

Apulia

Vol. I: Neolithic Settlement in the Tavoliere

by G. D. B. Jones



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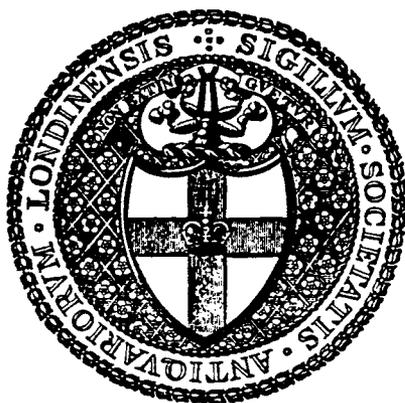
Volume I: Neolithic Settlement in the Tavoliere

By

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Frontispiece. La Panetteria I and II (site nos. 1 and 2)

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IAN A. RICHMOND
SOCIETATIS ANTIQVARIORVM LONDINENSIS
OLIM SOCIO DIRECTORI PRAESIDI
STVDIIS APVLIS
FAVTORI STRENVO

loca solatiorum nostrum

Frederick II of Hohenstaufen

I climbed up the last ridge, and then, through a waste covered with wild pear trees, descended into the extensive plains of Puglia, which afford a prospect curious from its novelty, but disagreeable after the survey of a few minutes.

H. Swinburne, *Travels in the Two Sicilies*,
Vol. I, p. 213

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By Catherine Delano Smith

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PREFACE

IN its essentials this work, the first of three volumes on the area based on the Bradford collection of aerial photographs, is presented as a source-book for the archaeology of the Tavoliere. So much has changed, and is still changing, both in the modern agriculture of the Tavoliere and in the greatly increased archaeological interest, particularly in the prehistoric period, that the true value of this work will only be seen if it is considered as a source-book on which to base the selection of future priorities and research programmes. It may well be that the catalogue presented here will have to be revised in terms of the numbers of sites known: a thousand sites, but in an area considerably larger than that of the present survey. Nevertheless, we may be sure of two things: first, that the Bradford collection of aerial photographs contains the basic evidence for the principal ancient settlement area of the Tavoliere, the Lucera – Foggia – Manfredonia axis; and secondly, that owing to deep ploughing at the beginning of the many modern agricultural schemes much of the evidence will never be seen in such clarity again — indeed, part of it has been completely destroyed. This is the long-term importance of the Bradford collection, made at the end of the Second World War, when an aerial reconnaissance squadron was stationed at Foggia.

The growth of the Apulia project under the guidance of the Apulia Committee of the Society of Antiquaries can be traced in a series of articles by John Bradford between 1946 and 1957. The first of these, 'Situlosa Apulia', was written in collaboration with P. R. Williams-Hunt and appeared in *Antiquity*, xx (1946), 191 – 200. This was followed by 'Buried landscapes in southern Italy', *ibid.* xxiii (1949), 58 – 72 and 'The Apulian expedition; an interim report', *ibid.* xxiv (1950), 84 – 9. With a short note on the site of Arpi (*ibid.* xxxi (1957), 167 – 9), these form the published work directly related to Apulia, though there is much useful information to be found in 'A technique for the study of centuriation', *ibid.* xxi (1947), 197 – 204, an article that subsequently formed the basis of the fourth chapter of Bradford's *Ancient Landscapes* (London, 1957). *Ancient Landscapes* contains only a limited discussion of the prehistoric evidence from Apulia, which Bradford intended to present in a monograph, of which this is the ultimate successor. Some of the Apulian results were described in *Shell Aviation News*, ccxvii (July 1956, 2 – 6) and in a brief guide to a small collection of Apulian air photographs exhibited in the Ashmolean Museum at Oxford, in 1948. Lastly, in *Bollettino di Paleontologia Italiana*, vii, 5 (1953), 113 – 16, C. Drago, then Superintendent for Apulia and the Materano, gave a useful summary (clearly derived from recent communication with Bradford) of the state of the Apulia project in 1953; this represented an expansion of an earlier note by the same author in *Rivista di Scienze Preistoriche*, v (1950), 129.

The late fifties saw the onset of John Bradford's illness, which led to his premature death in 1975. Not unnaturally, there followed a period of considerable uncertainty about the future of the project. This ended when Professor Sir Ian Richmond, as President of the Society of Antiquaries, took in hand the rejuvenation of the project. There were, however, many problems to be overcome, not least the tragic accident that befell Mrs Patience Bradford while she attempted to complete a series of medieval excavations in 1964. When

work recommenced on the Bradford material in the sixties it was not originally envisaged that there should be a full catalogue of Neolithic sites recorded in the corpus of aerial photographs. Rather, it was intended that the publication should be limited to material collected by John Bradford and housed in the Ashmolean Museum, together with a partial re-examination of the archaeological sequence at the major site of Passo di Corvo.

It was on the Roman side that the greatest amount of new work was envisaged, because relatively little had been undertaken previously and the full archaeological record of what had been done could not be found. However, in the course of re-examining the aerial cover in order to identify Roman elements in the landscape, the true number of Neolithic enclosures became apparent; it was felt, particularly by Richmond, in whose hands lay the guidance of the project, that the great bulk of material could not be ignored and that a comprehensive catalogue of the sites contained within the air photographic record should be prepared. This decision, while absolutely correct in its assessment, ultimately and for unrelated reasons meant that the process of completing the project would prove an extended one. Many of the sites no longer exist, because post-war land reclamation schemes did so much to alter the face of the Tavoliere. At the same time, the complete absence of negatives necessitated an extremely laborious process of enlarging many prints of problematical sites, in particular to recover detailed evidence of the layout of the interiors. Many of the photographs were taken from as high as 25,000 ft. (7,620 m.), many of the prints had faded and the process was never wholly satisfactory (see p. xviii).

The next step was to check details on the ground, sometimes in the company of Dr Ruth Whitehouse, at various stages in the programme of excavation that was being conducted in the mid-sixties. Further fieldwork took place in 1969 and 1971, and the bulk of the task had been completed. The resultant unfortunate delay in publication lies on the conscience of the principal author.

The flow of information from work in progress was not, however, stopped and locational and other information was made available to both Italian and British archaeologists and geomorphologists, particularly for the later study of the littoral undertaken by Dr C. Delano Smith and through the presence of a copy of the survey in the library of the British School at Rome. Dr Ruth Whitehouse published two articles on the southern Italian Neolithic, using in part evidence collected from a series of selected sites visited in company with the author. These were then used as the basis for M. R. Jarman and D. Webley's 'Settlement and land use in Capitanata', a contribution to the second volume of *Palaeoeconomy* (1975), containing reports on the results of the British Academy Major Research Project in the Early History of Agriculture. The techniques of site catchment analysis employed at large have, of course, been the subject of considerable debate amongst prehistorians in the last few years. More significant for their assessment in this particular case was a factor that was inadequately recognized at the time, namely, the basis of selection of the sites chosen in the Tavoliere (as opposed to the Gargano). These went back to Dr Ruth Whitehouse's work, when site visits were controlled by accessibility via modern roads or tracks, the absence of modern vineyards and olive groves, or indeed simply the need to examine some feature of the Roman or medieval landscape in the vicinity. These factors undoubtedly affect the long-term value of the survey, most particularly through inadequate recognition of the density of sites on the ground. One example will suffice. Towards the mouth of the Candelaro lies the site of Coppa

Navigata. The next adjacent site is shown 5.5 km. to the west along the north bank of the Candelaro at Masseria Maremorto, sometimes referred to as M. Aquilone. In reality, however, no fewer than eleven sites occur in the vicinity and, whatever one's view of site contemporaneity, some account of them must surely be taken in any locational analysis.

Meanwhile Dr Delano Smith, who contributes the introductory section of this report, was pursuing locational studies, particularly along the coastal strip between Manfredonia and Trinitapoli. Her work related to the growing involvement of Italian archaeologists. Professor S. Tinè, at the time Director of the Foggia Museum, began work on the excavation of a number of settlements, as did Professor A. Manfredini at M. Aquilone. Tinè's researches also led to confirmation of the discovery of the early settlement at Salpi (Salpi I), and dovetailed with Dr Delano Smith's analysis of coastal sedimentation in the Gulf of Manfredonia. Finally, Professor Tinè's programme of excavations began at Passo di Corvo, and he obtained important radiocarbon dates from the multiple superimposed sites at Scaramello di S. Vito south-east of Foggia.

The picture that is emerging of the Neolithic on the Tavoliere is not easy to bring into focus, with the steady growth of our knowledge of sites and the completion of scattered excavations, unfortunately still of too small a scale. The location and internal organization of the 250 or so sites found in the central Tavoliere form the core of the present publication. This factual basis has to be set against overall problems of chronology, material culture and social interpretation. In the fifties and sixties lack of radiocarbon samples made it impossible to assign the sites to any close chronological framework. Happily the situation is beginning to change. One of the Scaramella sites produced two dates, both from the primary ditch sumps, of 5050 ± 100 bc (Scaramella A - 1) and 4950 ± 65 bc (Scaramella 1 - 2) together with impressed, painted and incised pottery. Some at least of the ditched villages of the Tavoliere must be seen as a very early development of the Italian Neolithic. Recently Passo di Corvo has produced a carbon date of 4190 ± 65 bc, suggesting that the exceptionally large sites were a development of the later Neolithic.

British and Italian archaeologists originally argued in favour of a brief early Neolithic period characterized by impressed ware only. Dr Ruth Whitehouse's contribution was to suggest that there was in fact no separate 'impressed ware' phase. Her argument was based on the presence of painted wares, in however small a quantity, in almost all the sites she examined. Bernabo Brea's excavations at Sipari, where impressed, red-painted and Matera scratched wares were all associated in the primary level, point towards the same conclusion, as does excavation at Capo d'Acqua.

With several very important exceptions, such as Passo di Corvo, the great majority of the Neolithic settlements have diameters of 50 - 350 m. The role of the ditch systems has been disputed. The total absence of offensive weapons from excavated sites makes it impossible to argue that the ditches had a defensive role against human attack. Though clearly drainage might be a consideration at certain times of the year, the ditches are seen here as principally related to the control of livestock and associated agricultural activities. Lack of large-scale excavation (though this may be rectified at Passo di Corvo) makes it difficult to discuss the interiors, except to say that they exhibit complex patterns of occupation and reoccupation. Apart from the presence of compounds measuring up to 120 m. across, the internal features now attested from excavations include pits and a sub-rectangular house-plan (from M.

Aquilone). Care needs to be exercised in the interpretation of the pits, especially at Passo di Corvo, where alleged post-pits in our view represent the bedding pits of a Roman olive plantation. Passo di Corvo has provided examples of carbonized grain and Jarman's and Webley's work on soil types noted the high percentage of *crosta* soils suitable for arable cultivation in the vicinity of practically every site. Bones of all major domesticated animals are represented in the recent excavations, but it remains impossible to demonstrate the process of transhumance; though Jarman and Webley usefully show the potential of the Gargano peninsula, the source of the chert implements found at so many of the Tavoliere sites. The role of the Apennines in transhumance processes, if such existed, can best be judged by surviving traces of medieval *tratturi* that still form a feature of the countryside.

In the final analysis the situation is one in which major interpretative advances are now only likely to emerge from large open-area excavations. If this book serves to promote that end, then it will at long last have served its ultimate purpose.

G. D. B. Jones and David Whitehouse
Rome 1981

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NOTE ON THE PLATES

The quality and contents of the collection of plates in this volume require explanation. The great majority of the photographs were taken from vertical aerial coverage of the prehistoric sites. Of the original cover only prints exist; the negatives were presumably destroyed shortly after 1946. This has entailed considerable difficulties in presenting the plates. All the aerial photographs are copies of the original prints and were processed on extra-contrast paper. For this the editor is deeply grateful to Mr C. M. Daniels for making available the photographic facilities of the Museum of Antiquities in the University of Newcastle-upon-Tyne.

Nonetheless, some of the prints leave much to be desired; scratches and spots derived from the original prints have been erased so far as possible, but some blemishes have proved ineradicable. In no plate, however, has the tone of any crop-mark been accentuated by additional toning agent. At the same time it has been thought advisable to include a number of plates of poorer quality for special reasons. In the first place the cover of several sites suffers from cloud shadow (e.g. pl. XVI*b*), and secondly, one plate has been included from the Gargano (pl. XXXIV*b*) to illustrate the way in which the absence of the usual *crosta* subsoil (p. 33) blurs the usually precise impression given by the crop-marks. Lastly, in a number of cases (e.g. pls. XII*a*, XXV*a*) the precise interpretation of crop-mark features remains debatable, and the reader has been presented with the basic evidence to form his own judgement and leave the way open for future work.

Despite the imperfections of the plates the author wishes to emphasize the debt we owe to the quality of the original aerial cover, not merely for the way in which it revolutionized archaeological knowledge of the Tavoliere at a single stroke, but also for the enormous amount of detailed information made available for individual sites, like La Panetteria (p. 38, frontispiece), when modern crop conditions allowed. The massive changes in the agricultural condition of the Tavoliere since 1943 – 5, the period when the original cover was taken, have meant the loss of hundreds of sites to aerial photography. This was amply demonstrated to the author by the examination of recent Italian Air Force cover of parts of the Tavoliere through the courtesy of Dr Adamesteanu of the Italian Air Photographic Institute. At a rough estimate, recent agricultural schemes had destroyed perhaps 40 per cent of the known sites, and of the remainder many were visible in outline only; the internal details were no longer traceable.

G.D.B.J.

ABBREVIATIONS AND GLOSSARY

<i>AAE</i>	<i>Archivio per l'Antropologia e l'Etnologia</i>
<i>ASP</i>	<i>Archivio Storico Pugliese</i>
BAR	British Archaeological Reports
<i>BPI</i>	<i>Bollettino di Paletnologia Italiana</i>
Bosco	Scrub
Coppa	A low hill or elevation in the Tavoliere
<i>Crosta</i>	The uppermost layer of the limestone crust forming the subsoil of the Tavoliere
F.	Fiume — river
IIPP	Istituto Italiano di Preistoria e Protostoria
Masseria	A large farm, normally the centre of an estate
M.	Monte — hill
P.	Ponte — bridge
<i>PBSR</i>	<i>Papers of the British School at Rome</i>
<i>PPS</i>	<i>Proceedings of the Prehistoric Society</i>
Podere	A small farm established by a land reclamation scheme
Posto	Normally signifies a large farm
<i>RSP</i>	<i>Rivista di Scienze Preistoriche</i>
Stabilimento	Establishment, building
Stazione	Station
SS	Strada Statale — main road (state-maintained)
T.	Torrente — large river
<i>Tratturo</i>	Droeway
UISPP	Unione Internazionale di Scienze Preistoriche e Protostoriche

FOREWORD

TODAY the Tavoliere di Puglia has regained a superficial resemblance to its appearance under the Roman Empire. Huge, open fields of rolling corn and the regularly spaced farms of the various land reclamation schemes have within the last three decades replaced the wilderness of steppe crossed by the *tratturi delle pecori* that typified most of the region throughout the Middle Ages, and in some places into the twentieth century. There are belts of vineyards and olive groves around the few, whitewashed towns of the plain. Life is not easy on the bare, dusty Tavoliere, scorched by sun for most of the year and whipped by surprisingly strong northern winds during the winter months. Only hard work can make the laborious process of dry farming profitable and this is one of the main reasons why many of the modern land allotment schemes are only partially successful, just as it must also have contributed to the decline of the Roman centuriation systems.

Just as Apulia has almost always formed one of the more backward areas of Italy in social and economic terms, so, archaeologically, it lay fallow. This situation was changed at a stroke by the aftermath of the Second World War. The aerial photographs taken at that time located a wealth of archaeological material of all periods that promised to promote Apulia to its rightful place amongst the most important archaeological zones of Italy. All that was required was systematic analysis, fieldwork and exhaustive publication. Yet the very wealth of the material involved proved a daunting obstacle to everyone associated with the Apulian project. When John Bradford's illness made it apparent that he would be prevented from completing any publication of his results, the present writer was commissioned by the Society of Antiquaries of London to undertake a fresh survey and excavation programme in 1963 - 4. The scheme of publication involves three research reports covering the prehistoric, Roman and medieval remains of Apulia as revealed by aerial photography. Most of the intensive fieldwork was conducted in 1963 and this led to selective excavation in the summer of that year and the next through the courtesy of the Soprintendenza alle Antichità della Puglia e del Materano, to the officers of which we are greatly indebted.

The debts incurred in the preparation of this volume have been considerable: first, to the two other contributors who have had to cope with problems of reconstructing the prehistoric environment and working through reports of Bradford's original excavations. At the time of the 1963 - 4 excavations the principal author was considerably indebted to Mrs Patience Bradford, who was tragically injured during the course of her medieval excavation at Il Casone in 1963, to Mr D. W. R. Ridgway and to Drs D. B. and R. Whitehouse. The brunt of the excavations in 1964 were carried out by an extremely competent team of four local workmen: Signor Matteo DeIulissi (foreman), Signor Vittorio Di Giovinni, Signor Antonio Di Giovinni and Signor Ciro d'Appollo. To the speed with which they learnt a wide variety of excavation techniques was largely due the success of the 1964 season.

In this country Mr C. M. Daniels and Professor R. J. C. Atkinson kindly assisted with the enlargement and selection of the aerial photographs for use in this book. Comparative aerial cover of recent date was kindly provided for some areas by Dr D. Adamesteanu. Professor S. Tinè, formerly of the Museo Civico, Foggia, and now at the University of Genoa, was kindly

forthcoming with information concerning his own work in the area, as were Dr S. M. Cassano and Dr A. Manfredini. Signorina Gigiola Bacile of Masseria Durando and Signorina Luciana Valentini provided much assistance, both in Rome and the Tavoliere. Mrs P. Mallet kindly drew the material illustrated in figs. 76 – 103. Dr D. G. Coombs kindly advised during the final stages of preparing the typescript, likewise Miss C. Malone, Dr G. Barker, Dr R. Whitehouse, Mr S. Stoddart, Mr John Walker and Mr K. Maude, while on the practical side Mr P. Bennett, Mr W. A. C. Knowles and Mr D. Hook gave valuable assistance. Miss Gwyn Moss kindly provided some of the quantitative data for the final chapter.

The preparation of the typescript involved many hands over a long time, including Mrs B. A. Jones, and Mrs S. Hazlehurst. Two debts within the Society of Antiquaries must also be mentioned: to Hugh Thompson for his forbearance with a tardy author and to Miss Sarah Macready who prepared and sub-edited the final typescript for the press. Mrs K. A. Brown and Miss P. Faulkner kindly prepared the indexes.

The final debt of gratitude is to the two men who, with the support of the Apulia Committee of the Society of Antiquaries, prepared the way for the completion of this prehistoric project in Apulia: the late Professor Sir Ian Richmond and the late Mr J. B. Ward-Perkins. Through the support of the Gulbenkian Foundation the former established (during his Presidency of the Society) the arrangements under which the work of survey and excavation could proceed. Through the good offices of the British School at Rome the latter ensured adequate support for the scheme on the ground in Italy. This work is in effect a source-book for prehistoric archaeology in part of south-eastern Italy; it would be a fitting tribute to the vision and determination of these men if the next generation of Italian prehistorians built the superstructure on foundations they strove to create.

G. D. B. Jones
8th April 1982

Foreword to Chapter I

In 1963, I was offered the opportunity of embarking, as a geographer, on an investigation of the environment of the Tavoliere in conjunction with those archaeologists already involved in carrying out John Bradford's Apulia Project, the trilogy of Neolithic, Roman and medieval 'landscapes' he had envisaged as a culmination of his discoveries from wartime air-photographs and subsequent field investigations.¹ My own investigation would involve two main stages: first, an assessment of the region's present-day environment, its landforms and hydrology and the interrelated aspects of soils, vegetation and climate; second, an attempt to discover the extent to which this environment was different from that in which the Neolithic inhabitants of the plain would have lived, six or seven millennia ago. The latter aspect, that of environmental change, was in those days a relatively unfamiliar topic in archaeological contexts. Not only was the relevant data totally lacking, but so was any sort of methodology, and it was necessary to evolve my own field approach to the Neolithic environment of the Tavoliere. More surprising, perhaps, was the discovery that there was remarkably scant literature available on which to base a detailed local study of the

present-day environment, especially at the required, local, scale. Regional text books, especially those in English, not only dealt with the area summarily, but more often than not revealed gross misunderstandings, if not actual ignorance, of the physical facts and their consequences.² Similarly, there were few systematic textbooks, in any language, that were of direct and detailed relevance to this part of Italy. As a result, only the first stage of the investigation was completed by 1967 when Chapter I was prepared for publication. Inevitably, that text reflected the persistent ignorance about the nature of the physical environment of the Tavoliere in earlier, historic or prehistoric, times.

During the 1970s, however, I continued with my interest in the historical geography of the Tavoliere. With financial backing from a variety of sources,³ I was able to focus on specific questions of environmental change. I directed my attention first to the coastlands where, I argued, the changes would be the most observable and measurable. Eventually, I returned to matters inland and investigated valley changes, in particular in the vicinity of the major Neolithic site of Passo di Corvo, where I worked with Italian colleagues under the direction of Santo Tinè (University of Genoa).

Thus, in 1984, a decision had to be made regarding the present essay. In view not only of the intervening decade and a half of my own work on environmental change in Mediterranean Europe,⁴ but also of the considerable investment of archaeological expertise and effort in all aspects of the topic during the same period, clearly the original draft could not stand. The chapter had to be either rewritten or updated. The latter course has been taken, preserving the historical flavour of the document and its association with John Bradford's inspired fieldwork on the Tavoliere. Thus, although the section on Environmental Change has been given greater prominence as well as substance, the general structure of the original essay (Regional Setting, Local Setting) as well as much of the text, has been allowed to stand. This is not just as a reflection of the 'state of the art' as it was over two decades ago, but above all in order to underline the pioneering nature of John Bradford's contribution to archaeology, sadly destined to greatly delayed fulfilment and to publication at a time when such treatment of the physical and economic environment of archaeological sites has become commonplace.

Catherine Delano Smith
July 1985

CHAPTER I

THE NEOLITHIC ENVIRONMENT OF THE TAVOLIERE

By Catherine Delano Smith

THE province of Foggia, Apulia, contains the Italian peninsula's most extensive lowland, the Tavoliere (fig. 1). Surrounded on three sides by uplands, this huge plain (over 7,000 sq. km.) slopes gently to the sea on the fourth. It is drained by rivers which rise in the Apennines and debouch close together in the Gulf of Manfredonia and whose broad, shallow valleys often afford the only noticeable relief. Two other rivers, the Fortore to the north and the Ofanto to the south, serve as boundaries to the Tavoliere, although the plain itself continues as a long, narrow strip of coastal lowland north of the Fortore. This is the lowland that has been hailed as having one of the densest and most remarkable prehistoric settlement patterns of all western Europe, as well as a flourishing Iron Age civilization with cities no less prosperous or culturally rich than those of Magna Graecia.

THE REGIONAL SETTING

Structure and landform today

After the rather dramatic effects of the Alpine orogeny of the Tertiary geological era, Italy had very broadly assumed its present shape and outline. During the Pliocene, however, a major marine transgression drowned the lowest parts of the newly formed continent so that only the highlands emerged above the seas and it was during this period that the substance of today's plains and lower hills was deposited, filling up hollows with great depths of fine sands and clays and leaving coarser sediments around the shores. Further layers of marine deposits, together with the debris of continental erosion swept off the land, were added during the Pleistocene. As earth building gave place to earth moulding and as vast quantities of the earth's oceanic water were locked into the Quaternary ice sheets only to be released as melt-water during interglacial phases, so these deposits were eroded, cut into or overlain by the action of rivers and by variations in sea level.

The Tavoliere of the Foggia province is one such area where the surface of Pliocene and Pleistocene deposits filling a major structural trough have been marked by the Quaternary legacy of erosion and deposition. Geologically, its underlying structure is part of the Apennine system, being located between the foothills and the depression now occupied by the Adriatic sea. To north and south the upland blocks of the Gargano and Murge respectively are part of the Secondary core of the Apennine range, but both units have been isolated from the main mass by a longitudinal trench, the Fossa Bradano (fig. 2). This trench runs up from the Ionian Sea, its alignment marked by the Bradano river, and continues below the Tavoliere on a Foggia-S. Severo axis. Here, near Foggia, the limestones of the

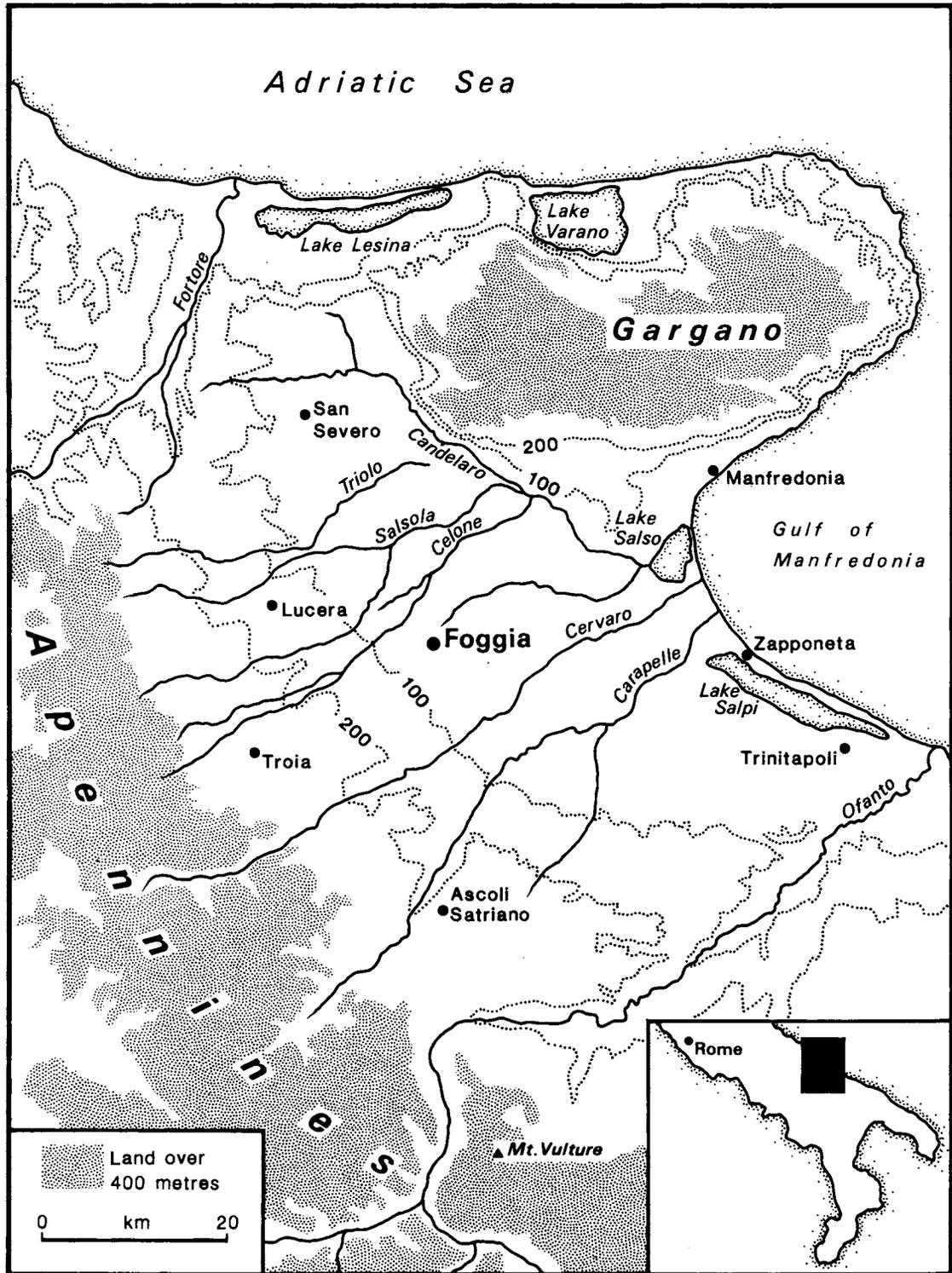


FIG. 1. The Tavoliere: general relief

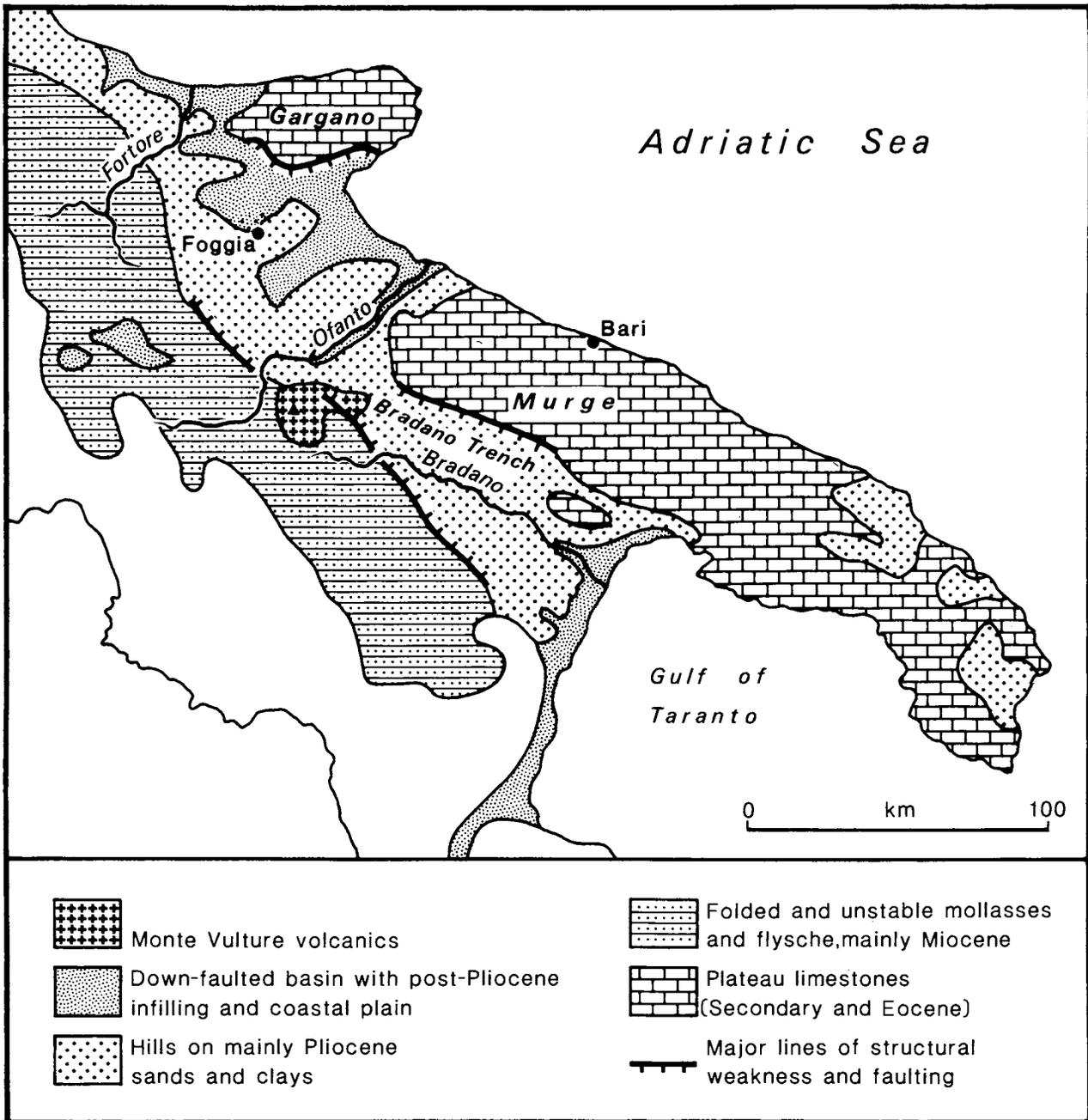


FIG. 2. Simplified morpho-structural outline of Apulia

base of the trench lie about 500 m. below the surface of the plain, forming a sub-horizontal floor on which the Pliocene deposits rest. Intensive local faulting has dislocated this floor so that seawards the limestones are much lower down, reached only at 700 m. in the

Manfredonian gulf. All this faulting indicates a structurally marginal and unstable zone and the frequency of earthquakes as recorded in recent centuries, some of which were centred on or close by this contact area, testifies to the structural instability of this part of the Apennine fringe. Similarly, the upstanding limestone masses are also faulted in several directions. Many of these faults are very local and of minor topographical significance. A more important and obvious fault line runs east–west across the surface of the Gargano from the coast at Mattinata towards S. Severo. As a line of weakness, it has been picked out by both karstic and surface erosion and has been excavated into a series of valleys and depressions that have provided, throughout history, the major east–west route across the Gargano. Still more dramatic in the landscape, and no less significant in terms of settlement, is the series of great faults that define the Gargano massif on its western and south-western sides. Here fault scarps of some 300–400 m. in height rise abruptly above the Tavoliere, effectively isolating the Gargano both from the plain and from its Apennine hinterland.

The Gargano massif thus appears in the landscape as one of the most prominent structural features of northern Apulia. It is composed mainly of limestone, predominantly Cretaceous in age but with occasional remnants of younger strata such as the powdery fossiliferous Eocene or yellowish early Miocene deposits that occur to the south of Lago di Lesina and Lago di Varano. The Cretaceous limestones are in general massive and fairly homogeneous, though narrow intercalations of soft marl give a banded and slab structure to dolomitized outcrops in the Bosco Umbra area and eastwards from there. They are compact, resistant, varying in colour from pure white to grey. The surface of these limestones was early eroded into a series of terraces or levels, now left perched as fragments of high plateau at 500–600 m., 800 m. or, in the case of the oldest and most eroded level of about 1,000 m., as a line of flat-topped peaks. On its south-eastern side, the Gargano massif is flanked by what appears to be a down-thrown block which forms a plateau at the foot of the main fault-scarp but still some 100 m. above the Candelaro valley; this is the M. Granata–S. Leonardo shelf.

South of the Ofanto, well beyond the horizons of the Tavoliere, the Murge has had a similar geological history. The intensity of continental erosion during the Pliocene contributed much debris from the younger strata overlying the Cretaceous limestone to the accumulation of what are now the hills and plains below and thus also to the infilling of the small structural hollows contained within the upland mass itself. Further inland, east of the Bradano trough, tectonic disturbances associated with the Pliocene resulted in the extrusion of the volcanic complex of M. Vulture, when crystalline rocks, volcanic tufas, and lavas of abnormally low basicity poured out over the nearby sands, clays, and limestones. The western boundary of the Tavoliere is formed by the Apennine foothills. These are predominantly of late Secondary (Cretaceous) and Tertiary structure, the basal outcrops being mainly sandstones, thin limestones or the discontinuous and very variable flysches and molasses that are particularly characteristic of this geological period.

Framed thus by uplands of older, more massive and yet often disturbed and unstable strata, the Pliocene and Quaternary deposits of the Tavoliere have been derived from continental as well as from marine material. Onto the basal limestone of the structural trench was laid first a great depth of fine blue marine clay, followed by a yellow clay. These two strata together constitute the bulk of the Pliocene infilling. On top of these, the

vicissitudes of the Quaternary left varied but more localized sediments of continental origin, the result of erosion of glaciated Apennine peaks and of fluvial transport and deposition during the Pleistocene. Thus the Tavoliere sediments vary according to origin. Most extensive are the marine deposits, clayey sands, gravels (some now cemented as conglomerates) and fossiliferous yellowish clays. Areas peripheral to the upstanding limestone blocks have received accumulations of rounded detritus, washed down from the upland. Other localized deposits result from the rejuvenation of fault lines which produced bands of angular, comminuted fault-debris subsequently cemented into breccias, such as those occurring along the northern side of the Gargano scarp between Apricena and Mattinata. The most recent Quaternary deposits tend to accord with the surface morphology of the plain, by then largely formed as a result of successive withdrawals and advances of the shoreline. By far the most extensive of these Holocene deposits are the river alluviums. Since the streams that drain the uplands converge on the Gulf of Manfredonia, the alluviums form a fan-like pattern based on the coastline.

It might be expected that such contra-faulting of clays and limestones would give rise to a well-marked line of springs and resurgences at the point of contact of permeable and impermeable strata. But there is a noticeable absence of springs along the base of the Gargano fault-scarp. This is due to the deep-seated nature of faulting in the Gargano limestone mass, which means that surface water is drawn down these faults and other subterranean fissures to be held in an aquifer in the base of the limestones far below the Tavoliere surface, leaving just a little seepage along the surface contact zone, such as the spring at Sipontum. Only in the Daunian Apennines, where Pliocene clays are juxtaposed against lithologically more varied and discontinuous calcareous strata, is there the expected line of springs giving rise to the headstreams of most of the Tavoliere streams.

In the most general terms, the surface relief of the Tavoliere can be described as flat and its landscape as monotonous. But in detail, the plain drops seawards not in a continuous gentle slope but as a series of marine terraces. The highest — and oldest — of these is also the most dissected. It forms the zone of contact between the plain and the Apennine hills, surviving as flat-topped ridges and knolls of consistent height, that is, about 400 m. above sea level. In some instances (at Troia, for instance), the ends of such ridges have afforded some of the most secure settlement sites. Less dissected, and of more restricted extent, is the 200–150 m. level terrace. This is composed of both continental and marine (shallow water) debris. Thus geologically differentiated but topographically uniform, this terrace accounts for ridges and levels between S. Severo and Lucera (the medieval site at Seggio Curati marks its seaward edge); the Troia ridge east of the town; and the Cerignola terrace. Then comes the Milazzian terrace, at 50–70 m. altitude in the Mediterranean in general and of similar altitude on the Tavoliere. This comprises the most extensive and uniform level, and can be said to epitomize the landscape and relief of the central Tavoliere. It runs, for instance, from below Seggio Curati towards Foggia, as the Lucera terrace; it is separated from this by the Vulgano and the Celone streams to continue as the Borgo Segezia–Amendola surface. South-east of S. Severo, a slight rise marking an interfluvium was early chosen for settlement at Il Casone. In the southern Tavoliere, its featurelessness characterizes the eastern part of the Cerignola–Orta Nova level. Below this terrace is another at 35–30 m. altitude. Presumably this can be identified as the Tyrrhenian. On the Tavoliere it stands out as a low shelf on the seaward

side of the Amendola surface, for instance, and below the Orta Nova terrace. The lowest clearly defined level, probably representing the Monasterian terrace, is today about 12–15 m. above sea level. It is in evidence at Cupola, near the coast; it forms the hinterland of Trinitapoli; and the surroundings of ancient Sipontum. The most recent and lowest terrace, the Nizzan (3–7 m. in the Mediterranean in general) is hard to detect in the ground, less easily discerned in the wetlands of the coastal zone, but is clearly picked out by the occurrence of subsoil *crosta* (see p. 12) and by the distribution of Neolithic settlement, the lowest Neolithic site (Marandrea) being at 2.5 m. above present sea level.

Although mediocre in size today in comparison with other networks in southern Italy, the rivers of the Tavoliere have in the past contained sufficient volume to account for the broad valleys which are cut into the marine terraces. The two largest river networks, however — that of the Fortore to the north and that of the Ofanto to the south — have in neither case contributed much to the plain's relief; they appear to be entrenched in discordant and possibly antecedent courses tangential to the lowland. On the plain itself, the Candelaro network includes the Triola, Salsola, Vulgano and Celone rivers. In contrast, both the Cervaro and the Carapello rivers have relatively simple linear networks with few tributaries. Almost all the surface water flowing across the Tavoliere is exogenous. It is drawn from the Daunian foothills, from catchment areas where the total annual rainfall of over 700 mm. may be double that of the plain itself. Even so, the Tavoliere rivers are short streams of small volume in comparison with those of the western, windward, flank of the Apennines.

The valleys of the Tavoliere rivers were formed in earlier periods of substantial flow, presumably those of the Pleistocene pluvial phases. Throughout the Holocene, the channels have meandered in braided and shifting courses across the floor of these broad valleys, leaving traces of abandoned courses clearly visible from the air. The valleys can be 2–3 km. wide, flanked by bluffs that rise steeply to the level horizons of the interfluvium. To all appearances the bottomlands are flat, but in fact they comprise a series of fluvial terraces. At P. Albanito, for example, the stony watercourse of the Cervaro river is but shallowly incised; its banks are scarcely a metre high. But beyond is another level, marked by banks of 3 m. topped by *levées*. The terrace between has been colonized by an abundance of halophytic vegetation (willows and tamarisks) or is used for cultivation. This narrow zone is, strictly speaking, the modern flood-plain, but its present-day characteristics, together with the shoals and braided channels of the stream itself, betray the extent to which its volume has been greatly reduced by, above all, the widespread development of irrigation. This artificial reduction of stream-flow explains also why many of the smaller streams such as the Canale Potesano and Canale Maria, tributaries of the Triolo, are fast becoming choked with reeds and vegetation despite the general tendency for rivers today to incise their courses rather than to build them up. In this way, two sets of factors, local ones affecting volume and external ones affecting general stream behaviour, are in opposition here on the Tavoliere. At present, it is the effect of the first that characterizes the lowland's hydrological network and regime. Even so, it must be said, at no time in their recent (Holocene) history have the Tavoliere rivers been responsible for transport and deposition of the huge loads of silt and sediment typical of the bigger rivers of the wetter, western, side of the Apennine range (Sele, Volturno, Tiber, Crati, etc.). In comparison with these, the Tavoliere streams have left only

shallow depths of historic fill: scarcely 50 cm. in the Cervaro at P. Albanito, probably not more than 3 m. lower down at Incoronata.

Downstream, the alluvial bottomlands merge into those of the coastal zone. At least 7 per cent of the total area of the Tavoliere lies at, or below, an altitude of 5 m. Over two-thirds of this land borders the Gulf of Manfredonia. The landscape is overwhelmingly stark and featureless even by Tavoliere standards; there may be no point higher than 3 m. above sea level for up to 8 km. inland. Closer inspection reveals a scatter of low rises, relicts of the most recent marine terraces, and these upstanding *ischia* have been picked out since Neolithic times as settlement sites. In relation to the general flatness they have received exaggerated respect: *Montaltino* is no more than 8 m. higher than the surrounding marshes (and only 11 m. above sea level) while *Monte di Salpi* is lower still, since much of its 12 m. is artificial (it has been the site of continuous occupation from early Roman to late medieval times as the port city of Salapia). Despite concerted attempts in the nineteenth and twentieth centuries to drain and reclaim the coastal flats, the area in general is still predominantly a wetland. Two extensive wild-fowl reserves have recently been created to make good use of the fact that total reclamation is evidently impossible. These wetlands, together with the lakes and salt pans of Salso and Salpi, are relicts of a series of extensive waterbodies that formerly occupied almost the whole of this area. From north to south there were: Lago Sipontum; Lago Salso (the estuary of the Candelaro river) and the interconnecting lakes of Versentino and Contessa; and finally, the huge extent of Lago Salpi (Lago di Salapia) with its inlets and ancillary lakes. Reclamation has considerably reduced the area of water: over 14,000 ha. have been turned into dry, mostly agricultural, land around Lago Salso since the early nineteenth century and some 6,000 ha. have been taken in from the northern end of Lago Salpi. Today, therefore, the landscape of the coastal zone is one of scrubby halophytic vegetation, bare mud or — in summer — sparkling white encrustations of salt, and dyked arable fields closed by high dykes or channelled by drainage ditches.

The ecological milieu

Climatic conditions

The southern part of Italy lies within the warm temperate climatic zone, enjoying a Mediterranean climate with its typical hot summers, marked dry season of variable length, and cool humid winters. However relevant these generalities may be on the national scale, on the regional they bear little relation to the actual average conditions found in northern Apulia.

As regards average annual temperatures, the Tavoliere conforms to the Mediterranean climatic type in general: 15.5°C at Foggia, 17.7°C for the Mediterranean basin as a whole. However, the annual range of temperature is unusually high — 20°C — and this draws attention to the coldness of Tavoliere winters. The average for the coldest month is 6.3°C. Winters in the centre of the plain can be frankly cold: a temperature of minus 7.5°C was recorded in February 1961, for example. Summers are not outstandingly hot (25°C is the average for the hottest month) although on occasion daily summer temperatures may rise to over 46°C.

Such figures indicate the distinctiveness of the Tavoliere climate: its continental nuance. As represented by conditions in the centre of the plain, at Foggia, the climate of the Tavoliere is described as *BHks* in Köppen's classification, in summary 'a humid, cold variant of a hot climate with a marked dry season'.¹ Several factors combine to account for this somewhat anomalous regional variation of the Mediterranean-type climate and for local variations with the Tavoliere itself. In the first place, there is the situation of the Tavoliere, in particular in relation to the Adriatic which, though deep, is a narrow body of water almost surrounded by land masses, with the result that the potential moderating effect of the sea is lower than might be expected. Second, there is the arrangement of the upland masses of northern Apulia. This factor perhaps does most to account for the region's climatic continentality, since not only does the Apennine backbone of southern Italy shelter the Tavoliere from rain-bearing westerly winds and air masses of Atlantic origin, but the Gargano and Murge, to north and south respectively, effectively enclose the lowland as a continental basin, leaving it open to maritime influences only on the Adriatic flank. Thus the Tavoliere lies in the rain-shadow of the Apennines. Not surprisingly, annual precipitation is much lower here (with 454 mm. at Foggia) than that at comparable latitudes on the west coast of the peninsula (Naples, 865 mm.), an important contrast when considering post-Neolithic erosion and valley infill. It is this factor that explains, too, the continental range of temperatures and the great heats of summer in a quasi-landlocked basin. But other factors may mitigate, or exaggerate, this continentality: winds, for example. The lowland gap between the Daunian Apennine and the Gargano massif, some 30 km. wide, tends to funnel winds from the northern (dominant) sector through this gap and across the Tavoliere. The Bora, or Maestrale, is a cold, dry continental wind, usually violent, representing the southward attraction of central European air currents into the vortex of depressions of Atlantic origin passing from west to east along the Mediterranean basin, and its effects are concentrated along the axis of this gap. Such rainfall as it contains is caught by the northern flanks of the Gargano massif. Altitudinal differences also contribute to local variations of regional climate. Zonation of climate, related on a global scale to latitude, has a counterpart in vertical zonation since temperature (and thus the air's water-holding capacity) decreases as altitude increases. So the warm temperate conditions of the lowland Tavoliere give way to cool temperate conditions upon the Gargano peninsula and inland on the Apennine hills. Average annual temperatures at Monte S. Angelo on the Gargano (843 m.) are 4°C lower than those of Foggia (74 m.) and annual rainfall totals nearly double (787 mm. and 454 mm. respectively). The north-facing Bosco Umbra records an average of over 1,000 mm. of rainfall each year. Even at these altitudes, some of the Mediterranean and continental characteristics of the regional climate are retained. For example, the high annual temperature range of the Tavoliere is found at Monte S. Angelo (18.5°C) and, though shorter (two months long), the summer drought is just as persistent.

The 'dryness' of the Tavoliere's summer needs qualification. Two of the summer months, August and September, regularly show relatively high rainfall totals in comparison with the other months of the year. In 1935 (a dry year overall) the 69 mm. of rainfall that fell in August was almost equalled by that of 67 mm. in December. It is precisely this irregularity of distribution throughout the year that is the most significant characteristic of the Tavoliere's rainfall regime. Unreliability is inconvenient in terms of agriculture and plant growth. In

1947, 234 mm. were recorded as the annual total in one of the drier areas of the plain towards the coast (Azienda Terra Apulia); in 1932 no more than 337 mm. were recorded in Foggia; but in 1915 916 mm. fell during the year with more for the month of August than in the whole year of 1876 (249 mm. and 237 mm. respectively). Apart from the depletion of soil moisture in a dry year, the severe pounding the soil receives under storm rain, which is physically damaging to the soil, results in the destruction of its granular structure as well as in the loss both of much of the rainfall and of the finer soil elements as run-off. As much as 67 per cent of the annual total may fall in this way; at Lucera in 1964, 38 mm. fell in 20 minutes on the 16th June. But this is not only a summer phenomenon; at Foggia in the same year, four separate days of rain in May accounted for all of that month's precipitation (43 mm.), while February's total of 7.8 mm. came almost wholly (7 mm.) from one storm. Indeed, despite the general tendency of a winter or autumnal rainfall regime, it is not unusual to find that the highest monthly precipitation totals actually fell during the summer months. In 1964, between 20 and 22 per cent of the annual total was recorded in the month of June alone in several places on the Tavoliere.

The combined effect of such factors of location, disposition of relief, and the nature of the regional climate in the Foggia province is reflected in the occurrence of distinctive climatic zones within the region. The most obviously distinct zone is the Gargano massif. Up on the limestone plateaux, the altitude of 1,000 m. means the climate here is classed as the 'sub-humid, cool, sub-type' characteristic of northern margins of the Mediterranean area. Annual precipitation at S. Marco in Lamis and at Vico Garganico averages just over 800 mm. (similar to that of Bas-Languedoc, for instance), but that in the famous beechwood of Bosco Umbra (at an altitude of 794 m.) reaches 1,237 mm. Persistence of low cloud high on the Gargano also means a greater number of days on which rainfall is recorded, while the lower temperatures mean that snow can be expected each winter as a matter of course. On the plain, Foggia may have snow on one or two days a year, but this rarely settles or lies. Only at higher altitudes (over 650 m.) does the snow cover regularly last at least the day of fall. In 1964, at Monteleone di Puglia, in the Apennines, three days of snowfall remained on the ground for a further eight days.

Down on the Tavoliere, the overall climatic rhythm of sometimes bitterly cold winters and hot summers which are dry except for torrential downpours is by no means uniformly distributed. On the higher terraces, particularly in the Apricena – S. Severo area, the effect of exposure to the winds of the northern sector (Maestrone) is reflected in, for example, a slight increase in the number of snow days. In 1953, when Foggia had only one day of snow, S. Severo had three. On the other hand, it is precisely in this zone that some of the highest temperatures have been recorded: 46.6°C in 1945, for example. The lower terraces all fall within the area delimited by the 500 mm. isohyet (fig. 3), but towards the coast rainfall gradually falls off to average less than 400 mm., despite the closeness of the sea. This coastal zone lies in a double rainshadow, being in the lee of the Gargano with respect to north-east rain-bearing winds as well as in the Apennine rainshadow.

