continuing research. A special thanks to Prof. Dr. Mete Nakiboğlu who initiated our involvement with the Graduate Programme for Geodesic and Geographical Information Technology (GGIT) at METU. We benefited from the use of facilities as well as from the participation of staff and students. Further cooperation with METU through the METU Development Foundation and METU Press has allowed the project to move forward and we wish to thank particularly Mr. Hasan Doğan and Mrs. Özge Kayakutlu for their help. A particular word of thanks also to the overstretched Ankara staff at the BIAA and Gina Coulthard in the London office for support at all times and help with the equipment in particular. Of the many who freely gave advice and encouragement special thanks are due to Prof. Crawford H. Greenewalt Jr., Dr. David French, Dr. Roger Matthews and Prof. Henry T. Wright Jr.

Geoffrey Summers accepted a generous invitation from the University of Berkeley to hold the post of visiting Regent's Lecturer in November 98 has taken this opportunity to accept invitations from UCLA, ASOR, Pennsylvania, Chicago and New York.

The Project as a whole remains deeply indebted to its sponsors, listed above, for support towards research and publication.

Special thanks go to Scott Branting for bringing with him from the Oriental Institute at Chicago a Trimble GPS system (complete with field computing accessories) and taking charge of the GPS survey; to Hans Birk for all of his expertise, the gift of a power pack that saved the geophysical survey, the loan of his total station and the fun of having him and his big blue lorry; to METU for the loan of a Nikon total station; and to Katherine Geers for obtaining the two walkie-talkie sets for the Project. We regretfully said goodbye to Christine Perrier who has been a key member of the team since 1995 and contributed to all aspects of the project; we wish her good luck as she settles in Peru. Dr. Lewis Somers of GEOSCAN provided training and advice for the geophysical survey.

Finally we thank the large international team of staff and students for their invaluable participation.

The 1998 team

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Architects: Ömür Harmanşah, Deniz Kutay, Françoise Summers.
Geologist: Christine Perrier.
Surveyors: Hans Birk, Aygün Erdoğan, Burak Özmutlu.
Conservator: Jodie Glen-Martin.
Computer and GIS Consultants: Levent Topaktaş, Vedat Toprak, Mustafa Türker.
Photographer: Behiç Güner.
Students: Stine Bahrt Hansen, Nurdan Atalan, John French, Zenia Hüserich, Torben Larsen, Allan Larsson, Sten Madsen, Oliver Pryce, Ayça Üzel, Line Wedege-Mathiassen.

We have been saddened by the sudden death of our colleague and friend Prof. Dr. Ayhan Erler who made a fundamental study of the geology.

THE KERKENES DAĞ PROJECT

1998 PRELIMINARY REPORTS

THE 1998 SURVEY SEASON

Geoffrey and Françoise SUMMERS

INTRODUCTION

Budgetary constraints restricted the planned scope of the 1998 season. Nevertheless, a great deal was achieved and the results yet again produced a number of startling surprises that represent very significant advances in our knowledge and understanding of the ancient city of Pteria. The project has continued to utilise new technologies and develop their application to the study of ancient urban sites, reinforcing the contention that, at least at Kerkenes, modern "high tech" survey techniques can be far more informative than excavation. Excavation does indeed have a place in the developing research design, but a place that is subservient to survey and non-intrusive remote sensing methods.

The 1998 season has also highlighted the difficulties involved in combining teaching and provision of student opportunities with the academic goals of a research project. Kerkenes will not again have such a large international student participation unless there is a section of the project budget that is specifically granted to providing training and opportunities for non-Turkish student participation. From a logistical point of view, applying to both the field work and, especially, the expedition infrastructure, fewer students and more locally employed and trained staff would be both more efficient and far less demanding on the project infrastructure.

It has further been resolved that continued research in the field at Kerkenes can only be carried out if a 4 wheel drive vehicle is available.

Finally, much of the frustration of the 1998 season was a result of continual equipment failure, especially two *IBM Thinkpads*. The Kerkenes Project continues to struggle to build up its own basic equipment. Great success has been achieved with respect to office based computing hardware and software. Future plans include, in particular, the acquisition of one or more laptop or palmtop computer to enable downloading of geophysical and other data in the field.

Fig. 1 *Computing facilities at Kerkenes.*

AIMS and METHODS

At the start of the 1998 season it was decided to concentrate all efforts on the northern third of the city because of monetary constraints and for logistical considerations. Earlier plans to spend the latter part of the season investigating aspects of the zone of public buildings at the high southern zone of the city were reluctantly given up in favour of concentrating all resources on the northern sector.

Specific aims

1. Topographic Global Positioning System survey, led by Scot Branting, of the northern third of the city and linking with GPS survey of the Kale and its environs carried out in 1997.
2. Geomagnetic survey of the northern portion of the city incorporating earlier surveys in Areas B, D and F.
3. Measurement of urban blocks with a total station for combination with existing rectified balloon photographs and digital maps produced therefrom.
4. Ground-truthing interpretative drawings made from the geomagnetic survey.
5. Computerised combination of the different data sets and the beginning of 3-dimensional reconstruction.
6. Completion of finds drawing, cataloguing, photography and conservation.
7. Limited test excavation, primarily because of the constant threat of illicit digging in areas adjacent to Test Trench 15 dug in 1996.
8. Extension of the network of survey control points to include Karabaş and Göz Baba and topographic mapping of the Göz Baba monument and its environs.
9. Completion of major articles and substantial progress on the Kerkenes monograph.

All for these aims were completely or very largely achieved, the greatest deficit being in the ground truthing of geomagnetic plans because of the time needed to process and print data to a suitable scale once it has been collected.

Fig. 2 *The northern area of the city from the hot air balloon.*

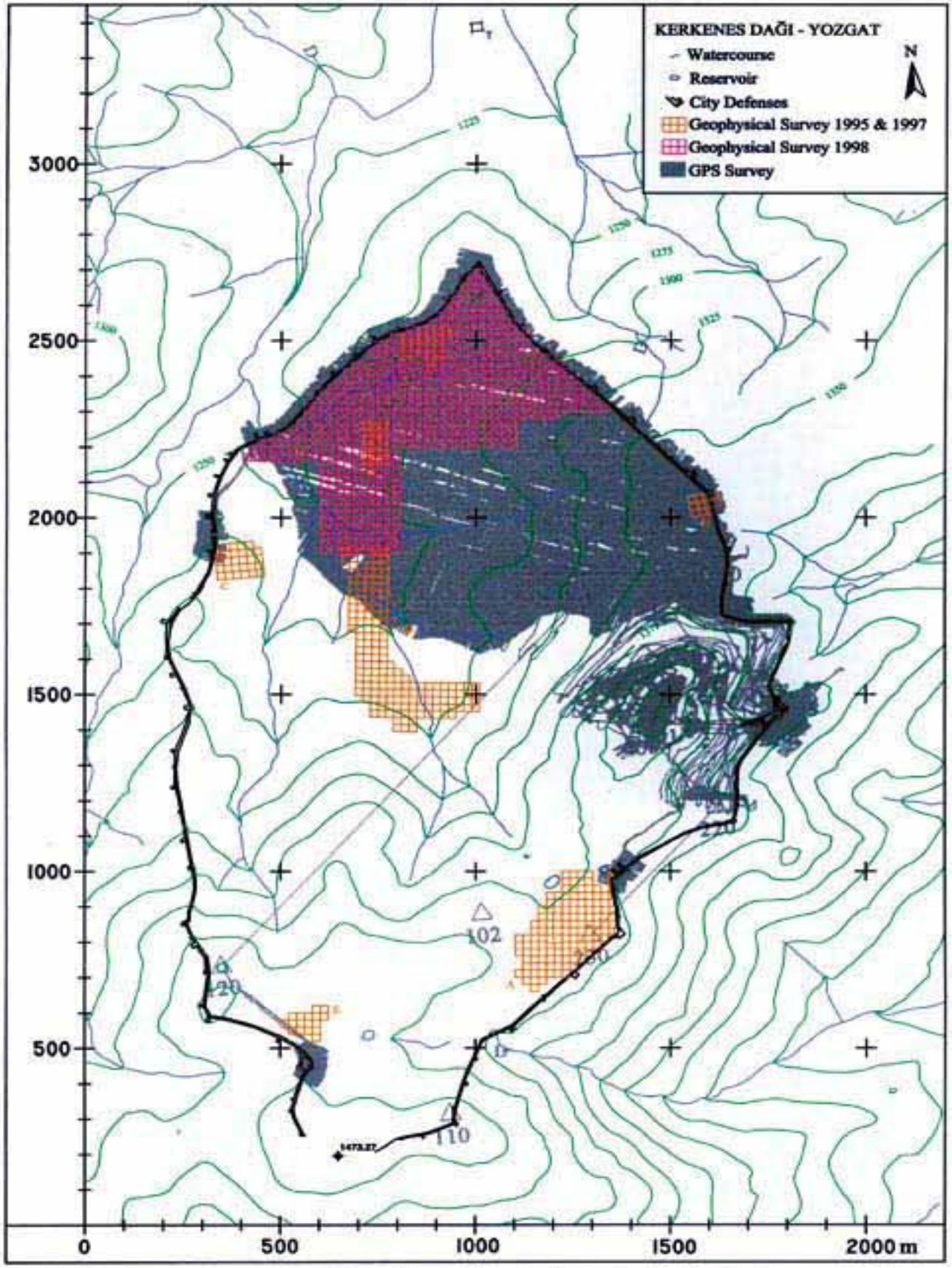

Fig. 3 Progress areas of the Geophysical and the GPS Surveys

Fig. 3 *Progress areas of the Geophysical and the GPS Surveys.*

Global Positioning System Survey (GPS)

A surface map has now been made of approximately one third of the entire city. 20% of which was made in 1998. In addition to the mapping of a large contiguous area, GPS maps were made of each of the seven city gates. The GPS was also used to fix points on the Kerkenes survey net at Karabaş and Göz Baba. It is estimated that a further two seasons will be needed to complete the city map, depending on the availability of equipment and the extent to which the detailed topographic mapping is carried beyond the city walls. Future research design includes using GPS to map communication routes, water resources and tumuli outside the city. The images in this were made in Surfer software form a total of *c.* 375,000 individual readings, of which 75,000 were taken in 1997 and 300,000 in 1998.