Soils

Soils on the Tavoliere today are generally of sober hue, light greyish in the dry summer, with darker greys on the valley bottomlands. Inland, on the higher interfluvial chestnut-

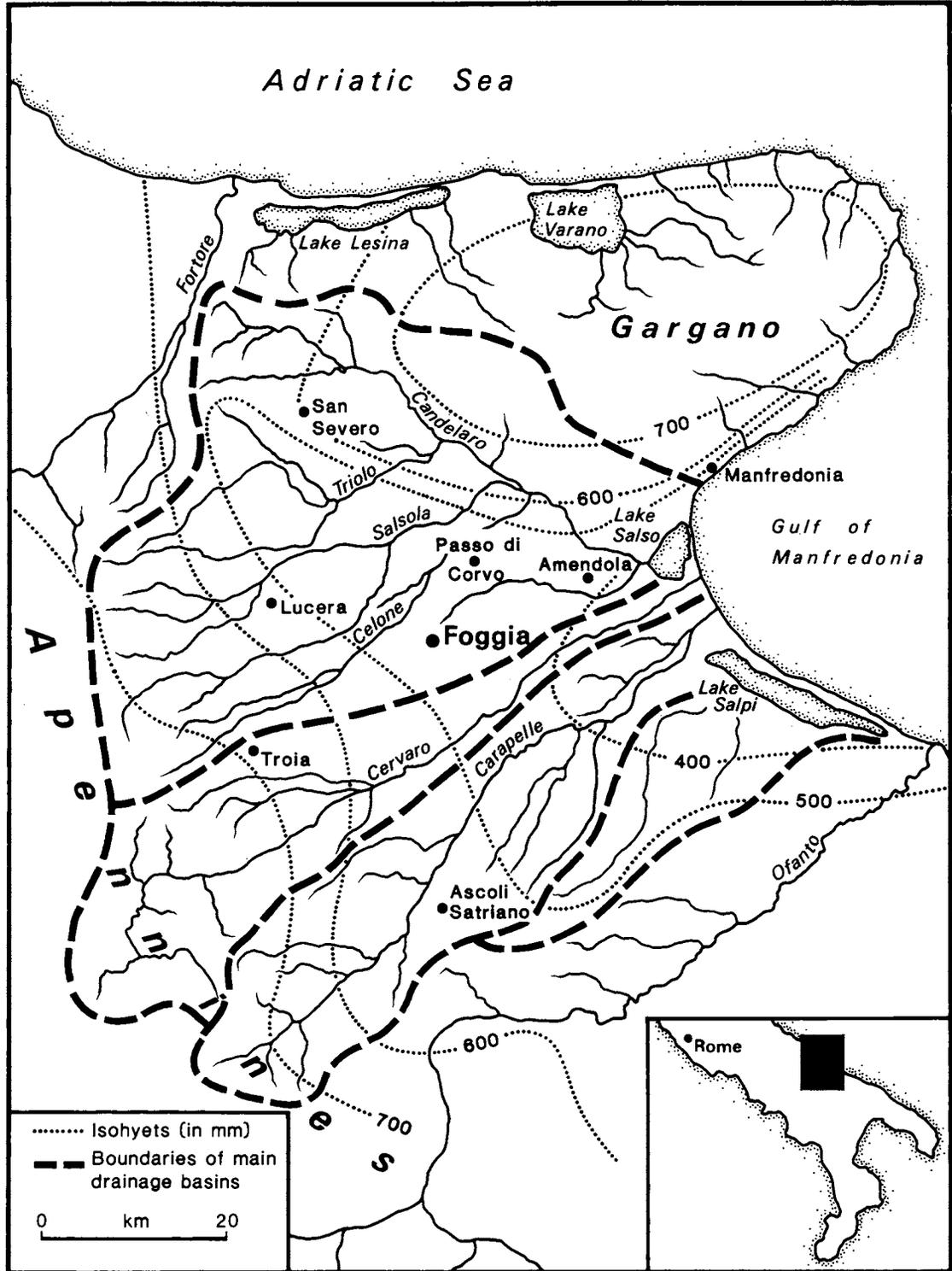


FIG. 3. Rainfall and hydrology

coloured soils may be found. All these are variants of Mediterranean steppe soils, developed from the sands, clays and gravels of the plain's geologically recent infilling. Characteristically, they are relatively immature soils, shallow in depth and of poorly developed profile (A/C horizons only). The browner soils have a relatively high iron oxide content; the pale grey soils owe their light colour to a low organic content. Most are of coarse structure, crumbly and loose when dry, but when saturated forming angular or prismatic clods which can be very sticky and heavy to work. Towards the coast, or in localized areas, soils may be saline; a thin, salty crust appears on the surface and spots, crystals or streaks of salt in the lower horizon, all representing poor drainage in an area of high salinity and evaporation. Though some soils are classed as siliceous rather than calcareous (the latter nearly always underlain by some form of *crosta*), the main pedological contrast of modern soils concerns those formed on the alluvium of river bottomlands or the coastal zone. These are deeper, moister, and thus cooler during the summer months than interfluvial soils. Today they are regarded as the most favourable, ranked Class 1.² Such an evaluation, however, is a very recent one, due above all to the introduction of mechanized ploughing (often with caterpillar-tracked tractors), which became widespread on the Tavoliere only from the 1950s onwards. Formerly, throughout the historic period and presumably in prehistoric times too, such alluvial soils were not cultivated. In part this would have reflected the distribution of specific land uses among the various types of terrain available. In part, however, it must also reflect the low esteem in which such soils — too heavy to work with ox-drawn ploughs and for that and other related reasons unprofitable in terms of yield per effort — would have been held as potential arable land. But the alluvium is by no means pedologically as uniform as the geological map would seem to suggest. Soils developed through the process of *colmate*, either through artificial ponding of river and flood water for purposes of reclamation or through blocking by natural processes, tend to be markedly stickier, clayey and generally more intractable.³ In consequence, such soils are considered less 'fertile' (Class 3), yields not justifying the difficulty and cost (in terms of such factors as the restricted time they can be worked, high risk of saturation, etc.) of cultivation. Even so, they are preferred to some of the terrace soils today, but this is only because the availability of so much alluvial land has meant, in modern decades, that the ranking of some soils used in earlier times has now dropped. The siliceous sandy soil of the Borgo Segezia and Cerignola–Ascoli Satriano districts and of the extensive area north and east of S. Severo is a case in point. Now Class 5, it served Neolithic farmers satisfactorily enough, to judge from the scatter of sites that is not noticeably less dense on it than elsewhere on the Tavoliere. It was certainly intensively cultivated under the centuriation programmes of the Roman period.

These points are a reminder of the importance of the degree to which agricultural soil is itself an 'artificial' feature as well as of the fact that its evaluation as 'good' or 'fertile' is as much a function of contemporary technological, economic and even social factors. Some soil properties, such as mechanical structure, can no doubt be regarded as constants, but variations in chemical and — most important — in organic composition may reflect changes in ecological conditions over the centuries. Deforestation, which has certainly affected all Tavoliere soils; the use of different crop strains; different cropping methods or agrarian systems; the development of commercial pastoralism or intensive livestock stocking; changes in ground-water levels as a result of these activities or of changes in relative sea level: all such

factors contribute to alter a soil within a matter of years quite substantially. For instance, as far as can be seen, Neolithic soils on the Tavoliere had a noticeably higher organic content than do present-day soils.⁴ Extrapolation of soil evaluation from modern conditions for historic, let alone prehistoric, contexts may not be all that useful an exercise.

One of the most distinctive features of the Tavoliere today is the calcrete that underlies so much of the plain. This *crosta*, a thick deposit of almost pure calcium carbonate, represents the chemical precipitation of marine calcium carbonates under former lagoonal conditions. Thus it must have been present in some form or another throughout the Holocene and in prehistoric times. The question arises as to its state in the Neolithic period, if this was different from that of the present day. Although a calcareous horizon of some sort is characteristic of many Mediterranean soils, in few areas of Mediterranean Europe is there a calcrete so well developed and so ubiquitous as on the Tavoliere. This reflects not only the regional climate, but also the marine nature of its geological history and the high concentration of calcium carbonates in recent deposits.

On the Tavoliere, calcrete, *crosta*, is formed at various altitudes and in association with all the marine terraces. Three forms, or horizons, may be distinguished. The uppermost layer is both the hardest and the thinnest. Scarcely half a centimetre thick, of rock-like hardness, characteristically banded in alternating tones of darker and light buff, it presents a resistant carapace that is broken only by trenching or modern deep-ploughing. The second horizon is characterized by a blocky structure of the white, chalky material. When turned up by the plough, these blocks litter the fields until picked out and piled into heaps or used as a building material. The third horizon, the lowest, is much less resistant, even pulverizing in texture, though well-formed nodules may be present so that differential weathering on exposed sections gives a honeycomb appearance.

Vegetation

The literary legacy of the last two centuries or so has emphasized the grassland nature of the Tavoliere's vegetation. The commonest description is that of 'tree-steppe', where a rich herbaceous layer is studded sparsely by tall shrubs or small trees. One investigation resulted in a list of nearly 200 herbaceous species (including ten species of clover (*Trifolium* sp.), numerous *medika* (*Medicago* sp.), euphorbes (*Euphorbia* sp.), and thistles (*Carduus* sp.) as well as the prevalent *stipa* grasses).⁵ Scattered among these were small trees such as *Pirus amygdaliformis*, *Prunus spinosa*, and *Rhamnus spinosa*. All these were found on the managed pastures of the Ovile Nazionale, which extend over the terrace surface south of Borgo Segezia. Such, it was postulated, would have been the grasslands of much of the Tavoliere at least since the later Middle Ages when the ranching economy began to predominate.⁶ On the stonier, drier, terrain, such as on the knolls and ridges of the higher terraces further inland, various heathlands may be found. Asphodel heath and fennel heath vary the grassland and provide, in summer, the tall desiccated stems much favoured by dormant snails. In spring and early summer these grasslands have a luxuriant greenness and freshness. By the autumn, however, much of the grass itself has become so dry and tough that since Roman times at least this has been the season for burning the pastures in order to remove the unpalatable dry material and promote succulent new growth after the first rains.

Such a picture of the uncultivated Tavoliere as a tree-steppe enhanced by the amount of

land under cereals or left as fallow is, however, incomplete. It takes no account of the relationship between relief and vegetation, for instance, still less of the nature of vegetation on the relatively moist soils of the valley bottomlands and, especially, the floodplains. Where grazing has been reduced or removed, shrubs and small trees can become common even on the edaphically dry interfluves. In edaphically cooler or more humid areas, the status of the vegetation may reach that of a maquis, a dense shrubland of relatively advanced ecological succession suggesting, in the case of the Tavoliere, recent regeneration of the vegetation. In more isolated parts of the Fortore valley, at Dragonara, for instance, a flourishing maquis was found. Elm, pubescent oak and sycamore form the tree stratum — the deciduous species reflecting in part local climatic and edaphic conditions at the foot of the Apennines, but above all the effect of *ubac* (north-facing or shaded slopes), effective here even at an altitude of less than 75 m. above sea level. The upper shrub layer was more characteristically 'Mediterranean', with species such as pistachio (*Pistacia terebinthus*), phillyrea (*P. latifolia*), hawthorn (*Crataegus* sp.) and blackthorn (*Prunus spinosa*). The lower shrub-layer contains the Little Holly (*Ruscus aculeatus*), Christ's thorns (*P. spina-christa* or '*Paliurus austral*'). Under such abundant shrub growth the herbaceous stratum is thin, containing acanthus (*A. mollis*), Love-in-the-Mist (*Nigella damascena*) and a variety of the Traveller's Joy so common on English downlands (*Clematis flammula*).

Such woodland once covered the valley bottomlands, where it would have been associated with the availability of phreatic water of the floodplain and lowest river terraces where the water-table is relatively high even in summer. Today very little remains. The outstanding example of a dense, well-developed, mainly deciduous woodland of this type — which should have given the lie to statements such as 'trees do not grow on the Tavoliere' — is at Incoronata, in the Cervaro valley. Here it has been protected, more or less continuously, since the creation in the Middle Ages of the sanctuary itself. The forest contains tall stands of a variety of deciduous species such as elm (*Ulmus montana*, *U. campestris*), poplar (*Populus alba*, *P. nigra*), and ash (*Fraxinus excelsia*) and oak (*Quercus pubescens*). Willows (*Salix alba*) abound close to the water's edge and on the shingle banks, with various reeds and tropophilic grasses; tamarisk is restricted to the higher banks, and away from the river channel species more Mediterranean in their distribution intermingle: oaks (*Quercus ilex*, *Q. apenninica*), the Little Holly and hawthorns.

In the coastlands, plant species vary according to the concentration of salt, while the vegetation distribution reflects varying degrees of soil saturation. Thus, zones of species and plant frequency mark the progression inland from barely colonized fresh muds fringing the perennial lagoons towards firmer land and relatively fresh water. Colonizing mud flats still susceptible to flood are the salicornes (*Arthrocnemum macrostachyum*), with their thick swollen spines spreading low over the mud, forming an increasingly denser cover where flood frequency decreases. Beyond is ranged a greater variety of plants, such as the pink-flowered thrift (*Statice limonium*), various reeds and rushes (*Juncus acutus*, *Scirpus maritimus*), grasses (*Bromus tenuis*) and couch grass (*Cynodum dactylum*). Still further inland both density of plant cover and variety of plant are increased by such species as sea blight (*Sueda herbacae*), marsh bedstraw (*Galium maritimum*), a tall stiff member of the chicory family (*Cichoryum intybus*), and mulleins (*Verbascum* sp.).

The dense vegetation of the limestone hills surrounding the Tavoliere presents a contrast

to the openness of that of the lowland. It comprises the garrigue that is so common on the degraded limestones of Mediterranean Europe. The once dominant evergreen, holm oak (*Q. ilex*), is still to be found, but it is shrubs such as the prickly Kermès oak (*Q. coccifera*), terebinth (*Pistacia terebinthus*), buckthorn (*Rhamnus aleternus*), and junipers (*J. communis*, *J. oxycedrus*), together with a tangle of lianas (*Smilax aspera*, *Asparagus acutifolius*, *Clematis flammula*, *Rubus ulmifolius*), that contribute to the appearance of well-developed, though not ecologically advanced, vegetation cover. In some areas, however, particularly on the shoulders and upper slopes of the 500 – 600 m. erosion surfaces of the Gargano, degradation has exposed the bare rock. Elsewhere there are only the sparsely scattered plants of the lowest Mediterranean heath associations: small aromatic plants such as rosemary, lavender and thyme, asphodel, or box, together with the ubiquitous grass, *Brachypodium ramosum*.

Higher on the Gargano and on *ubacs* and in shady valleys of the Daunian Apennines, deciduous oak replaces the holm oak, and box and laurel become dominant and there are more deciduous shrubs. Chestnut may appear at higher altitudes. Given the latitude, the famous beech forest of Bosco Umbra is out of place and its survival is remarkable, especially considering the duration and intensity of human settlement on the Tavoliere or indeed on the Gargano itself. It seems to be an ecological relict from an earlier post-glacial climate, surviving at 42°N. at an altitude of only 800 m., but in an exposed situation with regard to rainfall brought by air from the north and north-eastern sectors.

ENVIRONMENTAL CHANGE

The crucial aspects of the environment from the human geographer's point of view are those which most directly affect farming and the production of food — the soil, soil moisture and micro-climatic conditions which determine plant growth season by season. The object of such studies in an archaeological context is the revelation of farming conditions at a given moment in the past in a specific area. The key problem is that for none of these aspects (except perhaps in the case of buried soils) is the evidence clear or even direct. All factors are not only related to each other but to a number of other variables — position of water table, local relief, vegetation, sea level, etc. — which are likewise variables and for which the record is similarly elusive. Thus, before even speculation about field conditions on the Tavoliere in the Neolithic period can be attempted, certain basic points concerning the physical geography of the region have to be established: namely, first, the nature and outline of the coast; and, second, the nature of relief inland.

The coastlands

In historic times, lakes and marshes have characterized both eastern and northern coasts of the Tavoliere. There were Lago Salso and Lago Salpi, in particular, around the Gulf of Manfredonia and Lago Lesina and Lago Vieste to the north. These lakes and marshes, it is clear, are the relics of the former lagoons typical of an aggrading coastline that used to fringe the Tavoliere to the east as well as to the north where they still do. But by the late sixteenth century, an open, often navigable, series of waterbodies had been replaced by the

indeterminate zones of water, marsh, and river channel of the modern period, where boundaries, never clear at the best of times, are susceptible to seasonal variation. In addition, malaria had become a major problem, though there is little doubt that it has been endemic to the district since Roman times. With a desolate, flat, exposed, bleak landscape, evil-smelling in summer and windswept in winter, these wetlands have been dismissed as a hostile and useless environment, abandoned even by the local population.

This late historic picture does not apply to earlier times. Even in the later Roman period, at the time when the Peutinger Table (or its sources) was compiled, it would have been quite impossible to drive the 50 km. along the shore from just south of Sipontum to the mouth of the Ofanto as can be done today. Far from the continuous coastline there is now, the sands of the barrier islands that separate lagoon from open sea were interrupted by often broad stretches of water, interspersed here and there with sandy islets and spits. The largest of such openings was Lago Salso which, in Roman times at least, was an estuary quite open to the sea. To travel south from Sipontum, according to the route advocated in the Peutinger Table, the Candelaro river had to be crossed above its debouchment into the estuary, that is 8 km. inland.⁷ Further south, Lago Salpi extended from the Ofanto to behind what is now Zaponeta, separated from Lago Salso by the deltaic accumulations of the Cervaro and Carapelle rivers. From Early Iron Age times to the fourteenth or fifteenth century, Lago Salpi was navigable: Daunian Salpi, on the landward side of the main lagoon, was a port-city, sited on a promontory flanked by the small waterbody today known as the Marana di Lupara. By the end of the first millennium B.C., this small lake had silted up and a new city was laid out just 4 (Roman) miles to the south-east, on the shore of Lago Salpi itself (fig. 4). Further north, along the same coast, was the small lagoon of Sipontum, sheltered not by an offshore barrier so much as by a sandy spit growing out southwards from the shore close by the ancient city.⁸ On the rocky point at the southern end of the inlet, a luxurious waterside villa had been built in early Roman times, with a waterfront reminiscent of that of Pliny's seaside villa on the Tyrrhenian coast. This lagoon remained open to the sea until the middle of the sixteenth century, when it was finally and permanently closed by yellow sands swept along the shore from the Gargano coast. Previously it had afforded Sipontum what was described in the twelfth-century sailing guide *Compasso di Navigare* as a 'good' landing.

In all these former lagoons, the sediments record the change from waterbody to marsh and, eventually, dry land, though they do not necessarily contain dating evidence. Lagoon deposits are typically pale, white (often with a glaucous tinge), fine-textured clays with a high calcium carbonate content. Lenses or horizons of pale yellowish granular material indicate the incipient deposition of these carbonates as calcrete. The whiteness of the deposits is an indication of the clarity of the lagoon and the fact that there was good circulation of clean water, carrying material only in suspension and the finest fractions. In contrast, black oozes and dark muds characteristic of surviving waterbodies indicate still and stagnant water, their dark hue due to a high organic content and to incomplete decomposition under anaerobic conditions. What is found in the Tavoliere coastlands is that the clean white lagoonal sediments of the lagoons in their open state at some stage gave way abruptly to relatively coarse silts and sands, yellow-brown in colour, representing alluvial material brought in not by the sea but by the streams. The profile at Marana di Lupara, for example (the former lagoon lapping the shores of Daunian Salpi), showed about 3 m. of such

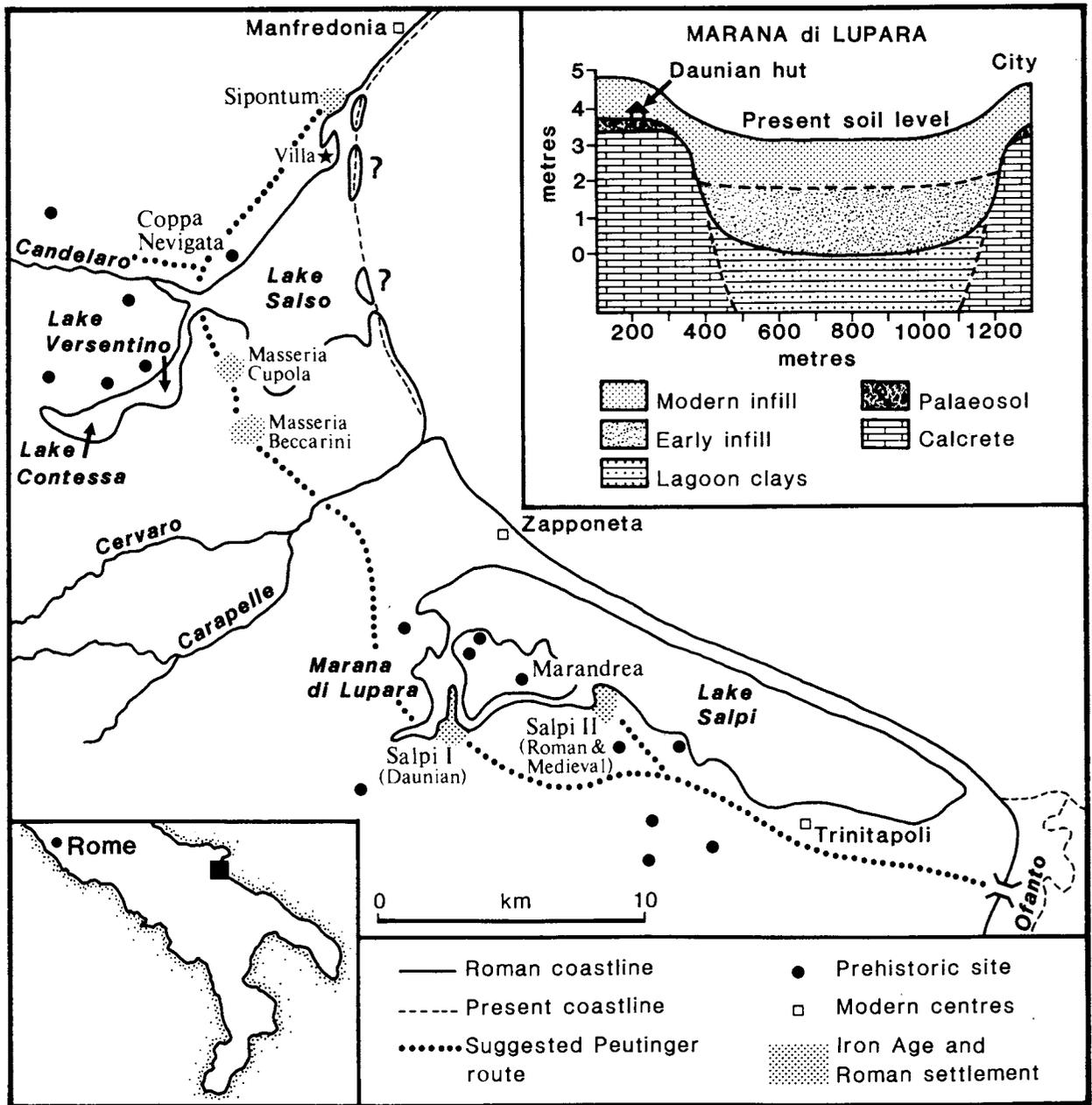


FIG. 4. Changing coastlands: the Peutinger Table (of the fourth century A.D., but based on first-century data) mentions *Salinis* rather than Salpi (see note 7)

infill overlying the white lagoon sediments (fig. 4, inset). The upper part of the alluvial fill was of the *colmate* type. Though direct dating is not possible, there is every reason to associate the change from open lagoon — where the water, though relatively shallow, would have been of sufficient depth for navigation even by the sea-going vessels of the day — to a rapidly silting, marshy, hollow prone to flooding and, no doubt, a breeding ground for mosquitoes with the demise of Daunian Salpi and the creation of a replacement port-city early in the second century B.C.⁹

Not every lagoon silted to this extent. The modern marsh of Marana di Lupara replaces a small (about 300 ha.) waterbody formerly joined to the main lagoon by a narrow channel that would all too easily have become blocked, ponding the waters of the Pila and Castella streams into the erstwhile lagoon. Such an event would not, in itself, be sufficient reason for the abandonment of the Iron Age site, since blocked channels are — and always have been — artificially cleared where the need or the will is great enough. But it could have been a contributory factor in the context of the Roman conquest of the region and the desire of a new administration for a new settlement and more efficient port.

It has proved a relatively straightforward matter to uncover the Roman coastlands of the Tavoliere. The depths of post-Roman infill are nowhere very great and they represent but one phase of aggradation. No major erosive period has removed substantial quantities of infill and, thereby, eradicated part of the sedimentary record. It is quite another matter, however, to deduce from the Roman coastal landscape the nature of the Neolithic one, four millennia earlier. Apart from the difficulties of drilling into saturated coastal sediments, there is the problem of the missing evidence, sediments removed by an intervening phase of large-scale erosion. In fact, allowing for this erosion, it can be argued that the Neolithic landscape probably lies not far beneath the Roman. Thus, since there is no sign of a former land surface (in well-bore data) below the lagoonal clays of the last millennia B.C., it can be suggested that, as regards both outline and configuration, the Neolithic coastlands of the Tavoliere would have resembled those of Daunian times — with open lagoons all along the coasts — rather than the marshlands of recent centuries.

Factors of change: erosion

Investigation into the recent geomorphological history of the coastlands of the Tavoliere shows that the most obvious changes have been those involving sedimentation. The corollary of this is that erosion has been an important factor inasmuch as it is inland erosion that provides the alluvial material that is transported by streams and deposited as infill in the lagoons as well as in the valleys. It might be thought that erosion was not a major problem on the Tavoliere, given the levelness of so much of its relief, and where run-off, the overland flow of rainwater which has not been able to sink into the ground, could be expected to be minimal, in contrast to areas of rugged relief where as much as 40 per cent of average rainfall may be lost as run-off. However, as noted above, the generalization of the Tavoliere as 'a flat lowland' is misleading. There are plenty of steep slopes, even if these are not particularly high. In the centre of the plain these are the valley bluffs and edges of fluvial terraces. Further inland, where the older terraces are more dissected, are the slopes of remnant ridges, such as those selected, in the Middle Ages especially, as settlement sites (Troia, Lucera,

Torre Fiorentino, Castelluccio, La Guardiola). The erosive potential, in terms of gradient, of all these slopes should not be underestimated.

In addition there are other factors which add to the erodability of Tavoliere soils. Three of these — infiltration capacity, vegetal cover and soil-storage capacity — are considered collectively more important than relief alone.¹⁰ Infiltration rates depend in the first place on soil texture and on the underlying parent rock. Over half the Tavoliere has a soil through which infiltration might be expected to be slow (soils classed as clays or clayey loams). A good vegetation cover, in providing a litter layer over the soil and ensuring a high organic element within it, would assist infiltration even on soils of this type. However, in recent centuries, the Tavoliere has become a 'treeless' landscape and the organic content of most of its soils tends to be, as already noted, low. A further disadvantage is the nature of the rainfall which, again as noted, so often falls as torrential storms, in winter as in summer, allowing insufficient time for absorption by even the most porous soils. Such storms are often highly localized, but it is not always appreciated how much flooding — from soil saturation — they may give rise to and the degree to which erosion and deposition of soil take place *locally*, even in areas of seemingly modest relief.¹¹ It is the culmination of minor, scarcely noticeable episodes of this type that tends to be recorded in the accumulations of alluvium in river valleys and in the coastal lagoons of the Tavoliere rather than the effects of anything more dramatic or large-scale.

The valleys

On the geological map, the valleys of the Tavoliere are marked by sediments classed as 'Recent Alluvium' which cover the entire floor of each valley in featureless uniformity. But the bland relief and geology of the modern landscape are due to post-Roman alluviation which masks a much more varied older topography. Below the alluvium are buried river terraces. Some of the higher ones carry prehistoric sites. Contrary to appearances on the geological map, such sites are in fact not themselves located on the Recent Alluvium but have been covered by it. This alluvial covering is sufficiently thin for some of the sites to be revealed by aerial photography (as in the case of one Neolithic site at Motta della Regina, another in the Celone valley near Tavernazza (Troia), and two in the Cervaro at Ortona), while others are found only by fieldwalking after deep-ploughing (P. di Lama). Fieldwork around the Neolithic site of Passo di Corvo on the Amendola plateau illustrates, on a small scale, the way the blanket of Recent Alluvium masks the formerly much more varied configuration of even the apparently most featureless of the plateau surfaces.

The Neolithic settlement of Passo di Corvo occupied some of the highest ground on the interfluvium between the Celone and the Faraniello rivers (fig. 5). It is located on an outcrop of Pleistocene sediment within which a well-developed calcrete formation features prominently. To the south and west, separating Passo di Corvo from the Iron Age city of Arpi, is a light depression covered by Recent Alluvium. Subsoil investigation showed that there is none of the yellow Pleistocene clay of the surrounding area below the alluvium and that the alluvium (4 – 8 m. thick) fills a former valley excavated from the bluish clays and sands of a much older (Calabrian?) marine terrace. The Neolithic settlement of Passo di Corvo, it transpires, overlooked, on its southern side, the small V-shaped proto-Faraniello valley.

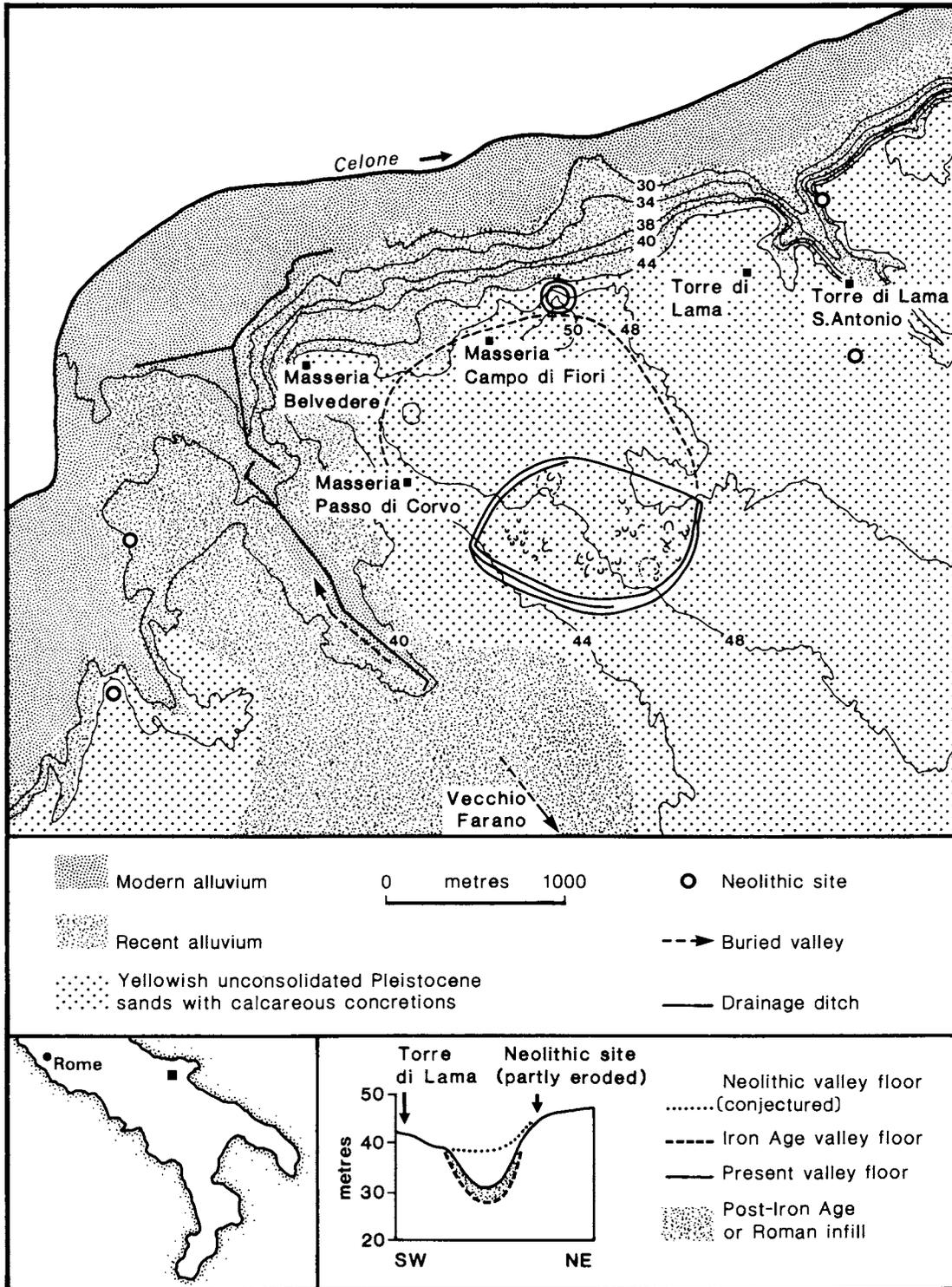


FIG. 5. Valley changes around Passo di Corvo

Confirmation that this is indeed likely to be the nature of the Neolithic landscape at Passo di Corvo came from the valley of Torre di Lama, to the north-east of the Neolithic settlement. Today this valley is a pronounced gully, 14–15 m. deep at its debouchment, with V-shaped profile, whose stream would be considered a tributary of the Celone were it now not too small to complete the journey across the bottom of the main valley. The gully is cut into yellow Pleistocene clays, but its grey alluvial fill contains, near its base, a layer of coarse material. These gravels (mostly of calcrete) and fragments of pottery and building material all show signs of wear or some rolling, consistent with the interpretation of this layer as a flood horizon. All datable material was Daunian (presumably from the several sites of that date known to lie in the catchment area).

Four main stages in the recent geomorphological history of this valley can be discerned. The earliest is a phase of erosion, or stream downcutting. This resulted in a shallow and open valley with a well-graded longitudinal profile. It cut into the 'bedrock' of the Amendola plateau by little more than 5 or 6 m. Its graded character suggests stable stream behaviour and something approaching a state of equilibrium in the factors affecting stream behaviour; that is to say, in the general environment. The floor of this primary valley is considerably higher than the present-day valley bottom. It is conjectured that this relict 'high level' section of the longitudinal profile represents the valley as it was in Neolithic times.

This relatively stable phase was followed — according to the sedimentary record — by a period of very active downcutting which led to the truncation of the longitudinal grading of the older valley. This left a nick-point in the profile. A deep gully was scoured out of bedrock all the way down to the main Celone valley. A period of aggradation, or infilling, followed, during which at least 4 m. of grey loams were deposited in the lowest part of the valley, rather less higher up. This is the fill that contains, in its early levels, the flood horizon already mentioned and whose pottery fragments give a *terminus post quem* for the onset of deposition in the second half of the first millennium B.C. Thus, these grey alluviums are those of the Younger Fill of Vita-Finzi's terminology.¹² Finally, a third phase of incision is recorded, that of the present day. At the upper end of the valley, the stream is downcutting into bedrock; lower down it is cutting into the Roman/post-Roman fill (fig. 5, inset).

These four phases in the history of the Torre di Lama valley are obviously not the complete story and many questions remain unanswered (including that of the relationship between the 'high level' tributary valley and that of the main stream, the Celone, whose subsequently greater degree of downcutting may have much to do with the tilting of the Amendola plateau). Evidence for intervening phases of aggradation may be lacking because of subsequent removal during an erosive phase. Modern deep ploughing is effective in eradicating many minor irregularities and contours that would otherwise betray former valley conditions. It should also be remembered that what may be characteristic of one valley (e.g. Torre di Lama) or even one river system (e.g. the Celone) may not reflect, in detail at least, events elsewhere, even on the Tavoliere. Not only do local environmental conditions vary, but so too does settlement history and land usage, factors not elaborated here but of vital importance in their effect on vegetation, soil run-off and stream behaviour. Even so, a number of consistencies have been prised from the buried landscapes of the Tavoliere. All these point to a topographically much more varied and interesting relief in

Neolithic times; with numerous, if small and shallow, valleys furrowing the interfluvies; with main valleys such as the Celone also much shallower in cross-profile than they are today and with occupation sites along the edges of the higher terraces below the bluffs of the valley sides; with steady all-year stream flow; and with a forest cover protecting the soil from erosion and whose humus-yielding litter would have contributed to good infiltration by rain.

Whatever there may have been in the way of climatic change on the Tavoliere during the prehistoric period, it has to be borne in mind that many soil changes which appear to record climatic alterations can result from human, or human-induced, changes rather than from wholly external factors. For instance, the simple clearance of vegetation for a settlement site and its fields and grazing leads to an alteration in the microclimate. It is microclimatic conditions that are likely to be recorded in the characteristics of the buried soils or ditch fills rather than those of regional or general climate. Factors such as temperature at ground level are altered as a result of exposure, but the most important change is in the amount of litter and decayed plant matter that enters the soil. As a result of vegetation clearance, this organic content is significantly lowered. This means that not only will soil fertility be reduced, but also soil aeration and soil drainage. Eventually, the amount and rate of run-off is increased and with it the degree of soil wash and erosion, flooding, and silting.

Another consequence of the loss of forest cover during the Neolithic, or later, may have been the gradual hardening of the upper layer of the calcrete. This can become hardened as a result of forest loss. Deprived of the protection of the tree canopy, herbaceous layer and litter, the soil becomes vulnerable to the erosion which eventually removes the friable horizons and exposes the underlying calcrete. Warm rain falling directly onto the calcrete dissolves some of the carbonates, but as the rate of evaporation is now accelerated this carbonate is deposited in crystalline form on top of the existing calcrete, forming the exceptionally hard carapace (*zonal crust* in Duchaufour's terminology¹³) that is now commonplace on the Tavoliere in general and at Passo di Corvo in particular.

Finally, something can be said regarding the quality of soils in Neolithic times. For instance, it is well known that nitrogen is an important factor in soil fertility and that nitrogen and humus proportions are closely related. Under warm *and* moist conditions nitrogen loss is rapid.¹⁴ Cultivation leads to greatly increased aeration of the soil and so this loss is considerably accelerated. These losses lead to a reduction in the rate of organic decomposition. The initial fertility of Tavoliere soils may well have been amongst the highest in the peninsula: the level relief, forest type of vegetation, the dark colour of its soils and an apparently warm moist climate would all have been important contributors to this. The unfortunate corollary of these factors would have been an exceptionally high fall-off rate in soil fertility after initial deforestation. It is deforestation, therefore, that is the critical factor in this aspect of environmental change, as in others. It sets in motion a sequence of processes (accelerated and increased run-off; soil erosion; calcrete hardening; soil deposition; flooding) that can be seen to have had an invidious if subtle effect on the landscape of the Tavoliere since the early Neolithic. It also may have affected its quality as an area in which to live and from which to make a living even during the Neolithic. Deforestation is above all the result of human and human-induced activity: at Passo di Corvo, as elsewhere, man has been the key agent of the changes in his own environment.

THE LOCAL SETTING: THE TAVOLIERE AS AN ECONOMIC AREA

Settlement pattern

From the sixth millennium B.C. the Tavoliere was home for an increasing number of people. When John Bradford suggested, in 1949, that the lowland had 'one of the densest concentrations of prehistoric settlement yet known in Europe'¹⁵ he had in mind about 200 sites, newly discovered from the wartime photographs. Since then, further fieldwork and new air photographs have resulted in the discovery of something approaching a thousand crop- or soil-mark sites, though not all of these will eventually prove to be prehistoric. Since then, too, details of their distribution have become available. In general terms, the observation made in those early days still holds good: that the overwhelming majority of sites are on slight knolls and rises on the interfluves and on the sediments of the marine terrace surfaces that constitute so much of the Tavoliere landscape. They are plateau sites, in the sense that these interfluves tend to tower over the valley bottomlands by virtue of the steep bluffs that demarcate these valleys. In addition, however, subtler distinctions in the configuration of the Tavoliere have since been made and some of these areas which once appeared 'empty' of Neolithic occupation are now found to have been no less densely settled than the interfluves of the central lowland. Neolithic sites have been found in the coastlands, for example, their encircling ditches cut into the calcrete of the lowest marine terrace (*c.* 3 m. above sea level) that is today surrounded by marshes and wetlands rather than, as in earlier times, the clear waters of well-formed lagoons. The valleys, too, are less 'empty' of early settlement than they had formerly been assumed to be. In this case, the general rule that Neolithic sites are never found *on* the Recent Alluviums still holds, but closer inspection has shown (as already noted) that there are at least a few Neolithic occupation sites on the highest river terraces within the valleys, or on buried interfluves which have been subsequently covered by that alluvium. In Bradford's day, only one such site was known (Motta della Regina); already fieldwork suggests that many more remain to be discovered. The surrounding areas, too, were seemingly well settled in Neolithic times. The Gargano is well known in this respect, but there can be little doubt that future fieldwork in the Daunian Apennines will yield sites there too.

Any assessment of the distribution of Neolithic sites of the Tavoliere has to be made in the light of the basic requirements of a simple farming community. Thus, it is a combination of relevant factors which would have been operational in the choice of a settlement site in Neolithic times by people who depended primarily and directly on the soil for their food. A simple model of these site-selection factors has long been known to, and used by, geographers, but it is no less applicable to prehistoric contexts for having been derived from studies of traditional peasant farming communities.¹⁶ Five essentials are identified. Whether for a single household living in isolation or a community grouped into a hamlet or village, the requirements are the same: water supply; arable land; grazing land; fuel; building material. These basic necessities can be weighted differently according to frequency of demand, rarity of the resource in the local area, or because of some other specific circumstance (water is needed daily, building material infrequently, for instance), but none can be ignored. Since the Neolithic inhabitants of the Tavoliere lived in open-air settlements — so there are no

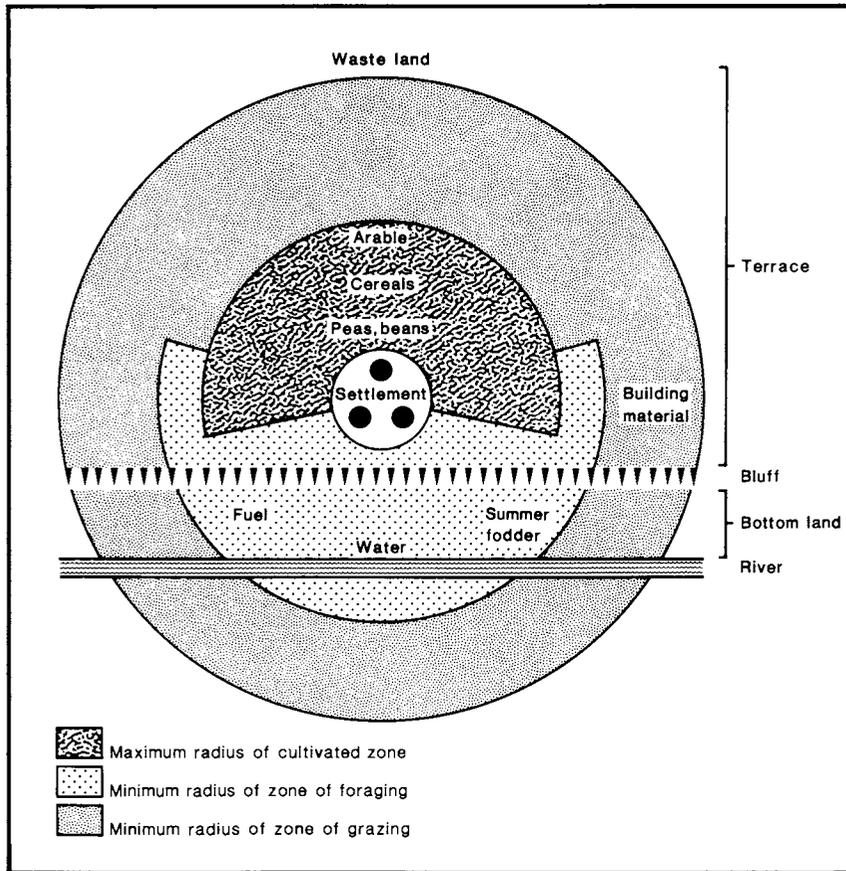


FIG. 6. Land-use model for the Neolithic site at P. Albanito

geological determinants such as the distribution of caves to consider — their occupation sites can be reviewed in the light of this model of site selection.

The main conclusion is that the sites of Neolithic settlements would have been favourable almost anywhere on the Tavoliere. The typical site is that which had both interfluvial and valley bottomland within easy reach (fig. 6: the hypothetical optimum shape for such territorial models is circular, but historical analogy shows how linear territories were often the most practical shape in view of the local terrain (see note 16 and my *Western Mediterranean Europe* (London, 1979), ch. 2, for examples). The moister, probably heavily wooded, valley terrain would have afforded all-year grazing as well as forage, fuel and timber; the drier soils of the interfluvial areas would have been those preferred for cultivation. Sixty per cent of Tavoliere sites examined in this respect¹⁷ do in fact lie within 200 m. of the break of slope and well over three-quarters of these are quite definitely crest or edge sites. The advantages of such sites would have been wide-ranging: good visibility; a well-aired, dry site; easy demarcation (defence not being, under normal circumstances, a prime motive for a farmer's selection of a site); convenient access across the plateau to arable fields and more distant grass and woodland or down the bluff to the pastures and forests of the valley. Wells within the

settlement (as at Passo di Corvo) would have provided domestic water, while livestock could be taken to a neighbouring stream or to the main river for watering. Very few Neolithic sites on the Tavoliere are further than 2 km. from a main river, but much more relevant is the fact that there would have been a far greater network of small streams, subsequently buried (as in the case of the proto-Faraniello), than is suspected from the rather bland present-day landscape, smoothed still further by the effects of modern ploughing.

Even for sites in the coastlands, the situation would have been little different. Though perhaps low-lying in relation to sea level, the marine terrace would have offered extensive dry terrain, sharply differentiated by relief from the neighbouring lagoons. Even today, at Marandrea (Salpi) there are some 200 ha. of arable land on *crosta*-based soils. Landward, the rising ground had the same advantages which profited settlements further inland. Seawards, the Neolithic inhabitants at sites such as Marandrea had an additional resource area, that of the lagoons themselves; finds of lagoon and estuarine mollusc shells, particularly on sites close to the coasts, testify to the exploitation of such resources.

Economic resources

Non-alimentary resources may come from geological strata or from the ecological milieu. In respect of the first, one of the most important resources must have been flint and chert for stone tools. Over sixty flint-working sites have been reported from the Gargano¹⁸ and tools of the characteristically mottled Gargano flints are found on almost every Neolithic site on the lowland. The Gargano flint occurs as thin beds in the upper part of the Lower Cretaceous series and in Hauterivian and dolomitized Valanginian limestones, easily reached without underground mining, being usually exposed in steep inland slopes or in the sea cliffs. Other stone tools were made from non-local obsidian or from split river pebbles taken from the beds of the main Tavoliere rivers. The lavas and other basic rocks of volcanic M. Vulture, just 60 km. up the Ofanto, were used for corn grinding: fragments of such quernstones have come from Neolithic sites on the Tavoliere as well as from later ones. The harder blocks of *crosta* were used in drystone walling, as at La Quercia and Passo di Corvo, for example, and no doubt in the construction of other buildings. Houses seem to have been built with a low stone wall as a footing and a support for a timber superstructure.¹⁹ It is difficult to imagine just what tools were used in the excavation of the ditches that are the peculiar characteristic of Tavoliere Neolithic sites; standing today at the bottom of a re-excavated compound ditch, cut through *crosta* (of decreasing hardness, it is true) to a depth of 2 m. or more, the scale of the ditches never fails to impress. It would have been the cutting of such ditches, perhaps with antler picks, that yielded the *crosta* ragstone for walling. Even today deer and roebuck are hunted in the foothills around the Tavoliere and it may be assumed that antlers were abundantly available as a tool and source of bone.

In terms of alimentary resources, the Tavoliere would have been as rich in Neolithic times as in historic times in 'natural' — as opposed to cultivated — foodstuffs. The importance of gathered resources to agricultural communities should not be underestimated. For peasant farmers, the occasional harvest of snails or shellfish, small game, fruits and berries, and various salads have provided not so much a contribution to the staple diet as its flavouring, variety, and source of additional vitamins and proteins. Shells of lagoonal or estuarine

molluscs are found on sites at the head of the Candelaro estuary, for instance. Most common is the edible *Cardium*, though it is only at Coppa Nevigata that these are found in extraordinary quantities. Recently, an examination has been made not only of the range of shellfish found on Neolithic sites in the vicinity of the Candelaro, but also of their seasonality and role in the economy.²⁰ It was concluded that their all-year-round significance as a supplement to the staple diet would have been greater than can be judged merely from a quantitative analysis of the surviving record. Land snails, it may be speculated, would have been gathered and used in stews much as they are still.²¹ Frogs, toads, and snakes provide valuable sources of meat in addition to wildfowl and game. From the grasslands may be gathered plants valued for their leaves, young shoots, or roots. Species of the chicory, lettuce and dandelion families provide salads. Wild asparagus is picked early in the year before the shoots harden into a prickly, trailing liana. Various thistles, fresh or cooked, are eaten, as is the root of salsify and at least one variety of creeping campanula. The taller shrubs and small trees have also been exploited in the past for culinary purposes. Gums from the pistachios have been used in wine preservation as well as a sealing; the ash provides an edible exudate (for which the tree has been cultivated in Calabria); the fruit of the strawberry tree is used to produce an alcoholic distillation; and trees such as the sloe and the hawthorn all yield useful fruit.

Agriculture

Sufficient evidence is available from sites on the Tavoliere to show that the mainstay of the Neolithic population was a mixed agricultural economy: cereals and livestock. Evidence is lacking for the nature of the various farming *systems* which may have been operated — the balance of individual enterprises (sheep, cattle, grain) on any one farm — but a general review is in order on the basis of the operation of such farming systems in the economy of Mediterranean Europe throughout the historic period and their relationship with the physical environment.²² In the first place, undoubtedly the Tavoliere is a good grain-growing region. Historically, it has been known as one of the ‘granaries’ of medieval Europe, able to produce not only hard wheats of excellent storage capability, but also a surplus, though the latter may have been due, in the modern period, to a low urban population rather than to high yields; on the contrary, such evidence as is available for wheat yields here in the Middle Ages suggests they were as low as anywhere at the time. For the early Neolithic, however, it is arguable that yields would have been relatively very good, falling off only with the accelerated nitrogen loss that accompanies the decrease in humus input consequent on vegetation clearance already described. Few soils on the lowland, even those over *crosta*, are too shallow for good cereal growth throughout the cooler part of the year, but the alluvial soils of the valley bottomlands would probably have been avoided in the Neolithic as were those on the more extensive post-Roman fill until very recently.

Crucial to the maintenance of soil fertility, after deforestation, is a supply of manure and in a mixed farming economy the relationship between livestock and the amount of land that can be cultivated is very close. Even on all-arable estates in the Roman period, stock was kept solely for this purpose. Just how early in the Neolithic this relationship was appreciated is not clear; it could have taken some time while yields declined before the need for an artificial

supply of humus to replace that of the natural plant cover was discovered empirically. Some sort of pastoral element is, therefore, an essential component of an arable or mixed farming system, not a mere adjunct. Animal bones found at Passo di Corvo by Professor S. Tinè show that cattle and the caprids were the most common, with pig in third place.²³ All these animals would have been fed all the year around from local resources: even today, sheep and goats find adequate grazing from the wasteland and along the riversides throughout the summer. Such sources would have been abundant in the prehistoric period. It is only when the number of animals is allowed to exceed the availability of local resources (or an exceptional drought occurs) that movement to pastures outside the immediate area — to the Apennine foothills or the Gargano uplands, for instance — is necessary. On the contrary, such movement would have been considered undesirable, in the normal manner of things, since the object has always been to keep stock within farm boundaries in order to benefit fully from their manure. Long-distance transhumance, such as that which took place on the Tavoliere at certain times in the historic period, including the Roman, is associated with a highly specialized farming system, that of ranching, and should not be confused with the livestock element of mixed farming.

CHAPTER II

THE NEOLITHIC SETTLEMENTS OF THE TAVOLIERE

INTRODUCTION

THE next part of this volume is devoted to a topographical study of the prehistoric sites located by aerial photography in the Tavoliere. The settlements, which were found in such large numbers throughout the area, give a quite exceptional view, prior to excavation, of an ancient ecology. Altogether the 256 sites located form one of the densest concentrations of prehistoric settlement in Europe (fig. 7). They lie compressed within a plain (pl. I) approximately 50 km. by 80 km. at its broadest and longest points. The boundaries of the area are, in effect, those of classical Daunia, the river Fortore to the north and the Ofanto to the south with the Gulf of Manfredonia and the Apennine foothills to east and west respectively. The two rivers mark natural geological boundaries beyond which the topographical character of the countryside changes radically. Within this area there are inevitably some gaps where no air-photographic cover is available. The mountainous Gargano peninsula, which represents an almost complete contrast to the Tavoliere, is one such area, but for the sake of comparison and to show the wealth of material still awaiting discovery there, a survey of part of the southern Gargano coastline is included in this study.