Fig. 4 *GPS kinetic survey being carried out with three receivers.*

In 1998 it was possible to do much of the mapping with one base station and three roving receivers because, by good fortune, the BIAA GPS equipment is identical to that loaned from Chicago by Scott Branting. Kinematic survey is carried out by setting a base station over a known point on the survey net and walking three receivers in parallel traverses *c.* 1 to 1.5 m apart. Each rover is set to read every two seconds. The system operates for about six hours per day in the field, the data thus collected taking some four hours to download. Processing time is difficult to estimate, partly because experience reduces it and partly because higher levels of processing, image making and combination of different data sets has yet to be completed. Initial two-dimensional maps are produced in *Surfer*. Traces can be viewed and printed out as a control on the evenness and density of the data collection. Three-dimensional digital terrain models (DTMs) can be produced in a number of different programmes and displayed in different ways. AutoCAD plans and rectified balloon photographs can be draped over the terrain models and buildings reconstructed and rendered in various ways, such as by extrapolating from digital photographic images. The GPS data will also be used for Geographical Information System (GIS) analyses of various aspects of the city and its environs.

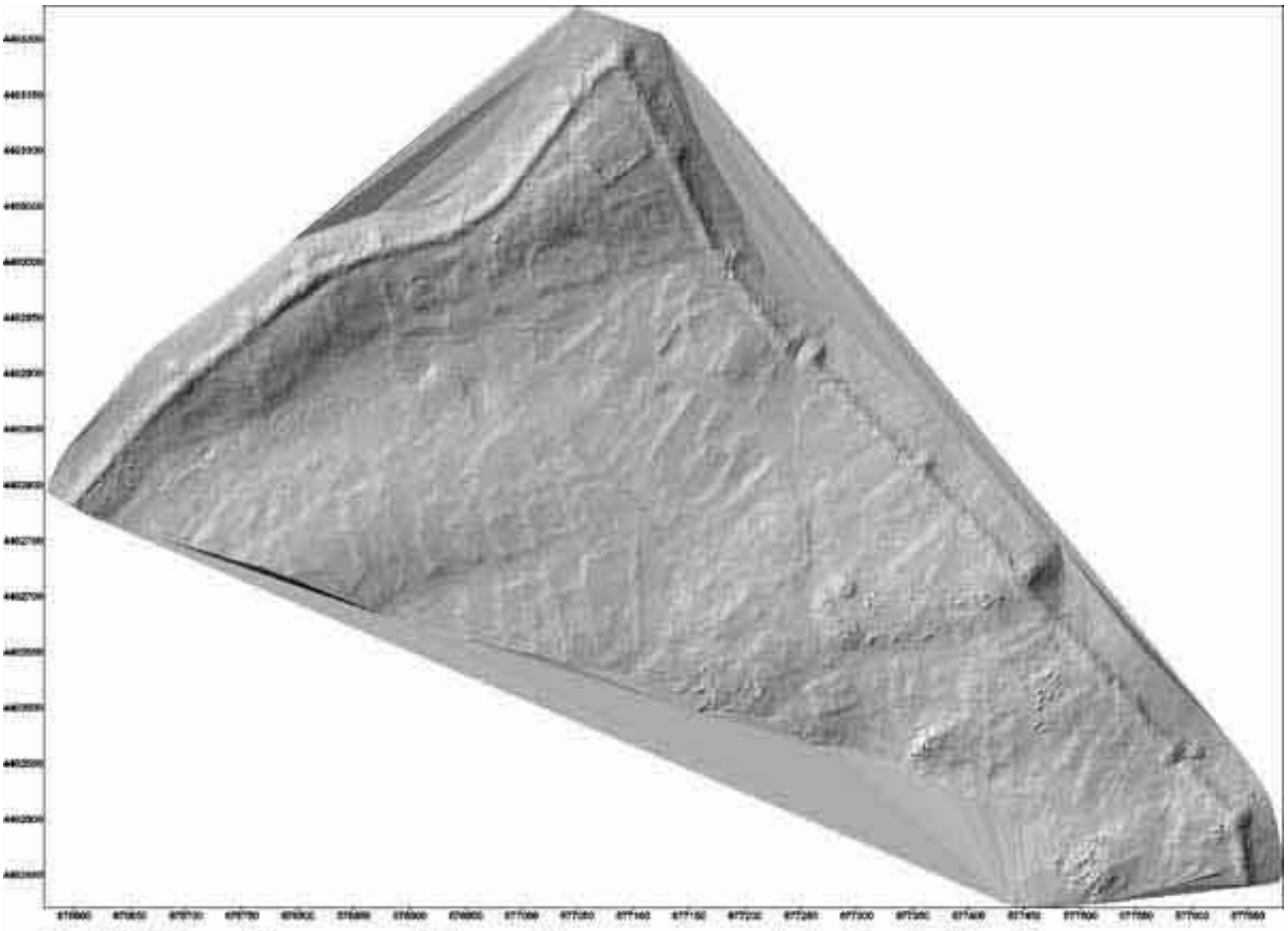

Fig. 5 GPS surface map of the northern area made by Scott Branting from a portion of the data collected in 1998

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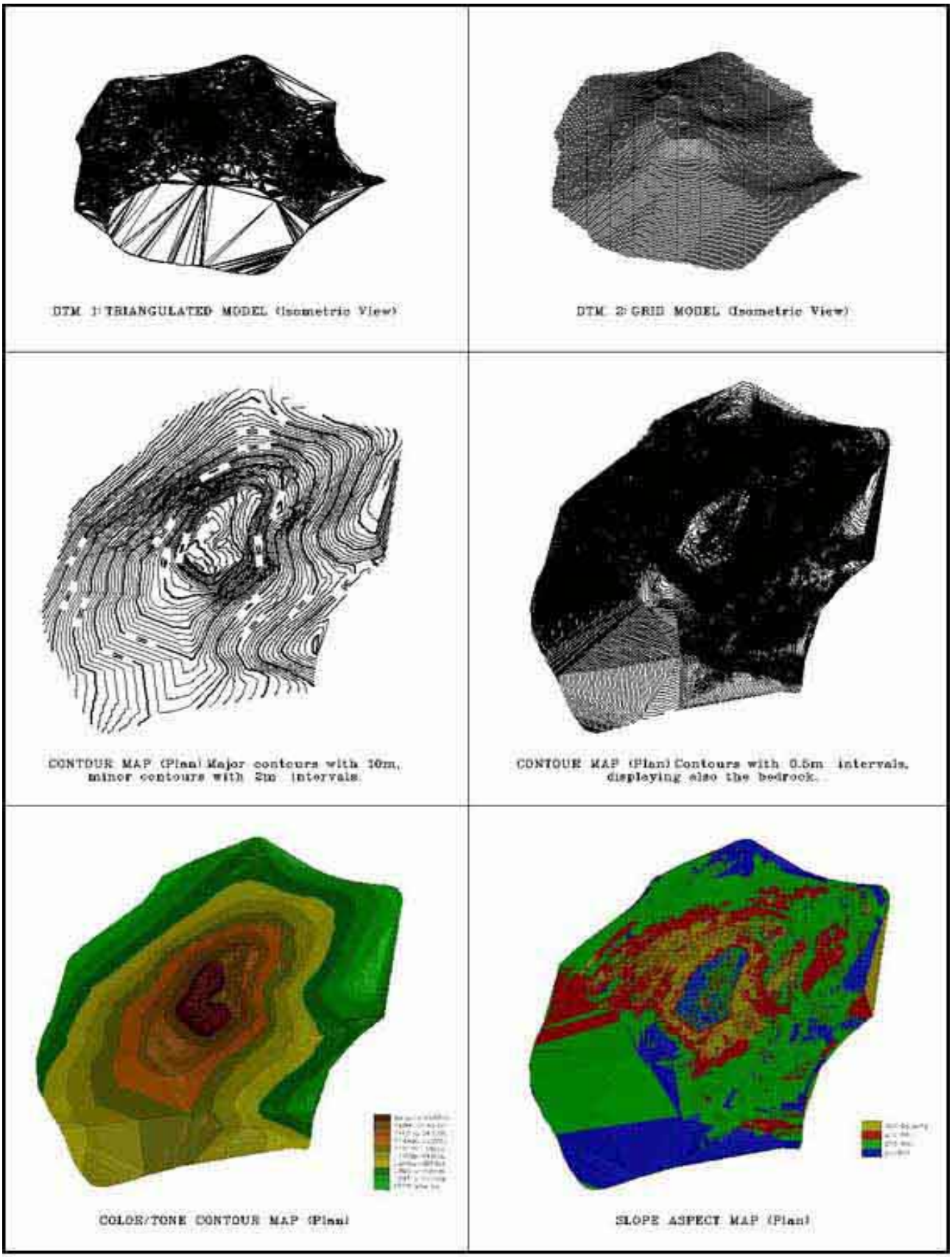

Fig. 6 *Preliminary GIS terrain applications, all derived from the measured GPS points, made by Deniz Kutay.*

Fig. 7 *An image draping application on the Kale area made by Deniz Kutay and Levent Topaktaş.*

Fig. 8 *Reconstruction drawing of the Kale made by Scott Branting.*

Geomagnetic Mapping

Geoscan RM 36 fluxgate magnetometers were used to map an extensive area of the city at the northern end, linking up with Areas B, D and F from previous seasons. Perhaps 25% of the available area has now been surveyed in this way and it is estimated that another 3 to 4 seasons will be required to complete the geomagnetic mapping, depending on the availability of equipment and funding. The resulting maps (Figs 9 and 14) show subsurface remains in remarkable detail.

Fig. 8 *Geomagnetic data collection in progress.*

Data is collected in 20 x 20 m grid squares, four readings per metre at one metre intervals, north - south / south - north zigzag. Experimentation in 1997 showed conclusively that providing the quality of data collection is high there is very little additional information to be gained from higher sampling densities at Kerkenes, although printed images might be slightly smoother. Higher sample densities entail more frequent dumping of data from the magnetometer to a lap top in the field, more processing time, processing in smaller units (because of limits on the amount of data that Geoplot can handle) and greater digital archiving capacities.

The next stage, to be carried out over the coming months, is to integrate the two-dimensional magnetic data with the three-dimensional GPS data.

In a future season, perhaps the spring of 1999, it would be most informative to re-map carefully selected grids with a resistivity meter to see if combination of the two methods could clarify subsurface features where magnetic signals are heavily influenced by the proximity of bed-rock and to examine the possibility that resistivity might yield information about depth and surface type. Whatever the results of such experiments, magnetic mapping will be the main method employed at Kerkenes, other remote sensing techniques being restricted to trail areas or applied to test specific hypotheses.