For the purposes of this site survey the Tavoliere has been divided into nineteen zones based on topographical units rather than modern local boundaries. In this way it is hoped that the factors governing the selection of prehistoric settlement sites will become apparent. The regions are plotted in fig. 8, where they may be compared with the relevant map sheets of the Carta d'Italia 1:25,000 series shown in fig. 9. With the addition of the Gargano the zones are as follows. They are set roughly in anti-clockwise order:

- I. Lucera North
- II. Lucera East
- III. Borgo S. Giusto
- IV. Troia East
- V. Borgo Segezia
- VI. Ortona West
- VII. Orta Nova
- VIII. Stornara
- IX. Cerignola West
- X. Cerignola South-West
- XI. Tressanti
- XII. Salpi
- XIII. Tavernola
- XIV. Foggia
- XV. Amendola

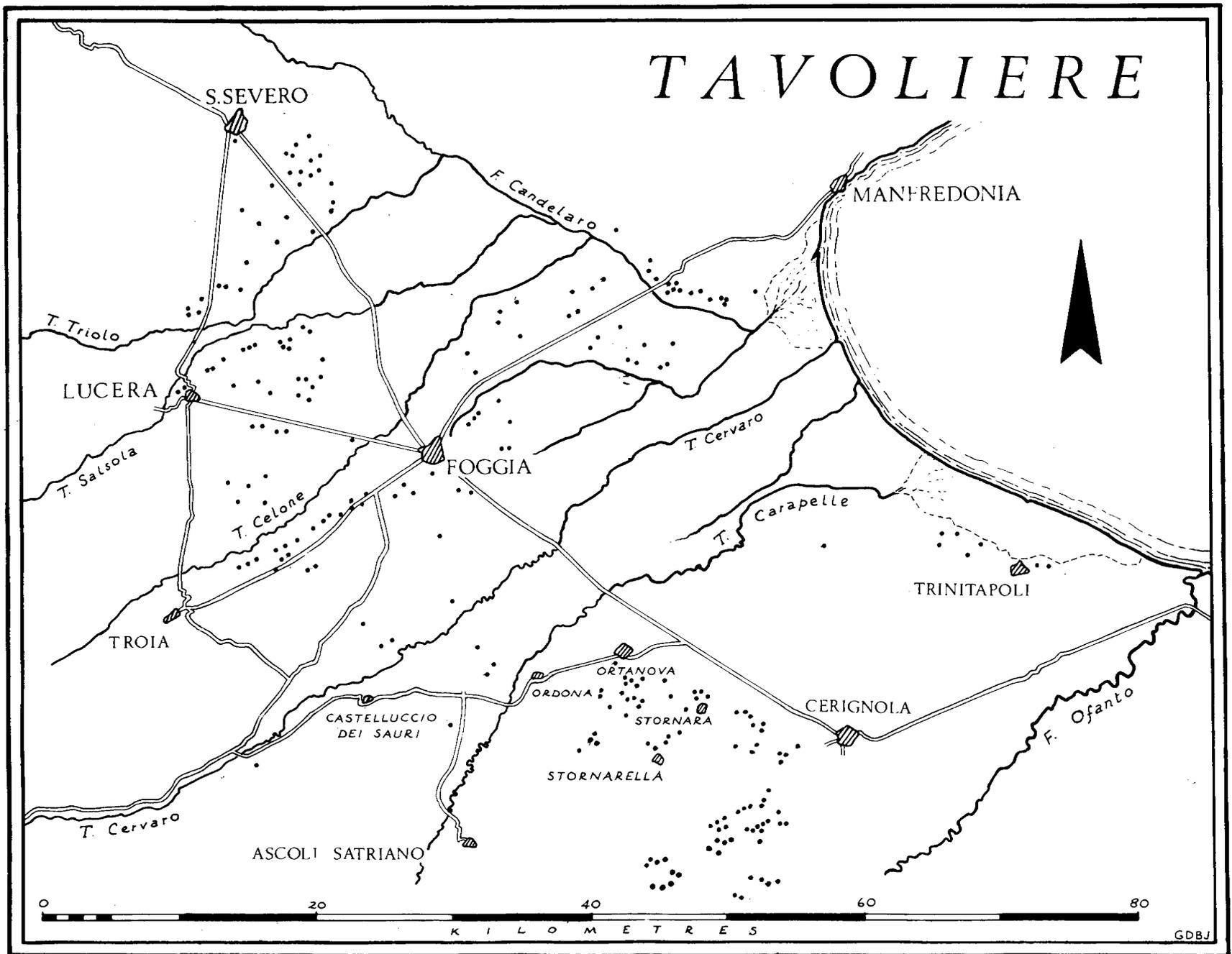


Fig. 7. The Tavoliere: overall distribution of sites (1:400,000)

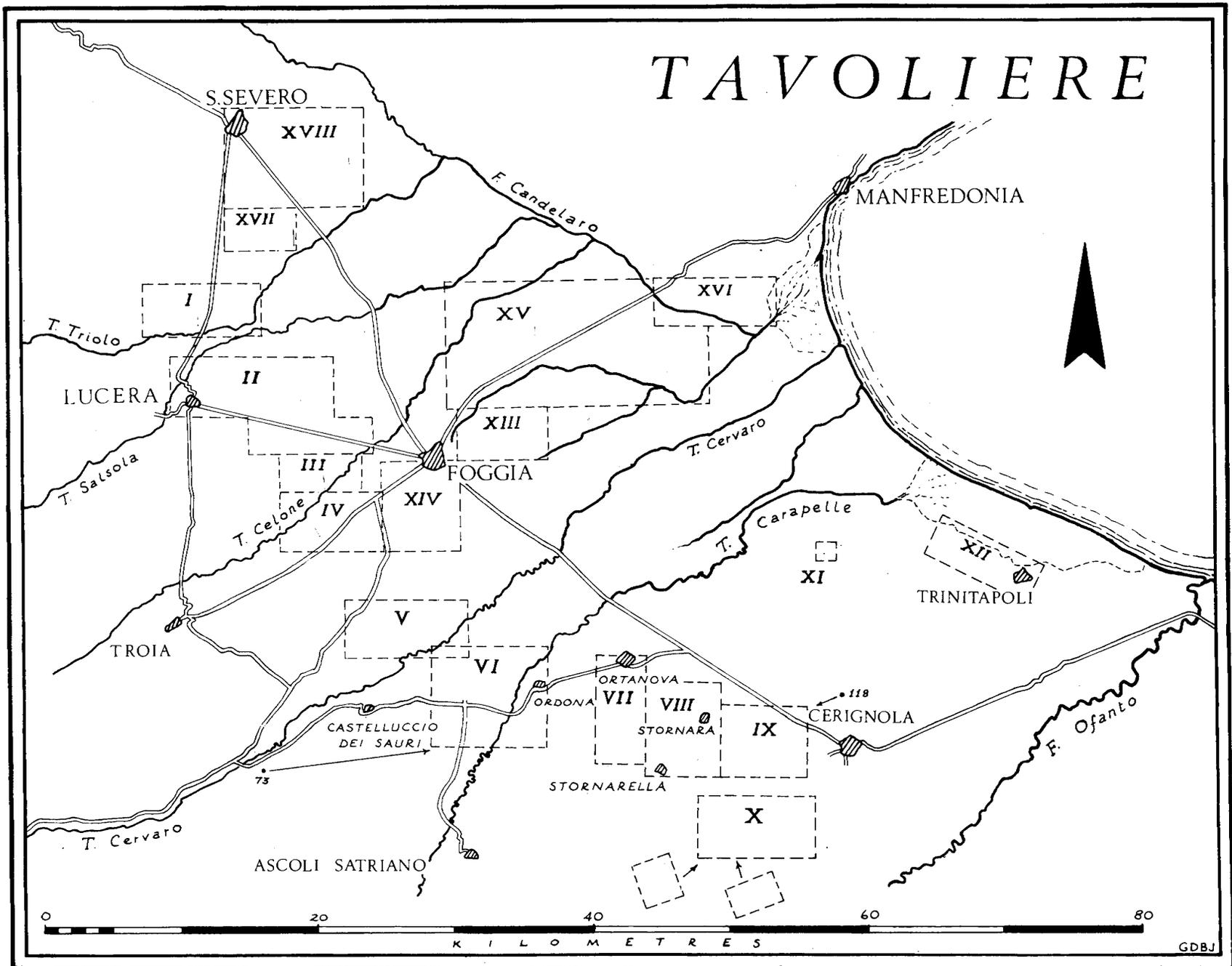


FIG. 8. The Tavoliere: designation of topographical zones (1:400,000)

- XVI. Candelaro
 XVII. S. Severo South
 XVIII. S. Severo East
 XIX. The Gargano

Each of the sites located in the survey has been given a separate number for ease of identification. Every number therefore remains unique in the site catalogue. Apart from the regions for which no cover exists, one may be reasonably sure that if an area is largely arable the listed sites represent almost the sum total of prehistoric settlement; such is the quality of the aerial cover available for much of the Tavoliere that only thick vineyards or olive groves obscure the evidence. Conversely it should be said that no settlement whose existence was suggested by the air photographs has failed to produce corroborative evidence on the ground.

The site lists of each region are preceded by a brief description of local topography and the main areas of settlement. With each site is given its serial number and six-figure grid reference on the Italian 1:25,000 series; the reference signifies the approximate centre of the site irrespective of size. This is then followed by a site description. Unless otherwise stated, all the measurements are derived from air photographs; in practical tests they have been found to compare most accurately with measurements taken on the ground. The process is far swifter than the use of tapes.

The scale of a particular air photograph is obtained from the formula:

$$\frac{\text{focal length of the lens (F.L.)}}{\text{height of the aircraft (H.)}} \times 12$$

Allowance for the actual height of the countryside over which the plane is flying must be made and so, in practice, the following formula is used:

$$\text{Scale} = \frac{\text{F.L.}}{\text{H.-h}} \times 12$$

where h. is the mean height of the country covered by the photograph.¹ With the scale determined, the length of any feature appearing on the photographs can then be converted into actual length with the help of photogrammetric tables.²

Measurements follow the metric system throughout. The dimensions of oval enclosures are given by stating the length of the longest axis and the maximum width measured at right-angles to that axis. Roughly circular enclosures are described by giving the *maximum* diameter. In the case of settlements with multiple ditches the distance separating concentric ditches represents the *average measurement* between them, as the gap frequently shows slight variations. The measurements of outer and intermediate ditch circuits are always given at their widest points.

The settlements of the prehistoric period are villages, large and small, normally surrounded by one or more ditches. The interior was generally filled with a number of internal compounds. The majority of the sites occupied level ground. On the western fringe

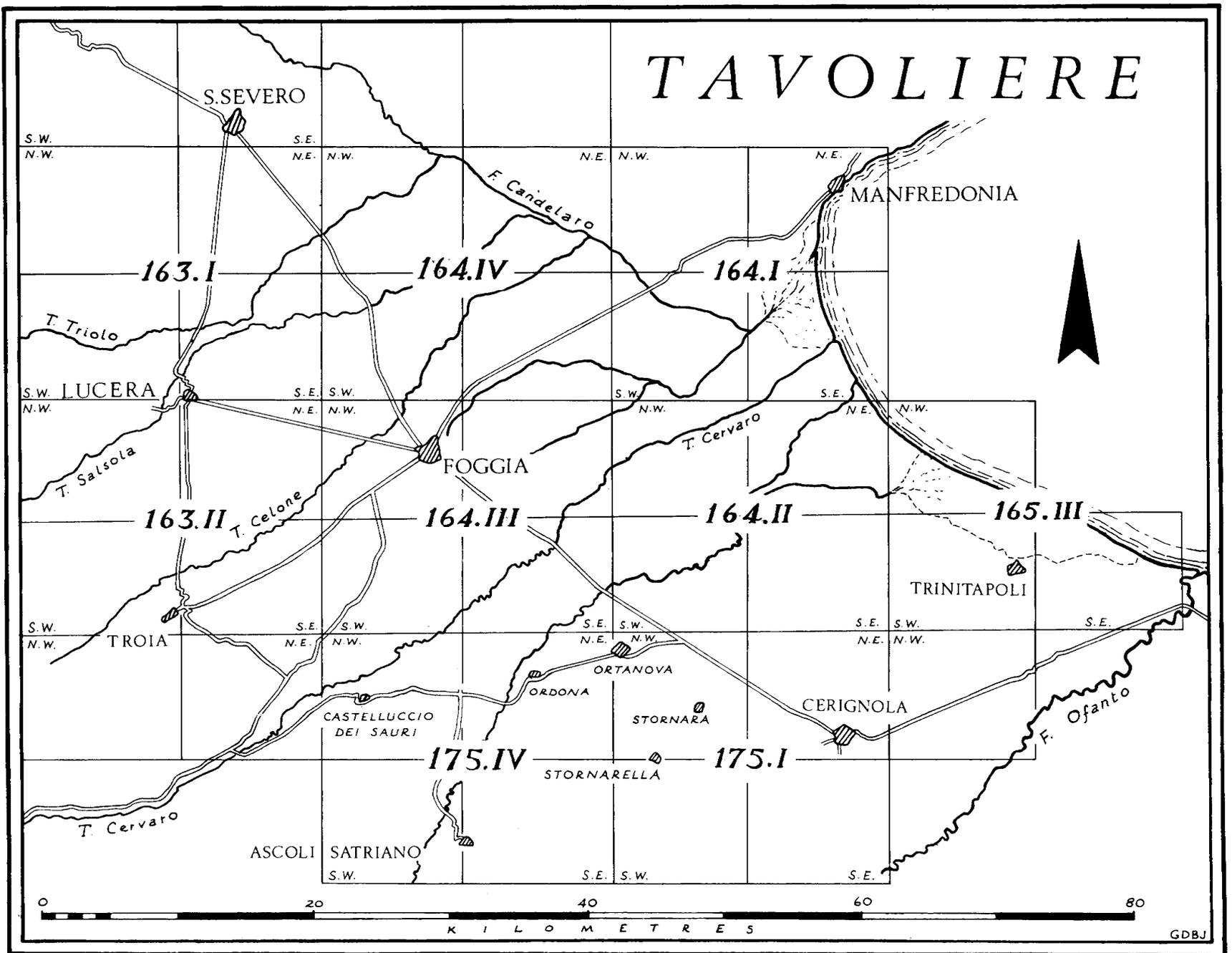


Fig. 9. The Tavoliere: relation to Carta d'Italia 1:25,000 map series (1:400,000)

of the plain, where the larger rivers flow in a north-easterly direction, most sites lined the edges of the low escarpments flanking the valleys of such rivers as the Cervaro, Celone and Triolo. This pattern of settlement, as shown by the site catalogue, is repeated time and time again. In many cases the actual edge of the scarp appears to have been incorporated in the plan to form part of the ditch circuit (p. 189). In the plain proper, where few such escarpments occur, it is surprising how Neolithic settlers made use of even a few metres of height in the siting of their settlements. Passo di Corvo (site no. **198**) is perhaps the best, and certainly the largest, example of this, but there are many other instances where a slight elevation in the plain has apparently been the deciding factor in the choice of site. Many sites were a considerable distance from fresh water, judging from present conditions; the inhabitants of scarp-edge sites could have drawn water from the streams in the valley below, even if this would have involved much labour at times when the actual stream-bed lay a considerable distance away (p. 52). (Such is the situation at present, for instance, in the Vulgano and Triolo valleys.) In the central section of the plain, water is obtainable today only from wells of exceptional depth or artesian bores, and the water-supply of Neolithic sites in this area is an insoluble problem on the evidence at present available. It is not yet known, for instance, whether the settlements were inhabited all the year round or whether the level of the water-table has changed.

With one exception, an important site at the foot of the Bovino gap (**73**), all the settlements identified were surrounded by simple or multiple ditches generally forming an irregular circle. The largest number, eight ditches grouped in two sets of four, belonged to the site close to Masseria La Quercia west of Ortona (**72**; for excavations on this site see pp. 130 – 1). In small and large villages alike the concentric ditch systems were usually symmetrically cut. Considered as a whole, the settlements form a remarkably homogeneous group. The larger sites were generally enclosed by several ditches and despite their size (the Passo di Corvo complex measures over 800 m. by 500 m.) the ditch systems often exhibit a remarkably symmetrical layout. Sites of smaller and simpler form, presumably based on family groups, were generally enclosed by either a single ditch or two widely spaced concentric ditches.

As far as the air photographs show, the entrances to the smaller and medium-sized settlements do not appear to have been elaborate. In most cases they form a small, outward bulge protruding from the line of the ditch. Similar features were noted by Ridola at the Neolithic sites of Murgia Timone and Tirlecchia further south in the Murge.³ In the larger sites with multiple ditches, however, the entrances are more obvious and take the form of a funnel created by the inturned arms of the outer ditch. Similar entrances may also have existed in the interior ditch circuits. This arrangement would have been adapted both for elementary defence and for the driving of herds in and out of the settlements.

The interiors of the sites were normally filled with ditched 'compounds' revealed, like the main enclosure ditches, by differential crop growth. In shape these compounds, as they are termed for want of a more precise term, were circular, semicircular or penannular. They differ little between small and large sites and only very rarely are they found outside the main enclosures.⁴ It seems clear from the air photographic evidence that the compounds, which were found in great numbers in almost every settlement, are proprietary rather than defensive in character. In some the entrances are narrow, but there are many more in which

the ditch follows only two-thirds, and sometimes less, of the circumference. Their sheer number makes it impossible to suppose that these compounds represent unfinished work, but it is always possible that the full circle was completed with improvised hurdles of brushwood. The diameter of the compounds, ranging from 12 m. to as much as 90 m., precludes the likelihood of the ditch having played a structural part in a building.

The sites listed in the catalogue yielded almost all the artefacts characteristic of the Neolithic period. Among these predominate blades and scrapers in chert, an easy supply of which lay close at hand in the Gargano peninsula,⁵ bone awls and, occasionally, pieces of Lipari obsidian.⁶ The pottery falls into several clearly differentiated types which are discussed in detail in the other section of this report (pp. 145 – 72), where they are analysed in relation to excavated material. Wherever possible, pottery and other artefacts have been collected from the various sites. In view of the number of settlements, however, this has not proved feasible in every case, nor would it have been worthwhile at the many sites that have suffered heavily from modern agricultural developments. A list of the material found at a site is appended to the description in the catalogue.

Why do crop-marks of prehistoric, Roman and medieval sites occur in such profusion on the Tavoliere that at times the air photographs resemble a palimpsest on which remains of all periods are clearly delineated beneath the present crops? The answer lies in the subsoil of the Tavoliere. It is formed of a light-coloured, highly porous, decomposed limestone that is sometimes floury, sometimes concretionary in character. The proximity of this limestone base to the top of the humus is rarely more than 50 cm. and explains the amazing clarity of some of the air photographs taken in the area. Every feature of the prehistoric, Roman and medieval settlement that cut into the top of the limestone subsoil (the *crosta pugliese*, as it is called) left a permanent incision which subsequently filled with topsoil. Given suitable crops, every ditch cut in the *crosta* is faithfully reflected in differential growth during the summer months, whether by crop-marks in corn during May and early June or weed-growth in July and August. Moreover, the differences in the character of the *crosta* explain the varying clarity of the crop-marks. The incredibly detailed air photographs in the Lucera or Amendola areas reveal almost every feature of a prehistoric site that is not obliterated by modern vineyards or olive groves. Contrast this with the air cover between Ortona and Ascoli Satriano, for instance, where only the general shape of the Neolithic villages is normally traceable (p. 73). The explanation lies in the diversity of the actual *crosta*, which in the first instance is concretionary and almost uniform in character, whereas in the latter it is of an extremely soft and flour-like consistency.

The factors limiting the area where crop-marks are visible stem from both geology and recent agricultural developments. Pliny remarked that Daunian Apulia began north of the Ofanto (the classical Aufidus)⁷ and, as pointed out earlier (p. 27), this river boundary corresponds to a natural division imposed by geology. South of that river the Tavoliere gives place to the terraced limestone slopes of the Murge that drop eastwards to the Adriatic. This coastal belt, covered with fertile *terra rossa* and adequately watered by springs, is today the most important olive-growing area in Italy. It is, and probably always was, densely populated and heavily cultivated; formerly it supported prosperous Greek colonies and a relatively dense concentration of Neolithic settlements.⁸ Further inland the limestone grows progressively more barren as the depth of topsoil dwindles to a few centimetres. Both here

and along the littoral as far as the Salentine peninsula, air photography is largely incapable of extending the amount of information on either the pattern or the details of ancient settlement. In the fertile areas the preponderance of olives and vines and the prevalence of 'fragmentation' — the system by which fields are divided and subdivided into small, irregular strips by members of the same family — make conditions difficult and often impossible for the occurrence of significant and continuous crop-marks. This also applies to the Apennine slopes along the western edge of the Tavoliere and the coastal strip north of the Fortore, Pliny's northern boundary of Daunian Apulia,⁹ where eroded, hilly country runs down to the Adriatic. In both these areas topsoil and subsoil are different from those of the Tavoliere and consist largely of Pliocene clays. To the east the Gargano limestone, with its bare rock and partial forest cover, is again quite useless for archaeological survey from the air. For reasons of geology and modern vegetation, therefore, the area over which air photographs offer an abundance of precise archaeological data is confined rather closely to the Tavoliere itself; around the periphery one should remember that these factors have greatly limited the amount of comparative material available.

Within the Tavoliere one should further remember that limitations of aerial cover also affect the picture of prehistoric settlement that emerges from the following pages. A reliability diagram has been constructed (fig. 10) to indicate the density of cover available for the area. This is quite sufficient to show the way in which the greatest amount of aerial cover is concentrated in a few zones that were in all cases the site of aerodromes in 1944–5. The cover in these cases nearly always comprises both high- and low-level material from all periods of the year as trainee pilots practised over their own bases. Elsewhere it will be seen that cover is regrettably sparse or non-existent. The latter is unfortunately true of a large area east and south-east of Foggia. If this material had been available, then it would have been relatively easy to define the lower limit of prehistoric settlement in relation to the receding shoreline and its associated lagoons. Elsewhere, as emphasized in the relevant sections, the cover for the Ortona – Ortanova – Cerignola region is entirely high-level. This is likely to have a deleterious effect on both the recognition of sites and the accuracy of their measurements. For this reason, therefore, as well as the problems created by modern cultivation in the area, dimensions are often given only in approximate form.

The various kinds of prehistoric settlements located from the air photographs are perhaps best explained by four examples of the types encountered. They show varying degrees of complexity, but the first example, shown in pl. XX*b*, is of the simplest kind. It consists solely of a single-ditched enclosure of almost circular shape. The measurements of the ditch-circuit are 80 m. by 85 m. There are no traces of any internal features. This site lies on the Alma Dannata, a small ridge of elevated ground 2 km. due west of Salpi. The next site lies 20 km. north-west of this, immediately south of Stazione Amendola on a scarp overlooking the marshes of the Canale Farano. The overall layout of the Neolithic site (known as Stazione di Amendola II) is shown with great clarity in pl. XXV*a* and again in plan form in fig. 43 (p. 97). It consists of an oval, double-ditched enclosure with a series of compounds on the southern side. They were placed in a row with their open ends towards the north and their backs towards the entrance gap in the double-ditches. Between the tips of the inner ditch the entrance is approximately 2.6 m. wide. It opens directly onto the limestone scarp overlooking the broad belt of coastal marsh and lagoon that extends to the slope below Posta Siniscalchi.

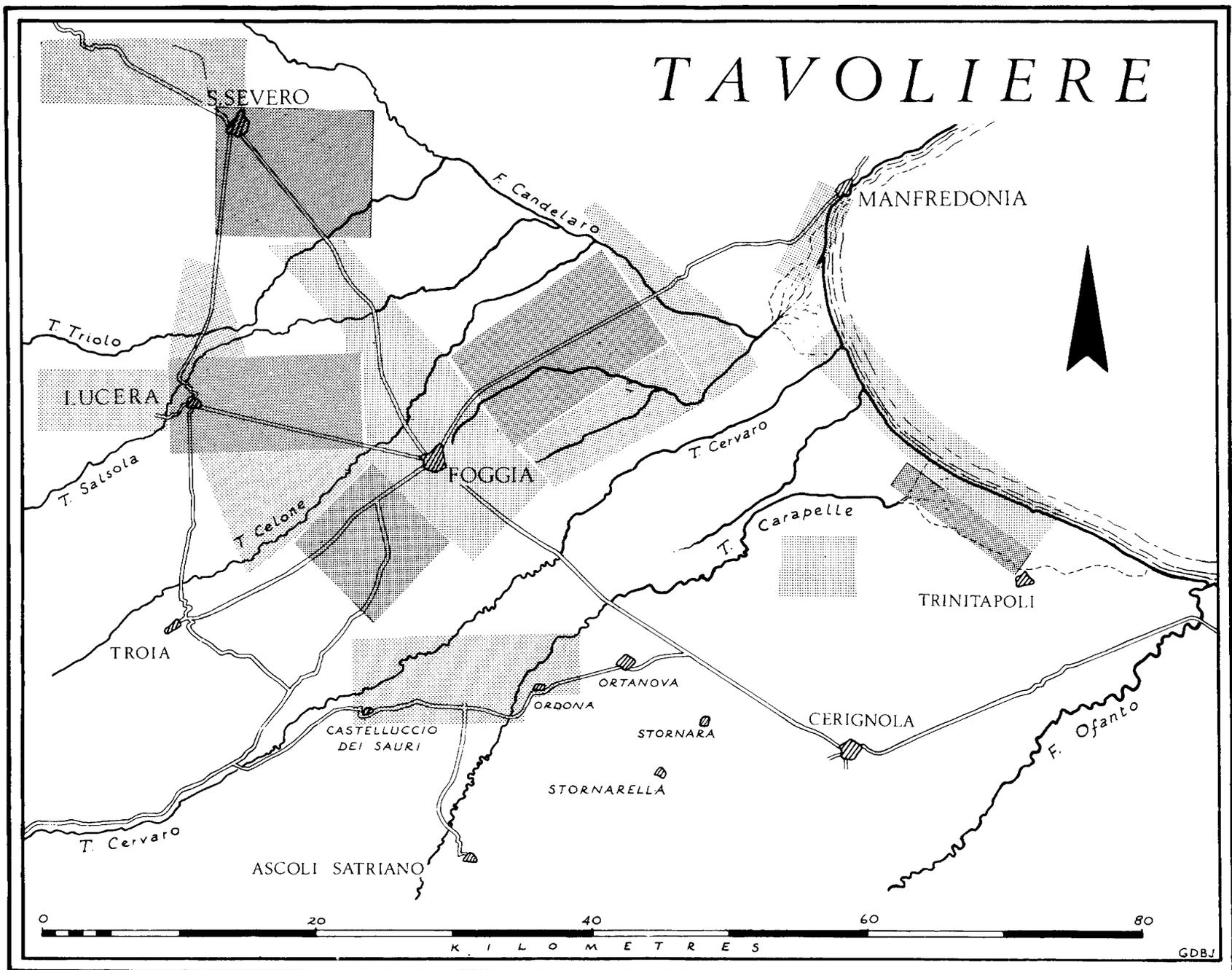


FIG. 10. The Tavoliere: reliability of aerial cover (darker areas indicate most intensive cover)
(1:400,000)

The overall dimensions of the settlement, including the double ditches, are 265 m. by 183 m.

So far the sites have been shown as they appear in vertical air photographs. By way of contrast the third example is illustrated in an oblique view (pl. XXXI*b*). The site in question occupies level ground close to the farm of S. Fuoco d'Angelone 11 km. north-east of Foggia. Two large enclosures are visible, each revealed by prominent crop-marks. The outer oval enclosure measures approximately 152 m. by 121 m. overall, and the inner circular one 79 m. A single, inturned funnel-shaped entrance can be seen (at A) facing southwards. No entrance to the inner enclosure is visible from the air. The crop-mark width of the inner and outer ditches ranges between 2.5 m. and 3.5 m. If there had been any compounds within the site, traces of their ditches would certainly have appeared as crop-marks. As it is, there is only a possible segment of one in the outer enclosure, another that seems to overlap both ditches on the far side of the site and one outside the village altogether, shown in the foreground of the plate. The plate also shows an example of the markings from later periods that often complicate the interpretation of a prehistoric site. The crop-marks of parallel rows of buried trenches are produced by the cultivation of vines. Trenches were cut into the *crosta* to give extra depth of soil to the tap-roots. In this case the irregular layout of the vineyard suggests that it belongs to the medieval period. If so, it would probably be related to the trackway delineated by twin ditches on the left of the picture.¹⁰ The parallel furrows (at E) on the darker ploughed soil are entirely modern.

The settlement described above probably saw two fairly simple stages of development: first, the creation of the small enclosure, and then its enclosure within a larger, oval, ditch-circuit. The most complicated settlement on the Tavoliere¹¹ shows five such phases of development. To give an idea of some of the larger and more complex sites, the settlement shown in pl. XXIII*a* near Masseria Fongo 7 km. south of Foggia will serve as an excellent example. Its position has no natural strength, though one flank was covered by the marshy ground around S. Lorenzo in Pantano. The settlement was surrounded by four ditches whose course is not completely traceable because the central portion of the site is obscured by crops in the air photograph. Two inturned, funnel-shaped entrances, marked F and G on the plate, show clearly in the first (inner) and second ditches. The overall length of the village measures 438 m. The inturned entrance at F extends 21 m. into the interior and the gap between the two ditches measures 4 m. at its narrowest. The four crop-marks of the main ditches have the same average width. They are more or less equally spaced and spread across *c.* 65 m. in total section. The traces of ditched compounds appear to be confined to the innermost enclosure, but it is not clear how many periods of development are involved in the present site.

SITE CATALOGUE

The settlement zones

I. *Lucera North* (figs. 11 – 13; pls. II – III*a* and frontispiece)

The commanding spur on which Lucera sits is flanked to the north by the valley of the T. Triolo, several kilometres wide at this point. The first range of hills to the north of the river is

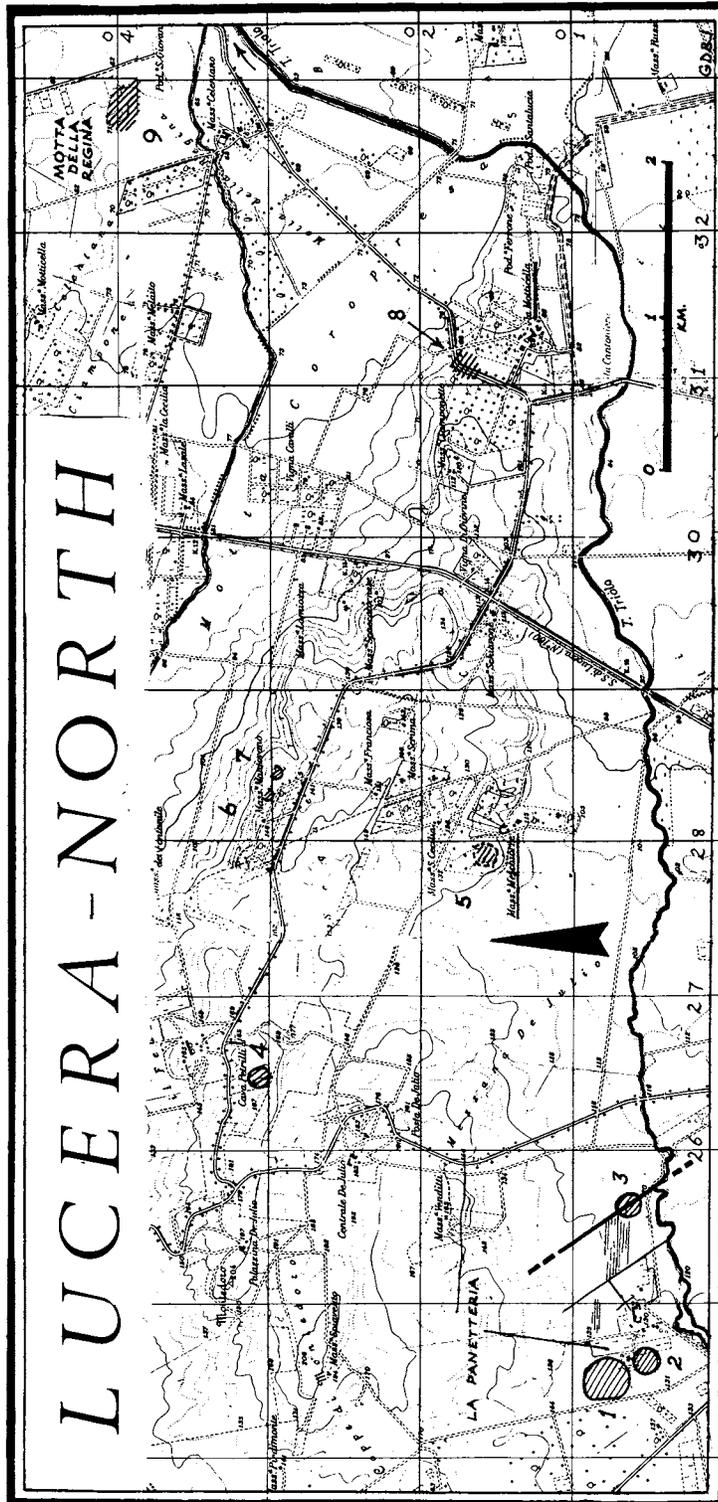


FIG. 11. Lucera North: location map (1:50,000)

designated Lucera North in this report. On its southern edge the area contains the important group of sites at La Panetteria (1 – 3). All three are somewhat abnormally placed in that they lie on the rising shelf of the valley floor, but their eastern neighbour at Masseria Melchiorne (5) belongs to the pattern of scarp-edge settlement familiar throughout the Tavoliere. This is clearly visible on the northward-facing scarp of the hills. The four sites at Cava Petrilli (4), Masseria Mantovano (6, 7) and Motticella (8) all follow the same pattern. For convenience the important site of Motta della Regina (9) north of the Canale Pontesano is included in this group of Neolithic settlements.

Map Sheet: *Fattoria Cavalli*, 163.I.SO

1: ref. 245008; figs. 11 and 12; frontispiece

La Panetteria I: a superb example of a medium-sized, single-phase village on the shelf 300 m. west of the modern farm. It consists of a single ditch (to which a second ditch is attached on the northern side) and fourteen internal compounds, as shown in fig. 12 and in the frontispiece.

All the features appear with amazing clarity from the air. The settlement is almost circular in shape with a rather flattened western side. There are traces of an unexplained third ditch (forming

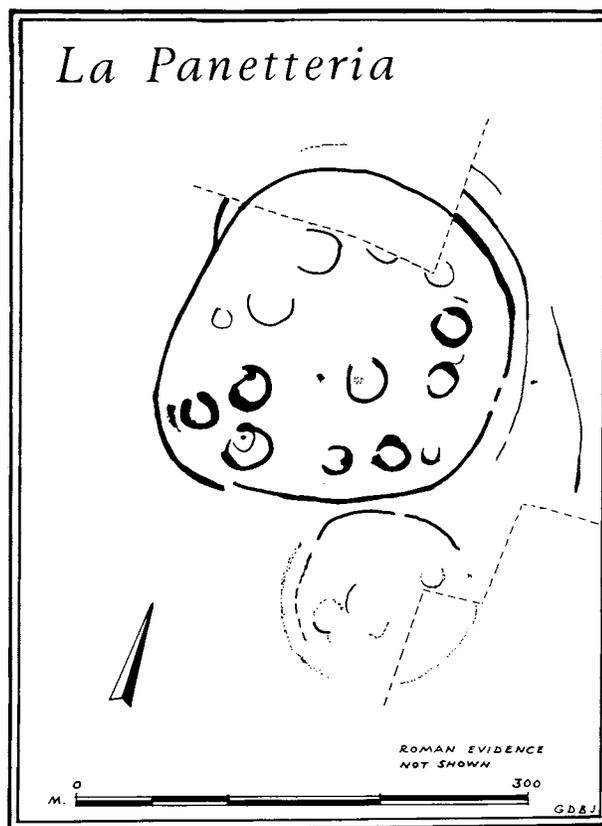


FIG. 12. Lucera North: La Panetteria (1:5,000)

part of an outer compound?) on the eastern side. At its broadest the main enclosure measures 240 m. across; the actual enclosing ditch averages 2.5 m. in width. The internal compounds have the following diameters (a key to the compound numbers will be found in fig. 110, right):

<i>Compound</i>	<i>Diameter</i>
1	27.2 m.
2	23.2 m.
3	18.0 m.
4	23.8 m.
5	24.4 m.
6	13.4 m.
7	18.6 m.
8	26.0 m.
9	18.0 m.
10a (small)	16.8 m.
10b (large)	34.2 m.
11	23.2 m.
12	27.2 m.
13	13.3 m.
14	29.6 m.

The site would clearly repay large-scale excavation; in particular the major and minor ditches of compound no. 10 promised important evidence on the use of individual compounds. Excavations took place in August 1964 and the results are described on p. 137.

2: ref. 246005; figs. 11 – 12; frontispiece

La Panetteria II: a smaller, single-ditched enclosure that appears faintly on the air photographs immediately south of the site described above. The site is almost perfectly circular with a diameter of c. 135 m. There are traces of at least six internal compounds, but their dimensions are made imprecise by modern cultivation. The entrance is represented by a break in the ditch on the north-western side.

3: ref. 255006; fig. 11; pl. IIa

La Panetteria III: an almost circular enclosure much hidden by a centurial road of the Roman period and its associated vineyards. The E – W dimensions are c. 110 m., with traces of at least three internal compounds.

4: ref. 265031; fig. 11

Cava Petrilli: a small single-ditched enclosure c. 120 m. across E – W on the centre of the ridge running north of the Triolo.

Map Sheet: *Lucera*, 163.I.SE

5: ref. 279016; fig. 11

Masseria Melchiorne: a complex, medium-sized site situated on the 100 m. spur overlooking the valley of the Triolo north-west of the present masseria. At least nine internal compounds are visible within the single-ditched perimeter, but the evidence is again much obscured by superimposed Roman vineyards and a centuriation grid road. Probable E – W dimension is 340 m.

6: ref. 284030; fig. 11; pl. IIb

Masseria Mantovano I: the western of a pair of settlements. They are both small scarp-edge sites on the northward-facing bluff immediately east of the present masseria. Again the quality of the crop marks is not good but the E – W diameter is *c.* 105 m. and there are faint traces of an internal compound.

7: ref. 285030; fig. 11; pl. IIb

Masseria Mantovano II: the eastern example of the pair of settlements occupies relatively the same position on the northward-facing scarp. It is somewhat smaller than its neighbour, with a diameter of 80 m. across and definite traces of an internal compound.

8: ref. 312017; fig. 11

Motticella: a prehistoric settlement on the northward facing scarp overlooking Motta della Regina. No air photographs of the site are available; it was located through the construction of a cutting for a minor road running north-west of the modern farm. The eastern side of the cutting revealed three large ditches and four small ones. A quantity of plain burnished ware was collected from the site.

Map Sheet: *Masseria Faralli*, 163.I.NE

9: ref. 328038; figs. 11 and 13; pl. IIIa

Motta della Regina: the prehistoric settlement at Motta della Regina is largely obscured by an extensive medieval earthwork. The later site is kidney-shaped and consists of a bank and ditch enclosing a kind of bailey with a motte in one corner (60 m. across) and another of similar size in a detached position at the other end. The whole earthwork measures *c.* 310 m. in length. The prehistoric settlement which originally occupied the site appears, in part, to the south-east of the medieval bailey. Its features are extremely confused on the air photographs and do not form a coherent picture on the limited evidence available. Basically they consist of a number of ditched compounds (at least twelve) averaging 15 – 18 m. across, surrounded by irregular multiple ditches 4 – 6 m. in width. Originally the ditches must have demarcated a roughly oval area now largely obscured by superimposed medieval remains, but, in any case, the prehistoric ground plan as preserved is very confused and clearly involves several periods of development.

II. *Lucera East* (figs. 14 – 17; pls. IIIb – X and XLVIb – XLVII)

Prehistoric settlement was very heavily concentrated along the scarp at the southern edge of the broad valley of the T. Salsola and the T. Triolo. The line of the scarp runs due north-east and, excluding the site of Lucera itself, nine settlements lie on, or close to, the scarp-edge in a fashion that is common across the whole Tavoliere. Of the nine sites (**13 – 21**) nos. **19** and **20** were massive settlements near Palmori, a new village created by the land reform authorities 10 km. from Lucera. Other settlements lay at intervals across the gently sloping plain and, wherever possible, advantage was taken of natural elevations in the choice of site, as at Valle Verde and Masseria Saccone.

The southern side of the area is also bounded by a scarp, albeit less sharp and regular than its northern neighbour. It overlooks the valley of the T. Celone which separates the Lucera shelf from the Borgo S. Giusto ridge (p. 50). It served as a focus of settlement for such sites as Masseria Martelli (**35**) and the very extensive village discovered near the level-crossing on

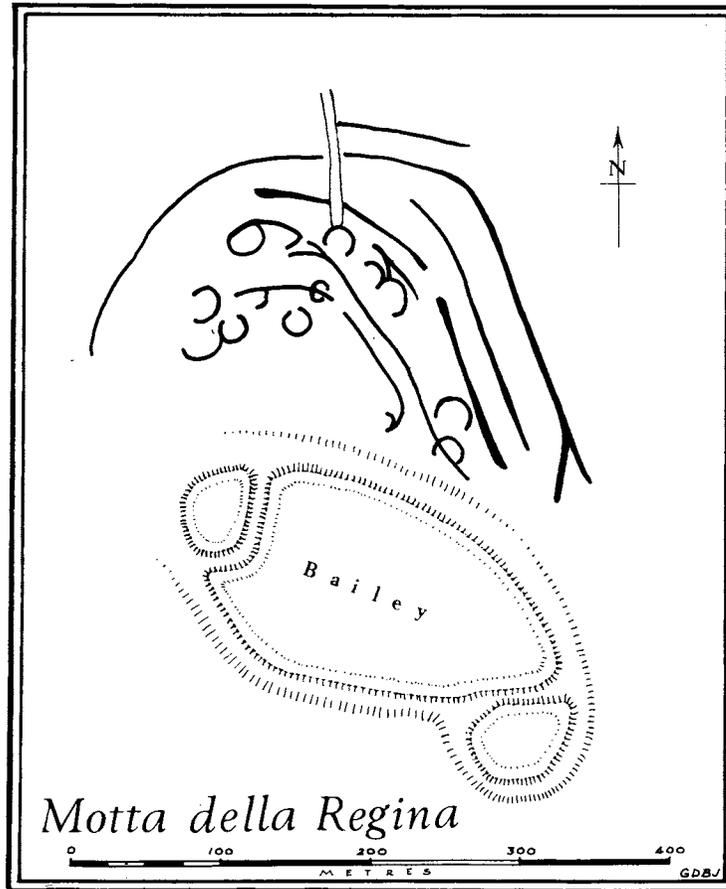


FIG. 13. Lucera North: Motta della Regina (1:5,000)

the Foggia-Lucera road (39). Traces of one or two other sites may have been obliterated by the densely packed vineyards and olive groves closer to Lucera.

Evidence of prehistoric occupation has been located at three points within the immediate environs of the town of Lucera. The most important of these was the area beneath the medieval castle where the excavations described on p. 143 took place. Part of a ditch system was located on the southern edge of the town and pottery collected from building operations on the northern side.

Map Sheet: *Fattoria Cavalli*, 163.I.SE

10: ref. 270954; fig. 14; pls. XLVIb and XLVII

Lucera Castle: the excavations of the site of the medieval castle produced evidence of Neolithic occupation from Trenches I and III of the 1964 excavations conducted by Dr Jones with the assistance of Dr D. Whitehouse and Dr R. Whitehouse. The results are described in full on

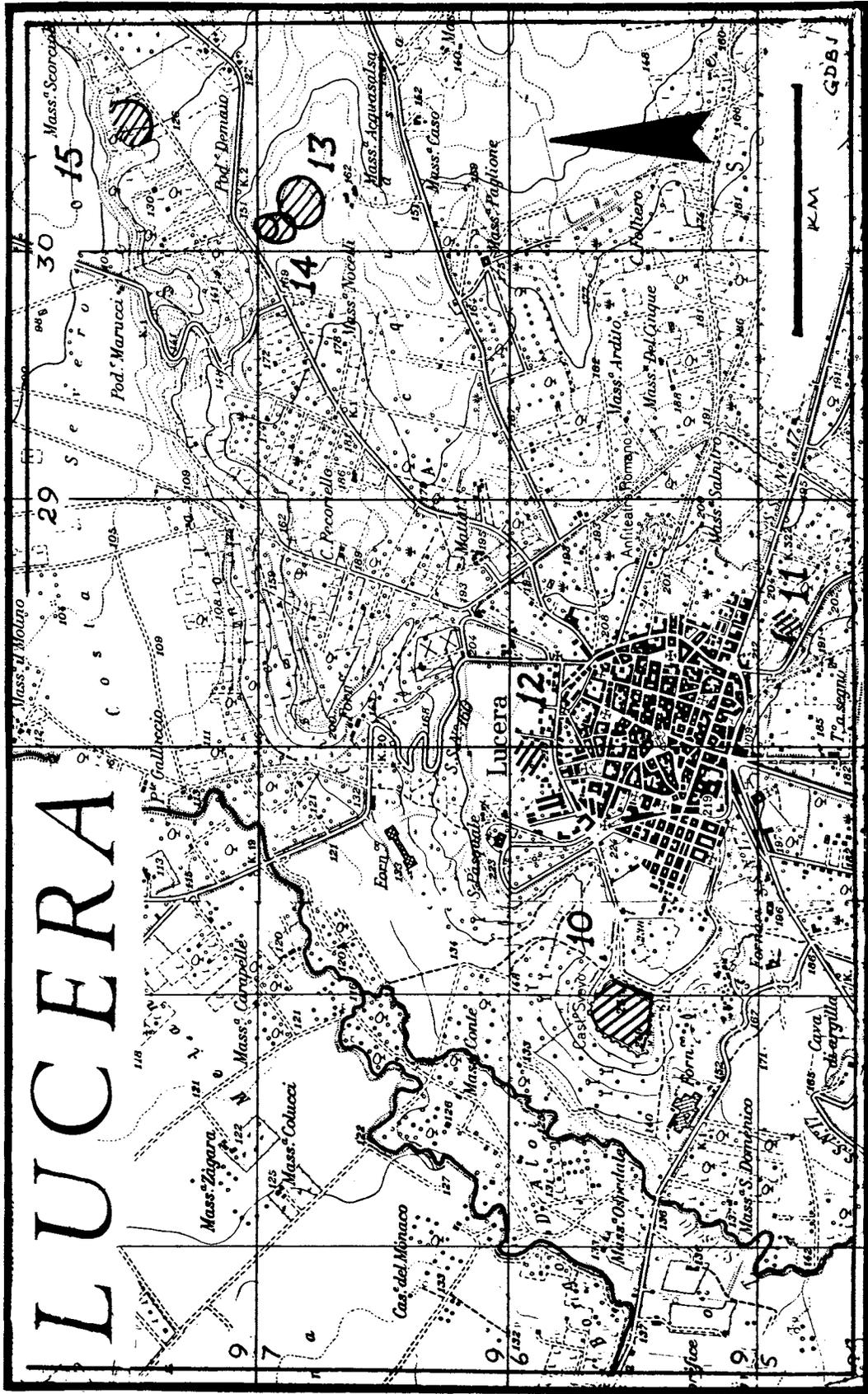


FIG. 14. Lucera East: Lucera (1:25,000)

pp. 143–4. Occupation of the end of the ridge on which Lucera stands would be natural, as it is one of the most outstanding positions in the whole of the Tavoliere.

Map Sheet: *Lucera*, 163.I.SE

11: ref. 284949; fig. 14; pl. IXa

Lucera South-East: clearance and levelling work prior to building in 1964 cut into the edge of the ridge on the southern edge of the town 300 m. from the Foggia gate. The results produced a most important Daunian – Roman pottery sequence and the truncated ditch of a prehistoric enclosure. Bag-shaped in section (as shown in pl. IXa), it measured 2.7 m. wide by 1.1 m. deep.

12: ref. 282957; fig. 14

Lucera North: building operations on the north side of the town produced impressed ware in 1964. It presumably derived from a site on the northward-facing slope of the Lucera scarp. The intervening distance makes it unlikely that the site was connected with the Lucera South settlement.

13: ref. 302968; figs. 14 and 15; pl. IIIb

Masseria Acquasalsa I: a well-preserved double-ditched enclosure immediately on the northern side of the present masseria. The site measures c. 228 m. across, while the average gap between the double ditches is 13 m. Two very large compounds form the principal features visible in the interior from the air photographs.

14: ref. 301969; figs. 14 and 15; pl. IIIb

Masseria Acquasalsa II: a prehistoric site immediately west of, and partly overlaid by, the previous settlement. This interpretation is based on the altogether fainter traces of the medium-sized nucleus and outer corral forming this site. It should be remembered, however, that this impression could be due to crop conditions and the actual situation might be the reverse.

The NE – SW measurement of the single-ditched inner circuit is 167 m., while the N – S length of the corral is 98 m. Traces of internal compounds are indistinct on the cover available, but appear to have been closely packed.

15: ref. 305975; figs. 14 and 15

Masseria Scorciabove: this site is located immediately on the edge of the northward-facing Lucera scarp. The single-ditched enclosure has a diameter of c. 94 m. There are traces of at least four internal compounds.

16: ref. 313982; fig. 15; pl. IVa

Il Posticchio I: the western of a pair of sites close to the small farm that gives the area its name. The single-ditched enclosure (c. 130 m. across) contains a single westward-facing compound. It forms a typical instance of a small single-unit settlement located in a scarp-edge position.

17: ref. 316984; fig. 15; pl. IVa

Il Posticchio II: the second of the two scarp-edge sites of this name. A projecting edge of the scarp contained a single-ditched 170 m. enclosure with no internal details visible.

18: ref. 317982; fig. 15; pl. IVa

Il Posticchio III: a third roughly circular, single-ditched enclosure immediately to the south-west of II. The details of the 160 m. enclosure are much obscured by present vegetation and crop-marks of Roman cultivation associated with the Lucera centuriation grid (to be discussed in Vol. II). There

appear to be traces of an outer corral attached to the south-eastern side of the nucleus. Though the details are far from clear this assigns the site to one of the typical Tavoliere categories.

19: ref. 350988; figs. 15 and 16; pl. V

Masseria Schifata: one of the major settlements of the Lucera ridge, like its neighbour Palmori I, it consists of two double-ditched compounds of great size without any apparent trace of compounds in the interval between them. The E – W measurement of the whole complex is *c.* 694 m. The gap between the outer ditches is 20.5 m., compared with 17.7 m. for the inner pair. The E – W measurement of the maximum diameter of the inner nucleus is 502 m.

There are numerous internal compounds, but their absence from the interval between the ditch systems suggests, as does Palmori I, that the site was of uniform layout, and these two major settlements may therefore be classed together.

20: ref. 368997; figs. 15 and 16; pl. IVb

Masseria Palmori I: the second major settlement of the area, with no. **19** above. Their proximity very strongly militates against the possibility of contemporary occupation. Like the Schifata settlement it is set some way back from the edge of the northward-facing scarp to which its siting was related.

Unfortunately, the remains are now totally lost or damaged beneath the new agricultural settlement at Palmori constructed during the 1950s. All details therefore have to be reconstructed from aerial cover, which is, as it happens, all high-level and not as clear as might be desired. Like Schifata, the site consists basically of two double-ditch systems with the addition in this instance of an intermediate ditch. The outer ditch breaks into two at the south side, but it is not possible to trace the details of the eastern side. Overall measurement is therefore not possible with strict accuracy but a minimum E – W measurement would be 740 m. The inner pair of ditches are 15 m. apart. The intermediate ditch lies 35.5 m. further out, with a further 150 m. to the outer pair. The numerous internal compounds do not appear to be laid out in any order.

21: ref. 362998; figs. 15 and 16

Masseria Palmori II: a medium – small enclosure on the edge of the scarp north-west of Palmori. The inner enclosure measures 133 m. across E – W and contained five visible compounds. The outer enclosure measures a further 44 m. and contained no compounds.

22: ref. 348984; figs. 15 and 16

Masseria Saggese I: a roughly circular enclosure only 53 m. across and surrounded by a single ditch. The remains in the centre are not clear, but there appear to have been internal compounds on the northern side.

23: ref. 347984; figs. 15 and 16

Masseria Saggese II: the site appears to comprise a single-ditched compound with attached corral on the western side. The E – W measurement across the compound is 32.5 m., while the overall length including the paddock or corral reaches *c.* 65 m.

24: ref. 352982; figs. 15 and 16

Masseria Saggese III: a single-ditched enclosure 74 m. across. Like the two other sites above and several below, it belongs to a group of very small enclosures (probably inhabited by extended family units) that occur principally in this area (see p. 197).

25: ref. 373987; figs. 15 and 16; pl. VIa

Masseria Melillo: a well-defined example of a very small (71 m. across) single-ditched enclosure with attached corral on the northern side. The site is now destroyed by olive yards.

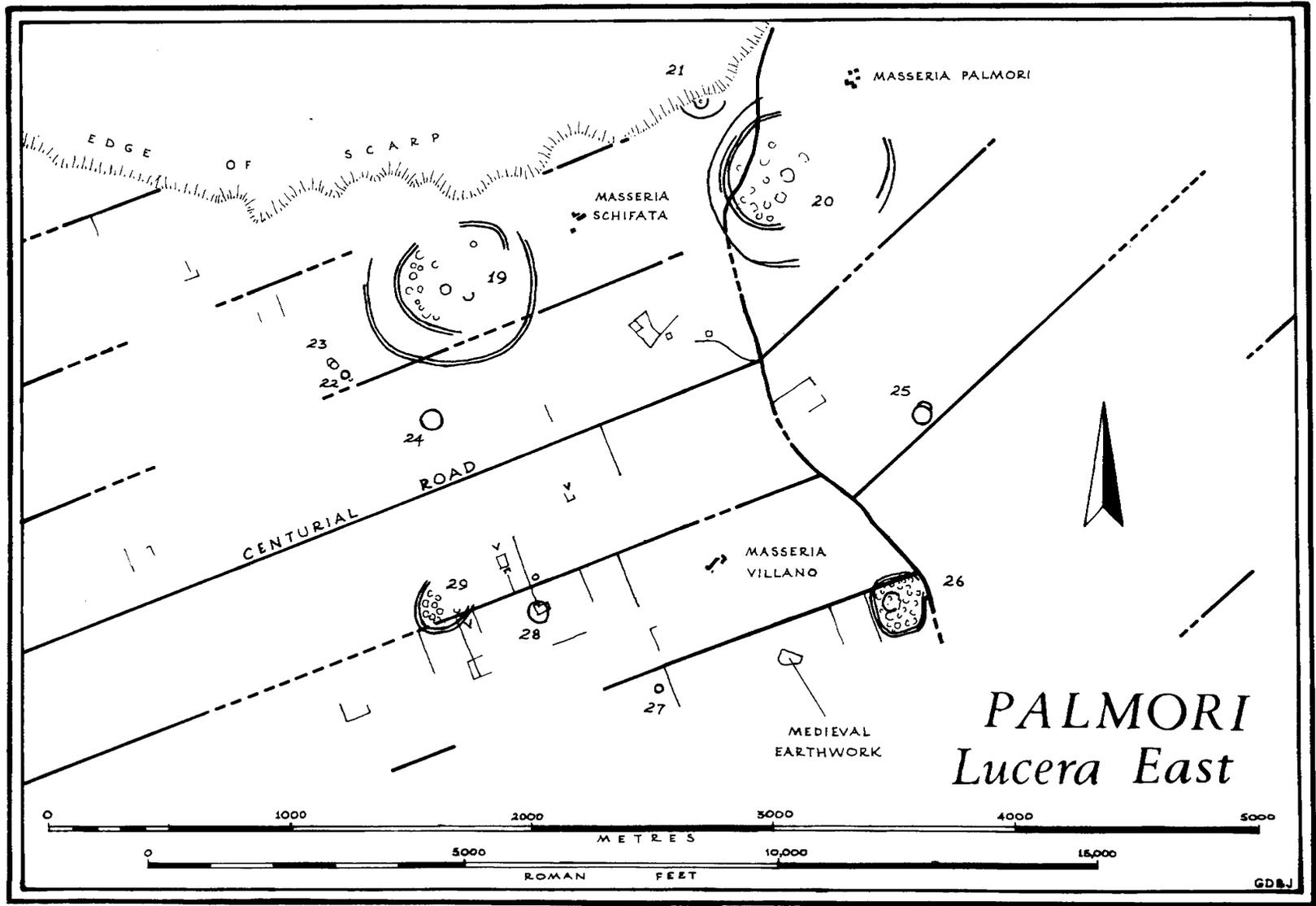


FIG. 16. Lucera East: the Palmori area (1:25,000)

26: ref. 374978; figs. 15 and 16; pl. VIb

Posta Villano: a good example of a medium-sized settlement with an internal circuit and a double-ditched outer circuit. Interpretation would be dangerous without excavation as two separate periods of occupation may be involved. From the air photographs the internal unit contains at least three compounds, though, as stated, they need not necessarily be contemporary. The maximum diameter of the inner circuit is 92 m., of the outer circuit 228 m. The outer pair of ditches lie 12 m. apart.

This settlement has suffered from the planting of olive yards in the area in recent years.

27: ref. 364973; figs. 15 and 16; pl. VIIa

Masseria Villano I: a small, single-ditched enclosure (36 m. across) traced amid the remains of a Roman olive yard. The crop-mark of a central feature shows clearly and is unlikely to be Roman in origin. Atypically, it is not an internal compound and may be a pit. The site itself belongs to a group characteristic of the area and is closely paralleled by the site below.

28: ref. 359977; figs. 15 and 16; pl. VIIb

Masseria Villano II: a single-ditched enclosure 89 m. across, appearing as a crop-mark of great clarity beneath the remains of a Roman farm belonging to the Lucera centuriation grid. The site was partially excavated by Bradford in the fifties, but the prehistoric levels were not reached.

29: ref. 355976; figs. 15 and 16; pl. VIIb

Masseria Villano III: a medium-sized site containing closely packed compounds inside a double-ditched circuit with no concentric corral. The eastern side of the site is never shown under revealing crop conditions, but the whole complex appears to be *c.* 280 m. across with an average gap of 12 m. between the ditches. The majority of the compounds in the interior appear to face due north.

30: ref. 362965; fig. 15; pl. VIIIa

Masseria Villano IV: another single-ditched enclosure revealed beneath the vestiges of a Roman ditched enclosure and vineyard. It belongs to the group characteristic of the area.

31: ref. 354950; fig. 15; pl. VIIIb

Posta di Colle: a medium-sized settlement, set like its neighbour in the middle of the Lucera shelf that rises gradually to the modern town. The area was used as an aerodrome *c.* 1943–5, and extensively photographed as a result. The site measures *c.* 230 m. across E–W and the regularly spaced pair of ditches lie on average 8.5 m. apart. There is a hint on the northern side, where the crop conditions are not revealing, that a single ditch marked the inner circuit and a double the external corral. The thirteen visible compounds all face south-west.

32: ref. 350958; fig. 15

Masseria Rizza: the aerial cover taken while the aerodrome in the area was being expanded indicates that a large site existed at this point NNE of Posta di Colle. Only a general indication of the settlement area is traceable from the aerial cover.

33: ref. 320963; fig. 15

Masseria Saccone: nearer to Lucera than the above sites the density of modern cultivation intensifies, and this site immediately east of Masseria Saccone is almost the only prehistoric site located in the area. It is a single-ditched enclosure with an E–W diameter of 120 m.

34: ref. 314948; fig. 15

Masseria Seggiocurati: the area of the present masseria of Il Seggio marks the site of a medieval earthwork that was probably the Angevin siege camp in the assault on Lucera Castle, and also an

Allied supply dump in 1945. Much of the zone is therefore obscured, but six internal compounds 200 m. east of the masseria testify to the existence of a prehistoric site. There are no definite traces of the associated perimeter ditch.

Map Sheet: *Borgo S. Giusto*, 163.II.NE

35: ref. 342930; fig. 17; pl. IXb

Masseria Martelli I: this is an important settlement much obscured by olive groves and vineyards on the edge of the southward-facing scarp overlooking the broad Vulgano valley. The site, 200 m. west of the present masseria, does not conform to the normal patterns familiar in the Tavoliere, and some of the detailed crop-marks are confused by centuriation features from the Roman period. In plan the settlement is a semicircle, the diameter of which is formed by the straight line of the southern side running along the scarp edge. Within this general plan there are three separate, single-ditched enclosures. The internal one measures 258 m. across in diameter by 163 m. It contains five very large compounds, four of which face inland to the centre of the enclosure. Along the northern edge there are six further compounds of smaller size and positioned at a variety of angles.

The intermediate enclosure is c. 312 m. across E – W by 213 m. The outer enclosure is best seen in the south-western corner as it swings towards the Lucera – Foggia road. The space between the inner and the intermediate circuits contains five further compounds.

36: ref. 340929; fig. 17

Masseria Martelli II: a single-ditched enclosure immediately east of the present farm. The E – W diameter is c. 76 m. There are at least six internal compounds, all of which face south-west towards the scarp edge.

37: ref. 345928; fig. 17

Masseria Spada I: a site lies c. 500 m. due east of Masseria Martelli on the south-western edge of the olive yards of Masseria Spada. The enclosure is of the single-ditched variety with a diameter of c. 56 m. Modern cultivation obscures further details, but there is a hint of a small compound to the north.

38: ref. 353929; fig. 17

Masseria Spada II: the traces of the second site in the area comprise the remains of a double-ditched enclosure with an approximate maximum diameter of 175 m. The two ditches are separated by varying distances up to 9 m. The visible compounds occur in the north-eastern corner of the site, but the evidence has been heavily damaged by modern cultivation.

39: ref. 395921; fig. 17; pl. X

Masseria Fragella: one of the major prehistoric settlements in the Tavoliere. It lies on the ridge of slightly elevated ground 0.5 km. west of the Vulgano, and the core of the site is roughly marked by the present intersection of the SS 17 with the N – S road linking the various agricultural reform schemes to either side of the main road. The layout of the enclosures follows the basic pattern visible at sites **19** and **20**, with a major inner enclosure set within a very large outer ditch circuit. The inner enclosure in this case has a triple, rather than a double, ditch and an E – W diameter of c. 280 m. overall. The outer circuit, too, is unusual in that its double ditch starts from the north-western corner of the inner enclosure rather than circling the latter independently as at sites **19** and **20**. In the northern and eastern sections the outer circuit runs c. 140 m. outside the inner, and then continues due south to create an enormous outer enclosure measuring c. 840 m. N – S. The E – W width cannot

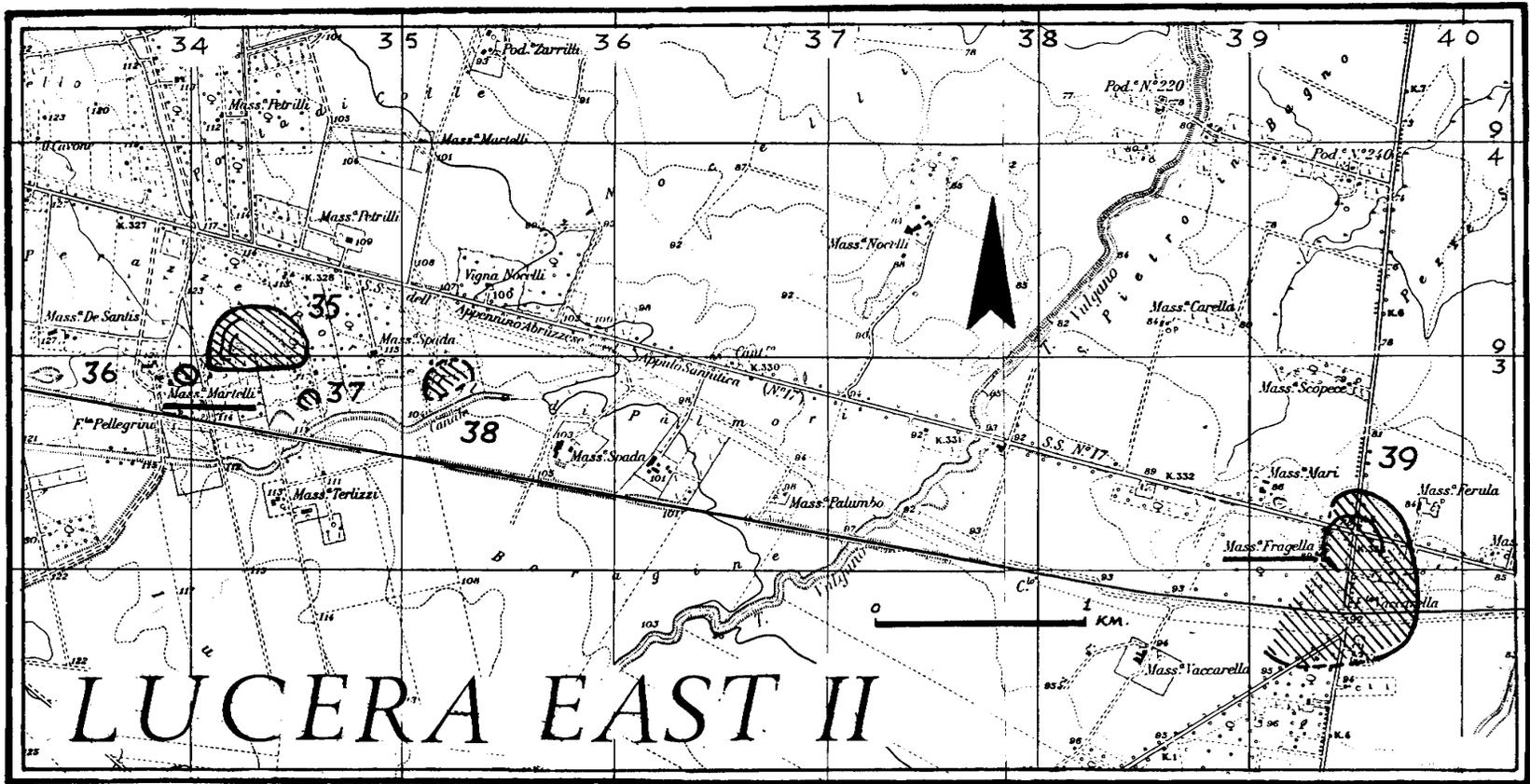


FIG. 17. Lucera East: Area II (1:33,333)

be given accurately because the western perimeter is obscured. Some of the details of the outer area can, however, be seen south of the Foggia – Lucera railway, where many compounds are particularly well shown as weed growths at certain seasons of the year (pl. Xb). Most compounds face in a westerly or north-westerly direction.

See also nos. **241** – **3**, p. 220.

III. *Borgo S. Giusto* (fig. 18; pls. XI – XII)

The area here termed Borgo S. Giusto takes its name from the new village created by the land-reform authorities on the northern bank of the T. Celone along a new road running south-east from Lucera to the Troia – Foggia main road. Topographically the zone is formed by a ridge (roughly 3 km. wide) running along a SW – NE axis between the T. Vulgano and the T. Celone. Viewed in section the ridge slopes up from the Celone to a steep scarp overlooking the broad valley of the Vulgano. Of the six prehistoric sites identified in the area, four, as one might expect, lie along this steep crest. The fifth (**44**) was located in the centre of the ridge and the sixth (**45**) on slightly elevated ground close to the northern bank of the Celone.

Map Sheet: *Borgo S. Giusto*, 163.II.NE

40: ref. 352897; fig. 18; pl. XIIa

Masseria S. Marcello: one of the two major settlements on the Borgo S. Giusto ridge. It lies on the tip of the steep scarp immediately south of the masseria. The importance of the site is clear when seen from the air. Of all the examples in the Tavoliere this best exemplifies the development and expansion of a prehistoric village (see plan).

The small, circular enclosure A, whose maximum diameter is 64 m., appears to form the original settlement; alternatively it may have been an independent feature within enclosure C. When it became too small for the inhabitants, or at a later date when it had ceased to be occupied, a second enclosure, B, was built immediately to the west; it is roughly oval in shape, measuring 111 m. in width by 146 m. in length. To judge from the aerial photographs showing the ditch-junction it was contemporary and integral with a large subrectangular enclosure, C (cf. site **26**), which included enclosure A and measures 169 m. in width from north to south. The southern half of the area contains many small compounds. The enclosure was further expanded by the creation of an even larger annexe, D, running from the north-eastern corner of B. This annexe brings the maximum N – S width of the group of enclosures to 325 m. To this must be added a single-ditched arm creating an open-ended annexe at the northern tip of the site; its exact purpose is not clarified by the air photographs.

The site is ripe for excavation. Of all the prehistoric villages on the Tavoliere this offers the best example of a settlement where the original nucleus was expanded by a series of annexes. The process must have taken a considerable time and the excavation of the various ditches could well produce an important pottery sequence.

41: ref. 356900; fig. 18

Masseria Santoro: a small, single-ditched enclosure on the scarp edge 200 m. south-west of the masseria. It measures 91 m. across.

42: ref. 332894; fig. 18

Santa Caterina-Tortorella: a large, double-ditched village on the edge of the northward-facing scarp between Masseria di Maggio and Santa Caterina-Tortorella. There appears to have been no development of the site. Its E – W diameter is in the region of 325 m. The two ditches lie between 8 m. and 14 m. apart.

43: ref. 364902; fig. 18

Masseria Lo Re: a medium-sized, single-ditched enclosure (c. 320 m. in length) lying a little way south of the scarp edge between Masseria Lo Re and Masseria Santoro.

44: ref. 335882; fig. 18; pl. XIIIb

Casella Anticaglia: a site bisected by the present road and overlaid by the intersection of two centuriation roads. A small circular nucleus (74 m. in diameter) lies enclosed within the south-western section of a larger, oval enclosure whose maximum width is 207 m.

45: ref. 359878; fig. 18

Vaccarella – S. Domenico: a small circular enclosure on a slight rise overlooking the northern bank of the T. Celone. Diameter 71 m.

See also nos. **244 – 5**, pp. 220 – 1.

IV. *Troia East* (figs. 19 – 20; pls. XIII – XV)

A total of seventeen sites clustered along the south bank of the T. Celone forms one of the most coherent and self-contained groups known from the aerial cover of the Tavoliere. The present town of Troia sits in a commanding position at the top of a ridge that shelves gently down towards Foggia. The southern edge of the Celone valley opposite the Borgo S. Giusto area is marked by a scarp-edge that reaches considerable proportions in the Bivio S. Giusto area. For 8 km. east of that area a dense concentration of sites has been located running east-north-east towards the junction of the Troia road with the main SS 90 linking Foggia with Campania. The major sites (**46**, **49** and **50**) occur in the area of Masseria S. Cecilia, where there is also evidence of a large medieval settlement. The S. Cecilia site itself sets the pattern repeated in the Schifata and Palmori (p. 45) settlements. The sites along the ridge to the east (**54**, **55**, **56**, **63**, **64** and **59**) tend to be smaller in size and perched on the actual edge of the scarp. Five, however, lie some way behind the scarp edge (**57**, **58**, **60**, **61** and **62**), two actually occupying a small scarp overlooking a seasonal watercourse immediately south of the Troia – Foggia road.

Map Sheet: *Foggia*, 164.III.NO

46: ref. 396873; fig. 19; pl. XIVa

Panetteria di Barone I: the settlement lies north of Masseria S. Cecilia on the Troia – Foggia road and is somewhat set back from the edge of the scarp on the south side of the Celone valley. In shape the site is oval with a single-ditched circuit, measuring 363 m. E – W by c. 285 m. N – S. There are at least ten internal compounds, of which the majority face in a north-westerly direction. The area has been heavily developed agriculturally in recent years.

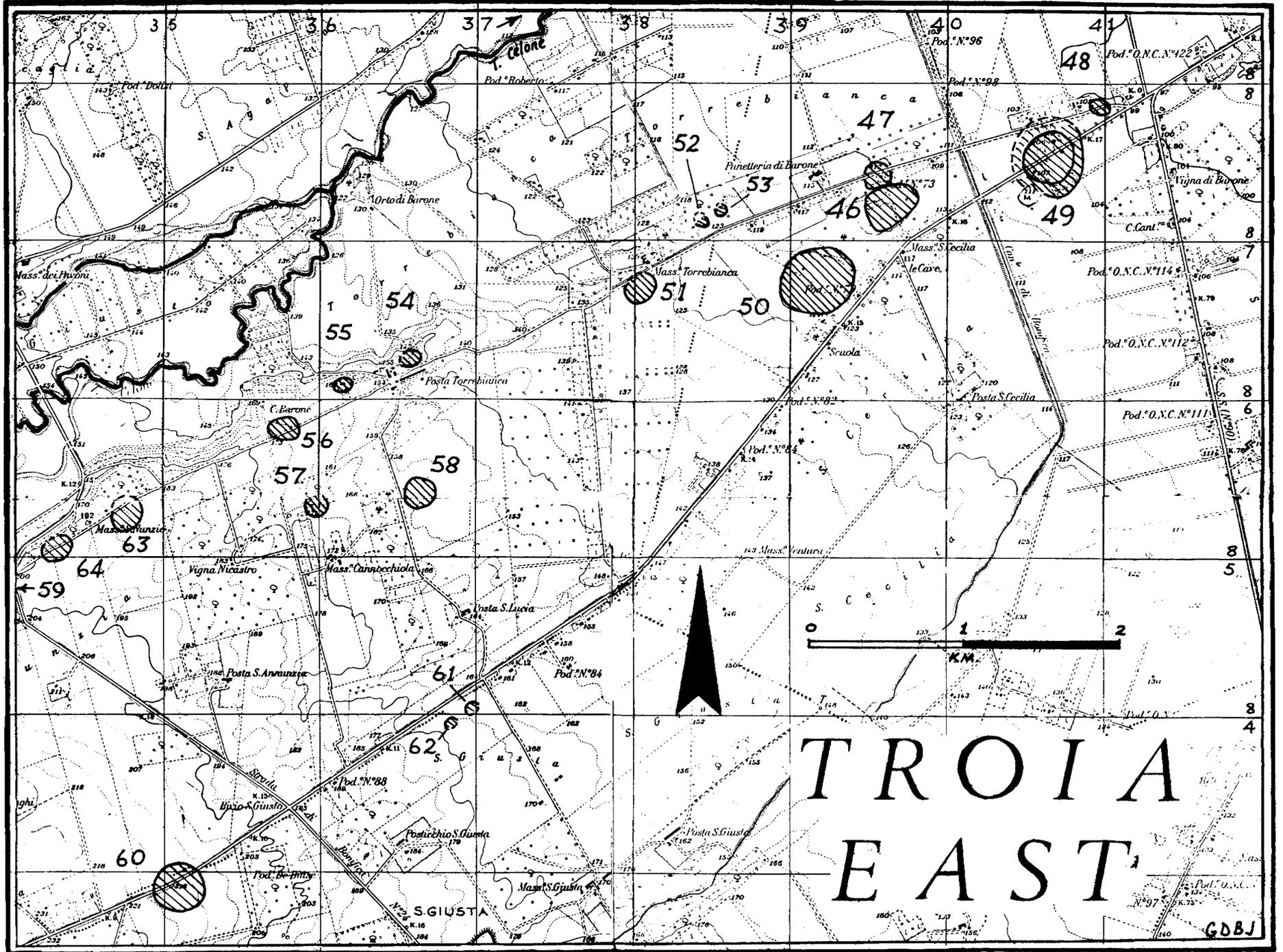


FIG. 19. Troia East: location map (1:33,333)

47: ref. 396876; fig. 19; pl. XIVa

Panetteria di Barone II: this smaller settlement lies on the northern side of the previous site and is bisected by the track to Panetteria di Barone. The crop-marks indicate an inner compound formed by a single ditch and an outer single-ditched corral. One large compound faces north-west in the inner enclosure and there is a suggestion of two or three compounds in the outer one. The E – W dimension of the smaller unit is *c.* 78 m., that of the outer 187 m. by *c.* 148 m. N – S.

48: ref. 409878; fig. 19

S. Cecilia I: north of the Foggia – Troia road and bisected by the scarp-edge track to Panetteria di Barone are traces of a double-ditched enclosure. Only the half south of the track survives in any detail. The distance between the ditches is *c.* 32 m. on the western side, *c.* 43 m. on the south. The overall width E – W is approximately 141 m.

49: ref. 407875; figs. 19 and 20; pl. XIVb

S. Cecilia II: a major site bisected by the Troia – Foggia road. It consists of an inner double-ditched enclosure with another double-ditched circuit following a concentric line. The outer circuit has certainly two ditches and traces of a third on the north-west side. The south-western corner of the outer corral is overlaid by a large medieval earthwork. The inner enclosure contains upwards of ten compounds, and there appear to be further compounds in the outer enclosure as well.

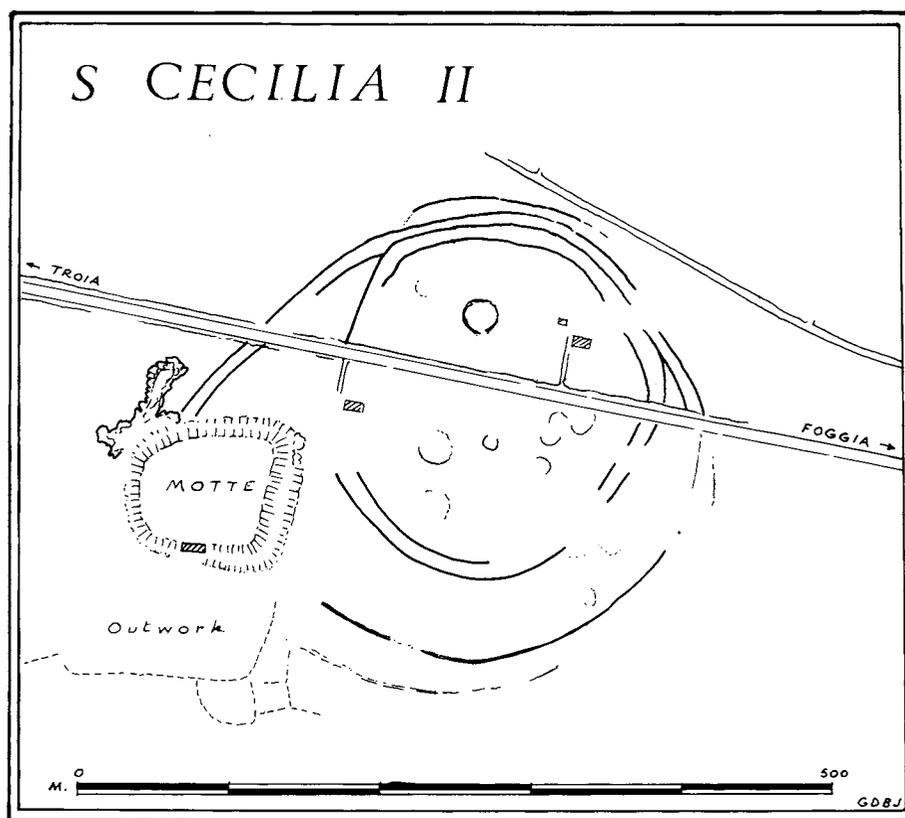


FIG. 20. S. Cecilia II (1:5,000)

It is not possible to calculate an accurate dimension for the outer circuit, since the relevant crop-marks are obscured by present surface features. The inner enclosure is approximately 199 m. across with ditches 32 m. apart. The outer ditches are separated by *c.* 27 m.

50: ref. 392868; fig. 19; pl. XVa

Masseria S. Cecilia: a large single-ditched enclosure set back from the scarp edge like **46**, and bordered on the southern side by the Troia – Foggia road. The enclosure contains upwards of twenty-five compounds, all appearing to face north or north-west. The shape of the site is a rough oval, *c.* 520 m. E – W and *c.* 390 m. N – S. There are possible traces of a second ditch on the north-western side.

51: ref. 380868; fig. 19

Masseria Torrebianca I: a medium – small site immediately south of the modern masseria. The enclosure has an overall width of *c.* 192 m., with two ditches varying from *c.* 15 m. to *c.* 47 m. apart. The traces of internal compounds are imprecise.

52: ref. 385871; fig. 19; pl. XVb

Masseria Torrebianca II: a small enclosure 79 m. across perched on the scarp edge north-east of the masseria. Like **53**, the northern face of the site has been eroded. No trace of internal compounds appears.

53: ref. 386872; fig. 19; pl. XVb

Masseria Torrebianca III: alongside site **52**, this small (192 m.) enclosure sat on the edge of the scarp north-east of the masseria. It contained at least four internal compounds.

Map Sheet: *Borgo S. Giusto*, 163.II.NE

54: ref. 366863; fig. 19

Posta Torrebianca I: an eroded enclosure on the scarp edge immediately east of the present farm. A single-ditched inner enclosure contains three certain compounds. The outer double-ditched enclosure measures in excess of 130 m. E – W, with the ditches *c.* 5 m. apart. The distance between outer and inner circuits is *c.* 33 m.

55: ref. 362861; fig. 19

Posta Torrebianca II: a settlement on the scarp edge following the pattern of the above site. A single-ditched inner enclosure (with a maximum E – W measurement of 50 m.) can be traced inside an oval corral reaching a maximum width of 88 m.

56: ref. 358858; fig. 19

Posta Torrebianca III: a third scarp-edge site close to the present farm. It follows the twin-unit pattern of the two above sites. The inner nucleus measures 143 m. across and contains traces of compounds on the northern side. The overall measurement for the outer circuit is *c.* 260 m.

Map Sheet: *Tavernazza*, 163.II.SE

57: ref. 360853; fig. 19

Masseria Cannocchiola I: a single-ditched settlement over 150 m. across E – W. The site only appears on high-level cover and no internal details are visible.

58: ref. 367853; fig. 19

Masseria Cannocchiola II: the eastern of two sites associated with the present farm. It consists of a single-ditched circuit over 200 m. across, with no internal details visible.

59: ref. 330846; fig. 19

Coppa d'Annunzio: a small single-ditched enclosure set on a prominent bluff north-east of Castellaccio. No internal details are visible on the high-level cover. The maximum width is approximately 143 m.

60: ref. 351829; fig. 19

Masseria Caracchiola: a single-ditched enclosure bisected by the main Troia – Foggia road. The site is a large one with an almost circular shape measuring 328 m. E – W. There is little trace of internal details, but there is a suggestion of a large compound on the western side.

61: ref. 370841; fig. 19

S. Giusta I: an elongated enclosure alongside the line of what was once a watercourse immediately south of the Troia – Foggia road. It measures 177 m. E – W by 60 m. N – S.

62: ref. 368838; fig. 19

S. Giusta II: a similar elongated enclosure south-west of **61**. It measures *c.* 160 m. by approximately 90 m. deep. No internal features are visible.

63: ref. 348852; fig. 19

Masseria S. Nunzio I: a medium-sized enclosure at the northern end of Vigna Nicastro. The overall measurement NE – SW is *c.* 285 m. The ditch circuit is only visible on the south side of the present scarp-edge track.

64: ref. 343851; fig. 19

Masseria S. Nunzio II: a two-unit enclosure on the scarp edge. The single-ditched inner enclosure measures 235 m. across E – W with at least five internal compounds. The concentric outer corral is single-ditched with an E – W dimension of *c.* 330 m.

V. Borgo Segezia (fig. 21)

The area known as Borgo Segezia for the purposes of this report lies south and south-east of Borgo Segezia as far as the T. Cervaro. The principal feature of the area is the steep scarp running south-west to north-east along the northern side of the valley. This was the main focus of Neolithic settlement. Two sites (**66** and **67**) lie close to Masseria P. Albanito and a third at the foot of the ridge near Masseria Biasotta (**65**). Away from the valley, prehistoric settlement was rare and, in fact, only one site (**68**) was located in the whole of the region. None of the sites in this area is of exceptional interest. The Masseria Biasotta settlement (**65**) shows a two-stage development; the other three settlements are all single-ditched enclosures.

Map Sheet: *Borgo Segezia*, 164.III.SO

65: ref. 473805; fig. 21

Masseria Biasotta, E: one of the best examples of a settlement where a small, single-ditched nucleus (70 m. wide) lies within a larger, and presumably later, enclosure. The latter also consists of a single

ditch, and its diameter is 300 m. Material from this site included burnished wares and chert implements. An interesting point was that the proximity of the Cervaro river bed (and perhaps a shortage of chert) had promoted the use of split river pebbles as scraping and cutting implements in place of flints.

66: ref. 433782; fig. 21

Masseria P. Albanito I: a large, single-ditched enclosure occupying the scarp-edge immediately east of the farm buildings. Diameter 600 m. No pottery was found during May 1963.

67: ref. 424777; fig. 21

Masseria P. Albanito II: a smaller, single-ditched enclosure occupying the edge of the scarp half a kilometre west of the farm. Diameter 400 m. Part of the ditch runs beside the course of the Via Traiana, and the interior of the site is overlaid by the junction of two centuriation grid roads.

68: ref. 414804; fig. 21

Ovile Nazionale, S.: an elongated oval settlement set in open bush country 1 km. east of the Foggia – Napoli road (SS 90). It is bounded by a single ditch and measures 290 m. by 210 m. It exemplifies the simplest of all prehistoric settlements, having only one period of occupation and apparently lacking internal compounds (see p. 34 above).

VI. *Ordonia West* (figs. 22 – 4; pls. XVI – XVIIa)

The south-western corner of the Tavoliere does not produce such startling crop-marks as those to the north. Nonetheless, there are important sites on the broad shelf of land later traversed by the line of the Via Traiana between Troia and Ordonia, *Aecae* and *Herdoniae* in the classical period. The Neolithic sites in question lie across the valley of the Carapelle west of Ordonia and the changing quality of the subsoil combines with a lack of low-level cover to reduce the amount of detailed evidence available. Certainly more settlements must have existed in the area.

Two medium – small sites (**69** and **70**) lie close to Masseria Nannarone across the valley from Ordonia. The two most important sites from the Neolithic standpoint lie to the south and north of this point. The southern example is found at Masseria Bongo (**71**), overlooking the western scarp of the Carapelle valley, in contrast with the two previous sites that lie on the actual scarp edge. Masseria Bongo marks the site of a treble-ditched enclosure over 700 m. in length, with a multiplicity of internal compounds. The northern example at Masseria La Quercia (**72**) is a very important settlement, because it was the scene of extensive excavations by Bradford. No less than eight ditches can be seen to surround the site, in two sets of four. To the west of this area near Castelluccio dei Sauri, but included in the present zone for convenience of reference, lies the site of La Lamia, the only settlement in the Tavoliere that does not appear to have a ditch system surrounding the compounds; this is quite clearly shown by aerial cover of excellent quality that gives no hint of any circuit system enclosing a collection of compounds that have clearly gone through a complex development. It seems clear that part at least of the explanation for the nature of the site must relate to its westerly position at the debouchment of one of the main west – east routes across the Apennines.

Map Sheet: *Ortona*, 175.IV.NE

69: ref. 494744; fig. 22

Masseria d'Azzara I: a small, single-ditched enclosure on the eastern edge of the Nannarone shelf overlooking the valley of the T. Carapelle south of the Ponte Rotto. No internal features are visible and the site appears to have been *c.* 170 m. in diameter.

70: ref. 489739; fig. 22

Masseria d'Azzara II: a small settlement lying on a terminal spur of the Nannarone ridge, immediately south-east of the masseria. It was enclosed by twin ditches and appears to have had a total diameter of *c.* 210 m.

Map Sheet: *Castelluccio de' Sauri*, 175.IV.NO

71: ref. 463715; fig. 22; pl. XVIa

Masseria Bongo: a major enclosure occupying a position reminiscent of a hillfort on a spur south-east of Masseria Bongo. It is of elongated shape with maximum dimensions of *c.* 450 m. by 210 m. and lies along a NE – SW axis. The triple ditches enclosing the site lie close (15 – 20 m.) together and probably all belong to the same period of construction. There are imprecise traces of internal ditched compounds but the extremely floury nature of the subsoil in this area does not lend detail (cf. p. 33) to air photographs of the site.

Map Sheet: *Borgo Segezia*, 164.III.SO

72: ref. 483767; fig. 22; pl. XVIb

Masseria La Quercia: a very interesting site perched on the edge of the scarp immediately south of the large masseria. The settlement has the largest number of ditches associated with any Neolithic village in the Tavoliere, namely eight, arranged in two groups of four. The semicircular interior contained by the inner ditch ring measures 384 m. in diameter. The four inner ditches span a total width of 62 m., the ditches being very symmetrically placed. Then a gap of *c.* 118 m. occurs between the inner and the outer ring of ditches. The outer four span a total width of *c.* 49 m. but are less regularly laid out than the inner ring. This brings the total diameter of the site to approximately 730 m. As at the Masseria Bongo (site **71** above), the subsoil is too floury to produce precise crop-marks, but traces of internal compounds appear to be limited to the inner enclosure. The settlement was the scene of the excavations described on pp. 130 – 1.

Map Sheet: *Bovino*, 174.I.NE

73: ref. 373719; figs. 23 and 24; pl. XVIIa

Masseria La Lamia: a remarkable group of Neolithic ditched compounds immediately south of the large modern masseria. The site lies at a strategic point at the foot of the Bovino gap where the valley of the Cervaro offers a low watershed into Campania along the upper Calore valley. The actual position of the settlement lies at the end of a long ridge running north-east, parallel with the line of

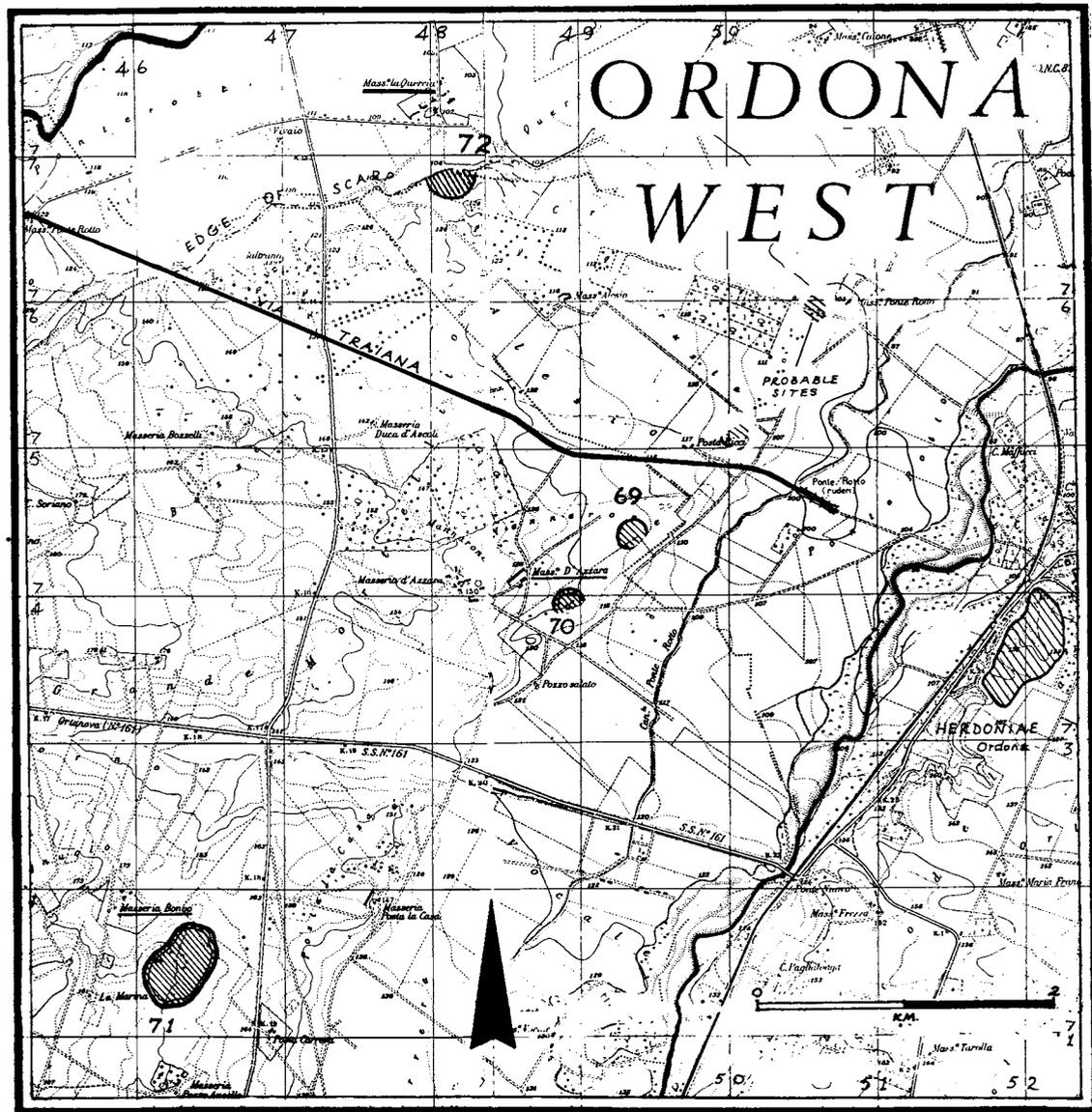


FIG. 22. Ortona West: location map (1:50,000)

the Cervaro valley. It commands sweeping views eastwards across a broad arc from Troia to Ascoli Satriano.

The site is unique in being the only settlement located in the Tavoliere that was not surrounded by enclosure ditches. Any interpretation of this must take into account the fact that Masseria La Lamia is the westernmost of all the Neolithic sites described in this report. Its position at the foot of the Apennines makes it tempting to suggest that the site represents a stopping-place during transhumance between mountain and plain.

Fragments of at least twenty-one ditched compounds are visible. They hardly need detailed

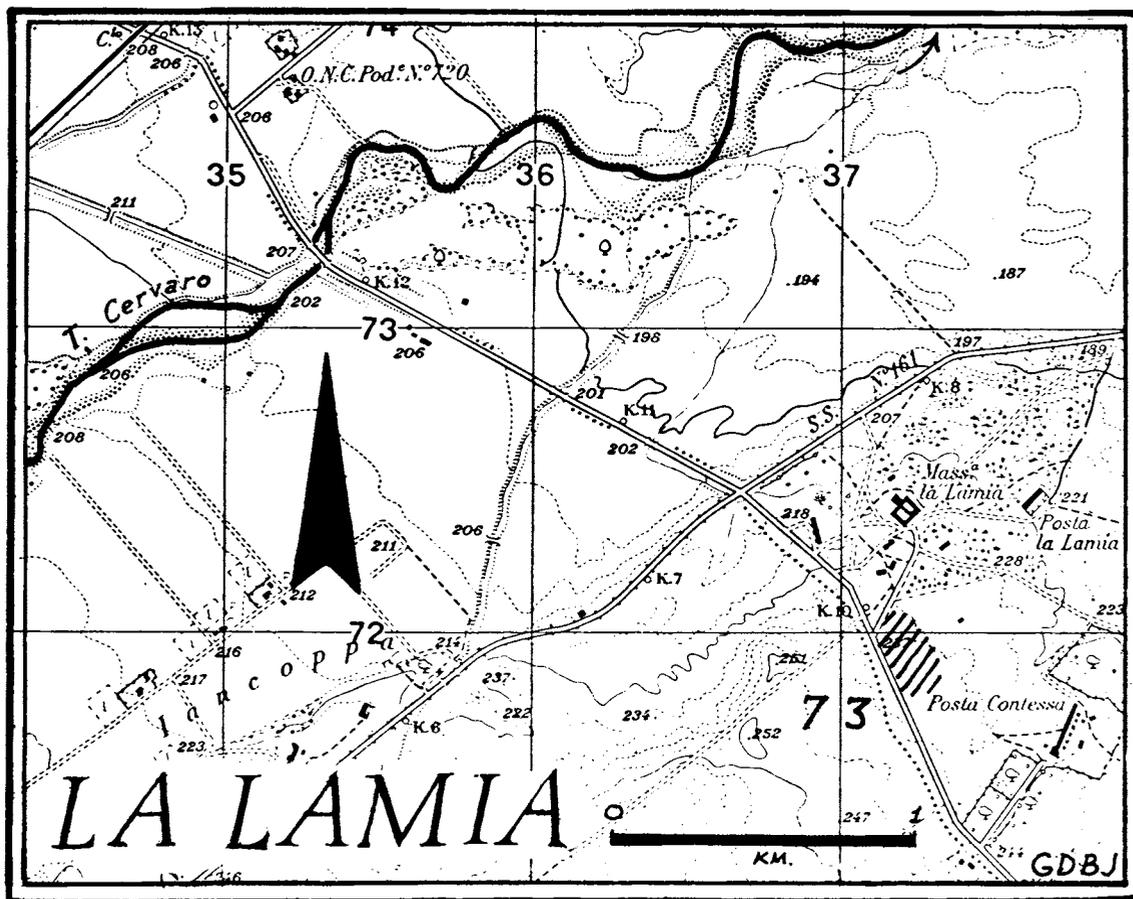


FIG. 23. Lamia: location map (1:25,000)

description here because they appear with great clarity in pl. XVIIa, on which the plan (fig. 24) is based. Several of the compounds show alterations implying extended use. Plain burnished wares were collected on the site.

Two further settlements can probably be identified north of P. Rotto at 501751 and 506759 respectively between Posta Ricci and Masseria P. Rotto. The quality of the aerial cover does not allow certainty over the identification. See also nos. 246 - 9, p. 221.

VII. *Orta Nova* (figs. 25 - 7)

It is to be regretted that the collection of photographs on which this work is based contains no cover of the Ortona area and the zone immediately to the east (fig. 25). Recent cover taken for Italian archaeological authorities was flown in winter and serves largely to emphasize the enormous agricultural changes that have overtaken the area since 1945. The first zone to the east where adequate cover occurs lies south of the town of Orta Nova to east

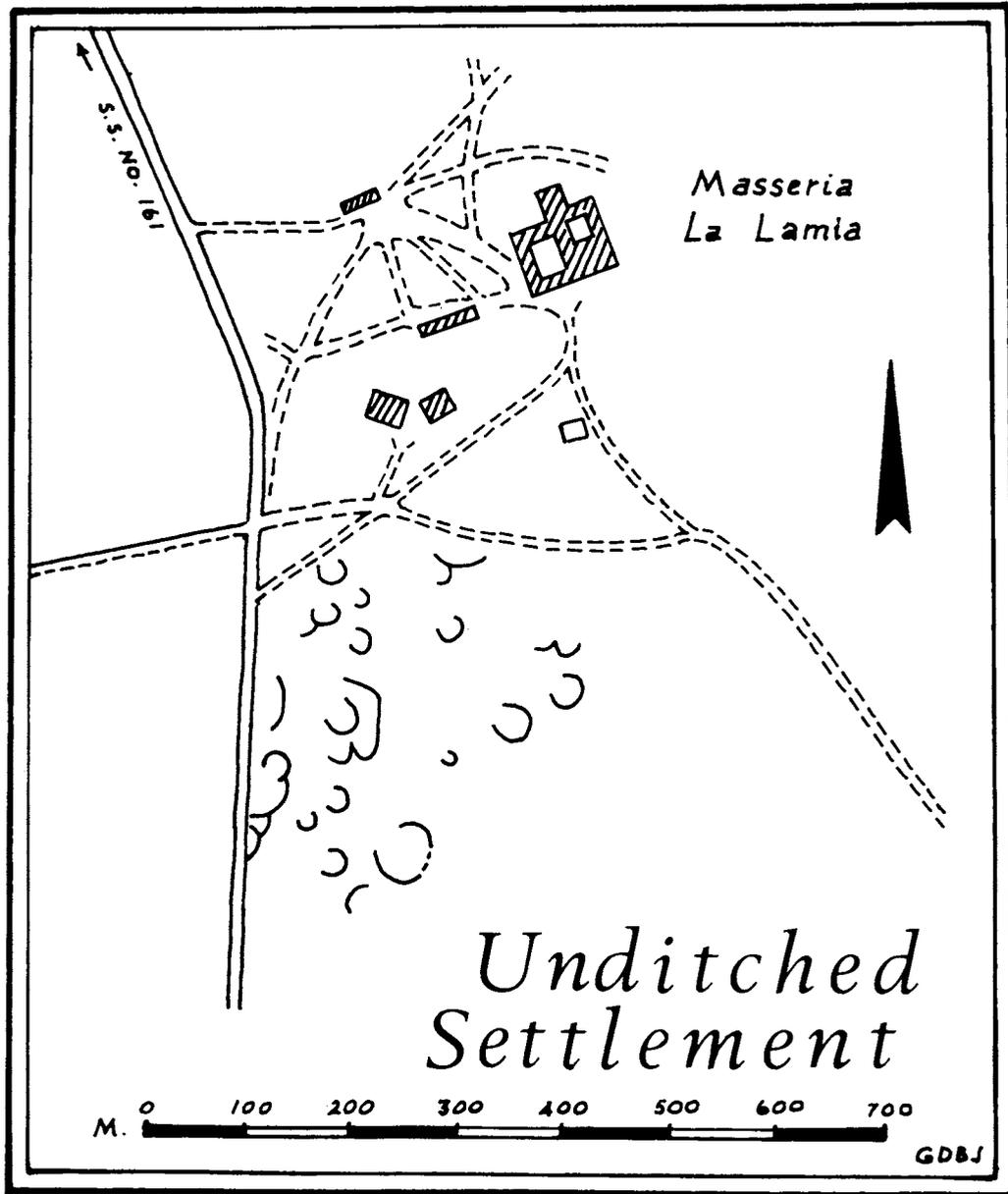


FIG. 24. La Lamia: plan (1:7,000)

and west of the Canale Ponticello in an area later bisected by the Via Traiana running east from Ortona close to Masseria Durando. To either side of the Canale slight eminences mark the sites of settlements (74 – 80). They seem to be characterized by the fact that their internal compounds, where visible, all face in a south-westerly direction and that several (74, 75 and 76) contain an exceptionally large compound in the centre. The eastern side of the

zone was densely settled in the prehistoric period, but the dense olive groves that now cover the area make it difficult to appreciate the slight rises in ground height that explain the position of each individual site. The main group (**87 – 92**) lies alongside the Orta Nova – Stornarella road 2 km. south of the town. The settlements are of considerable interest, particularly **89** and **92**, but are in all cases partly obscured by olive groves and vineyards.

Map Sheet: *Ortona*, 175.IV.NE

74: ref. 578725; figs. 25 and 26

Masseria Durando I: a slight eminence on the western bank of the Canale Ponticello 3 km. SSW of Orta Nova is the location of two sites. This, the northern settlement, is almost circular in shape and measures *c.* 190 m. E – W. The two perimeter ditches lie approximately 30 m. apart. Modern ploughing has obscured much of the detail, but it is clear that an abnormally large compound dominates the centre of the site. Its entrance lies to the south, the side on which traces of other, far smaller enclosures can be discerned.

75: ref. 578723; fig. 26

Masseria Durando II: the southern site occupying the elongated ridge west of the Canale Ponticello is ill-defined. The western side cannot be traced with accuracy from the air, but the overall dimensions would appear to be *c.* 220 m. N – S by *c.* 140 m. E – W. At least half a dozen medium – small compounds can be seen in the interior, all their entrances pointing in a south-westerly direction. Again there appears to be one predominantly large compound, in this instance to the south centre of the site. There may be a third site to the south of the present example; the quality of the air cover does not allow certainty on the point.

76: ref. 569695; fig. 26

Rio Morto: an oval, single-ditched compound perched on a bluff commanding the eastern edge of the Marana S. Spirito (=Canale Ponticello). The E – W dimension is approximately 110 m. There appears to be a small, paddock-like enclosure attached to the south side. The internal compounds face in a south-westerly direction, with one compound apparently being considerably larger than the rest. There are also traces of several external compounds on the northern side.

77: ref. 581707; fig. 26

Masseria Rio Morto I: the southernmost of three closely grouped sites on the shelf of Rio Morto overlooking the east bank of the Canale Ponticello. The width across the double-ditched perimeter is *c.* 160 m. E – W, while the outer ditch on the western side is somewhat irregular in relation to the overall plan. The internal compounds all appear to face west or south-west. At least eight further compounds are visible to the south of the perimeter. The quality of the aerial cover available makes it impossible to determine whether these belong to another site or to the present example.

78: ref. 582708; fig. 26

Masseria Rio Morto II: the middle site in the series in an equivalent position to **77**. In shape it forms an elongated oval *c.* 170 m. long measured N – S. No internal details visible.

79: ref. 582710; fig. 26

Masseria Rio Morto III: the northernmost site of the three appears to be triangular in shape (to make full use of a small projecting spur) with a N – S measurement of *c.* 110 m. No internal details visible.