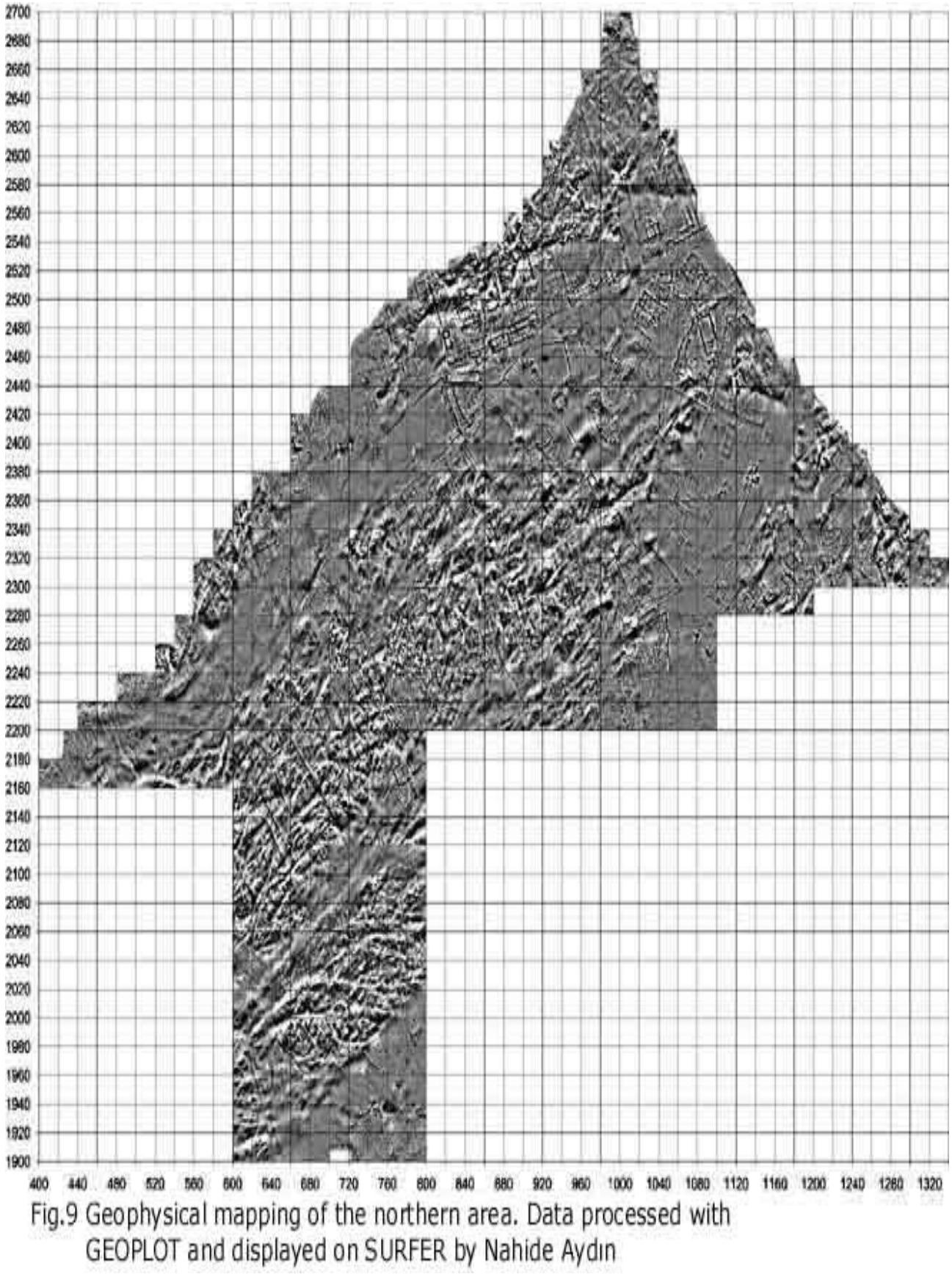

Fig.9 *Geophysical mapping of the northern area. Data processed with GEOPLOT and displayed on SURFER by Nahide Aydın.*

Total Station Mapping

Terraces to the south-east of the area selected for geomagnetic mapping were surveyed with a total station. Across this area of the site there is much out-cropping bedrock and a number of substantial later tumuli, but the outlines of "urban blocks", streets and passages are here particularly clear. The total station plan has been combined with the urban map digitised from rectified balloon photographs to give an excellent map of the main urban features. Detailed building plans will be obtained by geomagnetic survey in a future season.

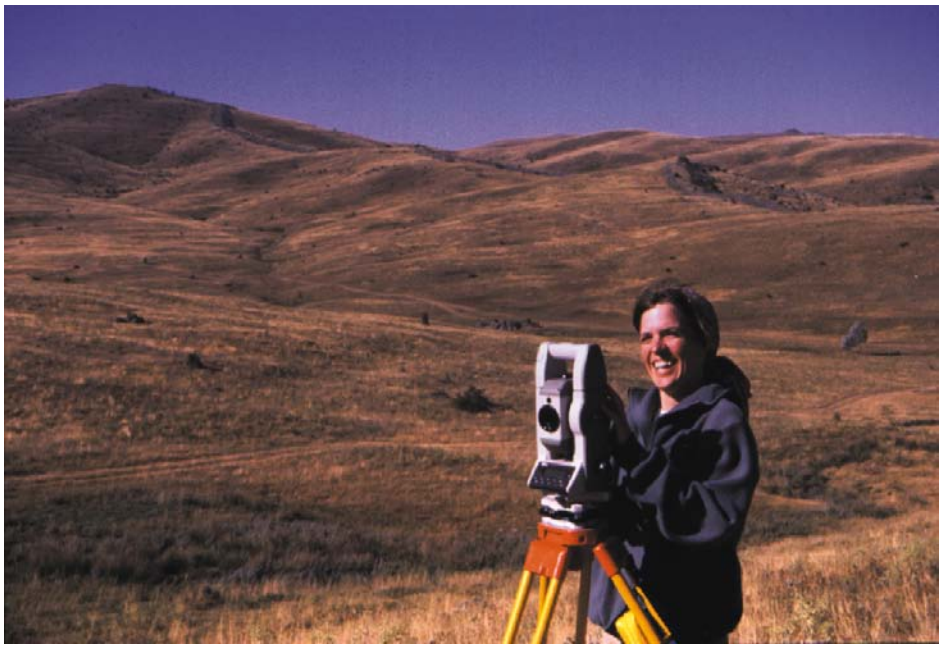

Fig. 10 *Christine Perrier using the total station.*

Ground-Truthing

Drawings made from a combination of survey techniques, especially the geomagnetics, are checked against visible surface remains. This checking allows some details to be filled in, e.g. where outcropping bedrock obscures magnetic signals or has been incorporated into structures or the identification of water courses. In some cases it allows wall widths to be measured. Post-destruction features, such as tumuli, animal pens and shepherd huts can also identified and excluded from the city plan. Much of the area surveyed during the 1998 season will require detailed ground truthing in 1999, following data processing and the production of interpretative drawings.

Computed Data Sets

Preliminary images are appended to this report. Over the coming months there will be further integration of these data sets into the GIS database. There are two distinct goals: visual presentation and urban analyses.

Illustration and Cataloguing of Finds from 1998 and Previous Seasons

All finds have been drawn, photographed and conserved, both from Kerkenes itself and from the regional survey. In addition, the expedition has made a proposal for the full restoration of a near life-size, Roman, terracotta statue of a female for the Yozgat Museum. The statue is currently in *c.* 250 pieces but appears to be very largely complete. It was recovered by the Yozgat Museum Director, Mr. Musa Özcan, during rescue excavations at Cemalı Höyük. After completion of restoration the statue will take pride of place in the Yozgat Museum.

Test Trenches

Two test trenches were dug in 1998. Both trenches, TT 20 and TT 21, were extensions of TT 15 dug in 1996. Both trenches were positioned with the aim of recovering objects where there was actual or potential interference by villagers. TT 20 comprised the remaining two thirds of the room at the north end of TT 15 in which the ivory plaque was discovered. TT 21 was in the room at the southern end of the same urban block over an area recently dug over and which had produced fragments of bronze objects. Overall, the results were disappointing and added little to our understanding of the ancient city. A separate report has been prepared.

Survey Net and Göz Baba Monument

The net of fixed survey points drilled into bed rock was extended to include Karabaş, Pürcüklü Höyük (also called Burç Höyük), the most prominent of the tumuli on the ridge to the west of the city, and the Göz Baba monument. A geomagnetic map was made at Göz Baba.

Publication, Electronic Dissemination of Results and Permanent Archiving

Satisfactory progress has been made in the preparation of publications and material for the Project Web Page. Fund raising for the Monograph has also been satisfactory but further funding is being actively sought. Major articles for imminent submission are on the Kale and other late remains for *Anatolian Studies* and an overview resulting from the British Academy Symposium on Anatolian Archaeology for an issue of the *Proceedings of the British Academy.*

The Project Director will be in North America in the autumn and has arranged to visit the Center for the Study of Architecture at Bryn Mawr to discuss the Kerkenes permanent digital archive with its director, Dr. Harrison Eitlejorg II.

Fig. 11 *A sample page from the Monograph.*

MAJOR RESULTS OF THE 1998 KERKENES DAĞ SURVEY

The results and interpretations given below are of a very preliminary nature. There will be much refinement and addition over the coming months as analysis progresses. Some of the tentative conclusions suggested below lack detailed presentation of the evidence to support them, this is partially due to the page limitations of such a report and partially because of the further processing and presentation of the data.

Historical and Chronological

A major advance has been the suggestion, made by Professor David Stronach, that the foundation of the city, called Pteria by Herodotus, was founded by the Medes not following the *Battle of the Eclipse* (May 25, 585 BC) and the ensuing peace treaty between the Medes and the Lydians, but somewhat earlier as the base from which the Medes conducted the five year war against the Lydians. This suggestion has much merit and important implications.

Firstly, the date at which Median Empire expanded into north-central Anatolia would be pushed back to before the time of Astyages accession to the throne. Since the fall of Urartu is now considered by many to have been as early as 640 BC, the major obstacle to such an advance of Median power is removed. It would seem most unlikely, however, that the Medes extended their power into and west of the highlands of Eastern Anatolia before the final destruction of the Neo-Assyrian Empire in 610 BC. The date for the foundation of Pteria could thus be put back from around 580 BC towards the very end of the seventh century.

Secondly, raising the date of the foundation provides a longer time span in which the city could have grown. Previous estimates, *c.* 585 - *c.* 547 BC, were less than 40 years or two generations. The new estimate might increase occupation by a generation.

Thirdly, the failure to complete the defences, i.e. not building the mud-brick superstructure, apparently not completing the “military area” and perhaps not completing the monument at Karabaş, might all be seen in the light of the Median-Lydian peace treaty. Indeed it seems possible, but admittedly highly speculative, that one provision of the treaty was cessation of further defensive construction.