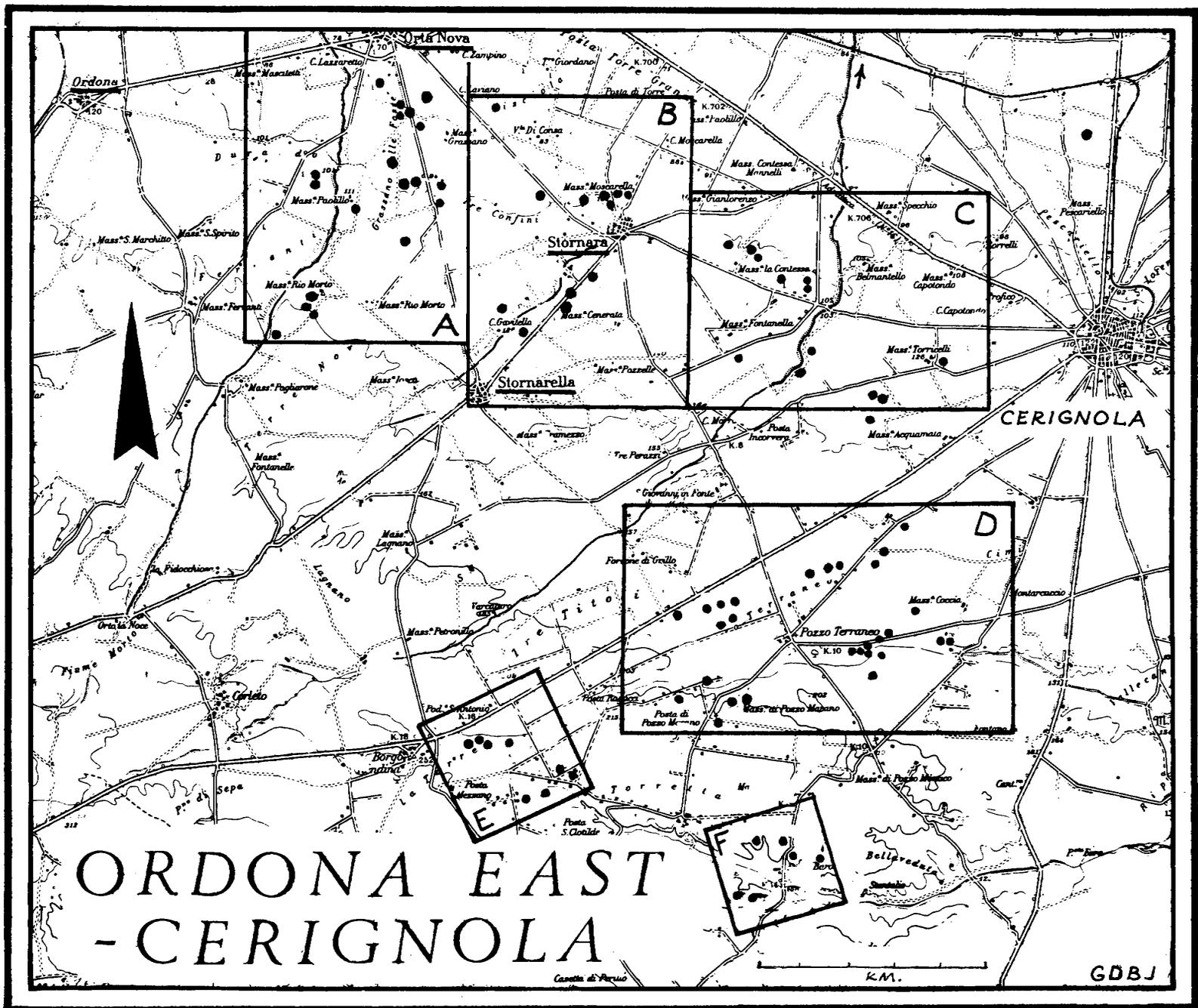


FIG. 25. Ortona - Cerignola: general location map (1:125,000)

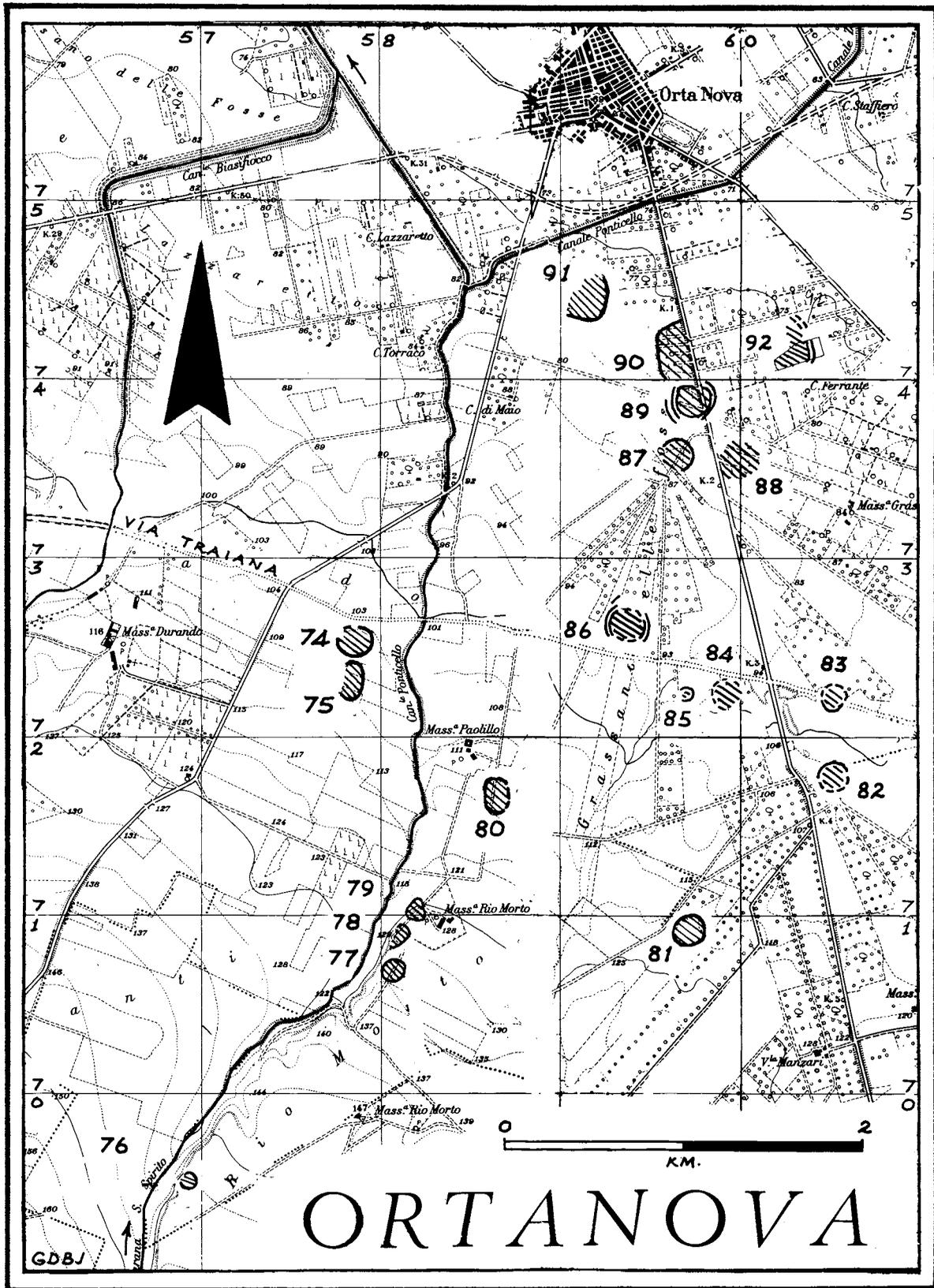


FIG. 26. Orta Nova: location map (1:33,333)

80: ref. 586717; fig. 26

Masseria Paolillo: stretches of the perimeter ditch marking a site 200 m. south-east of the masseria are all that is visible of a substantial site probably approaching 210 m. in length.

81: ref. 597709; fig. 26

Villa Manzari: 800 m. north-west of the villa a ridge of slightly elevated ground marks the site of a large settlement, the perimeter ditch of which is mainly visible on the north-western side. Owing to modern ploughing the rough diameter can only be estimated at *c.* 180 m.

82: ref. 604717; fig. 26

Tre Confini I: 150 m. east of the Orta Nova – Stornarella road lies the site of a prehistoric settlement partly obscured by Roman centuriation and partly by modern vineyards. The E – W diameter of the single-ditched enclosure reaches approximately 180 m. There are traces of a large internal compound forming the centre of the site as it appears in terms of crop-marks. Otherwise no internal details survive.

83: ref. 605723; fig. 26

Tre Confini II: the southern perimeter of a single-ditched site appears on the southern edge of the present *tratturo* that marks the line of the Roman Via Traiana running due east from *Herdoniae* (Ortona). The northern half of the site is completely lost in modern vineyards.

84: ref. 599722; figs. 26 and 27

Grassano I: on the southern side of the modern *tratturo* representing the Via Traiana a group of compounds appearing as crop-marks clearly indicate the existence of an extensive site. The circuit ditch, however, is not in evidence and no other details appear.

85: ref. 597722; figs. 26 and 27

Grassano II: there are indications of a small, oval single-ditched enclosure immediately west of **84**. Its E – W dimensions are *c.* 80 m. and no internal details appear beneath modern vineyards.

86: ref. 594726; figs. 26 and 27

Grassano III: beneath modern vineyards lie traces of a substantial enclosure with a double-ditched perimeter measuring *c.* 180 m. across. There are indications of an outer enclosure to the north, but all details are lost beneath vineyards.

87: ref. 597736; figs. 26 and 27

Grassano IV: the ridge of slightly elevated ground at the northern end of Grassano delle Fosse was intensively occupied by sites whose proximity demonstrates that they cannot have been contemporary. Site **87** lies to the south-west on the western side of the Orta Nova – Stornarella road. The area has been much affected by modern cultivation, but the crop-marks demonstrate the existence of a roughly circular, single-ditched enclosure *c.* 170 m. across.

88: ref. 600736; figs. 26 and 27

Grassano V: crop-marks indicate the existence of a site immediately east of the Orta Nova – Stornarella road. The settlement is in the 200 m. class, but only a general indication of perimeter ditch and compounds can be discerned beneath the intensive modern viticulture.

89: ref. 597738; figs. 26 and 27

Grassano VI: an important triple-ditched enclosure lying partly astride the Orta Nova – Stornarella road. Although much of the detail is lost in olive groves and vineyards, this is clearly a site of some considerable complexity. The inner ditch circuit (slightly under 200 m. in diameter) contains several compounds facing in a south-westerly direction. The middle ditch varies between *c.* 15 m. and 35 m.

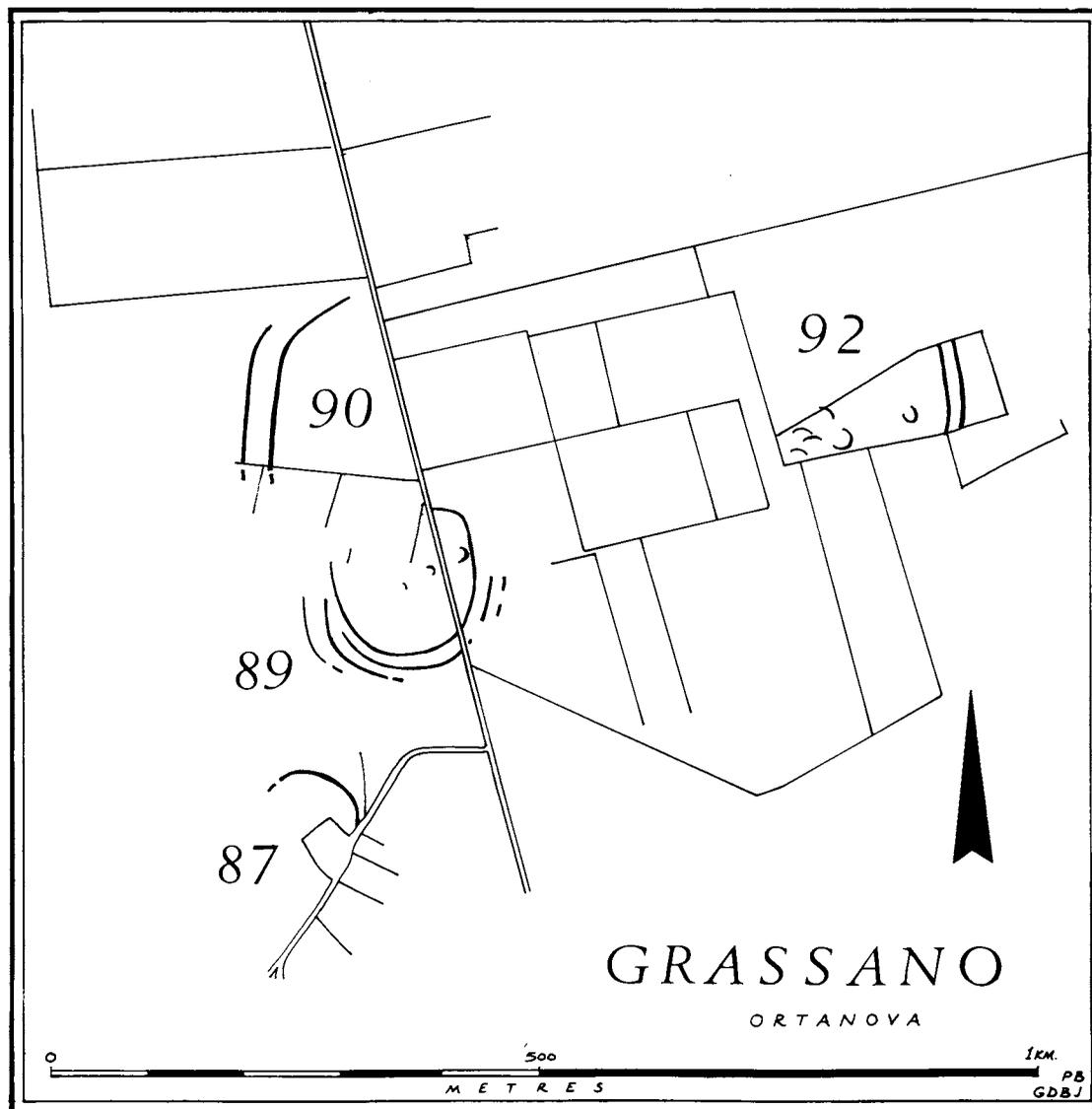


FIG. 27. Orta Nova: the Grassano complex (1:7,500)

in distance from the inner circuit. The nature of the outer ditches cannot be determined from the present evidence.

90: ref. 597742; figs. 26 and 27

Grassano VII: an even larger and presumably separate site immediately to the north of **89**, and bisected by the modern road. No information appears from the eastern side of the road and the evidence from the west is indistinct. The site appears to be over 300 m. long N – S by perhaps as much as 250 m. The western perimeter, consisting of a single ditch, has a straight section in it. No internal details are available.

91: ref. 592745; fig. 26

Canale Ponticello: the south-eastern portion of a substantial site measuring at least 220 m. E – W can be traced amidst dense olive groves 1 km. due south of Orta Nova. Indistinct traces of internal compounds survive with their entrances facing south or south-west. From the evidence available the ditch system was limited to one trench.

92: ref. 603742; fig. 26

Canale Ferrante: Olive groves and vineyards again obscure the major part of this settlement, which occurs c. 300 m. north of Canale Ferrante. A double-ditched perimeter circuit is visible in a trapezoidal area clear of modern cultivation. The ditches lie c. 40 m. apart and the outer example contains an entrance gap that is not repeated in the interior circuit. In the interior proper, westward- or south-westward-facing compounds can be traced, but the overall dimensions of this interesting site cannot be calculated. There are hints of the northern perimeter on the aerial cover but the issue is confused by traces of a Roman centuriation system in the same area.

VIII. *Stornara* (figs. 25 and 28)

The area of Stornara lies immediately to the east of Orta Nova. Like the previous zone the area is split N – S by a river valley, in this case the Marana La Pidocchiosa. The densely packed olive groves between Orta Nova and Stornara must obscure much archaeological information, not least the detailed layout of a Roman centuriation system, and only two prehistoric sites (**93** and **94**) can be located on the rather inadequate high-level cover available. To the south, however, the ground is more open and a number of sites can be located in predictable positions, such as bluffs along the eastern side of the Marana (**96** – **98**). The major agglomeration of settlement lay further north in an arc around the northern edge of Stornara and particularly near Masseria Moscarella (**99** – **104**). This group of settlements lies not merely along the edges of the Marana Pidocchiosa, but also, on a broader scale, at the upper lip of a shelf dropping north-eastwards towards the floor of the Tavoliere, nowadays roughly marked by the line of the SS Adriatica. This pattern is already evident on a much-reduced scale with sites **87** – **92** in the Orta Nova section, and becomes more pronounced, as the height of the shelf increases, in the Cerignola area to the east.

Map Sheet: *Orta Nova*, 175.I.NO

93: ref. 617737; fig. 28

Visciola: part of a single-ditched site c. 140 m. across is visible in an area of vineyards and arable north of the road linking Orta Nova and Stornara. The main nucleus of the site appears to have a paddock-like annexe on the southern side, thus conforming to one of the standard patterns of the Tavoliere settlements. All internal details are obscured either by modern cultivation or the remains of a Roman centuriation system.

94: ref. 623726; fig. 28

Tre Confini: an almost circular, single-ditched enclosure immediately south of the Orta Nova – Stornara road. Diameter c. 95 m.

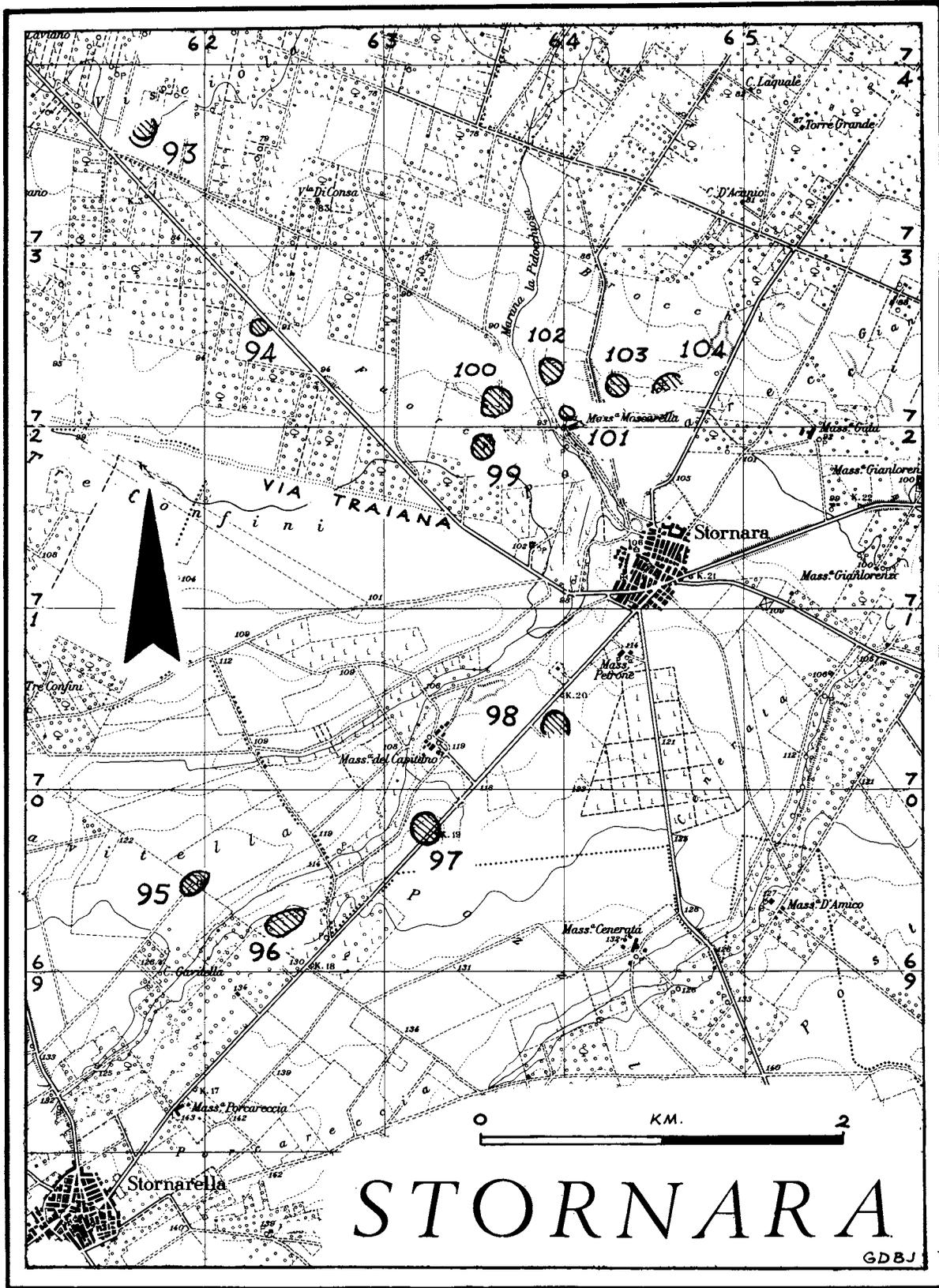


FIG. 28. Stornara: location map (1:33,333)

95: ref. 619695; fig. 28

Gavitella: an oval, single-ditched settlement on the Gavitella ridge overlooking the western edge of the Marana la Pidocchiosa. Maximum length *c.* 180 m. NE – SW.

96: ref. 625693; fig. 28

Canale Gavitella: a medium-sized oval settlement placed on a spur overlooking the eastern bank of the Marana la Pidocchiosa. The single-ditched perimeter measures *c.* 240 m. by 130 m. No further details are visible from the high-level cover available.

97: ref. 633698; fig. 28

Masseria del Capitano: a double-ditched settlement bisected by the Stornara – Stornarella road. The site is so placed as to take advantage of a projecting spur overlooking the Marana. The outer perimeter measures *c.* 170 m. in diameter, with the inner ditch set back some 30 m. Only high-level cover is available and so no details of the interior can be identified.

98: ref. 639704; fig. 28

Masseria Petrone: a faint, single-ditched site can be seen on the aerial cover immediately south of K. 20 on the Stornara – Stornarella road. The southern half of the site is lost but an approximately E – W diameter is 140 m.

99: ref. 635719; fig. 28

Fuorci I: no less than four sites lie close to the eastern scarp of the Marana la Pidocchiosa at Stornara. The lower shelf on the western bank was also settled, though to a lesser extent. This, the southern of the two sites in question, consists of a small internal enclosure *c.* 70 m. across set within a larger single-ditched compound. The settlement thus falls into one of the groups familiar on the Tavoliere (see site **65**, for instance). There are hints of either another site or an associated annexe to the south; the quality of the cover available does not allow certainty.

100: ref. 636722; fig. 28

Fuorci II: immediately to the north the second of the two sites is almost circular in shape with an E – W diameter of *c.* 110 m. Internal compounds are visible, but there are undoubtedly further complexities to the site which cannot be interpreted from the available cover.

101: ref. 640721; fig. 28

Masseria Moscarella I: the northern side of the yard associated with the farm contains the north-eastern section of a very small (*c.* 75 m.) single-ditched enclosure occupying the scarp edge.

102: ref. 639724; fig. 28

Masseria Moscarella II: 200 m. to the north compounds appearing as crop-marks indicate the presence of another, larger site. The apparently single-ditched perimeter is rather obscure for much of the circuit, but the estimated diameter is *c.* 160 m.

103: ref. 643723; fig. 28

Masseria Moscarella III: the first of two sites set back from the scarp edge lies immediately east of the service track north of the masseria. In plan it forms a double-ditched settlement approximately 120 m. across. All further details are obscured.

104: ref. 646723; fig. 28

Masseria Moscarella IV: there are faint indications of another double-ditched enclosure 200 m. to the east. Only the north-western side is recognizable, and it would be unfair to estimate the diameter.

See also no. **250**, p. 221.

IX. *Cerignola West* (figs. 25 and 29; pl. XVIIb)

The area thus designated comprises the zone west of Cerignola for which adequate aerial cover exists from 1944 to 1945. The 100 m. shelf overlooking the line of the present SS Adriatica runs due east – west across the area and is cut by the valley of the Marana Castello Superiore, which reaches a greater depth (relative to the surrounding plateau area) than any other river in the region under consideration. Six sites (**105** – **110**) lie along the western section of the shelf. Doubtless the pattern would be repeated at a similar density to the east if sufficiently detailed aerial cover were available, but this is not the case. Instead elements of another familiar pattern form sites **111** – **114** on either side of the Marana Castello, the two latter settlements taking advantage of steep, projecting spurs on the eastern side of the valley. The remaining four sites (**115** – **118**) simply reflect the occurrence of sites in areas where the modern vineyards and olive groves are less dense than usual.

Map Sheet: *Cerignola*, 175.I.NE

105: ref. 669707; fig. 29

Masseria Posticciola: a confused mass of faint crop-marks indicates the existence of compounds around the present farm. The site appears to be oval in shape with a N – S length of *c.* 180 m.

106: ref. 675706; fig. 29

Masseria La Contessa I: there are faint traces of a relatively simple single-ditched settlement immediately west of the main site in this area on a ridge of elevated ground 500 m. due east of the masseria. Diameter *c.* 90 m.

107: ref. 677706; fig. 29

Masseria La Contessa II: a triple-ditched site of considerable interest on the same elevation as **106**. It comprises an inner enclosure *c.* 75 m. NW – SE set inside another oval enclosure *c.* 170 m. at its greatest length. This in turn was enclosed by an outer ditch that survives as a crop-mark only on the northern arc. The site thus belongs to the category exemplified by, for example nos. **44** and **99**. See further, pp. 178 ff.

108: ref. 680701; fig. 29

Masseria Pavoncelli: elements of a large, single-ditched settlement over 200 m. N – S occur 200 m. north of the Stornara – Cerignola road. The details are obscured.

109: ref. 687700; fig. 29

Tratturo della Contessa I: the larger of two sites on slightly elevated ground immediately to the west of the *tratturo*. Single-ditched, diameter *c.* 110 m. E – W. Internal details obscured.

110: ref. 687699; fig. 29

Tratturo della Contessa II: a smaller site to the south. The layout is not quite as circular as that above, with a maximum diameter of *c.* 90 m. Again the internal details are obscure.

111: ref. 663680; fig. 29

Fontanella I: the first and southerly of two settlements on the Fontanella ridge west of the Marana Castello. There are indications of a single perimeter ditch encircling the ridge-crest *c.* 600 m. due north of Masseria Graziani. No internal details visible.

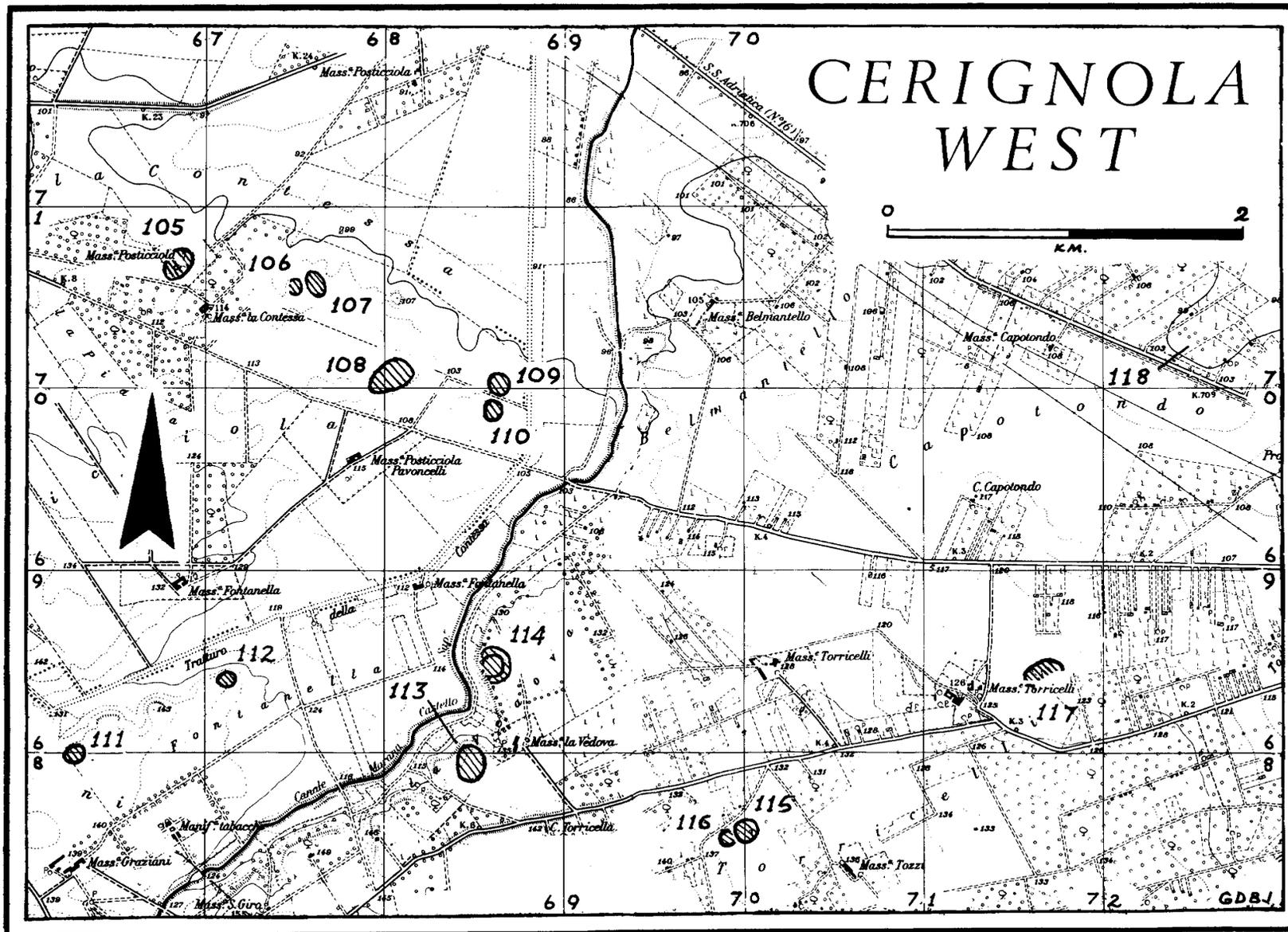


FIG. 29. Cerignola West: location map (1:33,333)

112: ref. 671684; fig. 29

Fontanella II: the northern example is rather smaller (c. 95 m.) with apparently twin ditches encircling the northern tip of the ridge. No internal details visible.

113: ref. 685679; fig. 29

Masseria La Vedova I: the eastern edge of the Marana Castello is marked by a series of steep bluffs that have been considerably eroded so as to form ideal spurs to accommodate prehistoric sites overlooking the river valley. This, the less clearly defined of the pair in the area, lies c. 300 m. due east of the masseria. The site takes the form of a double-ditched enclosure occupying the whole of one such spur. It is sack-shaped, rather than circular, in layout with a N – S measurement of just over 200 m. The numerous ill-defined internal compounds appear to point in all directions.

114: ref. 686686; fig. 29; pl. XVIIb

Masseria La Vedova II: due north of the modern farm lies the site of an interesting settlement that is the most clearly shown of all those on the relatively poor aerial cover of the region. It takes the form of the inner unit of the La Quercia site (**72**), i.e. four roughly semicircular ditches running up to the scarp edge. The interior thus formed measures c. 110 m. N – S, while at their maximum extent the ditches cover a further 100 m. The interior was sparsely filled with only two major compounds and faint traces of other arrangements to the east.

115: ref. 700676; fig. 29

Masseria Tozzi I: a very clear crop-mark shows the existence of a small (105 m.), double-ditched site on a ridge of elevated ground 0.5 km. due west of the farm in the area called Toricelli.

116: ref. 699676; fig. 29

Masseria Tozzi II: fainter indications of another site of very similar measurements exist immediately to the west of the above settlement. The obscuring of its eastern side by site **115** indicates that it is the earlier of the two.

117: ref. 717684; fig. 29

Toricelli: 400 m. due east of Masseria Toricelli the northward-facing bluff is pronounced, and despite intensive modern cultivation there are confused indications of a medium-sized site.

118: ref. 725702; fig. 29

Capotondo: general scatter of Neolithic pottery in vineyards north of SS Adriatica. No detailed cover.

X. *Cerignola South-West* (figs. 25 and 30 – 33)

The area in question comprises three zones: Terraneo, La Torre and Capacciotti (Areas D, E and F on fig. 25). The selection of these three areas south-west of Cerignola was enforced by the aerial cover available. The zones are not contiguous and simply reflect the surviving photographs and their distribution. The actual cover, moreover, is the poorest in quality of all the material relating to the Tavoliere. Most of the prints are from high-level runs and there is very little duplication for comparative purposes. In addition, the area is now one of the most intensively cultivated in the whole region and the density of cultivation has, of course, increased still further since the photographs were taken.

The Terraneo area is the main region for consideration as it formed the site of an aerodrome in 1945 and as a result was recorded from the air. Closer to Cerignola the density

of vineyards is such as to render field survey of this kind impossible. The distribution of prehistoric settlement in the Terraneo zone falls into two broad groups (sites **119 – 29** and **130 – 44**). The first is largely distributed along a ridge of slightly elevated ground running north-east past Pozzo Terraneo towards Masseria I Pavoni. The ridge appears to have overlooked a valley that contained water in the prehistoric period, but is currently dry west of I Pavoni. It so forms one of the best examples of the changed ecology of the area since the prehistoric period. The second group lies along a second watercourse (in this case still in operation), namely the Marana di Fontanafigura, known in its upper section as the Canale Carrasso. Of the series of sites to north and south of the valley floor one group (**136 – 9**) is of particular interest. The sites comprise four almost contiguous settlements sited on a particularly well-suited bluff overlooking the Marana (fig. 31).

The area of La Torre further to the west (see fig. 32) represents an extension of the shelf running south-west from Cerignola to Borgo Rendina. The zone in question in this case includes the headwaters of the two principal streams, the Canale di Fontanafigura and the Marana Capacciotti. The distribution of prehistoric settlements occurs in two groups along the bluffs overlooking the streams (sites **145 – 8** and **149 – 53** relating to Fontanafigura and Capacciotti respectively).

Like the above region, the area designated Capacciotti (fig. 33) is described here because of a surviving set of aerial cover. The zone itself is small in scale and occurs a few kilometres east of La Torre down the valley of the Marana Capacciotti. On the bluffs to the north lies a group of sites (**154 – 7**) amongst which one double-ditched settlement (**155**) can be drawn in considerable detail considering the relatively poor quality of the soil for the production of detailed crop-marks. Two settlements on the south side of the valley (**158 – 9**) indicate part of the general pattern of settlement along the valley edges, a pattern that could surely be repeated throughout the area if comprehensive aerial cover were available.

A. Terraneo

Map Sheets: *Borgo Liberta*

119: ref. 664630; fig. 30

Pozzo Terraneo I: an oval single-ditched enclosure on the low scarp looking northwards on to the Cerignola – Candela road. Maximum dimension N – S *c.* 170 m.

120: ref. 667632; fig. 30

Pozzo Terraneo II: the northern half of a similar enclosure shows faintly in a similar topographical position. E – W diameter *c.* 150 m.

121: ref. 670631; fig. 30

Pozzo Terraneo III: a slightly smaller enclosure measuring *c.* 115 m. E – W in the same overall topographical situation. The quality of the crop-mark information enables us to say that the internal compounds were at least four in number. They all appear to face due north.

122: ref. 670628; fig. 30

Pozzo Terraneo IV: the northern two-thirds of a considerably larger site can be traced 200 m. south of **121**. It is surrounded by a single ditch with an E – W diameter of *c.* 190 m. No internal details are visible with great clarity, but several of the compounds certainly face due south, in contrast with **121**.

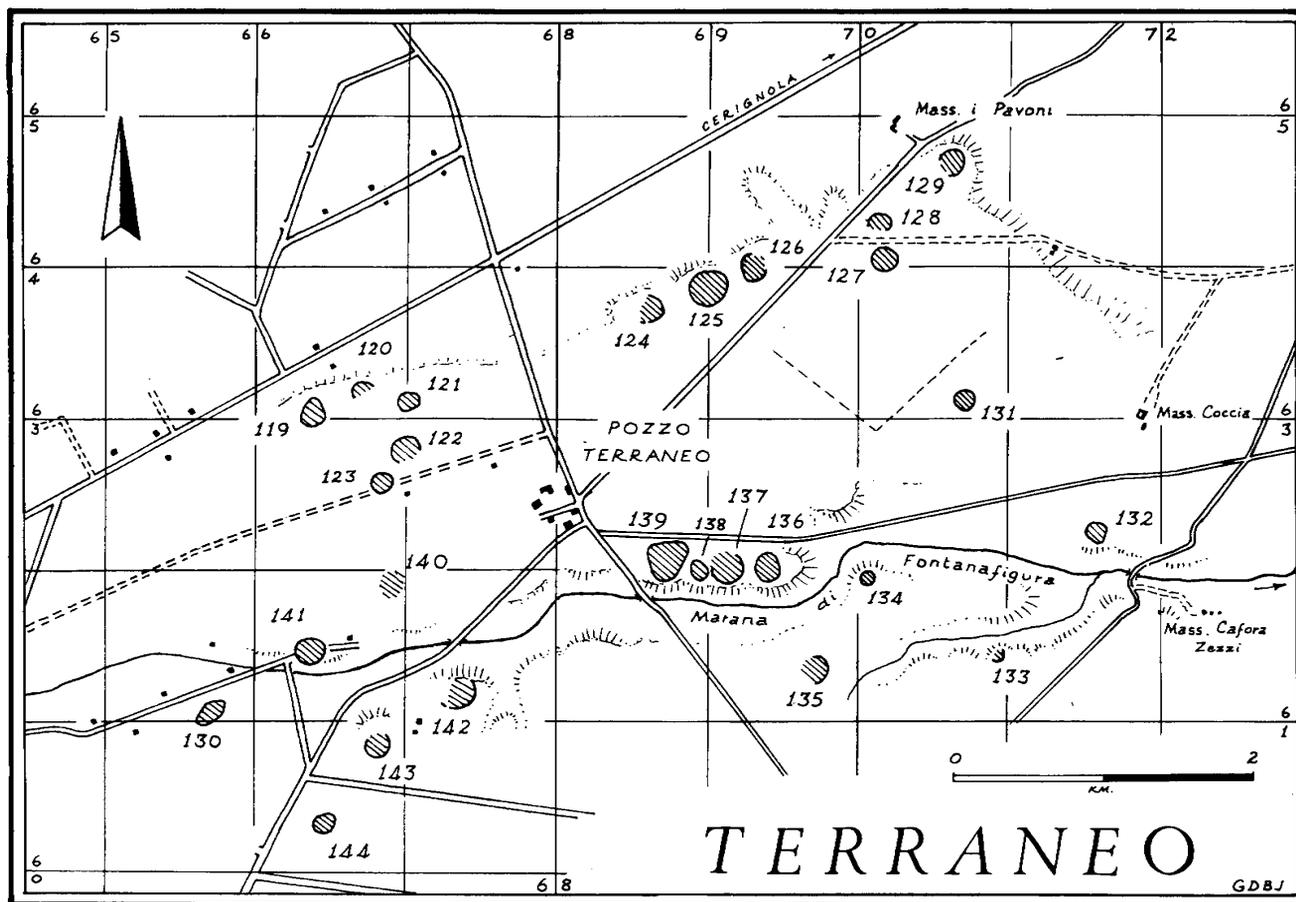


FIG. 30. Cerignola South-West: location map, Terraneo (1:50,000)

123: ref. 668626; fig. 30

Pozzo Terraneo V: a small, single-ditched enclosure that forms a regular circle in shape. E – W measurement *c.* 135 m. No internal details.

124: ref. 685637; fig. 30

I Pavoni I: the eastern half of a single-ditched enclosure the details of which are partly obscured by superimposed Roman agricultural features and a modern olive grove to the west. The diameter of the site was probably *c.* 180 m. N – S.

125: ref. 690639; fig. 30

I Pavoni II: like the previous settlement, this site occupies a low ridge of elevated ground forming a continuation of that marking the position of sites **119** – **21**. A Roman agricultural enclosure obscures any trace of internal detail but the circular, single-ditched settlement appears to have had a diameter of *c.* 280 m. E – W, which makes it by far the largest in the area.

126: ref. 692640; fig. 30

I Pavoni III: a third single-ditched site in a similar topographical position. The eastern half is largely obscured by the evidence of Roman agriculture, but the approximate N – S diameter is 185 m.

127: ref. 702641; fig. 30

I Pavoni IV: the general line of the elevated ridge marked by sites **124** – **6** passes across the Cerignola – Pozzo Terraneo road. The higher ground south of Masseria I Pavoni contains traces of three sites of which the largest (*c.* 170 m. in diameter E – W) lies to the south. Within the single ditch-circuit there are traces of at least four compounds, though their orientation is not clear.

128: ref. 702643; fig. 30

I Pavoni V: immediately north of site **127** across the present farm-track lies the site of another single-ditched enclosure. The southern side of the site is obscured, as are all the internal details. Diameter *c.* 160 m.

129: ref. 706646; fig. 30

I Pavoni VI: south-east of the masseria lies the third site in the group, an apparently single-ditched enclosure that appeared on unploughed scrub in 1945. Traces of internal compounds were then visible on the aerial cover in the form of weed growth. Diameter *c.* 155 m. E – W.

130: ref. 657610; fig. 30

Posta di Pozzo Marano: an elongated oval settlement located amidst a modern agricultural reform scheme on the south bank of the Canale Carrasso. Maximum length SW – NE *c.* 220 m.

131: ref. 708632; fig. 30

Masseria Coccia I: a double-ditched enclosure on an elevated knoll 1 km. north of the Marana di Fontanafigura. The site is almost circular, with an overall diameter of *c.* 120 m. and the two ditches set on average 20 m. apart.

132: ref. 716623; fig. 30

Masseria Coccia II: a little less than 1 km. south of the farm lies the site of an apparently single-ditched enclosure overlooking the north bank of the Marana di Fontanafigura. The irregular oval settlement measures *c.* 140 m. across E – W.

133: ref. 709614; fig. 30

Cafora Lupi I: the south-eastern half of a small site (*c.* 80 m. in diameter) can be traced on the southern bluff overlooking an unnamed tributary of the Marana di Fontanafigura.

134: ref. 701620; fig. 30

Cafora Lupi II: one of the line of bluffs on the southern side of the Marana di Fontanafigura is the site of another small settlement, forming an almost regular circle 95 m. across.

135: ref. 698614; fig. 30

Cafora Lupi III: the eastern half of a medium-sized site is traceable, set a little way back from the southern edge of the Marana. Modern cultivation has obscured the western side, but the overall diameter of the single-ditched site was probably *c.* 160 m.

136: ref. 694620; figs. 30 and 31

Marana di Fontanafigura I: the four sites comprising the group of settlements lining the north bank of the Marana form the most interesting feature of the prehistoric settlement pattern. Unfortunately not all the details are clear, owing mainly to the poor quality of the available cover, although modern agriculture also obscures much. Site **136** at the eastern end of the group is one of the clearest. It comprises a double-ditched enclosure *c.* 180 m. across with a number of compounds visible, two of which face in a westerly direction.

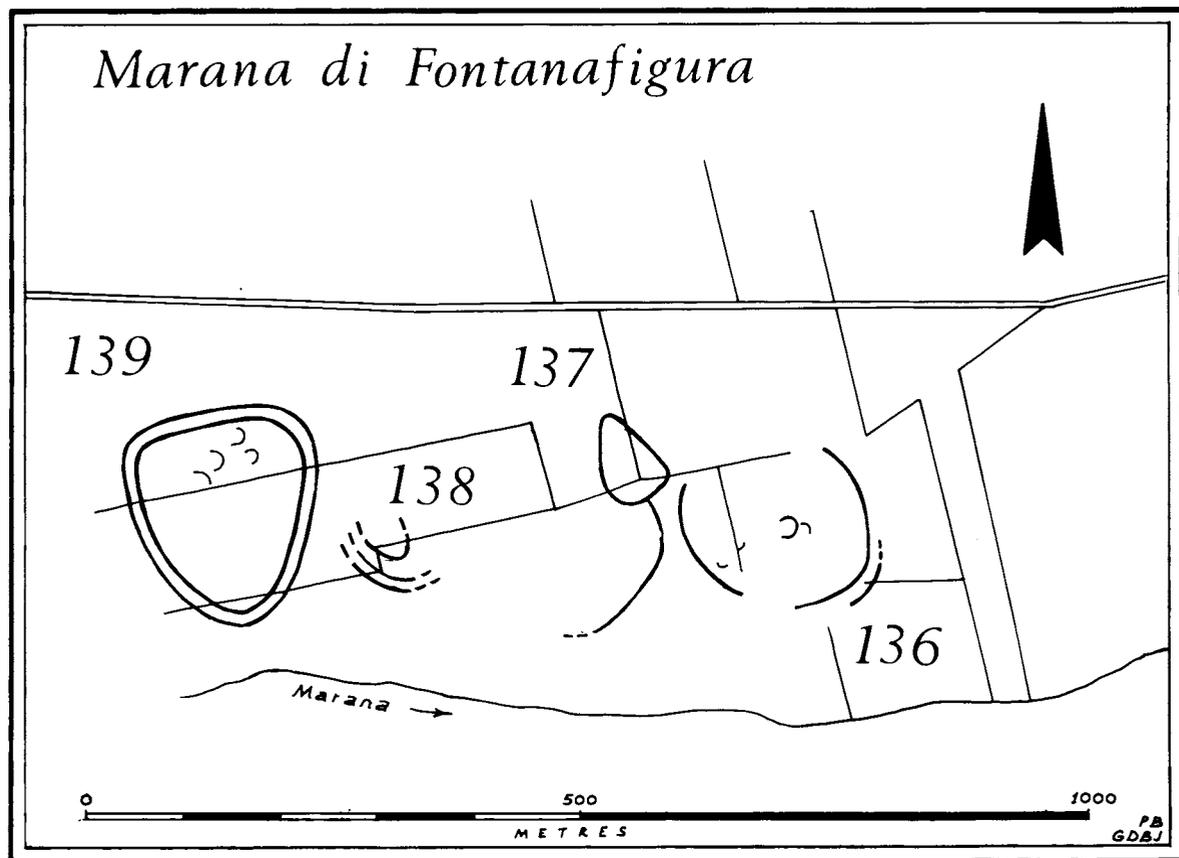


FIG. 31. Cerignola South-West: the Marana di Fontanafigura complex (1:7,500)

137: ref. 691620; figs. 30 and 31

Marana di Fontanafigura II: the second of the four sites presents problems of interpretation because of the poor aerial cover. Of two sets of crop-marks one relates to the eastern and south-eastern side of a large single-ditched enclosure, the E – W axis of which would have measured *c.* 200 m. The other crop-marks show the existence of a small pear-shaped enclosure at the north-eastern edge of the larger enclosure. The perimeter ditch of the larger enclosure appears to join that of the smaller at right-angles on the eastern side, but the return of the large enclosure is obscured effectively by modern cultivation. From the evidence of the ditches, however, the two features appear to be contemporary.

138: ref. 689620; figs. 30 and 31

Marana di Fontanafigura III: the third and smallest of the settlements consists of a small inner enclosure set within a double-ditched perimeter that measures approximately 105 m. N – S. Only the southern side survives in any detail.

139: ref. 687621; figs. 30 and 31

Marana di Fontanafigura IV: the fourth site was the largest. Its double-ditched perimeter follows an irregular triangular layout with measurements N – S of *c.* 260 m. At least four internal compounds can be identified in the northern section where modern cultivation allows; all face due west like those of **136**.

140: ref. 669619; fig. 30

Canale Carrasso I: unclear indications of compounds indicate the presence of a site close to the north bank overlooking the canale. It appears to measure *c.* 150 m. across.

141: ref. 663615; fig. 30

Canale Carrasso II: a second site can be identified amongst modern agricultural schemes on the northern bluff overlooking the canale. The evidence takes the form of a single-ditched enclosure with a diameter of 185 m.

142: ref. 674613; fig. 30

Pozzo Marano I: traces of a substantial site are evident on a bluff overlooking the southern bank of the canale immediately north-east of Masseria di Pozzo Marano. The air photographic evidence shows the eastern side of a single-ditched settlement at least 200 m. across.

143: ref. 668608; fig. 30

Pozzo Marano II: immediately south-west of the masseria lay another, smaller site of the same kind. The poor quality of the aerial cover allows no details to be recovered, but the site's diameter was approximately 140 m.

144: ref. 665603; fig. 30

Pozzo Marano III: further to the south-west lay an oval settlement *c.* 140 m. at its maximum length NE – SW. Apart from a single-ditched perimeter no other details are visible.

See also nos. **251** and **252**, pp. 221 – 2.

B. La Torre

145: ref. 610600; fig. 32

La Torre I: one of three such sites clustered on the southern edge of the Canale di Fontanafigura. Much of the detail is unclear from the aerial cover and would require excavation for clarification.

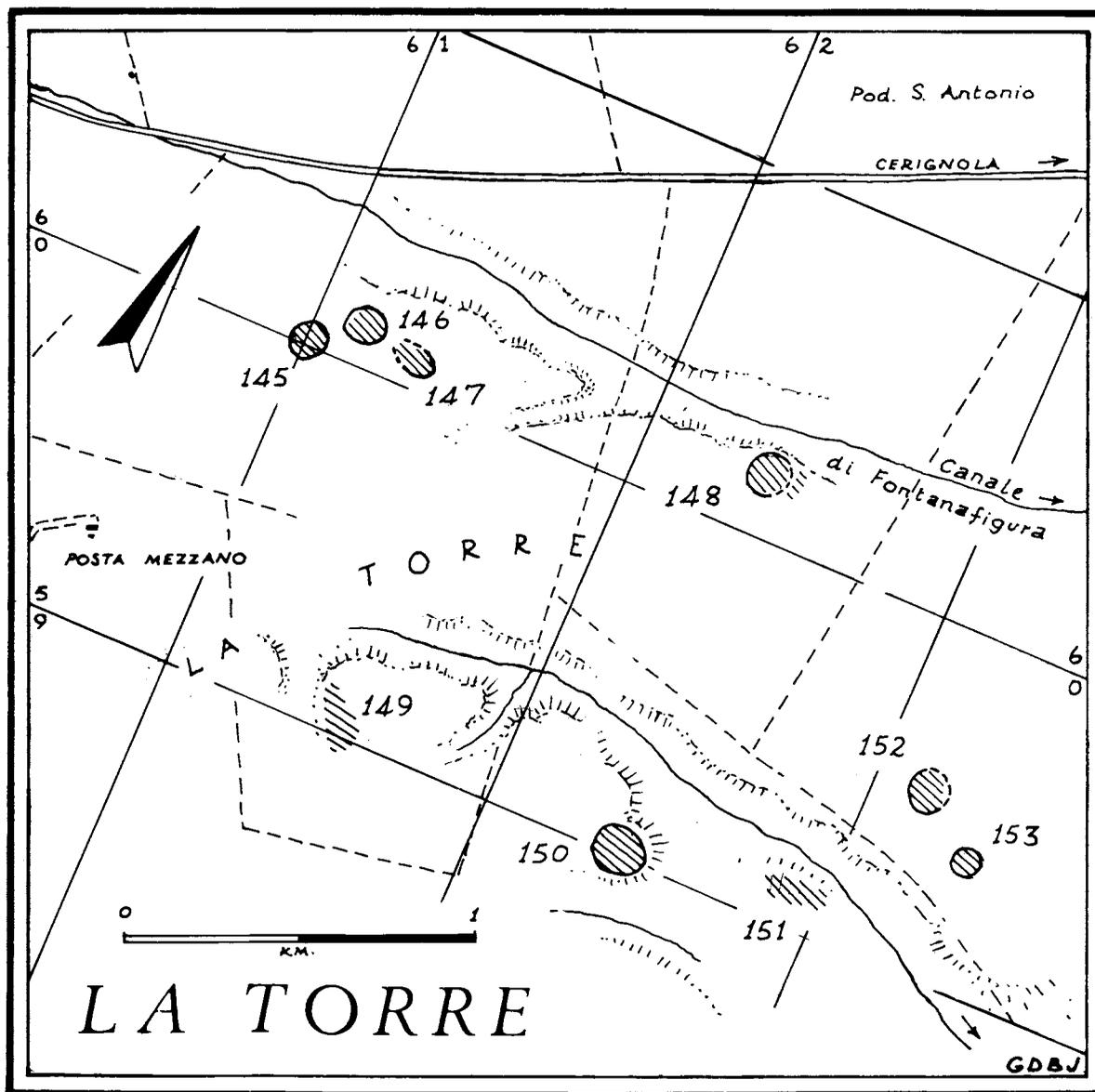


FIG. 32. Cerignola South-West: location map, La Torre (1:20,000)

This, the first site unit to emerge clearly from the crop-mark data, lies to the south-eastern side of the complex. Single-ditched, it measures *c.* 120 m. E – W. Traces of compounds are indistinct, but they all appear to face westwards.

146: ref. 612602; fig. 32

La Torre II: the second of the three settlements, measuring *c.* 135 m. E – W, is important because more of the internal detail survives, albeit the quality of the aerial cover is poor. Of the eight

compounds in the interior all face west and one, the most westerly, is by far the largest. This clearly has social connotations for this class of site in the medium category (pp. 178 ff).