Fourthly, acceptance of the higher date would necessarily imply the permanent stationing of a considerable military force of Medes and, presumably, their allies from which the war with Lydia was conducted. This has important implications for the infrastructure of the city which might now be expected to have had a far greater military component than had previously been thought.

Fifth, there are considerable and important considerations concerning the nature of the Median-Lydian 5 year war. In particular, it no longer becomes necessary to envisage Median forces crossing and recrossing the Zagros Mountains each campaigning season.

Thus the higher date now proposed for the foundation of the city has many attractions. It will doubtless be resisted by those scholars who view the Medes as a relatively trivial force and who take a minimalist approach to the existence of a Median Empire. It is clearly of great importance to establish the precise date of the foundation of the city. Dendrochronology offers the best prospect since the discovery of textual evidence is extremely remote.

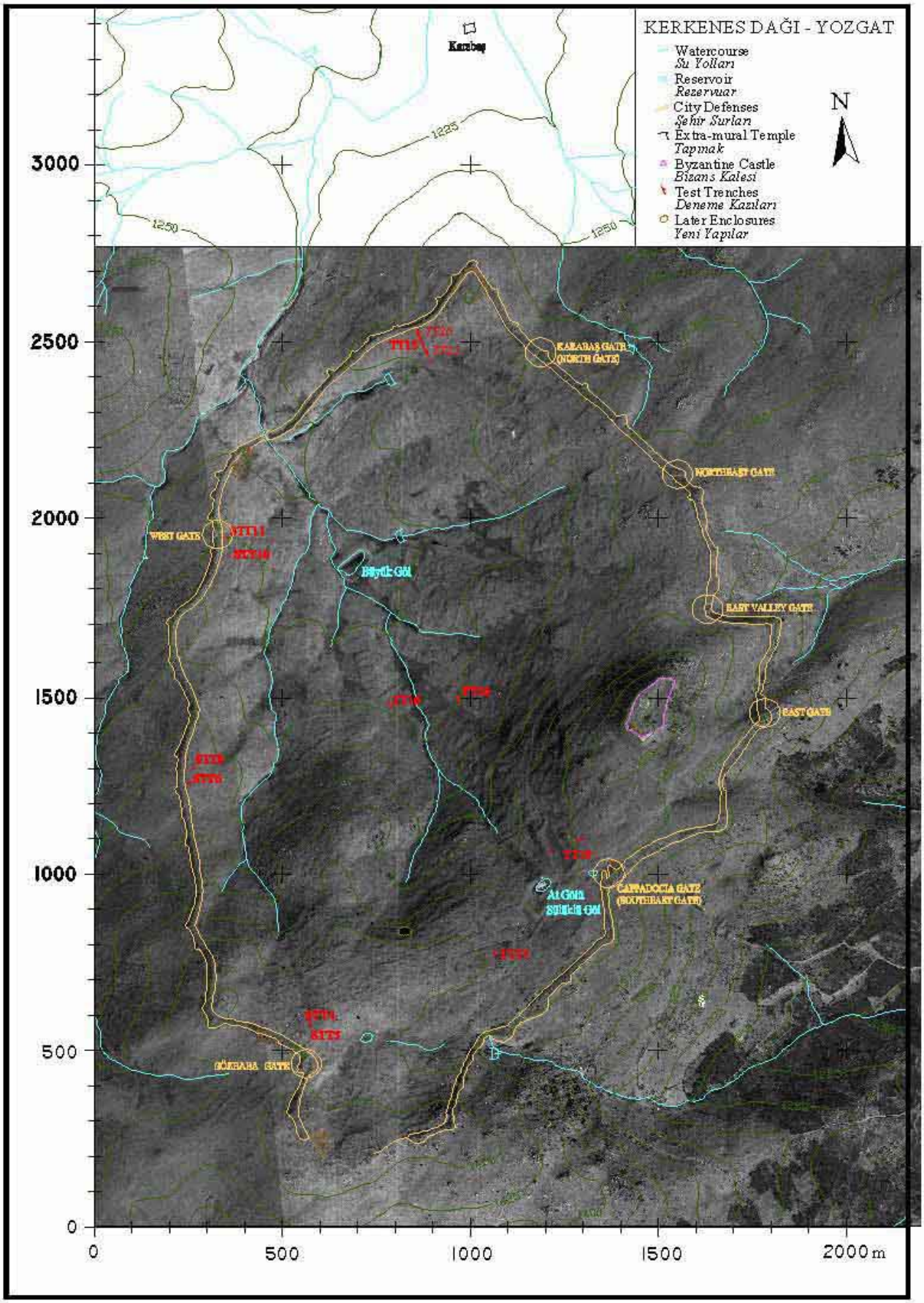

Fig. 12 Map of Kerkenes with the ortho photo at the background

Fig. 12 *Map of Kerkenes with the ortho photo at the background.*

Defences

Study of the defensive system has been completed. The major addition to our understanding of the seven gates and they in which they might have functioned is the realisation that passages are indeed surprisingly wide, most being around 8 m. It seems that, as at contemporaneous Lydian Sardis and earlier Phrygian Gordion, the defensive superstructure was not carried over the gate passages. Defenders atop the wall would thus have had to descend and reascend the wall in getting from one side of a gate to another. At Kerkenes, where the topography beyond the gates often involves steep descent, it is possible that these wide gate passages facilitated the rapid deployment and retreat of mounted troops.

Fig. 13 *Stretch of city wall near the Cappadocia Gate.*

Unlike Lydian Sardis, Phrygian Gordion or Urartian defences, there is no suggestion that walls or defences at Kerkenes were battered.

In the system of Kerkenes defences a number of influences might be detected. The possibilities suggested below have great significance in reaching an understanding of the cultural dynamics of the western portion of the Median Empire. The Kale appears to have formed a steep and barren peak that, whether or not it was walled, performed the role of a citadel as a place of last resort once defences were breached. This, according to A.W. Lawrence, is a Greek concept, (although it might also be seen at Lydian Sardis). The butting of towers and buttresses against the face of the curtain wall, rather than bonding them in, is also western, as might be the gates discussed above. There is little if anything in the system of defences at Kerkenes that seems to fit into a Near Eastern tradition as seen, for instance, in Urartu, Assyria or the Neo-Hittite cites south of the Anatolian Plateau. One site that does offer some parallel is the Neo-Hittite centre on the Göllü Dağ (near Niğde on the Central Anatolian Plateau), but the parallel is probably very superficial since the function of the Göllü Dağ site is very different to that of Kerkenes. The apparent western influences in the defences at Kerkenes are in sharp contrast to the architectural forms within the city which have clear Iranian antecedents.

What is to be made of this surprising western influence in the defences at Kerkenes? An attractive possibility is that the incoming imperial power, having no great urban tradition of its own, employed an architect from the West to design a defensive city that, after all, needed to defend itself

against tactics employed by the states of Anatolia (Lydia, Cilicia and whatever lay to the north). If this speculative suggestion has merit it, could be seen in the light of the later, Achaemenid, use of non-Iranian expertise and Alexander's employment of an Ionian architect to design the defences of Alexandria.

Urban Dynamics

Urban Zones

In 1998 much progress was made in the definition of urban zones at the northern end of the city. At the time of the catastrophic fire there were large urban blocks, each with a columned hall, along the inside of the city wall and separated from it by a street. On the two parallel ridges south of these prestigious blocks the urban units are smaller and the structures within them different in both character and function. The shallow valleys have been found to contain a number of previously unrecognised and substantial reservoirs, indicating substantially more management and control of water resources than hitherto realised. Further analysis of the pattern of urban zoning is a major goal of the next few months.

Chronological Development

At the foundation of the city the line of the city wall and the position of the seven gates were decided and the interior was centrally apportioned.

Military considerations might have of greater importance in the initial planning than previously suggested. From the 1998 season it has become apparent the northern tip of the city contained an open lozenge shaped space associated with a special structural complex that differs in plan from the blocks with columned halls on either side. The earlier contention that there was an unfinished military road around the inside of the city defences remains the only plausible way in which the defences could have been intended to function. Thus, at the northern tip of the city there seems to have been a public, probably military complex, hardly a surprising conclusion, but one lacking proof of function.

The large blocks inside the city wall at the north end, apart from that at the tip, each contain a columned hall oriented in the same direction, and other structures of similar character. Test excavations in Area B (1996 and 1998, TT 15, TT 20, TT 21) have apparently confirmed that the urban block wall was the primary construction. It is most plausible that the columned hall was also a primary structure. Thereafter the blocks were filled with buildings during the brief life of the city. The apparently haphazard positions of the lesser buildings within the blocks under discussion was dictated by topography, level areas being used first, later buildings requiring substantial infilling and terracing. Chronological indicators include spatial patterning, building techniques and materials and perhaps building forms (discussed in a separate section below).

The areas initially enclosed by the urban blocks were above the wet marshy areas in the broad shallow valleys. As the reservoirs were constructed, water channels built and muddy areas paved with stone there was an encroachment into the previously open areas, and perhaps on the military road inside the city wall.

Building Typology

A typology of buildings is slowly emerging. There are a number of apparently unique structures or building complexes which include each unit within the public zone to the south and the large complex at the northern tip of the city. Some building types, however, occur repeatedly, the most obvious being columned halls, two-roomed structures, small square structures (perhaps containing ovens) and long narrow buildings divided into small chambers. Some building types are associated with compounds or yards, most notably the two-roomed structures.