147: ref. 614601; fig. 32

La Torre III: an elongated, indistinct site on the eastern edge of the group. Its overall dimensions are c. 140 m. by 80 m.

148: ref. 624602; fig. 32

Fontanafigura: a roughly circular settlement on the southern edge of the river valley. The diameter is c. 130 m., with signs of external compounds.

149: ref. 615590; fig. 32

Posta Mezzano: indistinct crop-marks indicate the internal compounds of an apparently elongated settlement overlooking the source of the Marana di Capacciotti. The minimum N – S dimension is 200 m.

150: ref. 624590; fig. 32

Capacciotti I: the tip of the ridge separating the Marana di Capacciotti from an unnamed tributary to the south forms the location of a substantial site c. 160 m. across E – W. It was single-ditched, but no further details are visible.

151: ref. 629592; fig. 32

Capacciotti II: crop-marks of internal compounds facing west indicate the existence of a settlement approximately 200 m. long overlooking the south side of the valley. Part of the single-ditched perimeter is visible at the eastern end.

152: ref. 632595; fig. 32

Capacciotti III: the western site of a pair on the north side of the valley. The single-ditched perimeter was c. 130 m. in diameter, but internal details are not clear.

153: ref. 634594; fig. 32

Capacciotti IV: the second site of the pair is also single-ditched. Diameter c. 90 m. Of the westward-facing compounds the central one is in contrast with the others clustered along the eastern edge of the settlement (pp. 81 – 2).

C. Capacciotti

154: ref. 674579; fig. 33

Torretta: a roughly circular single-ditched enclosure on one of the high bluffs overlooking the northern side of the Marana. The northern side is partly obscured, but the site's overall measurements are c. 180 m. by c. 130 m.

155: ref. 679579; figs. 33 and 34

Posta Barone Grella I: the largest of three prehistoric sites in the neighbourhood. The details of the plan are set out in fig. 34. This shows that the settlement was circular in shape with an overall diameter of c. 285 m. The plan appears to form a variation on the double, twin-ditched settlement typified by sites **19** or **20** in the Lucera East area (p. 45). This is most apparent on the northern side, where a straightforward entrance runs through the four ditch systems. On the southern scarp edge, where the need for protection was arguably less, the inner circuit was reduced to a single ditch. The internal compounds face due south.

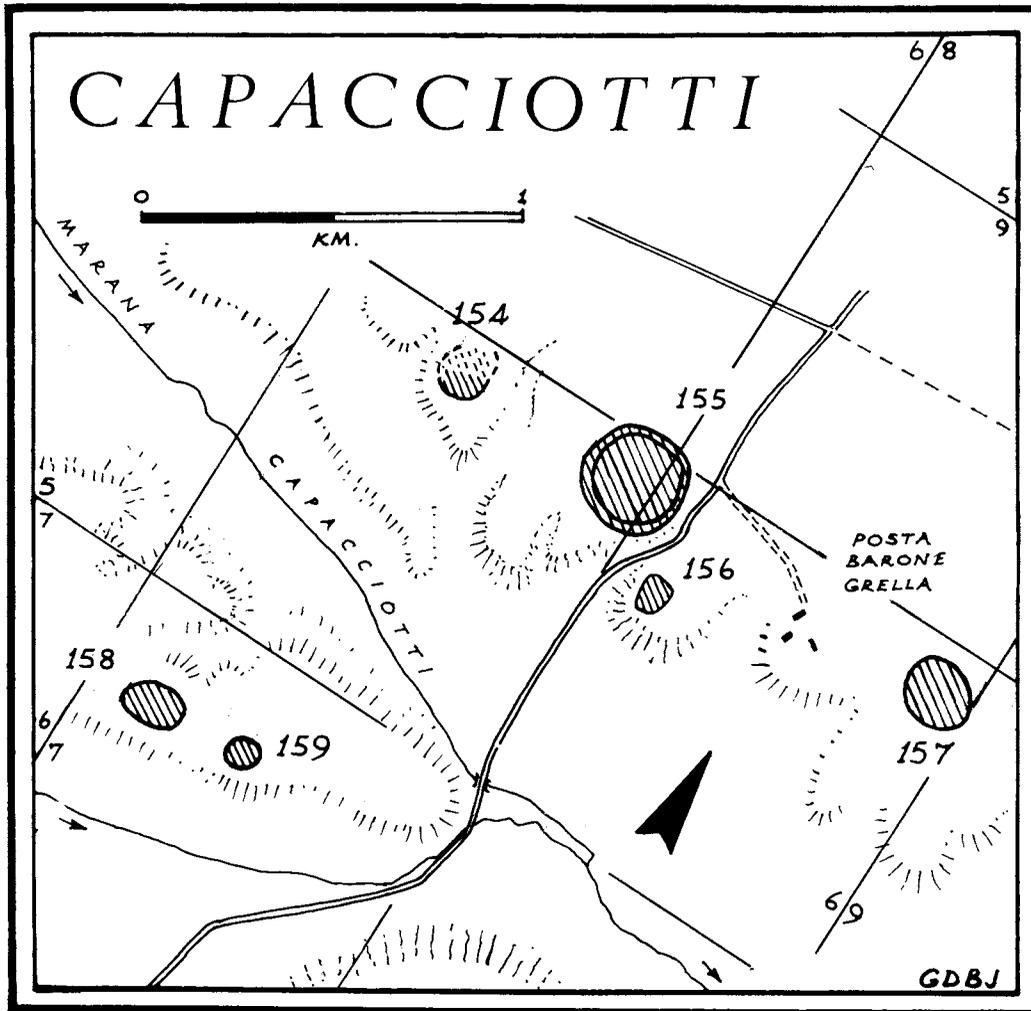


FIG. 33. Cerignola South-West: location map, Capacciotti (1:20,000)

156: ref. 682577; figs. 33 and 34

Posta Barone Grella II: a simple enclosure occupying a small bluff south-east of site **155**. The N – S dimension is c. 220 m.

157: ref. 689578; fig. 33

Posta Barone Grella III: 300 m. east of the present farm lies the site of another settlement of substantial size. It comprises an oval outer perimeter ditch measuring c. 190 m. N – S and containing a smaller, more circular ditch-circuit. The indifferent aerial cover does not allow further details to be made out, but there may be further complexities in the site.

158: ref. 673567; fig. 33

Pavone I: the first of two sites named from the masseria a little further to the west. The pair stand on

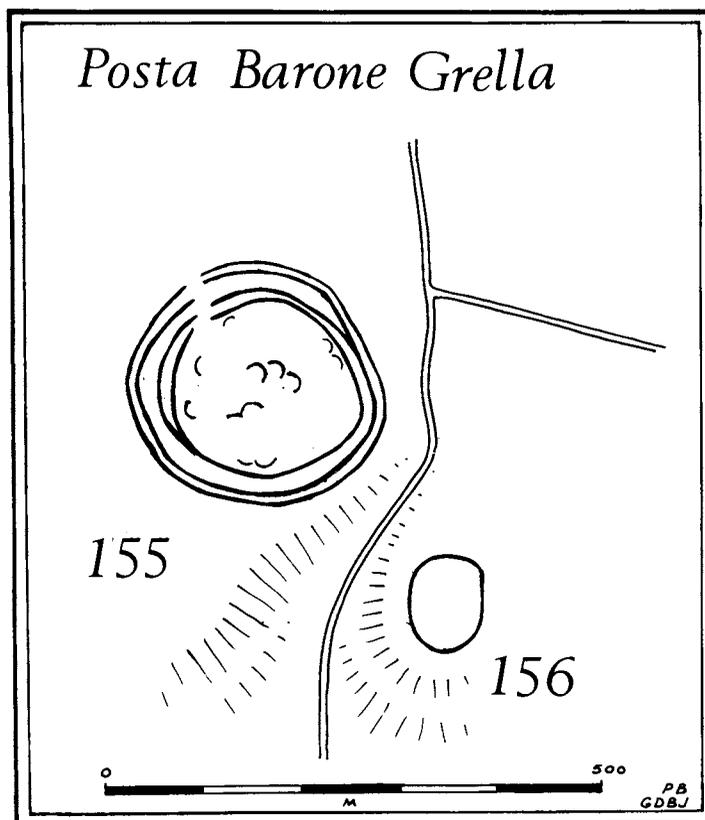


FIG. 34. Capacciotti: Posta Barone Grella (1:7,500)

southward-facing bluffs overlooking the valley of an unnamed tributary of the Marana. The site is single-ditched, measuring *c.* 175 m. by *c.* 110 m., and no internal features are visible.

159: ref. 675567; fig. 33

Pavone II: the site enjoys the same topographical situation as **158** above. The single-ditch circuit is *c.* 85 m. in diameter with no internal features visible.

XI. *Tressanti* (fig. 35; pl. XIXa)

The area designated *Tressanti* occupies part of the south-eastern edge of the Tavoliere, on the southern side of the F. Carapelle. The normal approach to the zone lies along the service road from Foggia to Trinitapoli, and it is along this line that the large masseria from which the area takes its name is found. Unfortunately aerial cover is extremely limited in the region, being confined to an area of *c.* 10 sq. km. around the masseria itself. This is particularly unfortunate because the whole area is so low-lying as to make it very difficult to seek Neolithic settlements on the evidence of ridges or other surface irregularities. Thus we are completely dependent on aerial cover and only one site (**160**) has been located.

Nonetheless, it seems preferable to follow the logic of the local topography and create a separate zone.

Map Sheet: *Tressanti*, 164.II.SE

160: ref. 738827; fig. 35; pl. XIXa

Tressanti: this substantial double-ditched site north-west of Masseria Marrella occupies a slightly elevated ridge overlooking the now canalized Fosso Marana di Castello. The details of the site can be seen clearly enough from the relevant plate. The settlement was nearly circular with the double ditches set c. 50 m. – 60 m. apart. The internal compounds visible appear to face north to the river.

While this site has produced sherds of Neolithic pottery, and clearly in origin goes back into prehistory, other possibilities for the later development of the site should not be overlooked. It appears to have certain similarities with the core of proto-Arpi which was later enclosed by massive circuit defences. There is a possibility that the site also belongs to the early Daunian period and forms an even earlier stage (Salpi O) in the recently recognized transfer of Salpi I to the known site of Salpi II owing to the difficulties created by silting (and resultant malaria) along the Gulf of Manfredonia. For a bibliography, see notes 12 and 13.

XII. *Salpi* (fig. 36; pls. XVIII, XIXb – XX)

On the northern side of the Gulf of Manfredonia the focus of settlement at all periods was controlled by the very limited area in which any permanent occupation was possible for the

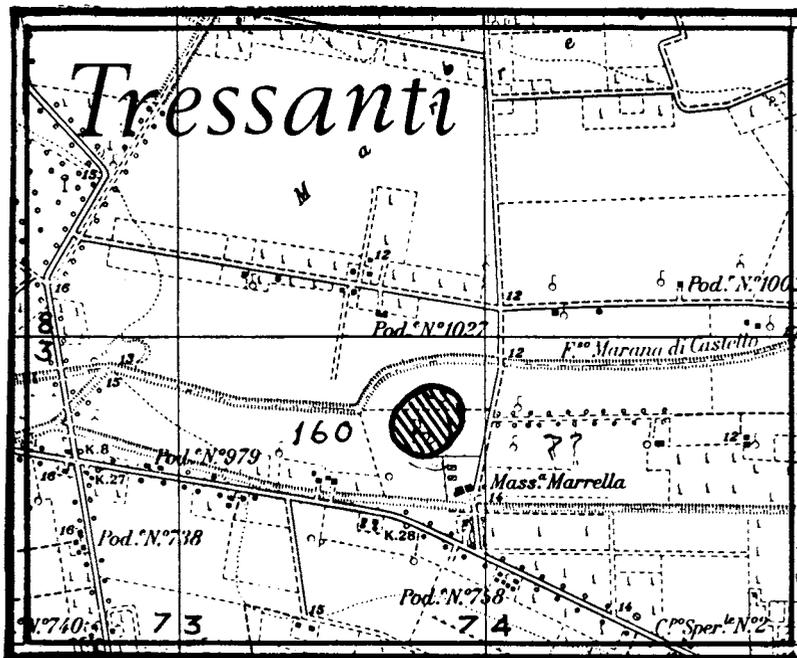


FIG. 35. *Tressanti*: location map (1:25,000)

reasons set out on p. 16. At the southern end of the gulf towards the mouth of the Ofanto, geological factors exercise a less obvious control on the location of settlement. Yet Salpi, the main centre of the area, was of greater importance than Sipontum, if only because the hinterland which it served, namely the south-eastern side of the Tavoliere, was so much more populous and productive at all periods than the arid, rocky slopes of the Gargano. There are factors, nonetheless, that conditioned the development of the Salpi area. The central section of the marshes and dunes between Siponto/Manfredonia and Margherita di Savoia has, until this century, been quite unusable; parts of it are slowly being reclaimed, but the area remained malarial until the end of the Second World War, and one must remember that conditions were probably far worse in antiquity. Strabo attests the existence of an extensive seasonal lake at the debouchment of the Candelaro valley into the marshes.¹² Further to the south settlement was impractical in the delta of the Ofanto, whose floods were often unpredictable and always destructive. Between the delta and the main area of the marshes, however, a wedge of slightly elevated ground projects into the marshes north-west of Trinitapoli. This was the focus of prehistoric, Daunian, Roman and medieval settlement. Though the site of the city of Salpi changed towards the end of the Republican period,¹³ it always served as the port of a large section of the Tavoliere until, not long after the thirteenth century, the silting of the harbour became unmanageable and brought its life as a Venetian trading port to an end. Today the eastward advance of the coastline has left the Salpi area nearly 5 km. from the actual sea. When filled, however, the holding reservoirs of the Margherita di Savoia salt-beds (which now occupy the intervening area between Salpi and the sea) almost restore the pristine appearance of the area by bringing sea-water to the foot of the ancient settlement area.

The wedge of elevated ground contained four prehistoric sites (including traces of a settlement under the site of the later city of Salpi II). A fifth lay at Marandrea (**162**) on the northern bank of the Canale Giardino. All the sites were located to take advantage of slight elevations in the ground.

Map Sheet: *Stazione di Candida*, 165.III.SO

161: ref. 847830; fig. 36; pl. XIXb

La Marana di Salpi: an oval single-ditched enclosure in the central section of the Marana di Salpi on the edge of the classical coastline along the south-western side of the Prima Zona Evaporante. The site, which was overlaid by classical and/or medieval vineyards, has a maximum length of 245 m. and a width at its broadest point of 198 m.

162: ref. 812843; fig. 36; pl. XXa

Marandrea: a single-ditched enclosure of medium size, approximately 3 m. above sea level at Mandrea on the northern bank of the Canale Giardino. The site is oval in shape and lies along the slightly elevated bank of the old river bed. There are an inner and an outer enclosure measuring 196 m. by 154 m. and 291 m. by 223 m. respectively. In this case, however, the continuity of the ditch demarcating the outer enclosure suggests that the outer oval represents an original feature rather than an expansion from an earlier nucleus. The smaller enclosure contains two small compounds on the north-eastern side.

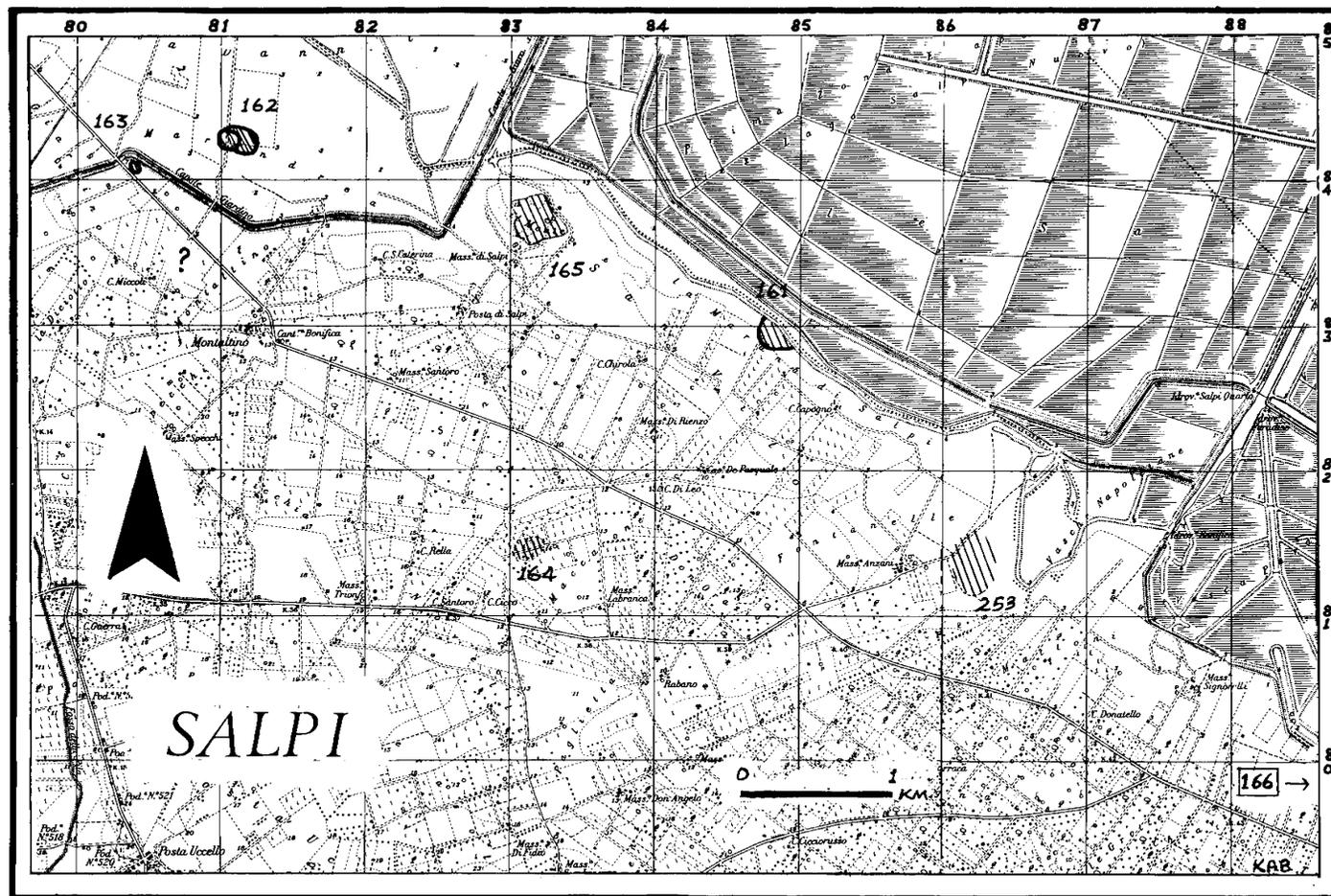


FIG. 36. Salpi: location map (1:50,000); see also no. 253, p. 222

163: ref. 804842; fig. 36; pl. XXb

Canale Giardino: a small, single-ditched enclosure of almost circular shape close to the modern road on the southern side of the Canale Giardino. The site, which is 85 m. in diameter, is now obscured by vineyards. There is also a possible site centred on 808835.

164: ref. 832815; fig. 36

Maccarone: a small settlement taking advantage of a slight rise (17 m.) in the area known as Maccarone 0.5 km. north of the Foggia – Trinitapoli road. The site is covered by dense vineyards, but there are traces of two ditches; the inner one is circular (diameter 85 m.), the outer oval in shape, measuring 145 m. at its broadest point.

165: ref. 832837; fig. 36

Il Monte (Salpi): although the nucleus was not localized, excavations in 1964 produced Neolithic material from the tell formation that marks the site of late Roman and medieval Salpi.

See also no. **253**, p. 222.

Map Sheet: *Trinitapoli*, 165.III.SE (not shown in fig. 36)

166: ref. 930798; fig. 36

Mezzana Comunale: on the basis of pottery, indications of a site in this area have been recorded by Gambassini and Palma di Cesnola (1967, 331) and likewise nearby at Posta Piana.

XIII. *Tavernola* (figs. 37–8; pls. XXI–XXIIa)

The area thus designated runs for 10 km. or so due east of Foggia as far as Borgo Tavernola (fig. 37). The region is so flat that it is at first difficult to isolate the salient features of the topography. These are the branches of the canalized River Farano: the Faraniello Demani running south of the Foggia – Manfredonia road and its tributary, the Faraniello. Within the relatively flat area concerned, the settlement pattern follows the scarp-edge pattern visible throughout so much of the rest of the Tavoliere. In the north-eastern corner three sites (**167**, **168** and **169**) found close to Masseria Santini on the south side of the Farano illustrate the point. Another complex lies in an equivalent position on the south side of the Faraniello, close to the site of Masseria Castiglione where a medieval settlement overlies an earlier site of Neolithic date. To the south there is another large site (**172**), now largely obscured by Casale Molinaro, and the pattern of settlement in the area is made clear 1 km. further south again. Areas of even marginally elevated land in this zone were of potential importance to the Neolithic settlers. Such land shows up as whiter patches on the aerial photographs, and in the Tavernola complex (**173**) we can see the most intricate of all the settlements located in the Tavoliere. It occupied an elongated ridge of ground which, it is clear from the air, reveals traces of a multiplicity of sites, mostly medium – small in scale, and containing a bewildering sequence of compounds and attached enclosures. Regrettably there is no satisfactory air cover of the area further east, including Borgo Tavernola proper (p. 34), and the site of what was the enormous region of seasonal lagoon and marshland at the mouth of the Candelaro (fig. 10). Nonetheless, the sites in this zone at Tavernola appear

to agree with those in S. Severo East by showing that the Neolithic settlement did not spread lower than the present 40 m. level on the eastern side of the Candelaro. This naturally has an important bearing on the region's overall environment (p. 14).

Map Sheet: *Borgo Tavernola*, 164.III.NE

167: ref. 491943; fig. 37; pl. XXIa

Masseria Santini I: a double-ditched enclosure of which the centre is formed by the present farm. The eastern side of the site is obscured by modern buildings, but the overall E – W measurement was approximately 180 m. The site is perched on the slight northward-facing scarp south of the canalized Farano, and all the visible compounds appear to face north.

168: ref. 489942; fig. 37; pl. XXIa

Masseria Santini II: a single-ditched enclosure immediately west of the above site. It has a relatively straight north side along the scarp edge and an E – W diameter of *c.* 170 m.

169: ref. 487939; fig. 37

Masseria Torre Giuducci: penannular compounds are visible on the aerial cover immediately south of the masseria of this name. The present layout of the masseria, however, obscures any definite traces of the associated ditch system. Nonetheless, the site clearly fits into the medium – small, scarp-edge variety exemplified by the two previous settlements.

170: ref. 524942; fig. 37

Castiglione I: the settlement in question again belongs to the scarp-edge variety, the scarp being in this case that to the south of the Faraniello, a tributary of the Farano. The layout falls into two halves, a relatively small inner nucleus approximately 160 m. across E – W and a larger outer corral. There are possible traces of an intermediate ditch between the two other single circuits. The soil conditions on the available cover are not good, and as a result nothing definite can be said of the internal compounds.

171: ref. 513937; fig. 37

Castiglione II: the present masseria marks the site of a medieval settlement and Neolithic sherds have been found on the surface. The site, which does not show on the aerial cover, would form another example of the scarp-edge series.

172: ref. 522931; fig. 37; pl. XXIb

Castiglione III: a medium-sized, treble-ditched enclosure *c.* 600 m. south-east of Castiglione and now largely obscured by the newly developed Casa Molinaro. As a result the site now lies largely under vineyards, but in the available cover the interior shows densely packed compounds. The majority of them face north, and some are demonstrably superimposed on others. Altogether the site is slightly oval in shape and measures 380 m. across E – W.

Map Sheet: *Borgo Tavernola*, 164.III.NE

173: ref. 580946; figs. 37 and 38; pl. XXIIa

The Tavernola Complex (Scaramella di S. Vito): as the Tavoliere slopes almost imperceptibly towards the present coastline east of Foggia, it becomes apparent to the observer that in geological terms one is

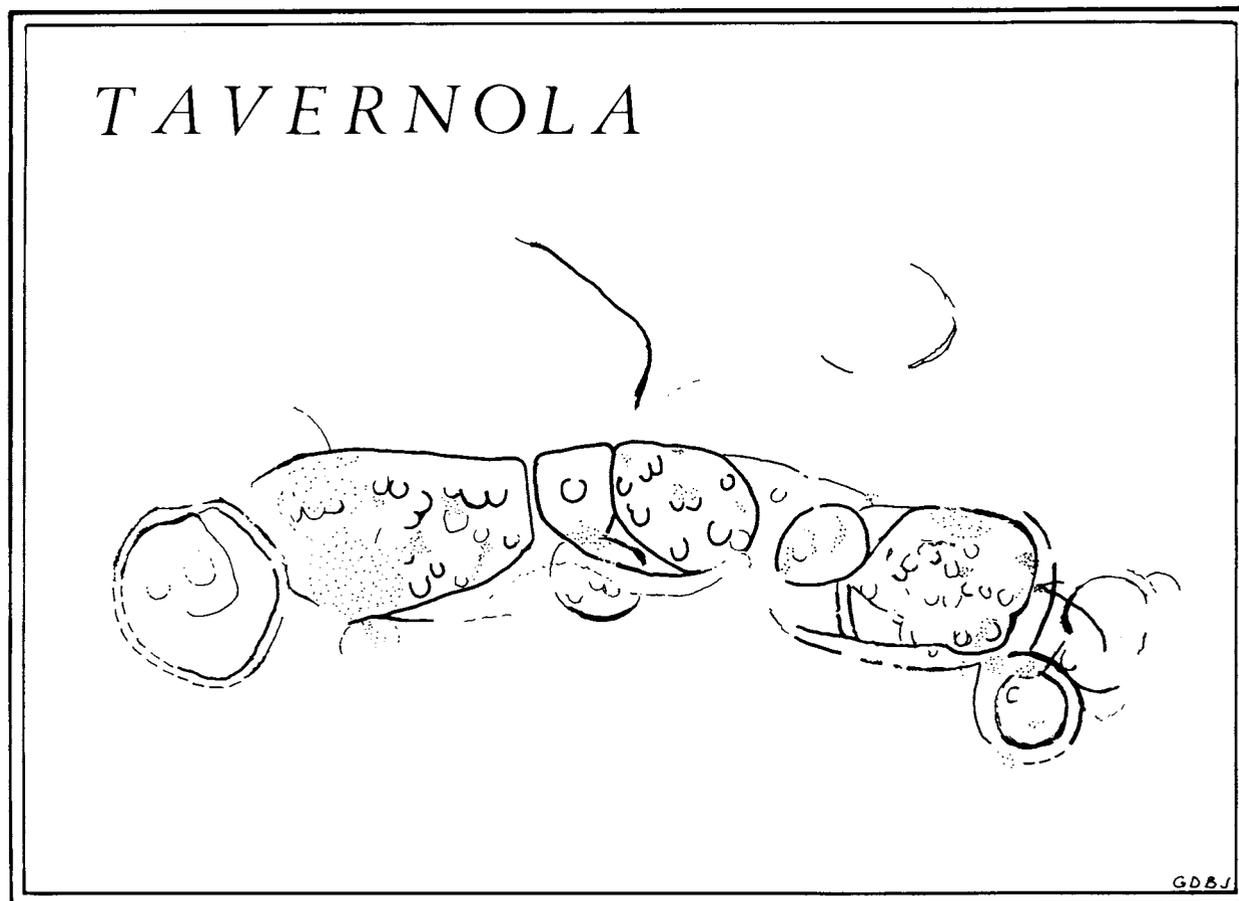


FIG. 38. Tavernola: the Tavernola complex (for approximate measurements, see text)

dealing with a receding shoreline. Just as today (though the conditions are partly alleviated by river canalization), a belt of malarial marshes ran behind the coastal dunes, the incline of the river channels being too slight to create an efficient outfall into the sea. The evidence from the area of S. Severo East, where the air cover is fairly comprehensive, suggests that to the north the 35 – 40 m. contour was the limit of any possible Neolithic settlement. Any elevations at this height are of importance for settlement at this level and the Tavernola complex illustrates the point. The ridge of elevated land on which it stands contains traces of no less than nine settlements, which can hardly have been contemporary. The details of the sites, so far as they can be reconstructed from poor aerial cover, are shown in fig. 38, based on pl. XXIIa. The various superimposed settlements are all relatively small in size, a characteristic imposed by the finger-like configuration of the 1 km. ridge. There are traces of single-ditched paddocks on the lower ground to both north and south, but it would be premature to attempt a decipherment of the complex palimpsest that the sites themselves present without the help of excavation.

Trenching by Professor S. Tinè yielded material for two radiocarbon dates of 5050 ± 100 bc and 4950 ± 65 bc which were obtained from primary ditch sumps (see further p. 176).

There are also probable, but not certain, traces of two further settlements damaged by modern agriculture south and south-east of Masseria De Nittis. They appear to be centred on 522919 and 513916.

XIV. *Foggia* (fig. 39; pls. XXIIb – XXIIIa)

So much of this area is directly affected by the development of modern Foggia that the details need occupy only a brief space. Due south of the city lies the present aerodrome, and what evidence there is for prehistoric occupation lies to either side of this. Three small settlements on the western fringes of the aerodrome are best regarded as small-scale extensions of the Troia East system (p. 52). The major sites lie well to the east on the edge of the 50 m. contour at Masseria Pantano (175) and Canale Carella (179) close to the edge of the Tavernola zone. To the south the medium-sized site at Masseria Fongo (180) appears in considerable detail. Clearly the evidence available is only a fraction of the original settlement pattern and one may note the way in which small sites, for instance, form the outliers of the Troia East distribution. Much of the evidence is probably not simply lost beneath intensive modern cultivation, but also obscured by extensive remains from the Roman and medieval periods, the latter being centred on the great Hohenstaufen centre situated at S. Lorenzo.

Map Sheet: *Foggia*, 164.III.NO

174: ref. 457888; fig. 39

La Masseriola: there are faint traces of an apparently single-ditched enclosure over 200 m. across E – W. It is an elongated oval in shape, lying east of the present road and opposite the Federconsorzi at the northern edge of Foggia aerodrome.

175: ref. 477877; fig. 39; pl. XXIIb

Masseria Pantano: this large site can be traced *c.* 200 m. north-east of the present masseria. The enclosure would form a somewhat flattened circle in shape, except that the southern side follows the edge of a slight scarp demarcated from the air by the line of a single ditch. All three perimeter ditches belonging to the main circuit derive from this single ditch. An inner compound is created by a single circuit *c.* 280 m. E – W. Approximately 40 m. outside it the outer perimeter is formed by a double-ditched circuit with variations between 15 m. and 30 m. in the distance separating the ditches. At the northern tip of the site a fourth ditch runs in an arc away from the outer perimeter. Although visible for several hundred metres to the north-east, this fourth ditch, presumably forming a paddock or enclosure on the eastern side, is not traceable any further.

176: ref. 436866; fig. 39

I Cavoni: on the western side of the aerodrome a single-ditched enclosure can be traced *c.* 300 m. west of Podere O.N.C. No. 63. It appears to measure slightly over 100 m. in diameter, though the evidence is not well preserved.

177: ref. 420878; fig. 39

Masseria Cecilietta: a single-ditched enclosure occupied an elevation immediately north of the present farm. It is oval in shape with an E – W dimension of *c.* 140 m. Several internal compounds are visible, all apparently facing in a south-westerly direction. One is of exceptional size (p. 189).

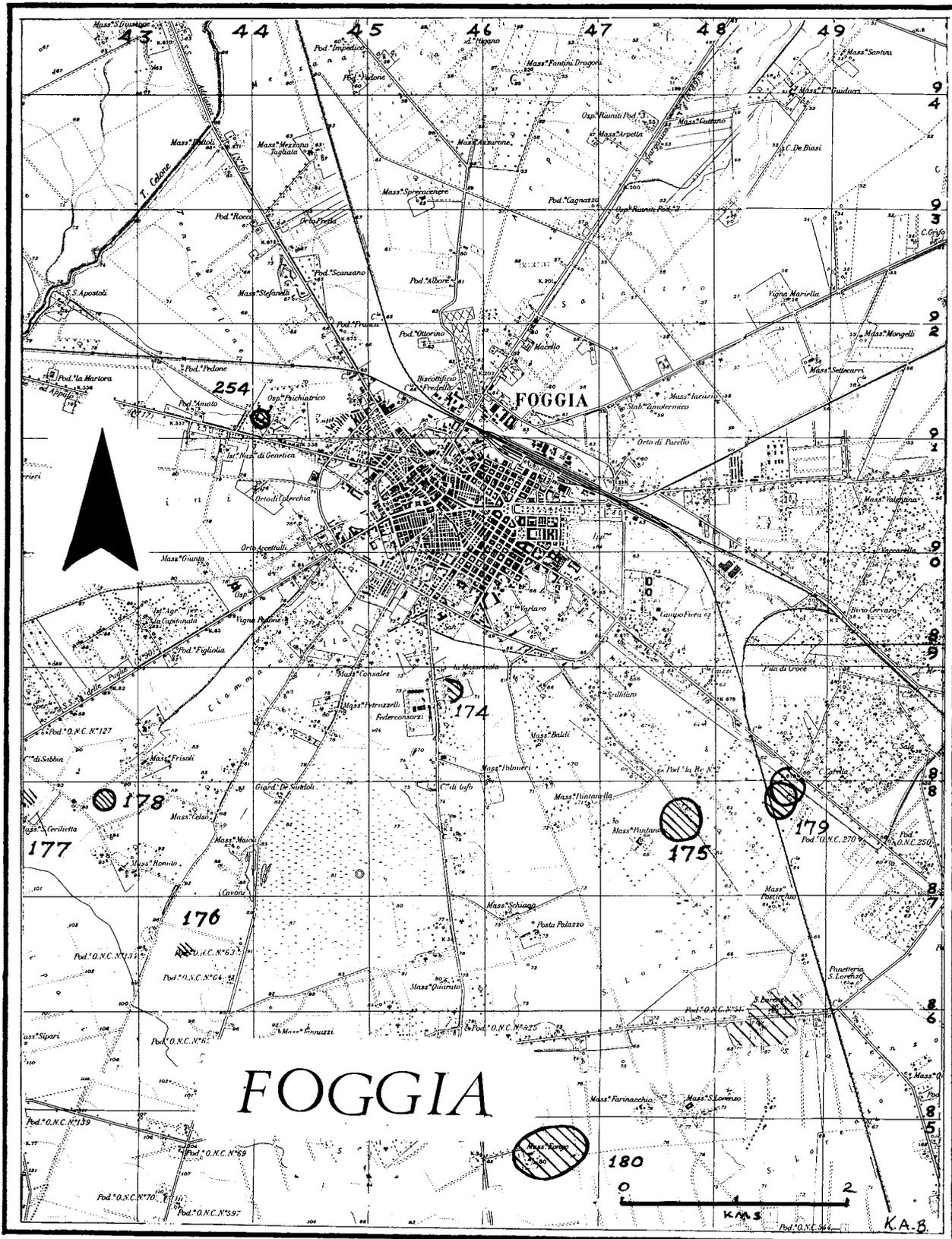


FIG. 39. Foggia: location map (1:50,000); see also no. 254, p. 222

178: ref. 427879; fig. 39

Masseria Frisoli: a second, single-ditched enclosure of slightly larger dimensions 0.5 km. south-west of the farm. No internal details are visible.

Map Sheet: *Borgo Tavernola*, 164.III.NE

179: ref. 486878; fig. 39

Canale Carella: 1 km. east of Masseria Pantano (**175**) there are traces of the ditches demarcating another large site on the edge of the 50 m. contour. Much of the oval perimeter is lost, but the present farm can be seen to lie in the north-eastern corner of a double-ditched circuit measuring approximately 320 m. by 270 m. The ditches are very widely spaced on the western side close to the Foggia – Napoli railway line.

Map Sheet: *Borgo Segezia*, 164.III.SO

180: ref. 465847; figs. 39 and 113; pl. XXIIIa

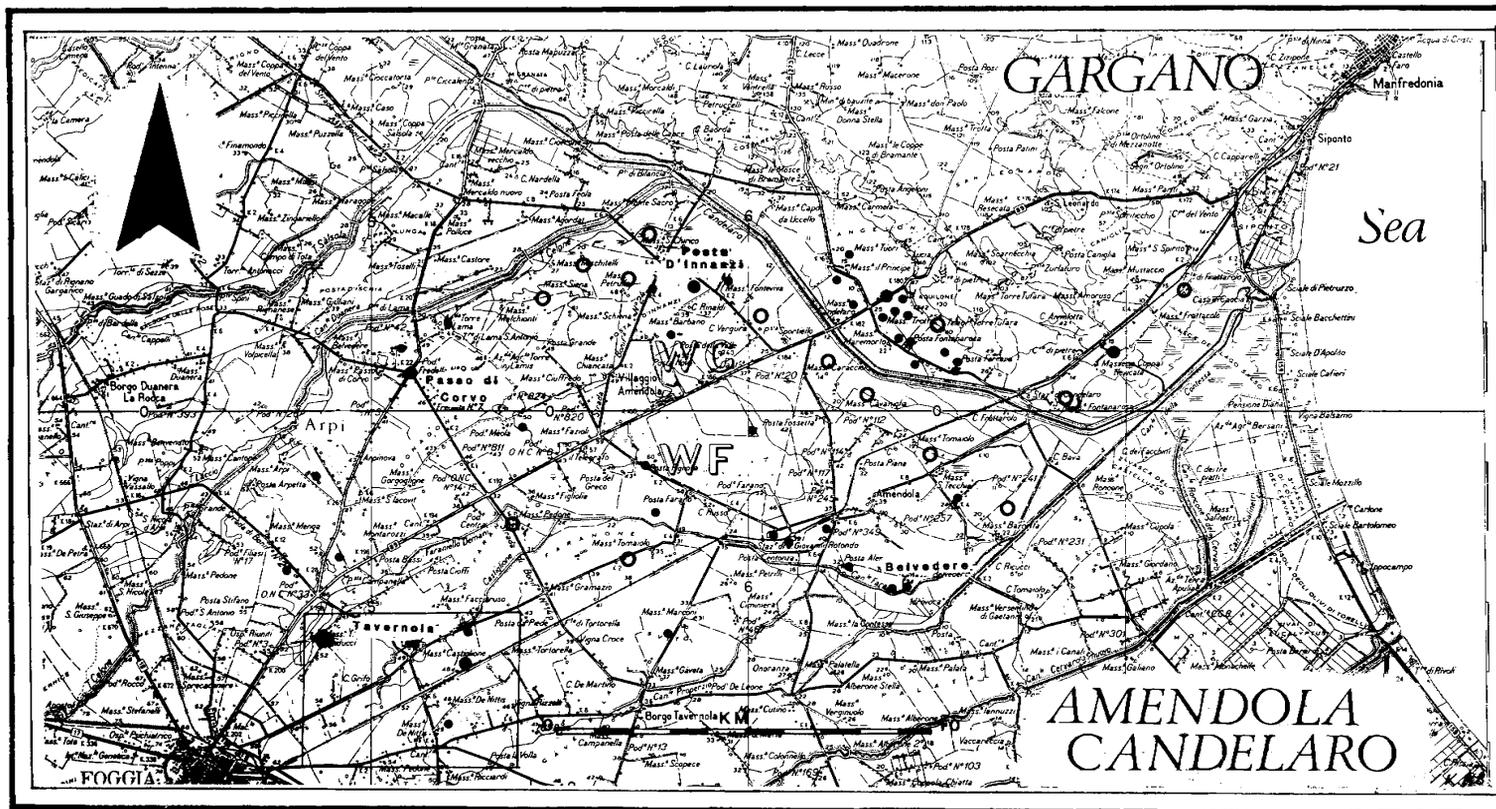
Masseria Fongo: the details of this site are discussed on p. 36.

Some Neolithic sherds have also been found during fieldwork in and around the great medieval site of S. Lorenzo, a retreat of Frederick II. So great has been the disturbance from the medieval site that it is not possible to locate the Neolithic nucleus.

See also no. **254**, p. 222.

XV. *Amendola* (figs. 40 – 46; pls. XXIIIb, XXIV – XXXI)

The area designated Amendola comprises the block of land between the site of Arpi and the western edge of the Candelaro valley (fig. 40). This consists of a raised shelf of land bounded to north and south by steep scarps overlooking the valleys of the T. Celone and the Canale Farano respectively. Following the normal pattern of prehistoric settlement in the Tavoliere, these scarps form the chief focus of settlement. Seven sites (**184, 185, 187, 188, 189, 190** and **191**) line the edge of the scarp above the Canale Farano. The pattern is then repeated by an arc of sites overlooking the Candelaro and Celone valleys. Some settlements were modest in size, like Fonteviva (**192**), Petrullo (**195**), and Torre di Lama (**196**), but the Posta d'Innanzi site (**193**) 2 km. north of the Foggia – Manfredonia main road is very extensive, with an outer compound measuring approximately 772 m. by 684 m. This in turn is dwarfed, however, by the site of Passo di Corvo, the largest of all the Neolithic sites on the Tavoliere (**198**) and the scene of extensive excavations by Bradford. It stands 3 km. north-east of the site of Arpi near Km. 22 of the Foggia – S. Marco in Lamis road, and, like the Posta d'Innanzi site, consists of an inhabited area set within an enormous single-ditched compound. Passo di Corvo is set some way back from the edge of the Celone valley; otherwise the main area of the Amendola shelf appears to have been thinly settled in the Neolithic period. Masseria Cascavilla (**194**) is the only other site of importance and is unusual in having several compounds that occur outside the main enclosure ditches.



THE NEOLITHIC SETTLEMENTS OF THE TAVOLIERE

FIG. 40. Amendola – Candelaro: general location map (1:200,000). Open circles mark settlement sites surveyed by Cassano and Manfredini (1983, 14)

Map Sheet: *Villagio Amendola*, 164.IV.SE

181: ref. 508977; fig. 41

Masseria Gorgoglione: a very small site consisting of two concentric ditches south-west of the farm and close to Podere O.N.C. 801. The two ditch circuits measure approximately 114 m. and 86 m. in diameter.

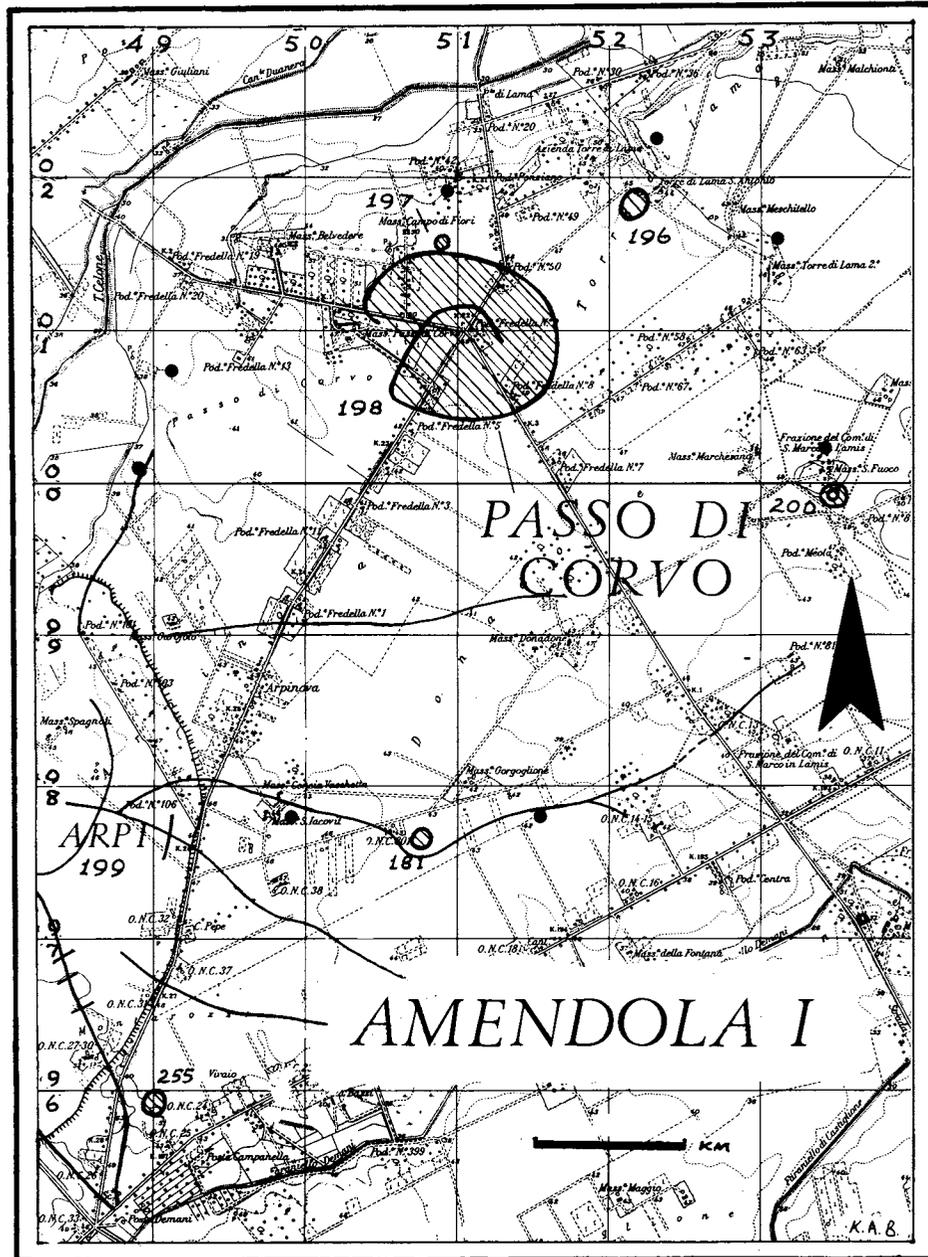


FIG. 41. Amendola I: location map (closed circles= sites identified by S. Tinè) (1:50,000); see also no. 255, p. 222

182: ref. 572979; fig. 42

Masseria Mezzanotte: a substantial single-ditched enclosure south-east of the masseria close to Podere No. 14. The axis of the site runs roughly N – S and measures 329 m. The width is 255 m. Two internal compounds measured 16.5 m. and 9 m. across.

183: ref. 580981; fig. 42; pl. XXVIb

Posta Farano: a medium-sized site formed by two irregularly spaced concentric ditches, north-west of Posta Farano. The internal circuit measures 213 m. by 203 m., the external 267 m. by 246 m. Part of the site now lies inside the area of Amendola aerodrome.

Map Sheet: *Amendola*, 164.I.SO

184: ref. 607967; figs. 42 and 43; pl. XXVa

Stazione di Amendola I: faint traces of a single-ditched enclosure extending along the scarp edge 400 m. west of the station. The approximate measurements of the site are 289 m. by 235 m. A rearward ditch curves round from this site to the next.

185: ref. 612966; figs. 42 and 43; pl. XXVa

Stazione di Amendola II: this superb site standing on the scarp edge immediately south of the station has already been described on p. 34, where it appears as one of the introductory examples to the site catalogue. The site was also discussed in Bradford 1957, 100 – 1; cf. pl. 27.

186: ref. 623970; fig. 42; pl. XXIIIb

Podere No. 249: a modern road bisects a very small, single-ditched prehistoric nucleus immediately south of the farm. The site measures approximately 86 m. by 67 m.

187: ref. 629962; fig. 42

Posta Alesi: a well-preserved, single-ditched enclosure on the scarp-edge north-east of Posta Alesi. The oval site, which lies along an E – W axis, measures 306 m. by 242 m.

188: ref. 641958; fig. 42; pl. XXVb

Masseria Belvedere I: this site, perched on the scarp-edge beside the farm, consists of a single inner ditch and two concentric outer ones. The former measures 195 m. by 168 m., the latter 299 m. by 235 m. and 314 m. and 262 m. respectively.

189: ref. 645960; fig. 42; pl. XXVb

Masseria Belvedere II: a second enclosure on the scarp north-east of the farm consists of a single-ditch circuit measuring 365 m. by 222 m. across.

190: ref. 653978; fig. 42; pl. XXVIa

Masseria S. Tecchia: a site on a spur south of the farm and overlooking the valley of the canalized T. Candelaro. The settlement was enclosed by two ditches. The outer one measures 262 m. by 231 m. at its maximum dimensions, and the inner ditch follows a regular course 14 m. away.

191: ref. 604990; fig. 42

Podere Farano: a single-ditched site measuring 210 m. by 195 m., now destroyed by the main runway of the Amendola aerodrome.

192: ref. 594034; figs. 44 and 45; pl. XXVIIa and b

Fonteviva: the smaller of two sites north-west of Masseria Fonteviva on the western slope of the Candelaro valley. The settlement shows three apparently separate phases of development. The first

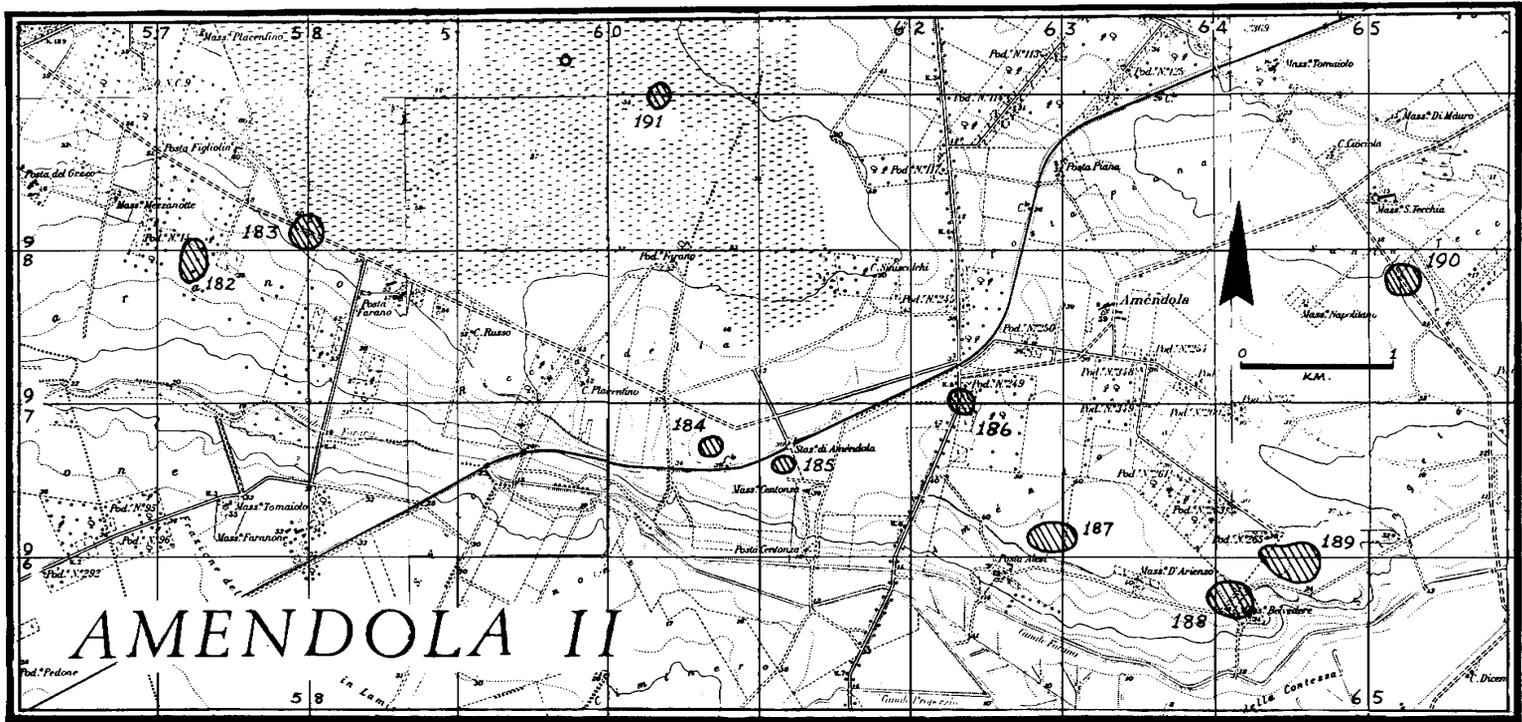


FIG. 42. Amendola II: location map (1:50,000)

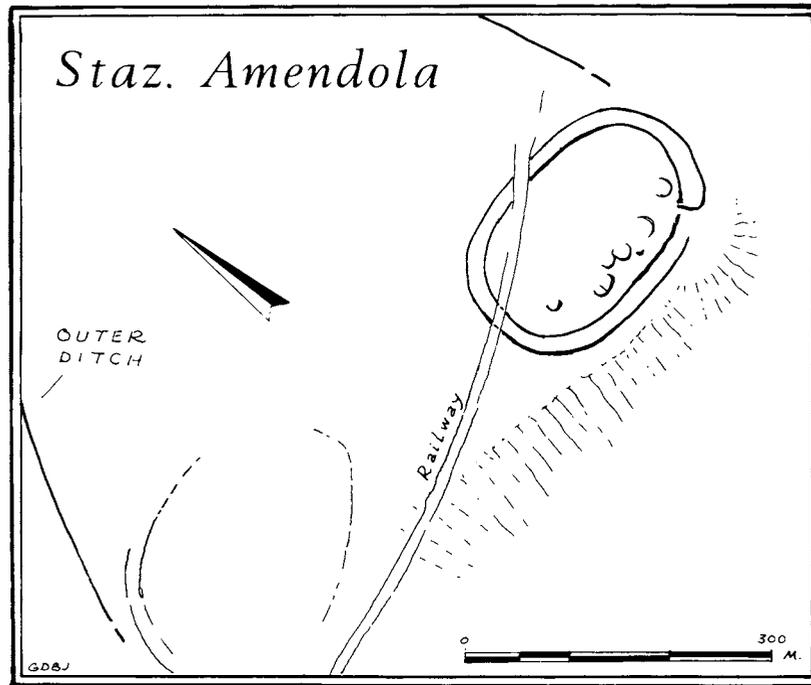


FIG. 43. Amendola: Stazione di Amendola (1:7,500)

and smallest is the original oval nucleus measuring 62 m. by 54 m. This was later incorporated in the eastern corner of a larger, single-ditched enclosure (148 m. across). Later a third enclosure was attached to the south-western side of the site, bringing its maximum dimensions to 202 m. by 168 m. The settlement was the scene of the excavations described on pp. 131 – 5.