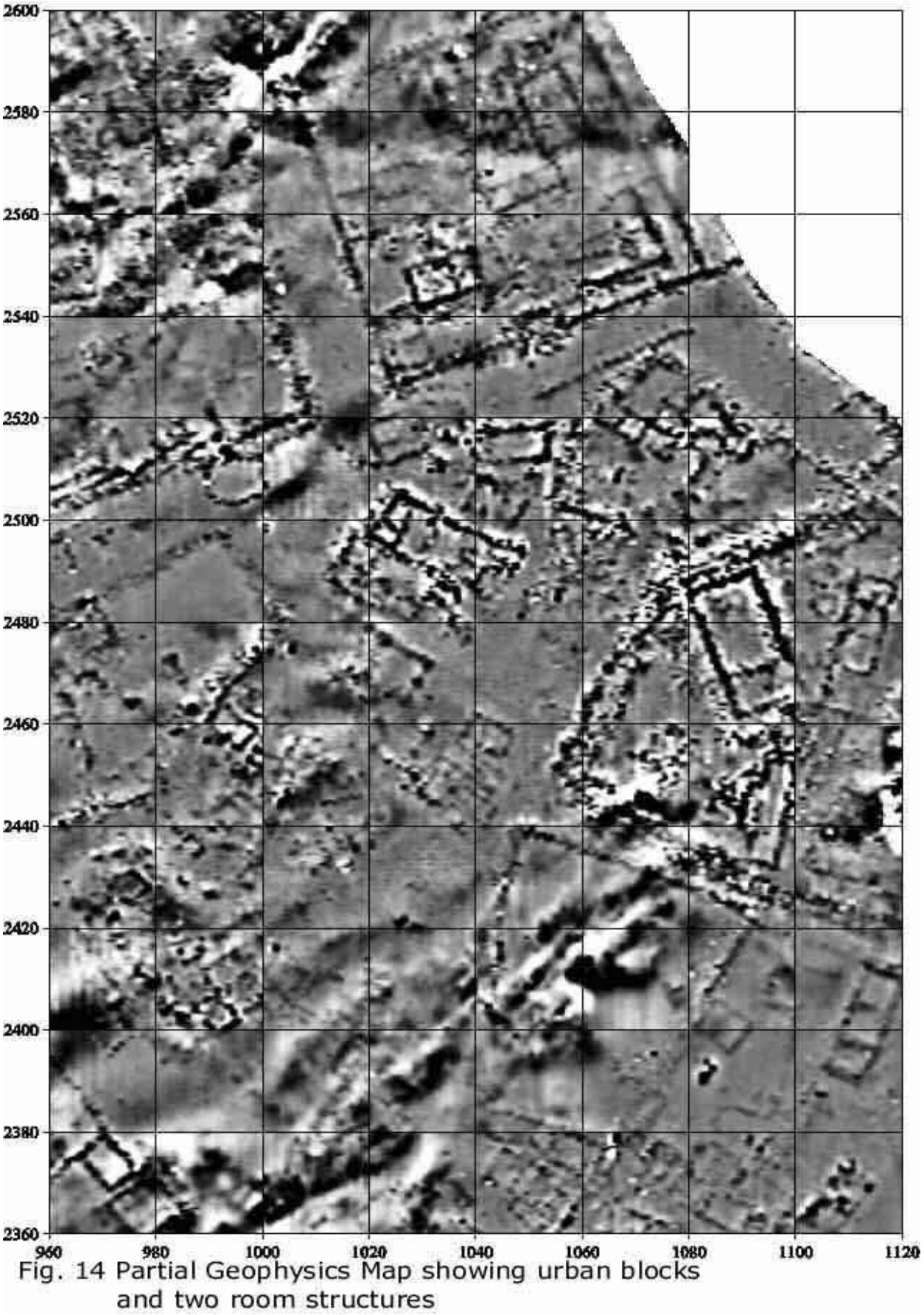

Fig. 14 *Partial Geophysics Map showing urban blocks and two room structures.*

Urban Communications

It still seems that originally there was a broad street, no less than 5 m in width, running around the city immediately inside the city wall. Like the wall itself, this street seems to have been left unfinished because passage is greatly restricted in places by substantial outcrops of bed-rock. It is self evident that such a street would have been an essential element in the military design of a defensive system 7 km in length since it would have enabled defending forces to rapidly reach points under attack. Open access around the inside of the defences would also have been essential for the practical business of construction. Encroachment onto this street is difficult to date, but most if not all of the stone walls that can be seen to cross it are the work of pastrolists and post date the end of the city. The construction of substantial animal pens and shepherds shelters in the lee of the defences continues to this day.

Other broad streets connect the city gates and also provide access between urban blocks to the street around the wall. It is not yet known if these streets were paved, some were certainly levelled and have retaining walls or perhaps even steps. Narrower streets and alleys were certainly stepped where the terrain was very steep (such as the slopes below the Kale surveyed in 1997).

The street plan that is emerging at the northern end of the city, however, appears to show that communication and circulation within the city was restricted in such a way that the zone of elite urban blocks with columned halls (if our interpretation is correct) are isolated from traffic to and from the gates. In other words, we appear to see an urban zone that was only provided with circuitous access to even the closest of the city gates. It seems probable that this restriction of circulation was not part of the original urban plan but came about as open space between urban blocks was built over, and might thus represent a deliberate trend towards exclusiveness and privacy. All of the above is, of course, highly speculative and may need to be revised in the light of further geophysical survey.

The Future

Major Areas of Investigation

1. The military or defensive dynamics of the original urban foundation need further elucidation. Two essential areas of future research are: (i) a greater understanding of communication and deployment of defending forces within the city and (ii) a better understanding of the line chosen for the defences and the positions of the gates in relation to potential attack and responses to attack by sorties. The first of these areas of research will be approached, in the first instance, through further geomagnetic and GPS mapping; the second through GIS analysis of the defensive circuit in relation to topography and approaches to the city.
2. Changes to the urban infrastructure that took place over the 2-3 generations of city's life. Abandonment of the defences, apparently before completion, was presumably linked to a change in the primary function of the city from that of an imperial military base (from which the Medes fought the Lydians and perhaps others) to an imperial city that administered rule over subject peoples within internationally agreed borders. The "horizontal stratigraphy" being revealed by geomagnetic mapping will document these developments.
3. Full identification of the urban zones, determination of differences in status and functions of zones and interaction between zones. Completion of the mapping is clearly the first stage. Determination of function will doubtless require further test excavations. To date, for instance, we do not know the specific function of any of the building types that have been identified, nor do we even have candidates for major religious elements within the city confines, nor for industrial areas and workshops.
4. Detailed geomagnetic and GPS mapping of the southern zone of public buildings.

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THE 1998 TEST TRENCHES

Musa Özcan and Geoffrey Summers

Fig. 1 *The northern end of Test Trench 15 after emptying the 1996 backfill.*

INTRODUCTION

Two test trenches were dug in 1998. Both trenches, TT20 and TT21 (Figs 1-2), were extensions of TT15 which was dug in 1996. The new trenches were positioned with the aim of recovering objects where there was actual or potential interference by villagers. TT20 comprised the remaining two thirds of the room at the north end of TT15 in which the ivory plaque was discovered in 1996. TT21 was in the room at the southern end of the same urban block, covering an area that had been recently dug over and which had produced fragments of bronze objects.

TEST TRENCH 20

TT20 exposed the east side of a chamber partially excavated in TT15 in 1996 when a portion of an ivory plaque was found on the floor.

Fig. 2 *The room in which the ivory was found in 1996 was fully excavated (TT20) in 1998.*

AIMS AND METHODS

Aims

The aims were:

1. The recovery and preservation of further art objects possibly stored here.
2. To test assumptions concerning the order of building construction within Area B.
3. To solve particular architectural problems.
4. To determine, if possible, the function of the room.

Methods

TT20 trench edges were defined by walls of the room uncovered in the northern end of TT15 and visible on the surface. The room itself measures *c.* 4 x 5 m. Firstly, backfill was removed from the portion of TT15 between the back of the columned hall and the north wall of the room. An east-west section was left *c.*1 m south of the north wall. After drawing and photography the section was removed to reveal the remaining portion of the room.

During excavation water was used to soften the very hard and dry granitic soils. Wetting the soil made excavation easier and greatly lessened the danger of mechanical damage to buried objects.

RESULTS

Excavation of this room has clarified construction phases within the urban block, and has added information on building techniques. A hemispherical bronze object and a pottery jug were the only finds.

PHASES

Phase 1

The north wall (Figs 1 & 2 at top), which seems to be the northern wall of the urban block, appears to have been built entirely of stone in its original phase. There may have been mud-brick added to the stone in Phase 3.

Phase 2

Terracing to the south of the Phase 1 wall, exposing the foundations and causing the wall to lean. The sloping ground was dug away at the north end and infilled at the south. A small buttress was built at the west end to support the north wall (just visible in the top left corner of the room in Fig. 1). The east wall was of stone with vertical timbers set in the face (Fig. 2 at right indicated by vertical breaks in the stone work, the upper courses of lichen covered stone are part of a recent shepherds construction).

Phase 3

Construction of the western and southern walls, also of stone, to form a room; and the laying of a clay floor and clay plaster on the walls. There was a wooden door frame and large stone step leading into a stone paved passage (Figs 1 and 2).

Evidence for an upper storey

An upper storey built of mud-brick is suggested by the following factors:

1. Small amounts of mud brick collapse and burnt brick, concentrated along the northern wall.
2. The timber framed east wall could have supported the weight of a second storey.
3. Possible wooden planks, found charred above the floor level, might have been the remains of an upper floor rather than those of a roof.
4. The absence of burnt roof materials and scarcity of mud-brick suggest that the burnt second storey of the building eroded away before collapse the upper floor.
5. The paved street (TT 15) in front of the room suggests a structure of some significance.
6. The ivory found in 1996 indicated a room of some significance, and perhaps fell from an upper storey.
7. Absence of windows or openings beyond the single door (opening onto a narrow shaded passage) would have made the room very dark and dingy.
8. The amount of stone tumble.
9. An upper floor would have looked out over the roof of the columned hall in front.

Finds

The excavation of TT15 in 1996 unearthed a number of high-status objects. This led to an expectation of further finds in the remaining two-thirds of the room but only two objects were recovered:

1) a bowl-shaped recut bronze object (Figs 3-4) with drillings for five nails along the rim, one of which has survived, was recovered. Neither the original nor the secondary function of this object are known.
2) a burnished grey ware jug with trefoil spout, high handle and flat base (Figs 5-6).

A single faceted bead, probably carnelian, was recovered from the fill. This, together with a polished bone “spatula” and the ivory inlay both found in 1996, make up the full inventory from the room. The bronze and the pottery jug seem both to have fallen from above since neither was *in situ* on the floor.

Function

Excavation of the room revealed little about its function. No domestic features, such as hearths of ovens, existed and no evidence for a work area, such as debris or raw materials, were found.

Fig. 3 *Excavation of the bowl-shaped recut bronze object in TT20.*

Fig. 4 *The bowl-shaped recut bronze object.*

Fig. 5 *Excavation of the grey ware jug with trefoil spout in TT20.*

Fig. 6 *Grey ware jug with trefoil spout.*

TEST TRENCH 21

TT21 was an eastern extension of the portion of TT15 revealing the "Southern Building". It measured 6 x 3 m.

Fig. 7 *TT21, three sides of the trench are bounded by walls, excavation ceased on top of the rubble terrace fill that runs beneath the walls. No original surface was encountered.*

Aims

1. To determine the extent of recent digging adjacent to TT15.
2. To test a number of questions posed by both the geophysical data from Area B, and by the excavations in TT15 in 1996.

Results

1. Extensive digging was evident, both recent (indicated by pieces of newspaper mixed with mudbrick collapse) and, perhaps, ancient.
2. The nature of the architecture and the use of the structure remain largely undetermined, but it is possible to propose, tentatively, a function in the storage of vehicles and horse gear.
3. The walls are visible on the geophysical map.
4. The structure belonged to a single building phase, although there were alterations within the enclosed space.
5. Mud-brick and timber framed walls stood on substantial stone footings.