193: ref. 588034; figs. 44 and 45; pl. XXVIIa

Posta d'Innanzi: the larger of the pair of sites on the southern flank of the Candelaro valley. Every year towards the end of May the outline of the village can be traced by a remarkable series of crop-marks in corn growing above the ditches of the compounds. The site is huge in extent and several stages of development are obvious in its plan. The smallest internal enclosure is single-ditched and oval in shape. Its axial dimensions are 218 m. by 286 m. This was enclosed within two widely spaced ditches; the interior oval measures 403 m. by 329 m., the exterior 440 m. by 417 m. As at Passo di Corvo (p. 101), this inhabited area lay to one side of a huge single-ditched enclosure that probably formed a home paddock for the village. It is not quite circular in shape, though not all the course of the enclosing ditch could be traced. Its dimensions are approximately 770 m. by 680 m.

Map Sheet: *Villaggio Amendola*, 164.IV.SE

194: ref. 578014; fig. 44; pl. XXVIIIb

Masseria Cascavilla: an interesting settlement on level ground north of the Foggia – Manfredonia road. The development of the site is not obvious (particularly as traces of a medieval road obscure some of the details on the air photographs), and the full picture of the way in which the site expanded could only be provided by excavation. It consists basically of two single-ditched enclosures, both of oval

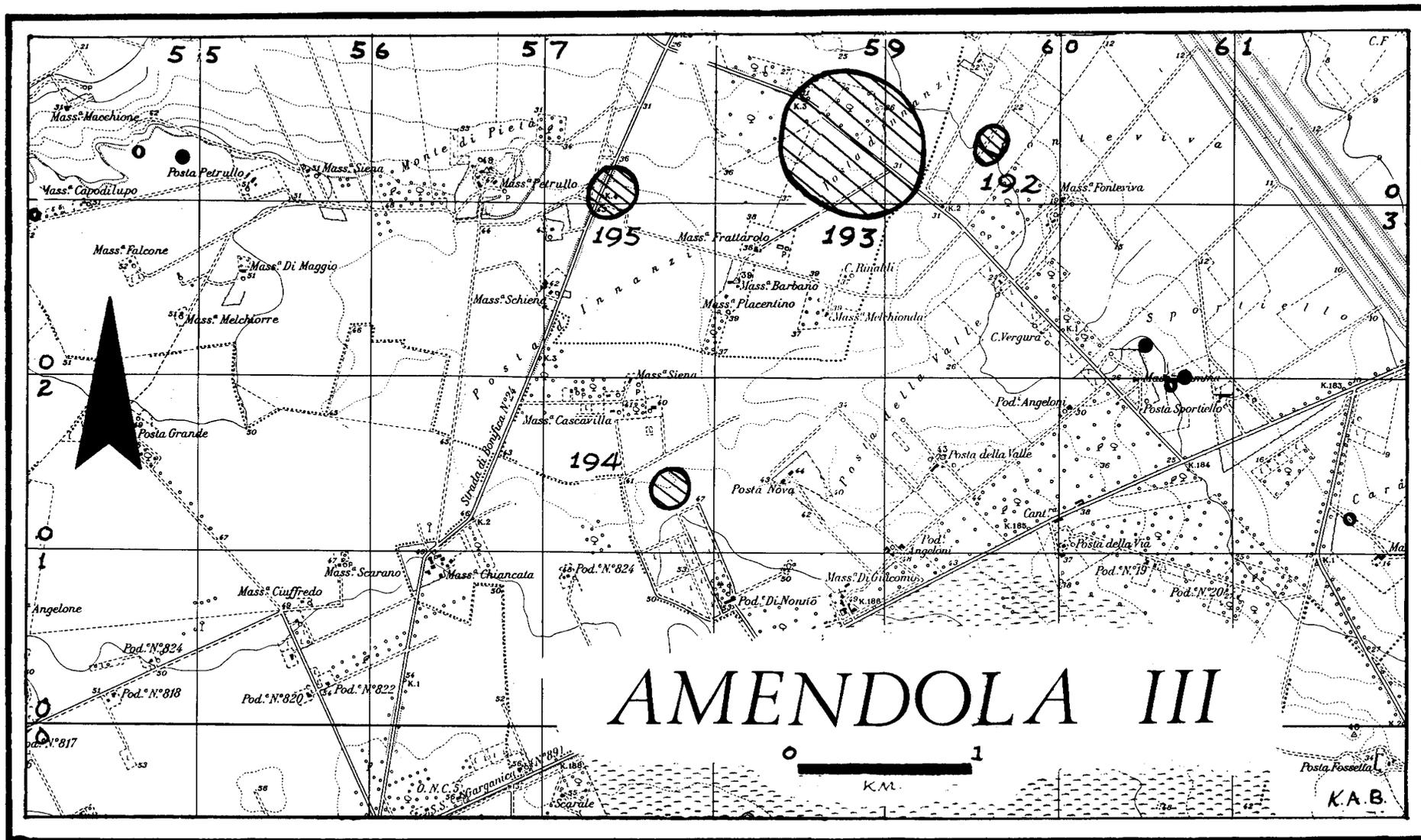


FIG. 44. Amendola III: location map (open circles=sites identified by Cassano and Manfredini (1983); closed circles=sites identified by Tinè (1983) (1:33,333)

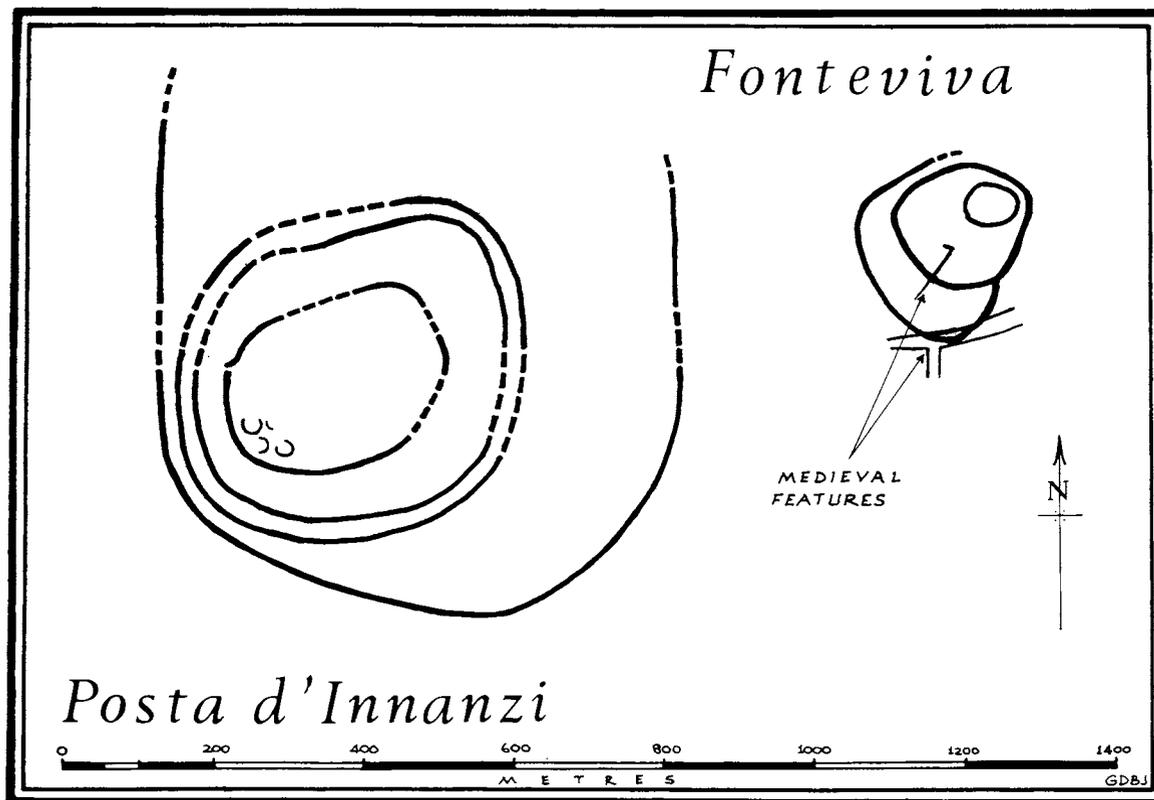


FIG. 45. Amendola: Fonteviva and Posta d'Innanzi (1:10,000)

shape with a longitudinal axis aligned NW – SW. The inner enclosure measures 204 m. by 168 m. and appears to contain traces of a smaller nucleus approximately half that size. This in turn is bisected by an unexplained curving ditch. The outer ditch measures 276 m. by 204 m., but its course is only visible from the air for three-quarters of its full circuit. The unusual feature, however, is that a number of ditched compounds (at least four) appear *outside* the outer enclosure. Their open sides all face due north towards the village, and two of the compound ditches appear to be connected with the outer enclosure ditch. Clarification of the many unusual features of this interesting settlement must await excavation.

195: ref. 574031; fig. 44; pl. XXVIIIa

Masseria Petruzzo: the new farm road (Strada di Bonifica No. 24) running SW – NE 500 m. due east of Masseria Petruzzo, the site of an important medieval settlement, bisects a small Neolithic site. The main feature of the remains is a circular nucleus approximately 94 m. in diameter. The ditch is exposed in section on both sides of the modern road, which runs in a cutting at this point. The ditch section which is visible in a road section (pl. XXVIIIa) illustrates the way in which crop-marks occur on prehistoric sites. To the north of the main ditch section two lesser ditches also appeared, 1.45 m. apart. They attest the existence of smaller compounds outside the main nucleus, and this is confirmed by the air photographs, which show at least four other compounds between 50 m. and 100 m. east of the main circle.



FIG. 46. Amendola: Passo di Corvo (1:12,500)

196: ref. 522018; fig. 41

Torre di Lama: air photographs show faint traces of Neolithic compounds on the shelf of ground south-east of the medieval tower. A small amount of coarse pottery was collected from the area, which later became the site of a more extensive Daunian and Roman settlement.

197: ref. 509016; figs. 41 and 46; pl. XXXa

Campo di Fiori: this lesser site close to the massive settlement belongs to a pattern common amongst double-ditched enclosures. The settlement is slightly oval in shape with two roughly concentric ditches with maximum dimensions of 156 m. and 114 m. enclosing a penannular compound 28.5 m. across. The latter lies slightly off-centre, with its entrance facing north. There are traces of at least two other compounds to the rear of the enclosure, the entrance to which must lie in the northern sector. For further details, see p. 101.

198: ref. 510010; figs. 41 and 46; pls. XXIX, XXXa and b and XXXIa

Passo di Corvo: this site is the major prehistoric settlement of the Tavoliere, a role fulfilled in the classical period by neighbouring Arpi and taken over in modern times by Foggia itself. It lies at a height of 52 m. on a slight but perceptible rise encircled in effect by the Celone to west and north. The original description given in *Antiquity*, xx (1946), 191, still serves for the most part.

The overall dimensions of the settlement, taking into account the surrounding ditches, are 730 m. by 460 m. The general plan can be seen from pl. XXIX and fig. 46. From these it is clear that the inhabited area of settlement forms the southern part of an even larger area defined by a single ditch to north, west and north-east. The latter is over twice the size of the area filled with compounds. This annexe has a greatest axial dimension of c. 1, 480 m. In the absence of compounds from the interior the annexe can be interpreted as either a paddock for grazing or a delimited area of cultivated land from which herds were excluded. The pattern, if not the scale, of the layout is familiar from many other sites.

In none of the available cover does the nucleus of the settlement produce crop-marks *in toto*. Nonetheless, some ninety fragments of compound ditches can be listed from the area; only the definite or relatively complete examples are drawn out in fig. 46. As can be seen, the great majority of entrances to the compounds face in a northerly direction; some compounds appear to have been subdivided. *Passo di Corvo* contains sufficient evidence to yield a statistically meaningful assessment of the compound sizes. From a sample of fifty-five compounds the overall (i.e. including the ditch) diameters measure as follows:

- | | | |
|-----|----------------|-----|
| (a) | 13·5 – 21·5 m. | 70% |
| (b) | 21·5 – 27·5 m. | 20% |
| (c) | 27·5 – 45·5 m. | 10% |

The percentage of compounds smaller than category (a) is negligible. The three largest compounds measure 36 m., 38 m. and 45 m. respectively. The very large compound in the south-eastern corner of the settlement (= *Passo di Corvo II* on p. 121) falls into a special class. Its size (95 m. by 100 m.) sets it apart as either an earlier settlement pre-dating the main occupation at *Passo di Corvo* or the site of the headman's residence. In view of the lack of any superimposed compounds the latter hypothesis seems preferable. See further pp. 117 – 35, 145 – 68 and recent excavations by Professor S. Tinè, who has published an account of his work in *Passo di Corvo e la civiltà neolitica del' Tavoliere* (Genoa, 1983); this book, which was not available to the author at the time of going to press, supersedes all previous discussion of this site.

199: ref. 486956 (approx.); fig 41

Arpi: at the southern end of the site of the city of Arpi the excavation of a cemetery area by the Soprintendenza alle Antichità della Puglia in 1939 and 1941 revealed traces of prehistoric occupation preceding the Daunian burials. Painted pottery, obsidian and chert blades were among the finds: 'pezzi di ceramica dipinta, ascia levigata, frammenti di coltellini di selce ossidiana'. The excavators also uncovered the ditch forming part of some kind of Neolithic settlement: 'un fossato che doveva circondare un abitato di età eneolitica' (C. Drago, *ASP*, iii (1950), 161–80).

200: ref. 535999; fig. 41; pl. XXXIb

Masseria Fuoco d'Angelone: a medium-sized site with inner and outer single-ditched circuit, apparently forming a single unit of settlement. The oblique aerial view shown in pl. XXXIb is the only available cover of the site.

See also no. **255**, p. 222.

XVI. *Candelaro* (figs. 47 – 8; pls. XXXII – XXXIV)

Today the canalized T. Candelaro runs in the centre of a broad valley at the foot of the Gargano escarpment and so into the sea south-east of Manfredonia. Before the canalization of the river, however, the Candelaro drained into an area of marsh known as the Lago Salso. The lake still exists today in diminished form but originally, in the rainy season, it must have extended far up the Candelaro valley, as attested by surviving placenames such as Masseria Maremorto. The size of the lake is in fact attested by Strabo for the classical period (vi.iii.9). Though malaria was probably endemic in the area, a string of Neolithic sites grew up along the northern side of the Candelaro valley on a gently inclined shelf marked by *terra rossa* soils below the edge of the Gargano limestone series. The density of sites at this point is important in demonstrating Neolithic man's recognition of relative soil fertility in the area. The line of the sites (201 – 213), thus probably represents the habitable fringe of the seasonal lakes created by the Candelaro. The largest sites at Bivio S. Giovanni Rotondo and M. Aquilone (204 and 207) have been partially excavated by A. Manfredini in recent years.

Coppa Nevigata, the only long-known site in this group (214), was located by quarrying in the first years of this century and has been the basis of much debate. It lies on a small limestone outcrop projecting into the Lago Salso east of the other sites and away from the actual Candelaro valley, because the edge of the Gargano limestone series turns north-east at Masseria Fontanarosa. Beyond this point settlement was controlled by the very limited area in which any permanent occupation was feasible. In recent geological times this area has continually changed, because the alluvial deposits brought down to the marshes have constantly moved the shoreline further east towards Manfredonia. As the once-malarial marshes (Cicero describes them as 'arena et paludes') are impossible for permanent settlement, the area where the narrow strip of coastal dunes meets the waterless Gargano limestone forms one possible focus for settlement at the northern end of the Gulf of Manfredonia (fig. 4). Coppa Nevigata thus lay beside the sea during the period of its occupation, and the gradual geological change explains how, as the point of junction between the dunes and the Gargano limestone has moved steadily eastwards, Coppa Nevigata, Sipontum and Manfredonia have in turn formed the main settlements of the Neolithic, Roman and modern periods (see further C. Delano Smith, Bibliography, p. 223). Coppa Nevigata has for too long been discussed as an isolated phenomenon in its geographical context. It should be seen as only one, albeit long-recognized, component of a remarkably concentrated collection of settlements relying on the same economic resource, the Candelaro lagoon and the fertile *terra rossa* shelf. The overall importance of this group is discussed further on p. 177.

Map Sheet: *Amendola*, 164.I.SO

201: ref. 628041; fig. 47

Masseria il Principe: again modern agriculture intervenes, but in a different way. The principal field division to the north of the farm has obscured the central and southern sectors of a medium-sized bivallate settlement. The northern tangent appears clearly, however, on the aerial cover. Two roughly concentric ditches, a maximum of 25 m. apart, enclose a site the diameter of which must

have approached 165 m. It is regrettable that so much of the detail of this, the most northerly of the sites identified, should have been so obscured, because it also marks the limit of cover available from 1945 for this agriculturally important stretch of *terra rossa*. There are faint traces of another possible site (201A) to the south-west, as also 300 m. to the south, where up to twenty compounds can be traced (201B).

202: ref. 628033; fig. 47

Masseria il Principe III: immediately south of C. Ricciardi a projecting spur overlooking the Candelaro offered a good habitation site. On the high-level aerial cover traces of compounds can be seen, particularly to the north-eastern side of the spur, but the change in the nature of the soil from *crosta* to *terra rossa* robs the features of great definition, and in particular a ditch circuit cannot be identified on the available cover. There is a possibility, taken in conjunction with the evidence from site 201 to the north, that some of the compounds clustered along this prime settlement area combining multiple food sources from the seasonal lagoon and the fertile terrace of land may not have been within enclosed areas.

203: ref. 632038; fig. 47; pl. XXXIVb

Angeloni: an ovoid univallate enclosure using a slight spur formation on the *terra rossa* shelf overlooking Masseria il Principe and the reclaimed valley floor of the Candelaro. The site measures approximately 110 m. by 90 m. The extreme height of the vertical cover available does not make it possible to describe internal detail, and various neighbouring crop anomalies appear to belong to later periods when several trackways crossed the Candelaro basin and climbed the lower scarp of the Gargano at this point.

204: ref. 636028; figs. 47 and 48; pl. XXXIVa

Bivio S. Giovanni Rotondo: now also known as Masseria Candelaro: an irregular circular enclosure bisected by the Foggia – Manfredonia road 200 m. north-east of the turning to S. Giovanni Rotondo. The triple ditches enclosing the site appear best on the northern side of the main road, where their course is indicated by lines of reeds growing to exceptional height in the rough ground. Excavation has shown that the ditches reached a width of 5 m. The SW – NE diameter of the inner ditch measures *c.* 256 m., while the two outer ditches lie approximately 24 m. and 20 m. beyond it. One large circular compound (*c.* 97 m. across) lies within the main enclosure.

With Masseria Maremorto III and Coppa Nevigata, this is one of the most substantial of the Neolithic sites on the eastern side of the Candelaro. As already noted, the line of the Candelaro valley marks a geological change from the *crosta* of the Tavoliere to the limestone of the Gargano, and at this point the site lies upon a projecting spur with little soil cover. This can be seen on the northern side of the site, where the trenches of the three ditch circuits are cut into the bedrock. See now p. 175 for recent excavation by A. Manfredini.

205: ref. 635023; fig. 47

Masseria Maremorto II: the north-eastern circuit of a Neolithic settlement is visible on the northern edge of the Bivio S. Giovanni Rotondo – Stazione Candelaro track-road. Part of the site, however, must lie to the south across the line of the modern road and its dimensions and details cannot be recovered from the evidence available on the aerial cover, which is further confused by superimposed Roman vineyards at this point.

206: ref. 636024; fig. 47

Masseria Maremorto I: again the changes in the nature of the soil away from the *crosta* familiar elsewhere makes definitive interpretation difficult on the mixed *terra rossa* involved. The site in question is univallate with a slightly ovoid shape extending to the north-west close to the external

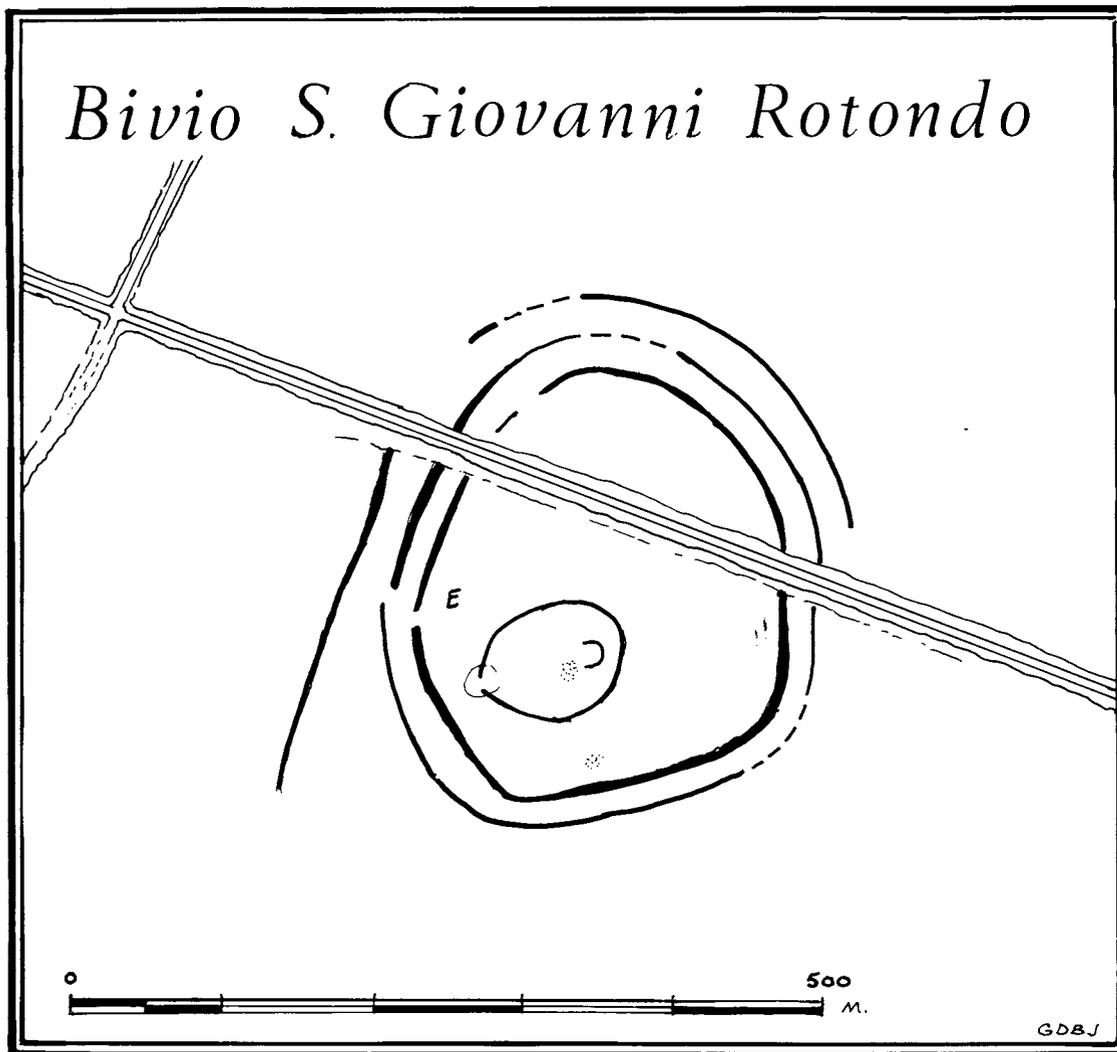


FIG. 48. Candelaro: Bivio S. Giovanni Rotondo (1:5,000)

ditch associated with the major site at Bivio S. Giovanni Rotondo (M. Aquilone). Traces of four or five compounds can be seen in the north-eastern corner close to the track leading to the masseria. The maximum N-S dimension is in the region of 160 m.

207: ref. 638019; fig. 47

Masseria Maremorto III (also known as M. Aquilone): a circular enclosure on the north-eastern side of the farm road immediately opposite Masseria Maremorto. The site was enclosed by three ditches. The outer ditch has a diameter of 240 m., the inner 180 m. No details of the interior appear from the air. From the eastern and western sides of the outer ditch two further ditches loop round across the road and towards the masseria. The details are obscured by modern development, which is particularly regrettable because the relationship with the univallate site Masseria Maremorto IV is thereby lost.

When sherded in 1963 the site produced a quantity of Neolithic material, including blades and scrapers in Lipari obsidian and chert, La Quercia and Passo di Corvo painted wares, together with burnished and incised coarse wares (see Whitehouse 1968b, 332 f.)

Subsequently six trenches were excavated on the site by A. Manfredini in 1967. Most of the trenches were concerned with establishing the relative chronology of the ditches and their respective fills. Fortunately, one of the two excavations in the interior located the remains of a sub-rectangular hut built in dry-stone walling within the area of a compound. See now Manfredini 1972.

208: ref. 638017; fig. 47

Masseria Maremorto IV: as already stated, there is evidence of a univallate enclosure on the south side of the modern farm buildings. It was located on the edge of the shelf above the Candelaro. In shape it is a rough circle with a diameter of approximately 160 m. E – W. The northern side and any details of the relationship with the outworks of site **207** are lost.

209: ref. 642027; fig. 47

Masseria M. Aquilone I: a small ovoid univallate enclosure appears to lie at the core of a larger site of which a single circuit ditch is partly visible on the western side. The core measures c. 60 m. by 40 m. overall and is placed on the upper shelf overlooking the Candelaro at this point.

210: ref. 641022; fig. 47

Masseria M. Aquilone II: on the immediate shelf overlooking Masseria Maremorto, despite changes in the subsoil to a greater limestone content, another very small univallate circular site can be distinguished.

211: ref. 644019; fig. 47

Posta Fontanarosa: traces of a substantial oval, single-ditched enclosure appear on the shelf south-west of the farm. Not all the site is traceable, but its approximate dimensions are 255 m. by 156 m. An additional circuit ditch runs from the south-eastern corner of the circuit and a further detached ditch can be seen outside this.

211A: ref. 642014

Posta Fontanarosa II: large spur site not visible on aerial cover. A middle Neolithic assemblage was recovered in March 1981. Double ditch visible in growing corn on north side.

212: ref. 652013; fig. 47

Masseria Fontanarosa I: part of another single-ditched enclosure is visible 1 km. west of the masseria. It is oval in shape and its dimensions are approximately 162 m. by 120 m. with a NW – SE axis.

213: ref. 653010; fig. 47

Masseria Fontanarosa II: the site of another settlement on the scarp edge overlooking the Candelaro is bisected by the modern track to Stazione di Candelaro. The crop-mark indications are not clear owing to the height from which the photograph was taken, but the site appears to be univallate and ovoid with an approximate diameter of 120 m., again with a NW – SE axis.

Map Sheet: *Fermata di Frattarolo*, 164.I.SE

214: ref. 697012; fig. 47

Coppa Nevigata: along the edge of the Lago Salso lies the very important prehistoric site of Coppa Nevigata, excavated in the first instance by Q. Quagliati and A. Mosso in 1909. The stratigraphy of

the site was established finally in excavations undertaken by C. Drago and S. Puglisi in 1955. The details of the results, which established a sequence of five occupation levels, were published in *RSP*, x (1955), 19–37. For recent analysis of the material, etc., see further pp. 145 ff.

The site has now finally been destroyed. The bibliography based on the Coppa Nevigata material is now large, see further pp. 223 ff.

Dr A. Manfredini of the Museo Pigorini, Rome, has kindly informed the author of further discoveries, namely two sites recognized from scatters of sherds on the spur north of Masseria Fontanarosa (683004). The recognition of these two additional sites from surface traces further emphasizes the importance of the overall group of sites along the edge of the Lago Salso (pp. 102–7). The results of the recent work are published in Cassano and Manfredini 1983. For their topographical discoveries, see fig. 40.

XVII. *S. Severo South* (fig. 49; pls. XXXV – XXXVI)

The area to the south of S. Severo, like that to the east, is largely given over to intensive vine and olive growing. The region could be said to terminate on a gentle rise that forms the north side of the valley belonging to the canalized T. Ferrano that flows into the T. Triolo 3 km. short of the SS Adriatica in the zone known as Motta del Lupo, where three important medieval sites are situated. It is fortunate in archaeological terms that the edge of this scarp is relatively free of viticulture in comparison with the situation further north. This has led to the location of a string of sites situated in a typical scarp-edge position. The major site of the whole area lies to the west of Motta del Lupo (**216**). In some ways it rivals Passo di Corvo. The double-ditched enclosure has an E – W measurement of 865 m. across the scarp edge between Motta del Lupo and Masseria Casalorda. Unfortunately almost all the details of the site are obscured because it is in precisely this key area that three medieval sites with their associated approach roads and field systems have also been located. This Neolithic unit, therefore, dwarfs all the others in the neighbourhood. Two further sites (**217** and **218**) are known in scarp-edge positions to the north-west, at Masseria Solimanti and Masseria S. Giusta, while another pair (**215** and **209**) balance the picture to the east. In effect the cumulative effect of S. Severo East and S. Severo South is to emphasize that the modern vineyards and olive groves surrounding the present town must obscure one of the thickest concentrations of Neolithic settlement in the Tavoliere, a settlement pattern that probably rivalled that of Lucera East in density.

Map Sheet: *Masseria Faralla*, 163.I.NE

215: ref. 359088; fig. 49

Masseria Ratino: the site appears in the form of crop-marks north-east of the masseria that indicate approximately a quarter of the circular settlement. It took the form of two concentric double-ditched enclosures of which the diameters are uncertain, though the site as a whole must fall into the medium-sized category. There are traces of huts within both the inner and outer perimeters; the latter was possibly *c.* 250 m. across.

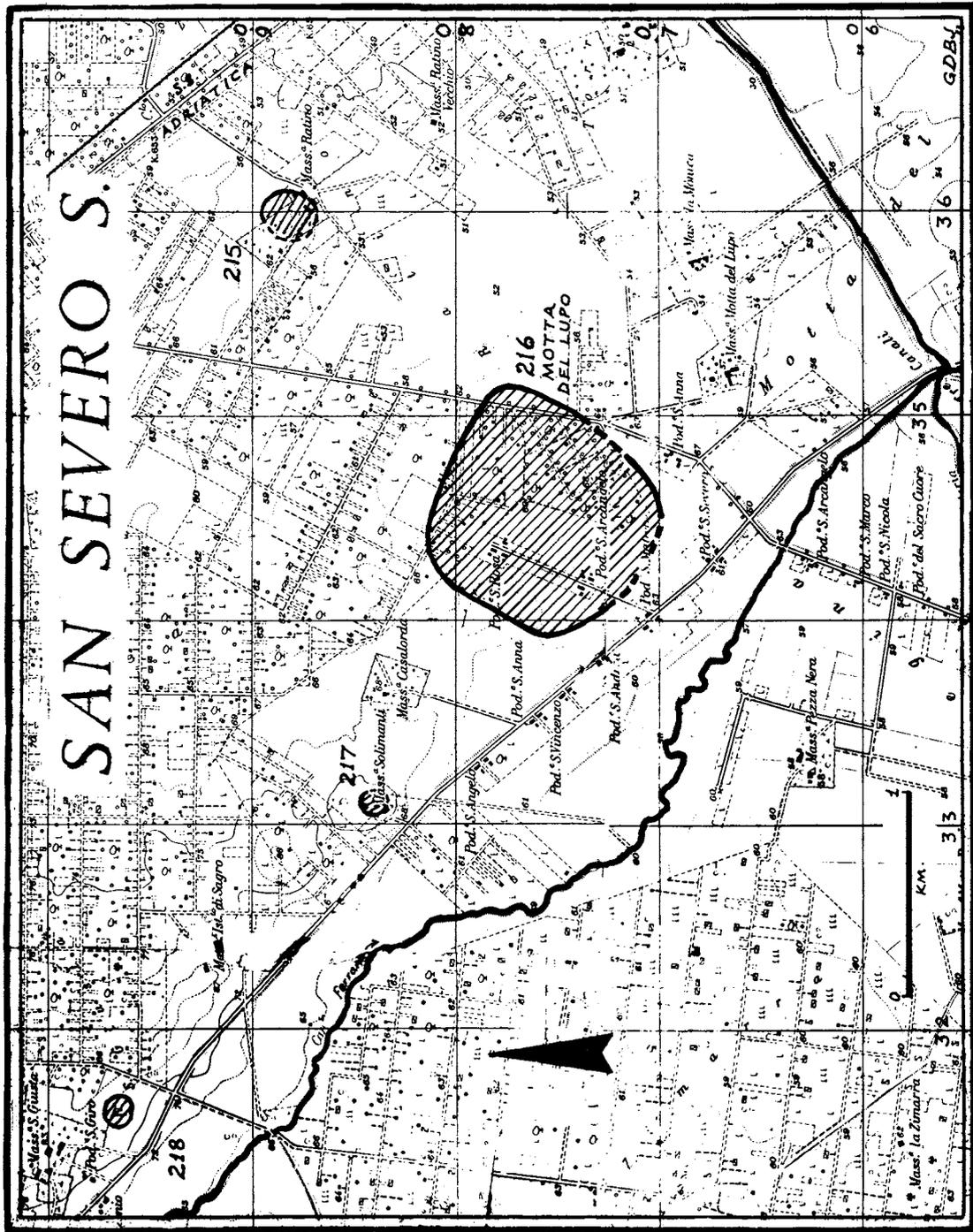


FIG. 49. S. Severo South: location map (1:33,333)

216: ref. 345075; fig. 49; pl. XXXV

Motta del Lupo: with Passo di Corvo this settlement deserves to be called a major Neolithic site of the Tavoliere. It lies immediately west of the medieval site of the same name and occupies a low scarp on the northern side of the canalized T. Ferrano, a tributary of the Triolo. The whole area as it appears on the aerial cover is intersected by medieval fields and roads serving the three medieval sites in the immediate area. Beneath the crop-marks indicating medieval features occur the tell-tale marks of penannular compounds covering over 1 sq. km. The associated circuit was double-ditched and can be traced for all but a small section of the eastern side. This enclosed area is greater than the compound-filled portion of Passo di Corvo, but less than the latter site's total area, including the outer paddock or corral. The maximum E – W width of the Motta del Lupo site is 865 m. There remains the question of whether there was an attached enclosure to the north to complete the parallel with Passo di Corvo. The evidence is not clear owing to the superimposition of medieval features.

217: ref. 331085; fig. 49; pl. XXXVIa

Masseria Solimanti: a medium – small enclosure with two major internal compounds visible (one with a northern attachment). The site is well shown in the relevant oblique aerial photograph. It is surrounded by a single ditch with a simple entrance on the eastern side. The N – S measurement is c. 138 m.

218: ref. 316097; fig. 49; pl. XXXVIb

Masseria S. Giusta: on the shelf north and north-east of the present masseria lies evidence of an oval site measuring c. 260 m. across its long axis. The outer perimeter is formed by a double ditch of which the external member is only faintly visible. There is also a trace of a single-ditched inner enclosure similar in shape to the outer circuit and measuring c. 170 m. across. The area that this inner circuit encloses appears to contain no ditched compounds, although the details are not well shown owing to modern buildings. The intermediate zone between the circuits is, however, packed with compounds. Possible interpretations could vary considerably (see p. 178, for further comment on this kind of site), but the superimposition of part of a compound with the inner circuit suggests more than one period of occupation.

Map Sheet: *La Camera*, 164.IV.NO

219: ref. 380073

K.656. The site is not shown on a detailed location map as it lies immediately west of K.656 of the SS Adriatica between Foggia and S. Severo. It was a single-ditched settlement perched on a low, southward-facing scarp overlooking the Triolo. Its overall E – W measurement was 73 m., with one major internal compound in the centre and several minor ones scattered round the northern perimeter.

XVIII. *S. Severo East* (fig. 50; pls. XXXVII – XXXVIII)

The S. Severo area is nowadays one of intensive olive and vine growing. Most of the region to the east and south of the town is laid out either as vineyards or olive groves and the amount that aerial photography can reveal is necessarily only a fraction of the potential evidence. Despite this, the material located is startling in its density and of particular interest

to the pattern of Neolithic settlement at the northern end of the Tavoliere. The current agricultural layout of the area also makes it difficult to understand the overall topography of the gently sloping shelf of land that slopes down east of S. Severo to the reclaimed marshes of the Candelaro. As the Tavernola area suggested (p. 86), the 40 m. contour appears to have been the limit of settlement on the eastern side of the marshes. The large number of sites located in the area lie roughly along the 45 – 50 m. contour line, an area that is not yet wholly devoted to olive or vine growing; on the other hand some caution is perhaps needed when so much is obscured by modern agricultural developments. Within the zone there is only one major valley, that of the canalized Venolo, with a complex of sites on its southern and northern banks at Masseria Stellatella (**227**, **228** and **229**). The south bank of this stream has influenced the position of several sites to the south-east, the largest of which is a massive settlement (**235**) now entirely obscured by vineyards in the area known as Madonna del Oliveto. A further site of substantial size occurs beneath the medieval remains at Torrione del Casone (**220**), the prominent medieval remains that were also the site of the classical *Ergitium* and the scene of excavations in 1963 – 4. The site lies on the edge of the land that has been reclaimed in modern times and it has a close parallel north of the Venolo at Il Casone (**221**), where a settlement of great complexity defies analysis into easily defined units. The area closer to S. Severo is very heavily composed of vineyards and olive groves, but at Contrada Guadone (**225**) the Soprintendenza under the direction of Professor S. Tinè has located a settlement close to the modern town.

Il Casone

Map Sheet: *La Camera*, 164.IV.NO

220: ref. 385114; fig. 50

Il Torrione: finds from both surface sharding and the excavations of 1963 and 1964 left no doubt that the long occupation of the site (it was the town of *Ergitium* in the classical period) extended as far back as the prehistoric period. The site occupies a slight elevation looking out across the large expanse of very flat (and once very marshy) ground extending eastwards to the Candelaro. As one might expect the nucleus of the Neolithic material appears to lie on the highest part of the site, that is the small crest now occupied by the Torrione, a circular medieval tower. It was, in fact, in the upcast of the tower ditch that most of the surface finds were located. Further unstratified Neolithic material was found during the excavation of a medieval brick kiln south-east of the tower.

The pottery consisted of a large variety of burnished wares with incised decorations including a rare pattern of sloping scratches made by a comb-like implement.

221: ref. 381125; fig. 50; pl. XXXVIIa

Il Casone: the Neolithic site at Il Casone is visible today in crop-marks immediately south of the deserted masseria. Much of the area concerned is now rough pasture and the plan is difficult to determine. It appears to consist of three concentric ditches (visible on the southern side of the hill) with ditched compounds occurring within the inner ring. Altogether little definite can be said about the settlement except that it certainly underwent a complex development.

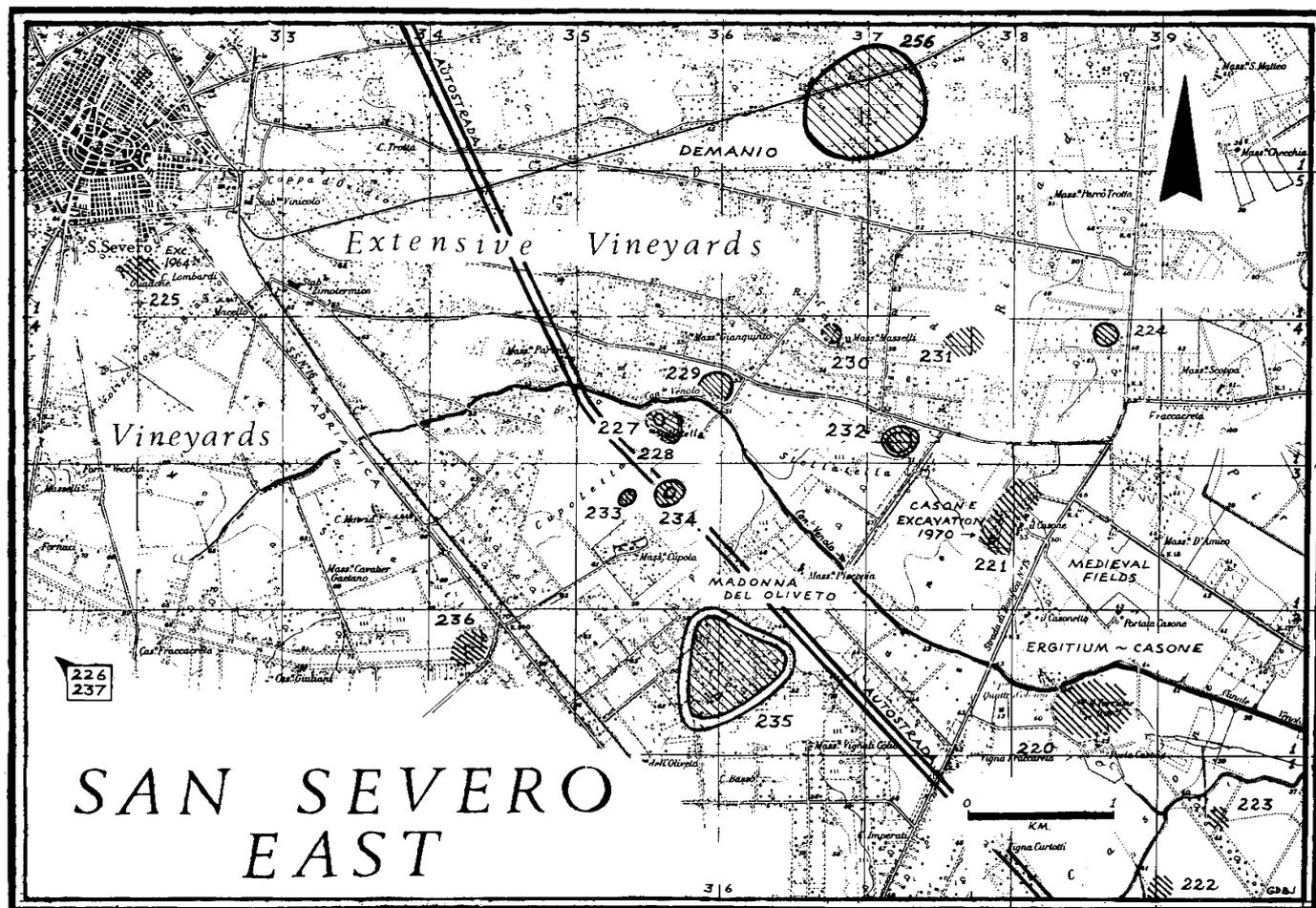


FIG. 50. S. Severo East: location map (1:50,000); see also no. 256, p. 222

222: ref. 390101; fig. 50

Masseria Miniscetti I: traces of several compounds indicate the existence of a site 1 km. south-east of Il Casone. Any estimate of the size of the enclosure must remain tentative, but it probably reached over 200 m. in diameter.

223: ref. 394106; fig. 50

Masseria Miniscetti II: an elongated oval *c.* 270 m. N – S. Modern cultivation prevents detailed location of the perimeter or the internal compounds.

Map Sheet: *Branca*, 156.III.SO

224: ref. 387139; fig. 50

Masseria Scoppa: a small, single-ditched enclosure bisected by a centuriation road 120 m. west of the present minor road to Casone. The settlement is almost circular in shape and there are no indications of internal features. Diameter 97 m. The site is now covered by modern vineyards.

Map Sheet: *S. Severo*, 155.II.SE

225: ref. 318145; fig. 50

Il Guadone: this name is given to an area lying on the south side of the present town of S. Severo. It was the scene of an excavation by the Soprintendenza in 1965 under the direction of Professor S. Tinè. The finds are deposited in the Museo Civico, Foggia.

226: ref. 295144

Pozzo delle Capre: the area of this name, 2 km. due east of S. Severo, has yielded pottery from the modern vine and olive yards. The grid reference relates to an elevation on which the nucleus of the site probably lay. Not shown in fig. 50.

227: ref. 358133; fig. 50; pl. XXXVIIb

Masseria Stelatella I: this settlement lies immediately east of the present masseria on the southern bank of the Canale Venolo. The details of the site derived from the aerial cover make it one of the best examples of its kind (p. 178). It comprises three separate enclosures none of which touches another, in a smaller version of the layout at *Masseria Martelli (35)* near Lucera. The N – S measurement of the inner compound is 50 m.; the outer enclosure measures *c.* 140 m. in the same direction.

228: ref. 358133; fig. 50

Masseria Stelatella II: to the south-west of the above site there are partial indications of a single-ditched enclosure of circular shape. Only the south-western tangent appears as a crop-mark and no dimensions can be accurately reconstructed.

229: ref. 359135; fig. 50

Masseria Stelatella III: a third site lies on the northern bank of the Canale Venolo north-east of the previous group. It comprises a single-ditched, elongated oval measuring *c.* 350 m. E – W.

230: ref. 368139; fig. 50

Masseria Masselli I: crop-marks indicate the presence of a single-ditched enclosure of which the

eastern side is preserved immediately west of the masseria. The site measures *c.* 150 m. across, and a single compound is visible close to the eastern side.

231: ref. 375138; fig. 50

Masseria Masselli II: heavy ploughing has almost destroyed traces of compounds indicating the existence of a prehistoric site 800 m. due east of the masseria.

232: ref. 373131; fig. 50

Stellatella: the series of sites on the north bank of the Venolo is continued by this double-ditched enclosure, the northern side of which is well preserved. The outer perimeter of the oval settlement measures *c.* 240 m. E – W with the inner ditch some 30 m. to the interior. Four compounds are visible, but further detail is obscured by the remains of a superimposed Roman centuriation system.

Map Sheet: *Masseria Faralla*, 163.I.NE

233: ref. 353128; fig. 50; pl. XXXVIIIa

Masseria Cupola I: the small elevation north of the masseria marks the location of two separate prehistoric sites. This example is apparent from crop-marks of at least six internal compounds in the eastern section. The perimeter is more difficult to identify but appears to comprise a single ditch with an approximate E – W diameter of 150 m. The compounds are northward-facing.

234: ref. 357128; fig. 50; pl. XXXVIIIa

Masseria Cupola II: further to the north-east lies the second site of the pair. The central nucleus, *c.* 120 m. across, is partly obscured by traces of Roman agriculture and is set within a larger enclosure *c.* 330 m. across. There are possible traces of another outer ditch to the north, but the evidence is further confused by trackways, probably of medieval date.

235: ref. 364114; fig. 50; pl. XXXVIIIb

Madonna del Oliveto: this represents one of the major sites of the Tavoliere. Its colossal size is heavily masked by the vineyards and olive groves amongst which it lies. The only details about the interior are visible at 360114, where a small area of arable occurs in the modern cultivation pattern. One of the compounds visible in this area is double-ditched, the only instance of the phenomenon in the Tavoliere, unless it should be interpreted as superimposition. The entrances in this pre-eminently large compound both face north-west.

The perimeter of the settlement is defined by two massive ditches comparable with the arrangements at Motta del Lupo. The maximum E – W dimension is approximately 750 m. The entire double-ditched circuit is traceable in general terms, but little detail can be established.

236: ref. 343118; fig. 50

S. Andrea: the slight eminence used by this medieval site was probably also occupied in the prehistoric period. Certain crop-marks amongst the traces of a medieval field-system appear to represent the circuit ditches of a substantial site. Neolithic pottery has been found in the area (*RSP*, xxi (1966), 431 (V. Russi)).

237: ref. 283129

Coppa Pallante: although not shown on the distribution map for the area, this site can be added to the group. It is a hill rising to 105 m., 2 km. south-west of S. Severo, and is completely covered with olive groves and vineyards. Signore V. Russi has found Neolithic pottery in the area (1967, 450).

See also no. **256**, p. 222.

XIX. *The Gargano* (figs. 51-2)

No description of Neolithic settlement within the Tavoliere would be complete without a discussion of the evidence available from the Gargano, the limestone peninsula that projects into the Adriatic. It is of interest both in itself and in the contrast created by its startling juxtaposition to the Tavoliere. Moreover, as already discussed (p. 33), it was the probable source of the supplies of chert and flint to the sites in the plain.

The Gargano has already been described in some detail (p. 24). Surface drainage is practically non-existent. Much of the water disappears underground into the karstic features that abound throughout the peninsula. The position of all settlement is therefore almost completely controlled by the availability of water, and this helps considerably in locating prehistoric and classical sites.

The Gargano has, with the Tremiti Islands, received much fruitful study in the last decade. This has resulted in a spate of announcements in the *Notiziario* of the *Rivista di Scienze Preistoriche* of work in progress on sites dating from the Palaeolithic period onwards, and numerous longer reports and discussions in the same journal, the *Archivio Storico Pugliese*, and elsewhere, including the *Memorie* of the Museo Civico di Storia Naturale di Verona — the body responsible for most of the work, carried out under the direction of the Director of the Museum, Professor Zorzi. It is obviously beyond the scope of the present section to do more than append a selection of what appear to be the more important notes and papers.¹⁴

The results of recent work are included in fig. 52, a distribution map of sites in the Gargano peninsula. It shows the group of sites now known along the northern coastline of the Gargano opposite the Tremiti islands. It should be noted that the reason for this agglomeration is that it forms the only piece of littoral that is relatively easily accessible today, a fact of modern geography that has shaped the pattern of research. Very many of the sites mentioned in the bibliography mark the position of flint industries. This is probably true of many of the others as well. Strata of flint and chert occur plentifully in all the cliffs of this part of the coast (p. 24) and also in the far wilder stretch to the south of Vieste. The existence of these Neolithic sites along the northern littoral and the obvious difficulties of the terrain in the interior suggest that the flint and chert products of the industries of the littoral were transported by water to the northern and south-eastern sides of the Tavoliere, whose prehistoric sites all seem to derive their stone implements from the Gargano.

As a number of sites were already known along the northern coast, the best way of substantiating the point seemed to lie in proving the existence of similar sites along the very difficult coastline south of Vieste, particularly in the area of the Testa del Gargano, the eastern tip of the peninsula. The results (also shown on fig. 52) were startling and far exceeded expectations. Every cove produced evidence of Neolithic occupation and the principal bay, Marina di Campi, was the site of a considerable flint industry. The details are given below; the evidence supports the theory mentioned above and suggests that further work along the habitable sections of the coastline would yield many other sites.

238: ref. 986316; fig. 52

Cala di S. Felice: worked fragments of chert can be recovered in quantity from the area to the rear of the foreshore.