Finds

A bronze horse bit fragment (Fig. 8), bronze strip fragments and a cylindrical bronze cap suggested an area in which vehicle and horse gear were stored.

Fig. 8 *Bronze horse bit fragment.*

CONCLUSIONS

1. Further test trenches at Kerkenes Dağ will be needed to test the results of geophysical survey.
2. Trenches might also determine the function of particular types of buildings.
3. If suitable locations can be identified from geophysical survey, trenches should be dug to obtain charcoal for dendrochronology.
4. Evidence for the environmental impact of the city remains a research goal that could only be retrieved through a program of trenching and flotation combined with wider geomorphological studies.

Such trenches will need to be very carefully sited to obtain evidence that addresses the major problems in coming to an understanding of how the city functioned.

Test trenches are backfilled in order to preserve the remains. The collapse of structures in the trenches excavated by Schmidt in 1928 demonstrates the need to backfill. Layers of stone are added to the tops of surviving walls, both to preserve them and to enhance their visual impact on the visitor.

Fig. 9 *Backfilling of the Test Trenches.*

Fig. 10 *The nylon strips placed before backfilling of the trench will facilitate determination of the trench extent in case of a re-excavation.*

THE KERKENES DAĞ PROJECT

1998 PRELIMINARY REPORTS

THE 1998 SPRING SURVEY IN NORTHERN YOZGAT PROVINCE

Geoffrey D. Summers

Şahmuratlı Köy before an evening storm, from the expedition's headquarters

INTRODUCTION

The survey was carried out between May 1 and May 9, 1998 during a brief and fortuitous spell of excellent weather.

Funds for the survey were provided through a Supplementary Grant from the BIAA. A mobile Garmin GPS 45 Personal Navigator unit was kindly made available by Cominco Madencilik Sanayi A.Ş. The work was done under the terms of the 1998 Permit for the Kerkenes Dağ Project and I would like to thank Professor, Dr Ender Varinoğlü and his staff at the Department of Monuments and Museums, the Turkish Ministry of Culture, for issuing the Permit in time for the survey to take place. Special thanks are due to Mr Musa Özcan, Director of the Yozgat Museum, for freely sharing his knowledge of the region, to Mr Mevlüt Üyümez, from Afyon Museum, who was our enthusiastic representative, to Mr Ahmet Koçak, Belediye Başkan of Aydıncık for giving up a day to take us to monuments with the Aydıncık İlce which involved a strenuous 2 hour walk back from a castle in the dark, to Mr Mustafa Duma, Headmaster of Eymir Lise, for taking us to site around Eymir and to the various villagers who offered hospitality and local knowledge.

Participants in the field were: Geoffrey Summers, Christine Perrier (geologist) and Nahide Aydın (archaeologist). Post survey analysis is continuing with additional help from Françoise Summers and Deniz Kutay.

Geoffrey Summers writing up the day's notes on the balcony of the expedition headquarters in Şahmuratlı Köy.

Archaeology is fun:
Nahide Aydın and Christine Perrier downloading the GPS.

AIMS OF THE SURVEY

The original aims of the survey were to record a group of rock carvings in a valley to the west of Çekerek and to examine the routes and passes leading northwards from the Kerkenes Dağ for evidence that would support the hypothesis that there was a major route leading directly northwards via Eymir and Aydıncık in the second and again in the mid-first millennia BC.

Research in the BIAA library between the initial application for a supplementary grant and finalisation of survey plans revealed conclusive evidence that the rock carvings were of Byzantine date, not early prehistoric as has been hoped. I owe to David French the suggestion that the images represent devils, hence their horns and tails that had misled us into thinking they were prehistoric representations of animals. After consultation with Dr. Roger Matthews and Professor Stephen Mitchell it was agreed that the survey proceed as planned, all emphasis now being placed on the issue of ancient routes and an estimate of the potential for more detailed and intensive survey sometime in the future.

One of the rock carvings.

The main group of images pecked into a natural rock face. Each of the figures has horns and a tail apparently representing devils of Byzantine date rather than early prehistoric depictions of animals. The largest image, at the top with horns partly in shadow, is shown in detail on the previous image. No other remains were seen in the immediate vicinity.

A Byzantine image incised into the smooth rock face, a little apart from the main group of devils on the previous image.

The final aims of the project as it went into the field were thus:

1. to test the hypothesis that there was a route from Kuşaklı Höyük, Hittite Zippallanda, (Gurney 1995) directly northwards to Ortaköy, Hittite Šapinuwa (Suel 1996);
2. to test the hypothesis that the same route was used in the mid-first millennium between the city on the Kerkenes Dağ, Pteria (Herod. 76.1, Summers 1997) and the Black Sea, especially Sinope;
3. to take a preliminary look at the settlement pattern in the Kümbet Ovası (Aydıncık İlce) and that part of the Çekerek Irmak valley running eastwards from it. This seems always to have afforded easy passage and was surely the route between Hattusa and Alaca Höyük (?ancient Arrina) and Maşat Höyük close to the north-eastern border of Hittite territory;
4. to gain a general idea of the potential within the region for an intensive archaeological survey that would be combined with study of the geomorphology and make use of GIS.

THE REGION

The region all lay within the province (İl) of Yozgat. It included the following districts (İlceler): Sorgun (formerly Büyük Khône, sometime Yeşilova) north of the main highway from the northern boundary to just east as far as the Samsun - Kayseri road, and Çekerek (formerly Hacıköy) west of the Çekerek Irmak and the Samsun - Kayseri road. The region comprises rolling and hilly country northwards as far as the Dağnı Dağ, a range that separates the sub-district of Eymir from that of Aydıncık (formerly Mamure, Eskiköy). Here the stream all form part of the Kanak Su system that eventually joins the Kızılırmak well to the south. The Aydıncık region is called the Kümbet Ovası and is famed for its onions. Here drainage is into the Çekerek Irmak.

Looking across the Kümbet Ovası and the Çekerek Irmak to the Kazankaya Canyon.

On the north side of the Kümbet Ovası is the Alan Dağ, another steep range, along the top of which runs the border between Yozgat and Çorum. The Alan Dağ is dramatically cleft in two by the Kazankaya Canyon, an impressive gorge through which the Çekerek Irmak is said to be forced through a 10 m wide passage, a roaring torrent in flood, chest deep in high summer. From Kazankaya the river valley afford easy passage eastwards. East and south-east of the Kümbet Ovası the terrain is hilly, often rocky, and deeply incised.

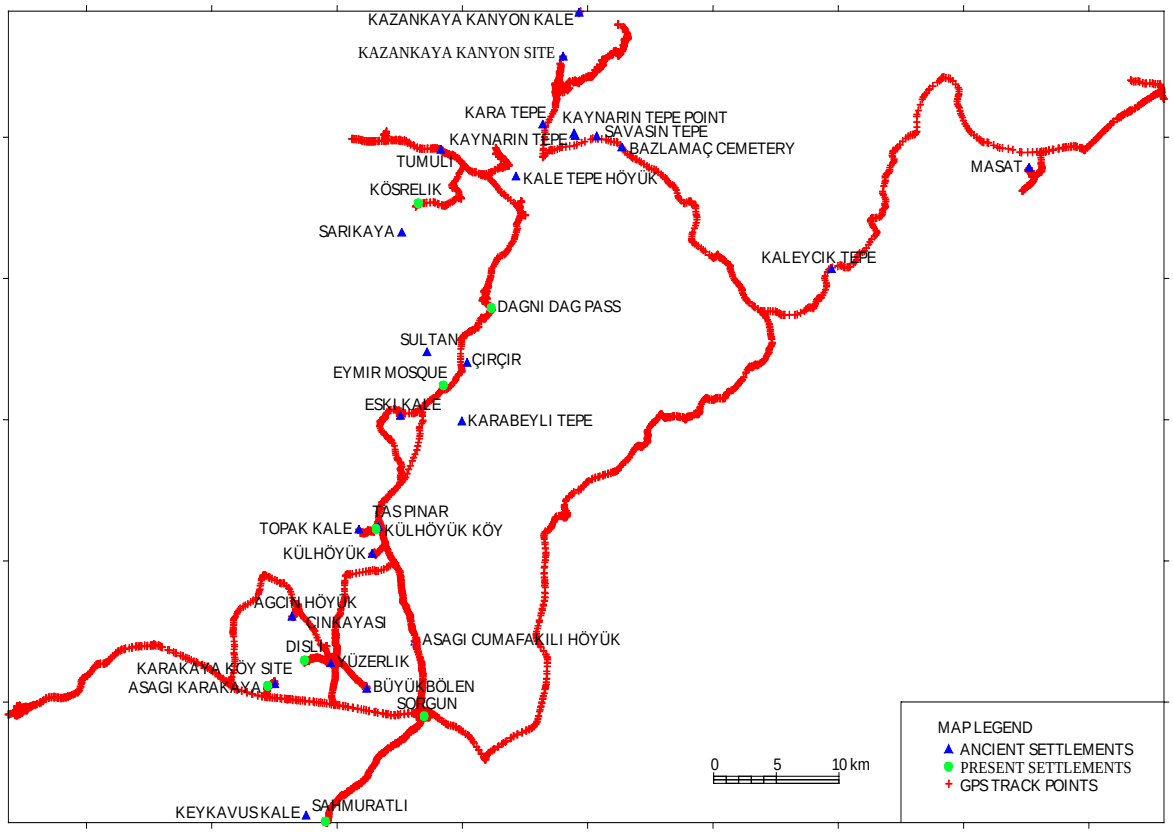
It is worthy of note that neither the Alan Dağ nor the Dagnı Dağ are higher or more exposed than the Kerkenes Dağ and, while dramatic in appearance, were no great obstacle in themselves.

PREVIOUS WORK IN THE REGION

Earlier sporadic survey and rescue excavations had been undertaken by the excavation team from Maşat Höyük under the direction of Prof. Dr Tahsin Özgüç (1978, 69-88; 1982, 143) and by the late Dr Erol Atalay and Mr Ahmet Ertekin (1986). Dr David French had traversed the region in the course of his study of Roman and other roads. Mr Selahattin Yalçın made an examination of the tourist potential in the region in the course of which he reported a number of ancient sites, notably Kale Tepe Höyük near Aydıncık (1988, reprinted 1995).

METHODOLOGY

The main potential routes were followed, as far as it was possible to do so by car. Information was sought in towns and villages to supplement that provided by Mr Özcan, Director of the Yozgat Museum and what little had been gleaned from maps and publications. Progress was plotted with a mobile GPS receiver that was magnetically attached to the top of the car and carried to sites off the road. Sites and views were recorded with a digital camera, presented to the Kerkenes Project by TAİ in 1997, and by traditional black and white and colour slide photography. Both the GPS and the digital camera could be downloaded into a lap top in the field. Pottery was collected and examined on each site, only a handful of sherds being retained for future drawing as evidence to support major conclusions. The idea of taking photographs of diagnostic sherds in the field was abandoned because it was quickly realised that useful photographs would have entailed washing the material.



A GPS Map showing the routes taken during the survey over an area of some 60 x 90 km. The data can be presented in different ways using Surfer and can be overlaid on topographic maps. Tracking readings are accurate to around 50 m, hence the thickness of the lines. Multiple individual readings also attain an accuracy of 50 m or less.

RESULTS BY PERIOD

Neolithic, Early and Middle Chalcolithic

No trace of neolithic or early and middle chalcolithic settlement was found. On one site, Kale Tepe Höyük (see below) a late chalcolithic level appears to rest directly on bed-rock.

Kale Tepe Höyük. The lower burnt level can be seen in the cut at lower left, the upper burnt level can clearly be seen in the scarp of the modern track.

It would thus appear that settlement sites in the broad valleys, like those in the Kanak Su basin to the south, are probably buried beneath alluvium. While very intensive survey might produce evidence for these periods on the higher valley terraces, and perhaps elsewhere on higher ground, it is extremely unlikely that any useful settlement pattern would come out of traditional intensive survey on foot because of later geomorphological alteration to the landscape. These changes include severe erosion on the slopes and high ground, infilling of valleys and movement of stream and river beds within the valley floors.

Late Chalcolithic and Early Bronze Age

One site of considerable interest was visited, Kale Tepe Höyük, just north of Aydıncık. Here villagers have been digging into the side of the mound to create terraced fields. In so doing they have exposed two highly burnt and well preserved levels, one apparently directly on top of the other. The lower, resting directly on bed-rock where this is exposed, would appear to be late Chalcolithic (Alişar "fruit stands"), the second some sort of EB II, according to current sparse knowledge of the ceramic sequence for the region. Exposure of the lower level has revealed a room with burnt mud-brick walls and floors with a row of charred roof beams just above the floor. Other charred timbers are also visible in the cuts. It is hoped that Prof. Peter Kuniholm will be able to extract samples from these beams for dendrochronological dating which would provide new and very welcome evidence for these periods.

EBA settlements of varying size and depth are widespread in a variety of locations. Interestingly, one small EBA site was located by chance on a high and exposed hill top. This site replicates evidence from the Kerkenes Dağ where there are a number of small hill top sites. These sites perhaps represent some form of seasonal upland exploitation and may be related to deforestation and resultant erosion. From a distance these sites resemble the tumuli that are scattered along ridges, on hill tops and knolls.

Kale Tepe Höyük. Mr Ahmet Koçak, Aydıncık Belediye Başkan, looks on while Mevlüt Üyümez and Geoffrey Summers examine the stratigraphy of the uppermost burnt level.

Second Millennium

In the grounds new mosque at Asağı Karakaya Köy, about 4 km north-west of Kuşaklı Höyük, a large carved and smoothed granite block with a row of four drilled dowel holes was discovered. This block is clearly of Hittite workmanship from a major public building, presumably a temple. The stone was said to have come from the old mosque in the village when that was demolished (?in the 1960s). No further stones of this nature were located. The block surely came from Kuşaklı Höyük and adds further evidence that it was a Hittite city of some importance, almost certainly Zippalanda.

There is second and first millennium material at Kale Tepe Höyük, as might be expected, but the upper level and the top were under dense cultivation, thus it was not possible to gauge the extent and importance.

The monumental Hittite block in the grounds of the mosque in Asağı Karakaya Köy. Later spolia can be seen in the background. Geoffrey Summers takes notes while Mevlüt Üyümez is engaged in conversation with villagers.

Mid-First Millennium

Surprisingly, no eighth-seventh painted material akin to Alişar IV was found. I have no explanation for this absence. It may be present beneath the crops at Kale Tepe Höyük, but if so it would be sparse.

Two mid-first millennium sites, presumably contemporaneous with the city on the Kerkenes Dağ, guard the approaches to the pass over the Dağnı Dağ between Eymir and Aydıncık. The first is on a steep bluff where the narrow rocky valley of the Eymir Çay opens out to rolling foothills below the pass. The other, in a similar position on the north side of the pass, is Kale Tepe Höyük. The juxtaposition of this pair of sites surely indicates that the route northwards from Kerkenes took this direct line in the Median and Achaemenid periods. Our pottery sequence at Kerkenes is not yet secure enough to be certain that these two sites were occupied in the Median period, but since both have Achaemenid material and material that closely resembles that from Kerkenes, the conclusions regarding the route seem secure enough. It may be significant that the first of these sites did not have any Hellenistic pottery, either fine wares or the so-called Galatian ware.

Tumuli

As in the vicinity of Kerkenes Dağ, there are tumuli on ridges, hill tops, knolls, höyüks and plains. Dating is unclear, some are known from excavation to be Achaemenid, none certainly earlier but this needs confirmation. There is said to be a tumulus with an ashlar chamber and dromos on the top of the Dağnı Dağ.

Hellenistic

One Hellenistic site, already known in the literature (Atalay and Ertekin 1986), was visited on top of the east side of the Kazankaya gorge. At the base of the gorge, on the other side and within Çorum province, is a Hellenistic rock relief. We could see no apparent connection between these two sites apart from their apparent date. The site that we visited comprises a long, sloping rock-cut tunnel with neatly cut steps at the upper end. The tunnel is cut into limestone and was obviously intended to reach water or to end in a rock-cut cistern. To the evident surprise of the builders the limestone suddenly gave way to highly fractured volcanic rock. In a desperate attempt to find water a number of low and irregular passages were hacked out of the volcanic material in various directions before the whole scheme was abandoned. On the steep jagged rock above a small square tower like structure of evidently Hellenistic drafted masonry was constructed, but nothing further that we could see in the rapidly fading light.

The Hellenistic walling of the Kazankaya Canyon Kale.

A few fragments of mortar and tile attest some later activity in the vicinity.

The site is surely Pontic castle intended to protect passage along the top of the eastern side of the Kazankaya Gorge. It seems most likely that the original scheme to construct a substantial castle was abandoned when it proved impossible to secure a supply of fresh water.

The rock-cut tunnel.

An extensive Hellenistic settlement at Topak Kaya, to the west of Külhöyük Köy showing fields recently terraced into the site.

Roman to Byzantine

No particular effort was made to visit and record sites of these periods, many of which are flat. Almost every modern settlement has one or more Byzantine grave stelae, the majority of which are inscribed.

Besides the flat, rural sites three sites of some note were recorded.

Şebek, high on the north slope of the Dağnı Dağ, above Aydıncık, is said to have been monastic. Little remains beyond a few scattered foundations amongst the bushes.

A site in the bottom of the Kazankaya Gorge, on the left bank of the Çekerek Irmak has a mortared defensive wall on the south side that was once carried across the river. Although it is called a Kale, the precise nature and function of the site is elusive. Preserved logs surviving in the defensive wall could suggest that it is a later construction than the buildings behind it.

Kale Tepe, Kayakışla has a Byzantine wall across the south end. The mortar and the surface pottery are reminiscent of Keykavus Kale on the Kerkenes Dağ, to which it may be related.

Selcuk

At the foot of Kale Tepe Höyük, Aydıncık, are remains of a substantial Selcuk period structure, presumably a caravanserai. Little remains in situ, the interior being beneath field, the outer walls forming field boundaries. It would not be possible to recover much of the plan. The location, however, underlines continuing use of the north - south route.

Other Results

There does not seem to have been a major site in the vicinity of Çekerek town. The site at Acıacıhöyük is modest.

A typical Byzantine grave stelae built into a Çeşme in Külhöyük Köy

The Çekerek Irmak flowing through the Kazankaya Canyon. A part of the late defences that originally bridged the river can be seen at centre.

Detail of the wall with surviving timbers.

Acıacıhöyük, a limestone outcrop with Early Bronze Age occupation on the high mound and more extensive Hellenistic remains that include rock cut cist graves.

The course of the modern main road between Sorgun and Çekerek (the Samsun-Kayseri road) does not follow an ancient route.

The modern road from Alaca to Çekerek diverges from the ancient route somewhere near the sharp turn in Çekerek Irmak, the natural route following the river valley in the general direction of Zile and Maşat Höyük.

The Cekerek Irmak valley looking eastwards from the Kümbet Ovası towards Maşat.

A route along the Çekerek Irmak from just south of Çekerek itself north-eastwards towards Zile is perfectly possible, but no evidence was seen to suggest that it was of particular importance at any period. The southern continuation of this route would probably have more or less followed the course of the river rather than the main road, but this region fell outside the area of our survey.

Major Conclusions

The principle objectives of the survey were achieved and no further field work in the region covered is contemplated in the immediate future. Preliminary results are to be published on the Kerkenes Project Web Page and in the Sonüçlar. The principle results will be incorporated in the forthcoming monograph on the Kerkenes Project. Detailed evidence will be combined with other results from the Kerkenes Regional Survey and included in specialist papers as appropriate. It is hoped that Prof. Kuniholm will be able to build on the discoveries at Kale Tepe Höyük in the summer of 1998.

1. The Hittite route from Küşaklı Höyük (Zippalanda) to Ortaköy (Şapinuwa) more or less followed the line: Gurpınar, Külhöyük, Kayakışla Kale Tepe, taking the modern pass over the Dağnı Dağ range (their being no viable alternative), Kale Tepe Höyük and thence crossing the Alan Dağ somewhere west of the Kazankaya Gorge.
2. The mid-first millennium route between Kerkenes (Pteria) and Sinop (Sinope) followed the same route, probably crossing the Alan Dağ immediately west of the Kazankaya Gorge and thence proceeding north-westwards towards Amasya. This is much easier and more direct than the course of the modern road from Sorgun via Çekerek to Zile.
3. This direct route north would have been very difficult if not impossible in winter. Its major importance is probably restricted to the brief life span of the Median city of Pteria on the Kerkenes Dağ when it would have facilitated contact between the Medes and Greek colonies on the Black Sea, notably Sinope. Herodotus knew that Pteria lay due south of Sinope, the only place that he mentions in connection with Pteria.
4. The Dağnı Dağ appears to form the natural border between Cappadocia and Pontus.
5. Major intensive survey of the region covered would produce a mass of detail but perhaps little of wider significance for the prehistory of the northern plateau. Because of crop cover, intensive survey would involve much field walking in both early spring and in autumn over several seasons. It would be essential to combine any more intensive traditional survey with a detailed study of the geomorphology and the creation of predictive models that took into account changes to the landscape over the last 12,000 years.

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Abbreviations are those used in *Anatolian Studies.*

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APPENDICES

Appendix I

THE FIVE YEAR PLAN

Appendix II

PROJECT PUBLICATIONS

Appendix I

THE KERKENES DAĞ PROJECT

THE FIVE YEAR PLAN

1. Beginning in 1999 there will be formal collaboration with the University of Berkeley and participation of a team led by Professor David Stronach. This collaboration will bring some certainty and continuity to the Kerkenes project, but it will also add a new dimension whereby there will be an increase in the role of test excavations. This does not, however, mean that there will be a reduced emphasis on the basic research design with its ongoing emphasis on remote sensing in order to gain as complete an overview of the ancient city as is possible.
2. Collaboration with Berkeley will entail application for an excavation permit, because the resources of the Yozgat Museum are insufficient for a continuation of collaboration in test trenching. Thus it will be necessary to raise additional funding to pay for a site guard, to construct a depo for the storage of study material and to extend and improve facilities for conservation. In the longer term, we would expect to be able to improve other facilities at the expedition's base in Şahmuratlı Village, including the construction of more washrooms and sleeping accommodation.
3. Clearance, conservation and limited restoration of selected architectural remains, beginning with the Cappadocia Gate and the "palace" façade, will reveal the architecture in more detail and begin the process of developing the potential of Kerkenes for local and international tourism. It is hoped that funding for the development of site infrastructure can be raised from sources other than those that normally support archaeological research.
4. The greatest emphasis will be placed on continuing and completing the geophysical and GPS mapping of the city. This will be combined, as before, with limited test trenches aimed at solving specific archaeological problems, particularly function of structural types and the environmental impact of the city.
5. After completion of the detailed topograhic map of the city compiled from the GPS survey data, we would hope to extend GPS survey beyond the walls to map routes, ancient water management associated with the Iron Age city and the many tumuli in the vicinity of Kerkenes. It is expected that GPS survey outside the city wall will begin in 2001.
6. Collaboration also entails clear division of responsibilities and areas of research. The project will continue under the direction of Geoffrey Summers and will continue to be officially sponsored by the British Institute of Archaeology at Ankara (BIAA). The BIAA has appointed a Steering Committee for the Kerkenes Project whose current members are Dr. Roger Matthews (Chair and Director of the BIAA), Professor David Hawkins (SOAS, London), Professor Henry T. Wright Jr. (University of Michigan), Geoffrey and Françoise Summers. The basic division of responsibilities is that the Project Director will continue the programme of remote sensing and study of the urban dynamics and will initiate clearance, recording and conservation of architectural monuments while Professor Stronach will conduct test excavations at places selected in consultation with the Project Director. Professor Stronach and his team will be responsible for reports and preparing publication of the results of the test trenches. It should be emphasized that we do not envisage large scale area excavations within this five year plan, and would not embark on a major programme of excavation unless sufficient long term funding, both for fieldwork and for post fieldwork could be secured.
7. A detailed outline of the 5 year plan follows. It will be understood that some elements of this plan are more fluid than others. The plan as set out below assumes that equipment for geomagnetic, GPS and survey equipment will be available to the Project and that there will be a 4x4 vehicle for fieldwork. It is difficult to estimate the time and resources necessary for architectural clearance and conservation. The progress of excavation is also dependent on what is

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OUTLINE OF RESEARCH DESIGN FOR THE 5 YEAR PLAN (1998-2002)

Year 1, 1998

The present five year phase started in 1998 with concentration of the survey work in the northern end of the site. A 20 x 20m grid was established and recorded using a total station. Two gradiometers were used to collect data with complete coverage of the area within the city walls. A detailed topographic survey was conducted very efficiently by combining two sets of *TRIMBLE* GPS allowing one fixed station and three rovers to be used simultaneously. The city map in preliminary report for The 1998 Survey Season (Fig. 3) shows progress of the survey to date. The season was funded by the BIAA and National Geographic Society. Donations were received from the Anatolian Archaeology Research Foundation and other private sources. The Yibitaş Lafarge Grant was extended and Yimpaş continued to contribute to the house guard fee.

Year 2, 1999

A short spring season at the northern end of the city will allow experimentation with resistivity survey when the ground is wet, re-survey of a few selected grids with the magnetometer in order to obtain better data and further ground truthing of the 1998 geomagnetic results.

During the summer season, geophysical survey will extend the mapping of the city at the northern end.

GPS survey will extend the detailed topographical map towards the southern half of the city.

Ground truthing and surveying by total station will be done in the areas covered by the geophysical survey.

The programme of test excavations will start in the summer of 2000, thus allowing time to build the required facilities and to apply for an excavation permit.

It is however hoped that clearance of gate and ‘palace’ facade, proposed in 1998 in collaboration with the Yozgat Museum, can be carried out. Funds fell short of the planned 1998 programme but for 1999 a grant has been secured for the clearance of the Cappadocia Gate and Prof. David Stronach is confident that funding will be forthcoming for the ‘Palace’ clearance.

Clearance of the western half of the Cappadocia Gate and a length of the glacis would be followed by necessary conservation. To the surviving walls and glacis, one or two courses of stone will be added.

The extent of clearance of the buttresses and the purported entrance to the “palace” will depend on results and resources. Again there would be limited conservation and the addition of new courses of stone where necessary.

Year 3, 2000

Geophysical survey in the centre and southern half of the city will again extend areas previously surveyed.

GPS survey will complete the mapping of the central portion of the city.

Ground truthing and total station survey will continue as in previous years.

Test excavation in area B to elucidate problems raised by TT 15 and the geomagnetic map. This would include a transverse trench across the urban block that passes through the columned hall. Perhaps also a test trench to investigate a two-roomed building and associated features in the centre of the city (for which a detailed application was approved in 1998 but not taken up for want of resources). The geomagnetic map of this set of structures is particularly vivid. Location below a çeşme would enable wet sieving and flotation.

Clearance of monumental architecture will depend on results from the previous season.

Year 4, 2001

Geophysical survey will cover remaining areas at the southern end of the city, including such of the Kale slopes and the steep slopes as seems reasonable and worthwhile, and the small area between the base of the Kale slope and the eastern section of the city wall.

GPS survey will complete mapping at the southern end within the city walls. If time allows the survey will be extended beyond the city walls to map routes, tumuli and other relevant features.

Options for the excavation of test trenches are (i) a trench within the "palace" to check geomagnetic results and solve architectural problems, (ii) an extension of STT 4 and STT 5 to obtain evidence for the function of the urban block and the structures appended to its eastern side (where we know that preservation of organic materials is excellent, the repertoire of pottery can be extended and there are preserved strata that span more than one phase within the short life of the city. Other options will present themselves as the geomagnetic survey progresses.

Regulations lay down that all activities have to be within the same area of the site, so that it will be necessary to programme remote sensing, clearance and test excavation in such a way that all the activities are conducted within the same part of the site, either simultaneously or consecutively.

Clearance of monumental architecture will depend on the results of the previous seasons.

Year 5, 2002

The 2002 season should see the completion of the geophysical survey. It is hoped that by then, all of the areas where useful results are anticipated will have been surveyed before the end of the season.

GPS mapping will continue outside the city.

Further clearance of monumental architecture, depending on the results of the previous season, will be carried out.

It is anticipated that no excavation will be planned so as to allow completion of the work on material and finds from previous seasons.

All results will be finalised for publication.

YEAR 2003

Phase 2 and the publication of the monograph will have been completed before the summer of 2003. It is anticipated that a programme for a new phase of the project to explore further certain areas of the city by means of clearing and test trenches will be proposed. It is also hoped that by then Kerkenes will have found its due place as part of the Historical and Cultural Heritage of the area and that a programme for the conservation, restoration and development of the site to provide the required facilities for visitors.

Appendix II

PROJECT PUBLICATIONS

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Gurney, O.R.

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THE KERKENES DAĞ PROJECT

Geoffrey and Françoise Summers

THE FIVE YEAR PLAN

1. Beginning in 1999 there will be formal collaboration with the University of Berkeley and participation of a team led by Professor David Stronach. This collaboration will bring some certainty and continuity to the Kerkenes project, but it will also add a new dimension whereby there will be an increase in the role of test excavations. This does not, however, mean that there will be a reduced emphasis on the basic research design with its ongoing emphasis on remote sensing in order to gain as complete an overview of the ancient city as is possible.
2. Collaboration with Berkeley will entail application for an excavation permit, because the resources of the Yozgat Museum are insufficient for a continuation of collaboration in test trenching. Thus it will be necessary to raise additional funding to pay for a site guard, to construct a depo for the storage of study material and to extend and improve facilities for conservation. In the longer term, we would expect to be able to improve other facilities at the expedition's base in Şahmuratlı Village, including the construction of more washrooms and sleeping accommodation.
3. Clearance, conservation and limited restoration of selected architectural remains, beginning with the Cappadocia Gate and the "palace" façade, will reveal the architecture in more detail and begin the process of developing the potential of Kerkenes for local and international tourism. It is hoped that funding for the development of site infrastructure can be raised from sources other than those that normally support archaeological research.
4. The greatest emphasis will be placed on continuing and completing the geophysical and GPS mapping of the city. This will be combined, as before, with limited test trenches aimed at solving specific archaeological problems, particularly function of structural types and the environmental impact of the city.
5. After completion of the detailed topograhic map of the city compiled from the GPS survey data, we would hope to extend GPS survey beyond the walls to map routes, ancient water management associated with the Iron Age city and the many tumuli in the vicinity of Kerkenes. It is expected that GPS survey outside the city wall will begin in 2001.
6. Collaboration also entails clear division of responsibilities and areas of research. The project will continue under the direction of Geoffrey Summers and will continue to be officially sponsored by the British Institute of Archaeology at Ankara (BIAA). The BIAA has appointed a Steering Committee for the Kerkenes Project whose current members are Dr. Roger Matthews (Chair and Director of the BIAA), Professor David Hawkins (SOAS, London), Professor Henry T. Wright Jr. (University of Michigan), Geoffrey and Françoise Summers. The basic division of responsibilities is that the Project Director will continue the programme of remote sensing and study of the urban dynamics and will initiate clearance, recording and conservation of architectural monuments while Professor Stronach will conduct test excavations at places selected in consultation with the Project Director. Professor Stronach and his team will be responsible for reports and preparing publication of the results of the test trenches. It should be emphasized that we do not envisage large scale area excavations within this five year plan, and would not embark on a major programme of excavation unless sufficient long term funding, both for fieldwork and for post fieldwork could be secured.
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