FIG. 51. The Gargano: location map (1:400,000)

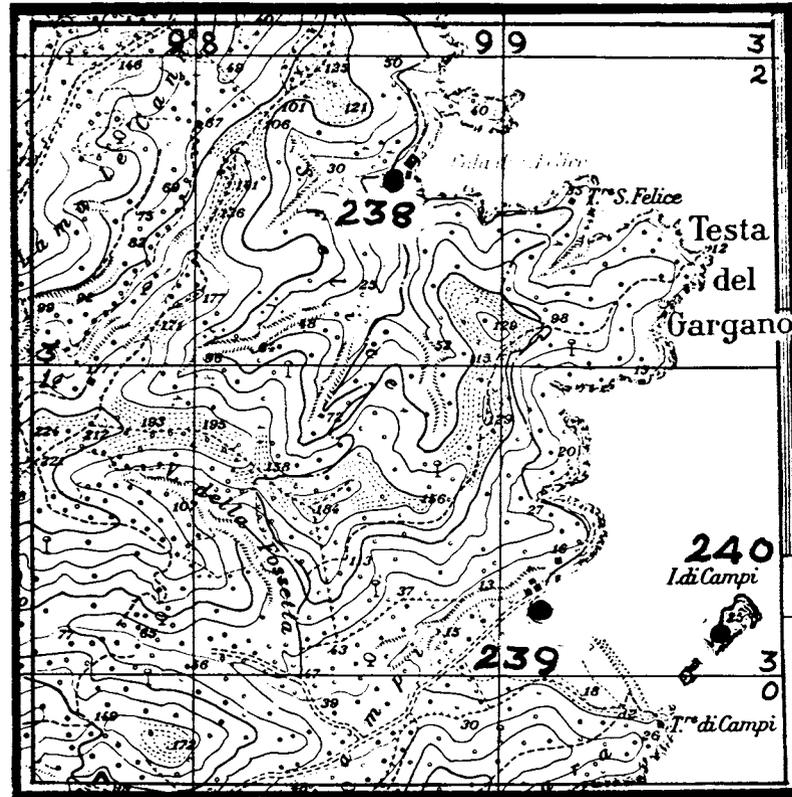


FIG. 52. Testa del Gargano: location map (1:25,000)

239: ref. 992302; fig. 52

Marina di Campi: this area forms the largest bay in the neighbourhood of the precipitous Testa del Gargano. It was not altogether surprising, therefore, that it also appears to have been a considerable prehistoric centre. The area behind the foreshore is littered with worked chert, and some fragments of impressed ware were found.

240: ref. 998302; fig. 52

Isola di Campi: the bay of Marina di Campi is partially protected by the offshore island of Isola di Campi, an isolated limestone mass that must once have been joined south-westwards to the mainland at Torre di Campi. Examination of the rock mass in company with Professor and Mrs A. R. Birley showed that the sheltered western side of the island was occupied in the prehistoric period. A quantity of worked chert and coarse pottery was recovered from the rocky scree. It should be emphasized that the isolation of the island must have meant the preservation of the archaeological material in better condition than usual. The island, least accessible of all the sites in this book, would make a promising centre for further exploration.

CHAPTER III

THE EXCAVATED SITES

EXCAVATIONS IN 1949 – 63

By D. H. Trump

THE initial discovery of the Neolithic sites from air photographs naturally left many questions unanswered. Bradford's trial sounding at Vignate Fraccacreta near S. Severo (see p. 222, no. 256) showed that a fuller excavation would probably be very rewarding. In 1948 the Society of Antiquaries of London formed an Apulia Committee under the chairmanship of Sir Mortimer Wheeler and placed funds at Bradford's disposal for trial excavations on some of the newly discovered sites. Permission for the work and further help was granted by the Soprintendenza alle Antichità dell'Apulia e del Materano. Accordingly, in August 1949, trenches were dug at Passo di Corvo, Masseria Villano and Coppa Cavone. A brief summary of the work appeared in *Antiquity*, xxiv (1950), 84 ff. Much more extensive work was carried out in 1950 at these above-mentioned sites, as well as at Masseria la Quercia, Fonteviva and several others briefly described in this section. Unfortunately no interim report appeared on the important results, though some progress was made towards publication, particularly on a visit to Taranto by Bradford and his wife in 1956 shortly before his illness became fully apparent.

Ultimately in 1963, when it was apparent that ill-health would prevent Bradford ever writing up his results, the present writer was invited by the Society of Antiquaries to prepare this material for publication. Accordingly he worked over the collections of material at the Museo Nazionale, Taranto, and the Ashmolean Museum at Oxford. In March 1963 he dug two additional trenches at Passo di Corvo, not so much to obtain new material as to clarify the notebooks of the 1949 – 50 campaigns.

The report following, then, has the nature of a salvage operation, with the inevitable shortcomings connected therewith. It must be realized that certain ambiguities in the Bradford notebooks have had to be squarely faced if the record is not to be misleading, but, if at times criticism of the original excavations may seem implied, this is in fact not intended. Bradford could have resolved these uncertainties without difficulty; the writer, not present at the excavations, cannot do so. There remains, however, a substantial body of results of great value to the prehistory of southern Italy. Their adequate publication both increases and in some degree repays our great debt to John Bradford.

Passo di Corvo (198, figs. 53–64, pls. XXXIX–XLI)

This site, one of the largest of the group and certainly the most interesting one studied, lies 10 km. north-east of Foggia along the road to S. Marco in Lamis. It stands 52 m. above sea level, on a perceptible rise. The T. Celone circles it at no great distance on west and north. The archaeological features can be described, with only slight alterations, in Bradford's own words in his article, 'Situlosa Apulia' (*Antiquity*, xx (1946), 191–200).

This village has an overall measurement (i.e. including the surrounding ditches) of approximately 730 m. by 460 m., and lies in one corner of a very large oval area (enclosed by a single ditch) between two and three times the extent of the village itself (fig. 46; pls. XXIX–XXXIa). The longer axis of this great enclosed annexe, clearly indicated by the crop-mark of the ditch, measures approximately 1,480 m. No 'hut-enclosure ditches' have yet been identified within it, and thus it must probably represent either (i) a kind of 'home-paddock' in which herds grazed under the villagers' protective eyes (at night or at certain seasons), or (ii) the most valuable cultivated ground immediately adjoining the village. However, these explanations are not mutually exclusive. A second definite example of a village lying within, and at one end of, a ditch-enclosed area of greater size than itself has also been established. The relationship, in position, of one to the other is reminiscent of that of the 'domestic' to the 'farmyard' on the 'homestead' sites.¹

Although at least one-third of the interior of this village, from the nature of cultivation at the time of photography, has not provided us with crop-marks, some ninety 'hut-enclosure' ditches, or fragments of them, have been counted in the remaining area. It will be seen that all have their openings in the same general direction; in a few cases these ditches appear to have been recut, or the area demarcated by them subdivided internally. It is not, of course, suggested that they were all inhabited simultaneously. Fifty-five were chosen as being sufficiently clear to give reasonably accurate data; and their mean overall diameters (including the ditch) range as follows:

13.5 – 21.5 m. across	70 per cent
21.5 – 27.5 m. across	20 per cent
27.5 – 45.5 m. across	10 per cent

The percentage of those less than 13.5 m. across is negligible. The three largest measure c. 36 m., 38 m. and 45 m. respectively. A very large circular enclosure, with an apparently funnel-shaped entrance, which dominates the village is here in a class by itself, being approximately 95 m. by 100 m. overall.²

One might well have expected to see the crop-marks of post-holes had there been any elaborate timber-structures, but they are not apparent. It might perhaps be argued that the severe parching of the ground would tend to iron out differences caused by such small features.

Campo di Fiori (hereafter termed *Passo di Corvo I*), a small triple circle to the north, immediately outside the outer ditch of *Passo di Corvo* itself, has to be considered at the same time. At first glance, this ring does not look contemporary with the main village (fig. 46; pl. XXX). A difference of date is equally recognizable in the 'large circular enclosure' (A) mentioned above and hereafter called *Passo di Corvo II*. Since several of the smaller

hut-compound ditches intersect it, as detailed air photographs show (pl. XXX) there can be no question of identifying it as a larger 'chieftain's hut'. Sections were cut through both these features, confirming the cultural differences and proving their date earlier than the main occupation of Passo di Corvo (= Passo di Corvo III). The details of the excavations are set out in the following pages.

Passo di Corvo I (Campo di Fiori) (197)

Campo di Fiori is earlier than the Large Circle (Passo di Corvo II) and will therefore be described first, though the arguments for its priority depend upon the typology of the pottery, not the excavation itself or the form of the site, and will be dealt with in the appropriate section.

It is a typical homestead site consisting of three ring-ditches, two roughly concentric with diameters of 156 m. and 114 m., enclosing a single penannular hut-compound of 28.5 m. diameter, somewhat north-west of centre. The widths of the first and third ditches, revealed by the two trenches in 1950, were respectively 3 m. and 1.2 m. The middle one was not excavated by Bradford.

Trench I (fig. 54), measuring 3.65 m. by 2.15 m., cut across the line of the hut-compound ditch. This was only 1.2 m. to 1.35 m. wide where it cut the hard crust-layer of the rock, widening slightly in the softer rock below to give it a rather baggy section. Some daub was found, implying lightly constructed huts within the ring.

The distribution of pottery by ware and level within the ditch fill is given in table I (p. 201). Much the richest level was the 15 cm. of silt on the ditch bottom, presumably rubbish accumulation during the life of the site. The overlying level is perhaps the result of deliberate refilling (cf. Passo di Corvo 1963, Trench VI) and may even be the remains of a wall along the lip of the ditch (cf. Passo di Corvo 1949, Trench VII N.) cast in first. In any case its material is identical with that from the lower silt, if somewhat scantier. All the sherds from 0.9 m. to 1.8 m. were conflated by Bradford, so one cannot now confirm that the later materials, such as the 'Corvo' painted sherds³ and a higher proportion of dark burnished ware, were confined to the upper part of the ditch, and earlier wares, like the impressed sherds, to the lower. It seems likely, however, that the refilling left a slight hollow to be filled by the deposit with the later sherds. Material of the layers above the level of the rock was not kept, these being disturbed by later agriculture.

Trench II measures 7 m. in length and was sited to cross both the outer ditch of the Campo di Fiori homestead and the outer enclosing ditch of the Passo di Corvo village (fig. 55; pl. XXXIXa).

The Passo di Corvo ditch, which had cut away the outer lip of the Campo di Fiori ditch, had straight sloping sides 1.75 m. wide at rock level, 1.15 m. at the base 2.35 m. below. It showed the same sequence of fill as the last ditch described — silt, stones, earth and, above rock level, ploughsoil, the last a mere 40 cm. in depth.

The Campo di Fiori ditch was generally similar, but much broader and shallower, originally 3 m. wide at the rock surface (2.4 m. surviving in the section) and 1.6 m. deep. It lacked the lowest silt deposit. A stony level is described in Bradford's notes as 'big stones,



FIG. 53. Passo di Corvo: location of trenches (1:20,000); areas shown in roman capitals, trenches in arabic numerals

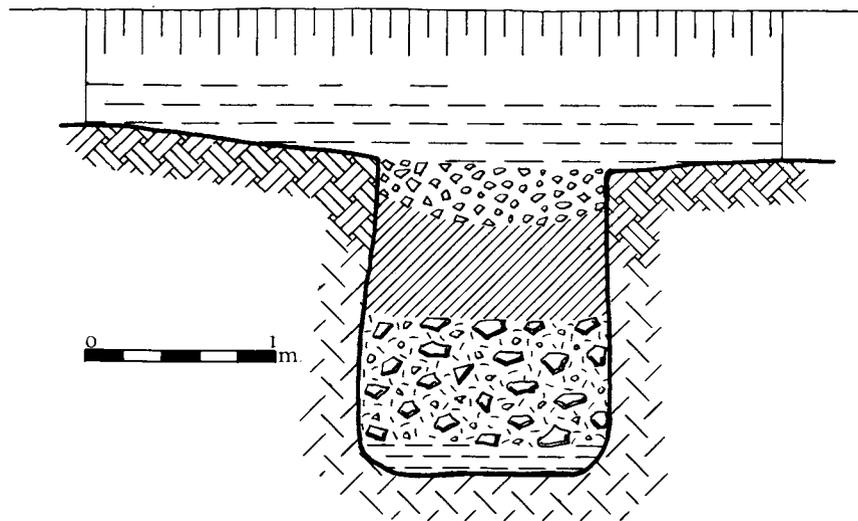


FIG. 54. Passo di Corvo I, Campo di Fiori: Trench I, section (1:40)

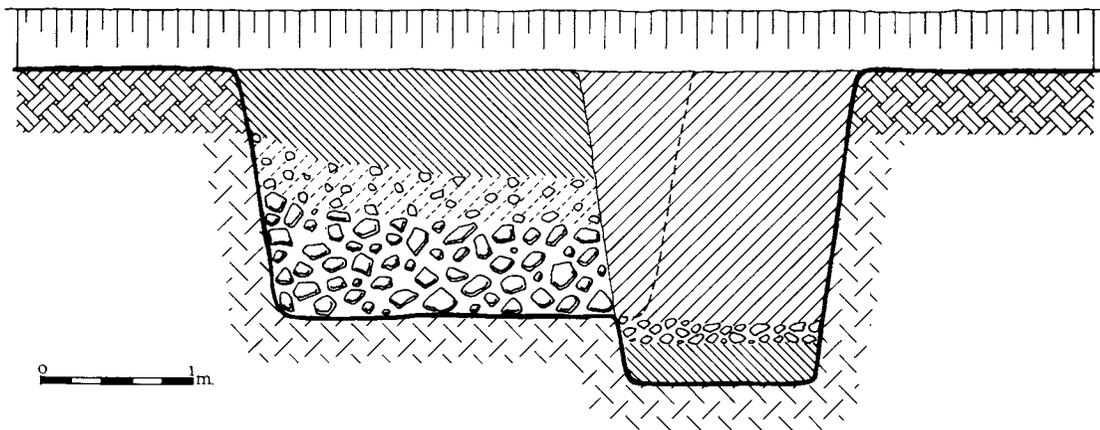


FIG. 55. Passo di Corvi I, Campo di Fiori: Trench II, section (1:50)

(?) fallen wall'. The stony level in the outer ditch of Passo di Corvo is, however, unlikely to have been from a wall, so some other explanation may be necessary.

Material from these ditches was very scanty, because each lay in an outlying position relative to its habitation site. The section did not, therefore, give a simple stratigraphic relationship between the Fiori and Corvo wares; but it did, on the other hand, prove the Campo di Fiori site to be the older, since its ditch is here cut away by that of Passo di Corvo.

Passo di Corvo II (Large Circle)

The Large Circle within the main village was roughly 100 m. in diameter, with apparently a wide entrance to the north. It was sectioned in two places and touched in two others. *Trench III* 1950, 7.6 m. by 1 m., was on the east side. The ditch here had markedly undercut sides and a depth of 3 m. from rock. Its fill was very uniform fine earth, probably deliberate (fig. 56).

The material from this ditch was of the greatest importance, since it gave the only unequivocal stratification of the two main classes of painted ware, here called 'Corvo' and 'Quercia'.⁴ The figures are given in table 2 (p. 201). Their significance will be discussed later (p. 145), but the contrast between the top 60 cm. of the ditch filling and the rest (the next two levels are poor or missing) is immediately obvious.

Trench IV was designed to investigate another feature indicated by a crop-mark which intersected the ditch of the Large Circle. A plan and section are given in fig. 57. The excavator in 1950 interpreted it as a drainage ditch, using the Large Circle as a soakaway. Without clearance of the other lip of the latter, the possibility of its being a later hut-compound ditch (cf. Trench VI) cannot be excluded. Just such a hut-compound ditch can be seen on the air photograph in the northern part of the Large Circle, where this trench apparently lay. The notes are not clear on its actual location.

At all events the material from the narrower ditch was of the later type of Trench III. That from the deeper ditch has not survived for study. If it is really a drainage channel, its lesser depth necessarily makes it later structurally too; if it is a hut-compound circle, priority

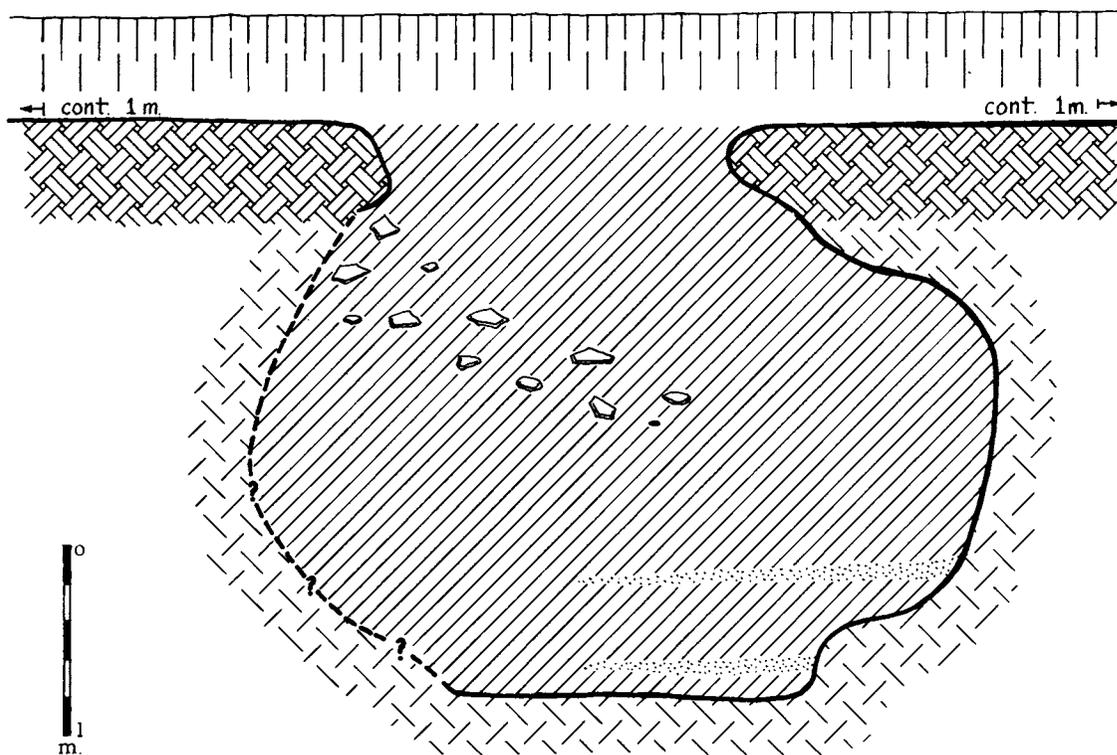


FIG. 56. Passo di Corvo II, Large Circle: Trench III, section (1:40)

cannot be so easily determined. The evidence from Trench VI, however, was much more explicit.

Trench V 1963, was originally laid out 7 m. by 0.7 m., then widened to 1.5 m. over the ditch, which was 4.5 m. in width. It was abandoned at a depth of 50 cm. when time ran out, the point it sought to prove having been already settled (see the last paragraph on the next trench).

The material recovered (see table 3, p. 202) was of the type found in the lower levels of Trench III.

Trench VI was dug in 1963 with the intention of confirming the relative dates of the Large Circle and the hut compounds of the main village. It was accordingly sited to cross the intersection of ditches of the two structures visible on the photographs in the western part of the circle. It measured 7.5 m. by 2 m. The width of the ditch at rock surface was 3.6 m., but the western lip was only 0.7 m. deep, the effective ditch being about 2.4 m. wide by 1.8 m. deep (pl. XXXIX*b*). The widening was probably due to large tabular blocks of the hard rock crust cracking off and slipping into the ditch while it was still open. One appears in the section in fig. 58, and a similar one had begun to move from the other lip. This phenomenon could explain the many irregularities in the width of ditches visible in the air photographs.

There were only three natural levels in this trench. Below modern ploughsoil, 40 cm. thick, the fill of the ditch was a stoneless dark earth. The only hint of subdivision was an

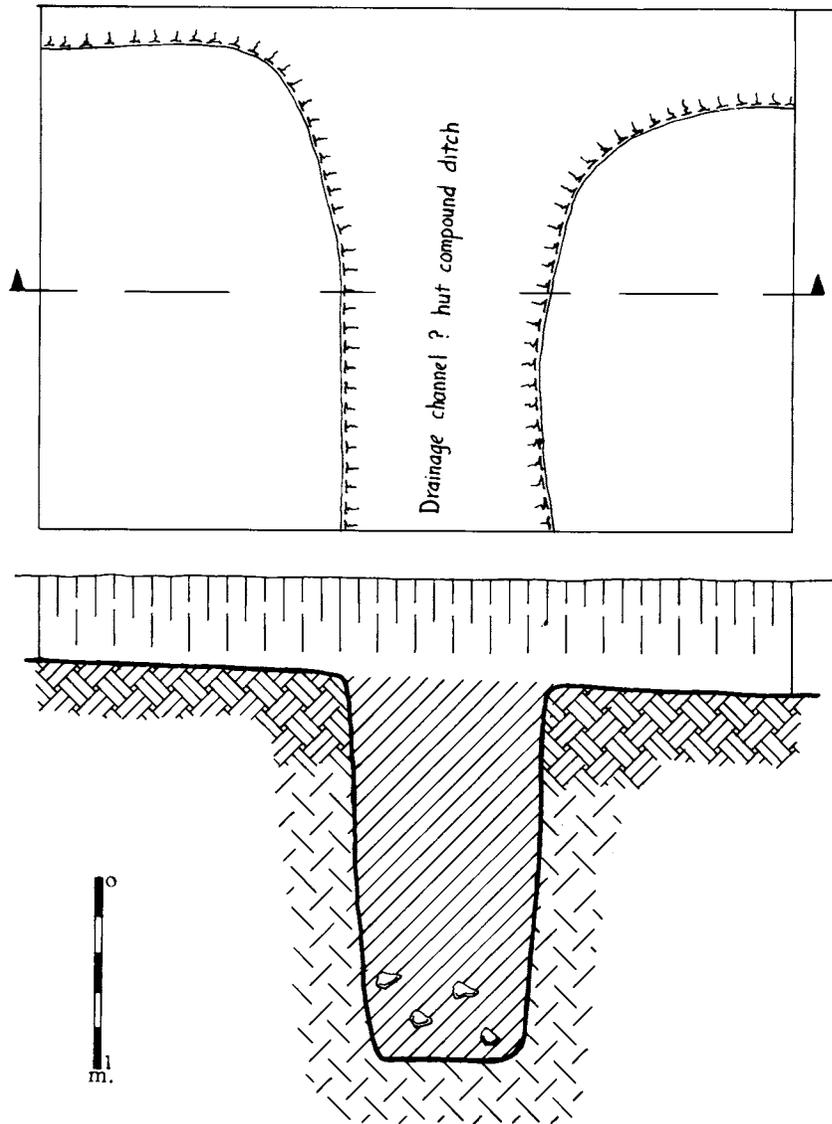


FIG. 57. Passo di Corvo II, Large Circle: Trench IV, plan and section (1:40)

intermittent layer of daub, a tip-line dropping to 35 cm. below rock surface at the centre of the ditch. It could not be traced over the whole trench so this fill was dug in spits.

The table of finds shows that the layers just mentioned are the only significant ones. The ploughsoil level can be dismissed rapidly. The Iron Age sherds show that there was some slight late reoccupation of the site. Differences above and below the daub layer were slight but important, though both groups of material belong to the 'late' type in Trench III. The upper level, for example, had a noticeably higher proportion of buff to dark burnished wares. Some particularly fine red-painted jar fragments were noteworthy. Proof was found that the fill below the daub line was a single deposit and so, apparently, deliberate. Two sherds of a

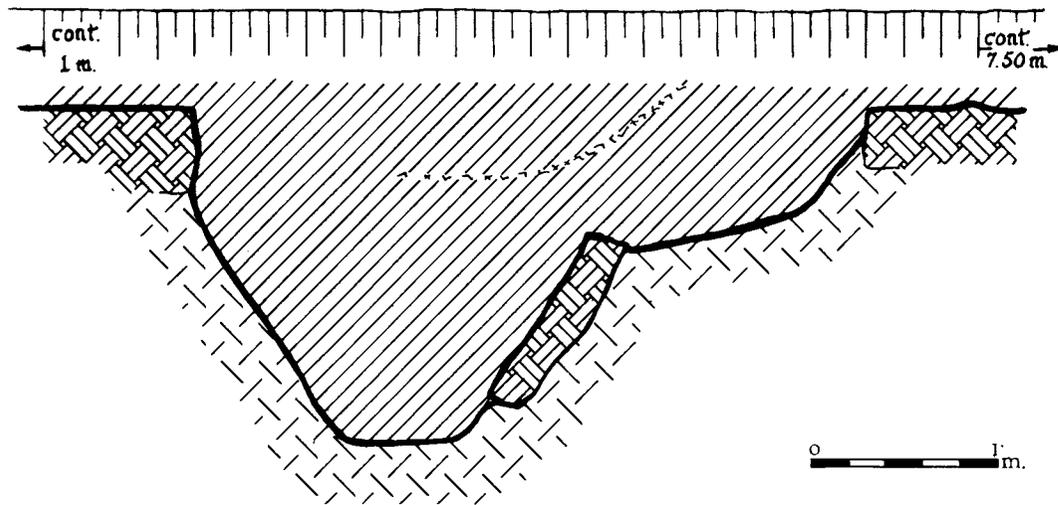


FIG. 58. Passo di Corvo II, Large Circle: Trench VI, section (1:40)

coarse pedestal from spits 4 and 8 (roughly at depths of 0.7 m. and 1.7 m. from rock surface) joined. Sherds of a very distinctive vessel, treated on p. 165 below, were scattered through levels 3, 4, 6 and 7.

The later of the two ditches, whichever it was, had completely cut away the fill of the earlier. Trench V was accordingly cut across the Large Circle ditch where the photographs showed it to be clear of hut-compound ditches. If the two trenches produced the same material, then the Large Circle ditch, common to the two, would be the later; if their material was different, then the hut-compound ditch would be the later. Since the latter proved to be true, conclusive, if indirect, confirmation of Trench III's stratigraphy was obtained.

The nature of the ditch fill requires further discussion. This deposit cannot be the result of the gradual accumulation of rubbish from a nearby habitation, or sherds of single vessels could not have been so widely separated in depth; contrast the large adjoining sherds lying together in the level above the daub layer. Nor is it likely that the ditch would have been allowed to become obliterated while the site remained in use. It is not the result of the original ditch-spoil, left as a bank on the ditch lip, slumping back in when the site was abandoned; the soil was completely unlike the white limey marl beneath the rock crust, and contained too much cultural material. It is not a natural accumulation washed in from the surrounding surface — this is level, and it is impossible to visualize natural agencies collecting earth and unworn sherds and sweeping them into the open ditch to form so homogeneous a fill. These arguments apply not only to this ditch, but to all those excavated.

Two possible explanations of the circumstances remain. Rubbish from the habitation within the large circle was collected close to the lip of the ditch, but prevented by some means from entering it as long as the site was in active use. When the ditch was no longer maintained, natural agencies rapidly transferred the rubbish bank into it, leaving only a slight hollow to be filled by later direct tipping, the daub and deposit above it. Or the

rubbish accumulated generally on the site, and was deliberately shovelled into the ditch at or near (remembering the deposit above the daub layer) the end of the site's life. A motive for this action is perhaps suggested by the evidence from Fonteviva (see p. 134 below). There are difficulties to both alternatives, but the writer finds the second the more credible.

Passo di Corvo III. The Main Village

Three trenches, II, IV and VI, already described, disclosed features of the main village, all to some extent linked with earlier structures. All, however, produced the later 'Corvo' material. Four other trenches investigated the third occupation of the site directly.

Trench VII was actually the first dug, in 1949, to investigate one of the hut-compounds west of the main road (fig. 59). It really consisted of four trenches in cruciform plan sectioning the ditch at the supposed cardinal points (a note after a reference to the North Trench reads: 'actually north-west by compass', but the original labelling of the trenches will be maintained). Further clearance was carried out in the north-east quadrant to expose the butt-ends of the penannular ditch (trenches '*ingresso* nos. 1 - 5'). The main trenches were each 3 m. wide and 7.6 m. long from the central peg (see pls. XXXIXc - XL).

The ditch section in the south is reproduced in fig. 59 but otherwise the south and east trenches produced no structure of note. Human skull fragments came to light in the fill of the former (p. 206). The west trench ran into the ditch of the next hut-compound on that side, but it was not possible to obtain relative dates for the two.

The north trench revealed two features of considerable interest. Firstly, the butt-end of the ditch had at some time been refilled to widen the entrance and a cross-wall had been built to retain the filling. Secondly, there were clear signs of a wall following closely the inner lip of the ditch. Two courses of stones, set in herring-bone fashion, survived below ploughsoil. A stony layer in the ditch fill, but not at the very bottom, would seem to show that this wall once continued higher. Whether the stoneless layer beneath it was a primary silt or the top of a bank pushed in before its stone revetment, of which the wall is merely a footing, the excavator was not sure.

Apart from this wall in the north trench, no features of note appeared within the circuit of the ditches. A hollow at one point, too small for a hut floor, was probably a natural depression in the rock. A square cist-like setting of stones seemed to have no significance. If the hut-compound ditches really contained huts, these have left no traces except a little scattered daub. No post-holes were found. The pottery from all parts of this trench was uniform, though poor. It corresponded exactly with what has been called 'late' or 'Corvo' ware (p. 162).

Trench VIII. A second hut-compound was sampled in 1950 in the area behind 'Podere Fredella 8', the farm on the Strada di Bonifica No. 14 overlying the Large Circle. It must be observed, however, that the notes on this trench are not clear and the identification on the plan is not guaranteed.

There were apparently two, concentric, ditches, though only one shows on the air photograph. They were 6.4 m. apart, the inner having an internal diameter of 17.6 m. Both ditches were unusual, the first in being so deep and narrow (2.6 m. by just under 1 m. wide at

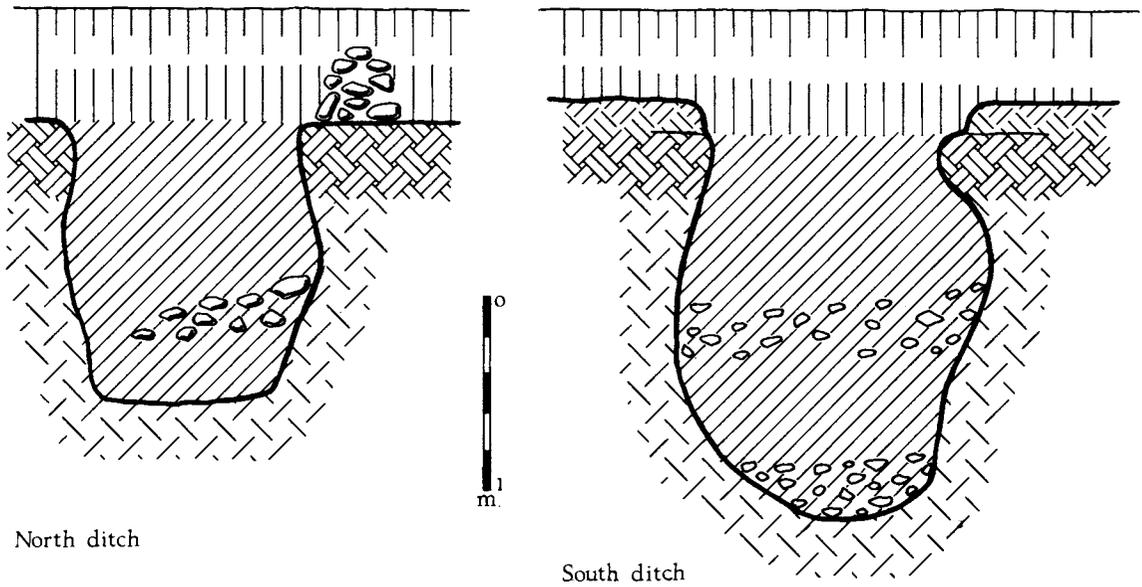
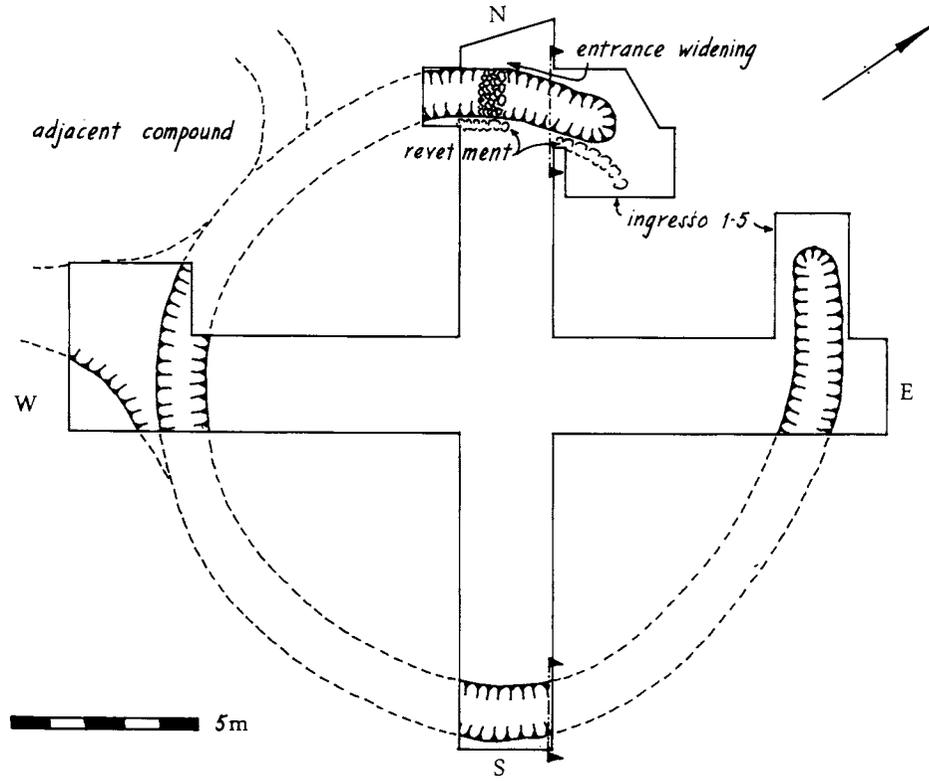


FIG. 59. Passo di Corvo III, main village, 1949 compound: Trench VII, plan (1:200) and N. and S. sections (1:40)

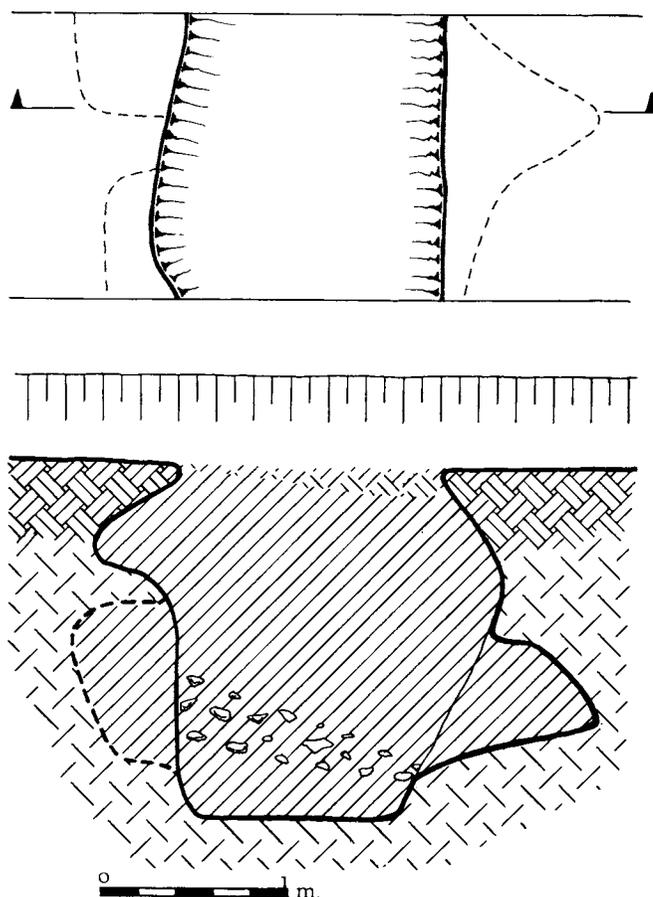


FIG. 60. Passo di Corvo, Podere 8: Trench VIII, outer ditch, plan and section (1:40)

the rock surface) the second in having 'cupboards' in its sides (figs. 60 and 61 and pl. XLIIa). These may be deliberate, or irregular undercutting of the type revealed in Trench III.

The material, of standard 'Corvo' type, calls for no comment.

Trench IX. South-east of this a long trench estimated (see below) at 66.5 m. by 1.8 m. wide covered three ditches, lettered A, B and C from east to west. A and B are the enclosure ditches of the village, C a hut-compound well inside these. A note gives dimensions as follows: A, 4.6 m. wide, separated by an interval of 18.3 m. from B, which was 6.1 m. wide; then follows an interval of 37.2 m. to C, of which dimensions are not quoted. Figures based upon the sketch section differ slightly from these or add to them: A, 5 m., interval 16.4 m., B 6.1 m., interval not shown, C 1.45 m. The sections are given in figs. 62 - 4 and see pl. XLIIb.

Here also relatively little pottery was found (in B only fifty-eight sherds), and it was all of the standard 'Corvo' type.

Trench X, also cut in 1950, poses another problem. It lay on the south side of the site, just west of the Foggia road. Here were three ditches, of which the inner two were sectioned, as indicated on the site photographs (pl. XLIIc - d). The labelling on the sherd bags, however,

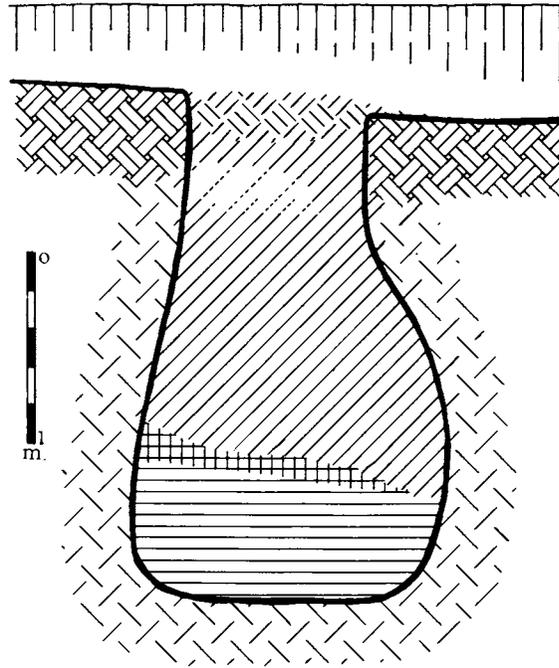


FIG. 61. Passo di Corvo, Podere 8: Trench VIII, inner ditch, section (1:40)

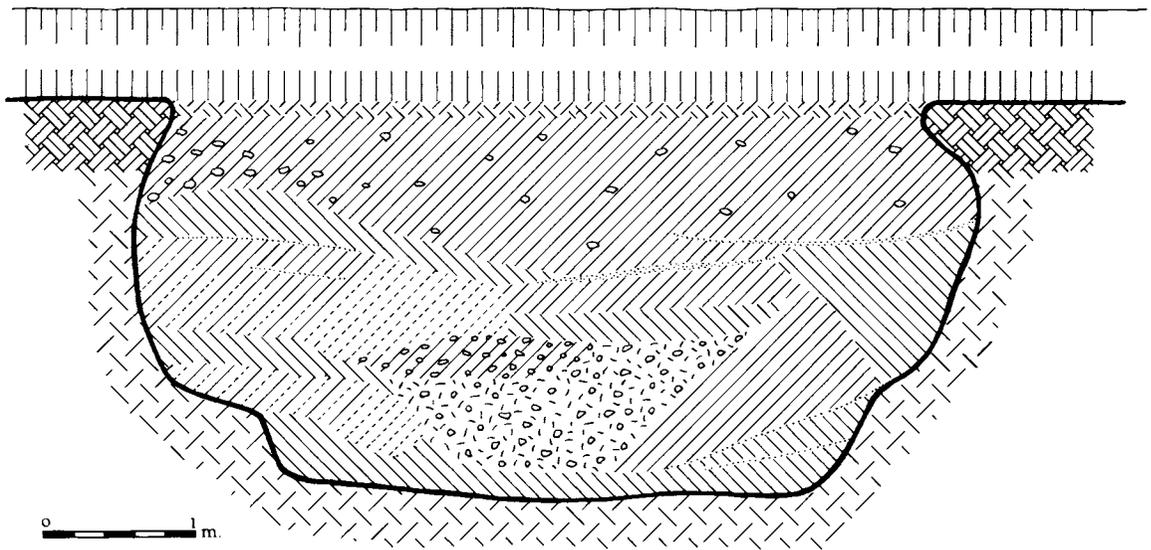


FIG. 62. Passo di Corvo, E.: Trench IX, outer ditch, section (1:50)

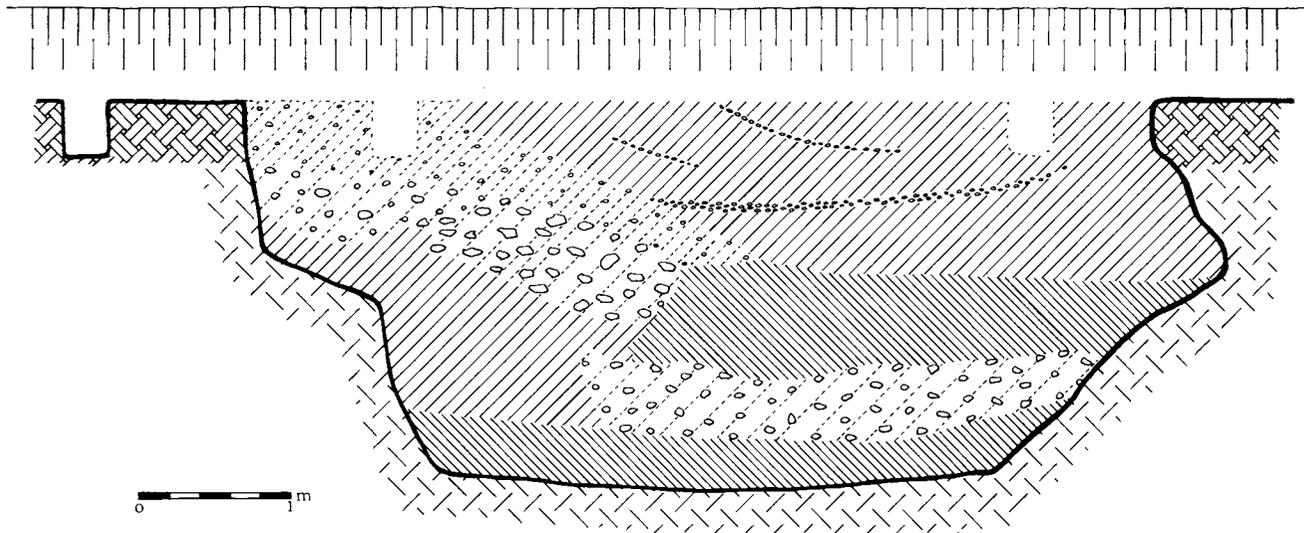


FIG. 63. Passo di Corvo, E.: Trench IX, inner ditch, section (1:50)

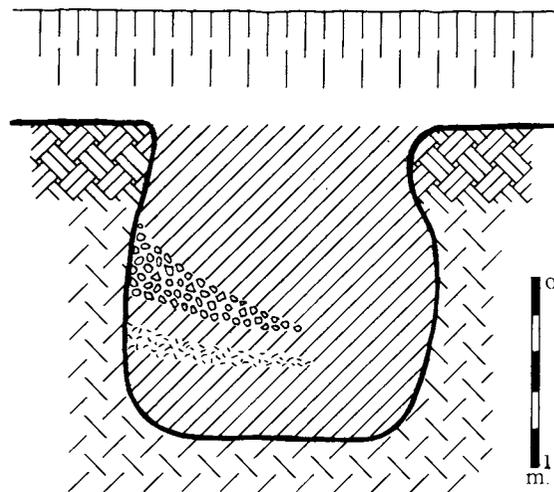


FIG. 64. Passo di Corvo, E.: Trench IX, compound ditch, section (1:40)

refers to one ditch section only, with no hint as to which ditch it was. The only other information obtainable from this source was that bottom was reached at just over 3 m. The notebooks make no mention of the trench at all except as a source for some of the pottery.

The material was very much richer than that from the ditches in Trench IX but equally uniform (as shown in table 4, p. 203) and of the same type; dark burnished and buff wares were common, the latter often painted in red, while 'Quercia' (dark) painted, rocker and other impressed wares were scarce.

La Quercia (72, figs. 65–7, pl. XLIIa–c)

The masseria of this name lies 5 km. to the north-west of Ortona, 13 km. south-south-east of Foggia, on the lip of a marked escarpment. The ancient site is defined by a series of concentric ditches in two groups of four isolating an ovoid area on the lip of the slope. The diameter of the area enclosed by the innermost ditch of this system is some 284 m., while the distance between the innermost and outermost ditches is 214 m.; so that the maximum (?) external diameter of the site is as much as 712 m. Within these, four hut-compounds can be seen on the air photograph, but the three excavated trenches were confined to the village ditches near the points where they were cut by the slope.

One of the trenches, probably the first, was across the third ditch of the inner group of four on the north side. The notes imply that the others were not in this group, without specifying where they actually were. The interval of 110 m. between the trenches given by Signor Campi cannot be reconciled with the Bradford notes at all. Trench III, described as 'trench through ditch on edge of scarp', is located only in relation to features like posts and trees which had disappeared between the date of the excavation and of the present writer's visit. On some sherd bags Trench I is referred to as 'Pavoni's'. The material from all trenches is, however, uniform, so that it is sufficient to know that it came from sections across the village ditches. It is clearly of a single period only, roughly matching Passo di Corvo II.

Trench I measured overall 9.7 m. by 2.75 m. but, as is shown in the plan (fig. 65), not all this area was cleared. For example, it included only a 1.2 m. section of the ditch. This measured 3 m. from side to side by 2.1 m. deep from rock surface (fig. 65). The rock here was more deeply buried than at Passo di Corvo, a little over 1.1 m., giving a total depth from surface of 3.2 m. In the drawn sections, the hard rock-crust is shown as having the same thickness as on the other sites, for what this may be worth; but an actual figure is nowhere quoted.

15 to 20 cm. from the ditch's southern, or inner, lip lay a stone wall, 1 m. wide at its base, slightly battered and standing 86 cm. high. It consisted of larger stones set flat at its base with several courses of smaller ones set on their sides above, with a rubble core. South of this again was a floor of large pebbles.

The fill of the ditch is mainly described as 'hut rubble'. The second trench, too, included 'daub, stones, hut rubble', so as one of the two is certainly the third ditch, there must have been huts in the spaces between the ditches as well as within the enclosed area, unless, as suggested below, this was a deliberate fill transported from the central enclosure. The distribution of sherds, table 5 (p. 203), shows the wealth of material at this site, but no appreciable differences at different levels. In fact, rather as at Passo di Corvo Trench VI, two sherds of a single jar were recovered at depths of 0.6 m. and 2 m., again implying deliberate refilling.

Trench II measured 4.9 m. by 5.8 m., and cleared the outer end of one of the ditches where it reached the escarpment (fig. 66). Its section, too, was simpler than that of Trench I, showing a ditch with straight sides and bottom, 3.3 m. wide at rock surface, 2.4 m. at its bottom 2.5 m. lower. Two thin but distinct layers of hut debris appeared at depths of 30 cm. and 60 cm. from rock. Table 6 (p. 204) shows the contents.

Trench III. The dimensions are not recorded. The ditch, which it cut, was 2.3 m. wide and is described as 'excavated to 5½ ft. (1.7 m.)', implying that bottom was not reached, though

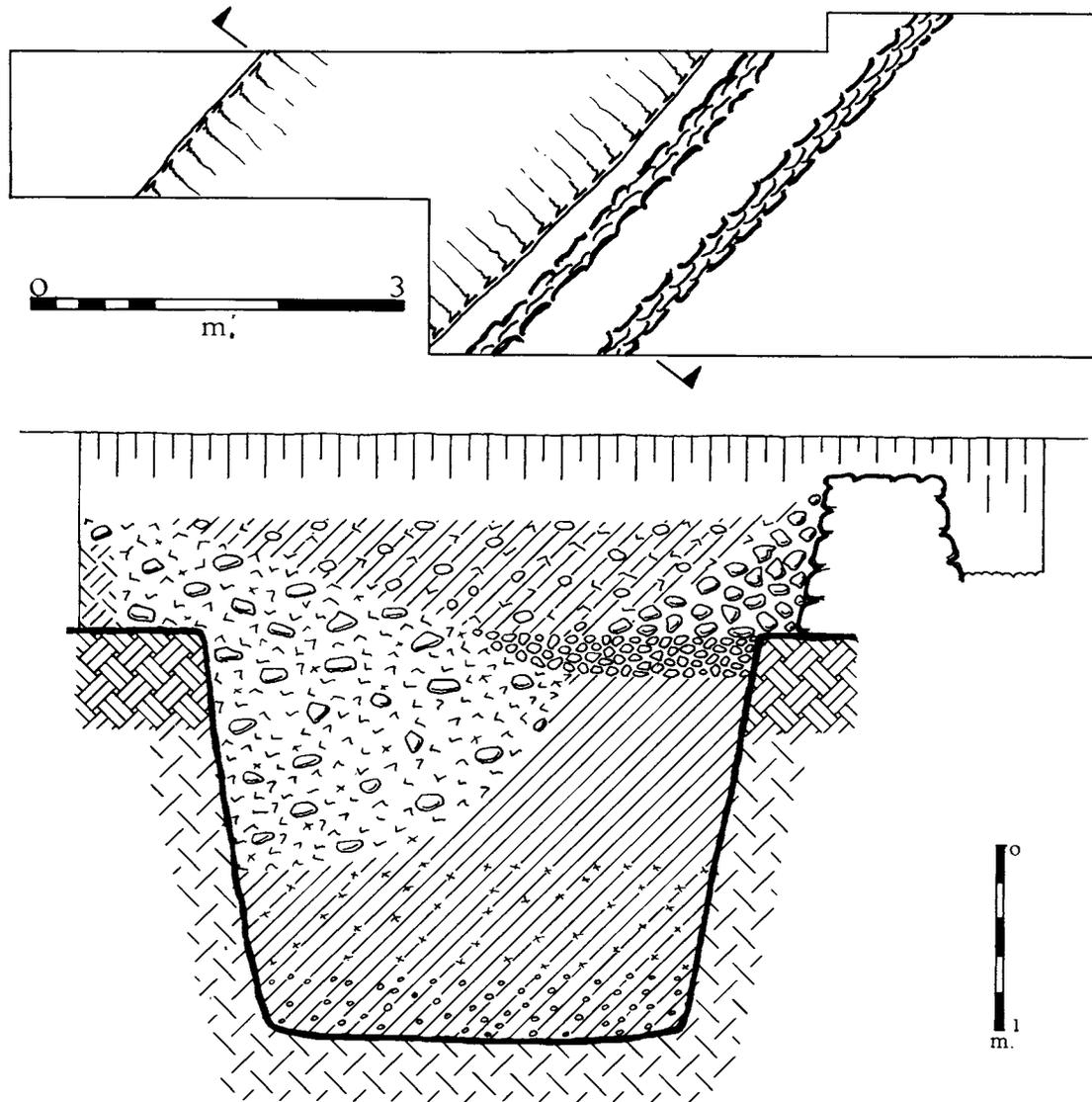


FIG. 65. La Quercia: Trench I, plan (1:60) and section (1:40)

this is not certain. The sketch section gives a depth of 2 m. (fig. 67). At 30 cm. below rock surface are indicated 45 cm. of 'floors(?) compact thin lines of whiteness', and lower still a 'white stony spill from bank (?)'. The material from this trench was scantier but of exactly the same type.

Fonteviva (192, figs. 68 – 70, pls. XLII d – XLIII)

This typical homestead site lies 8.5 km. north-east of Passo di Corvo, on level ground at the edge of the slope overlooking the valley of the Candelaro. The air photograph (pl. XXVII b)

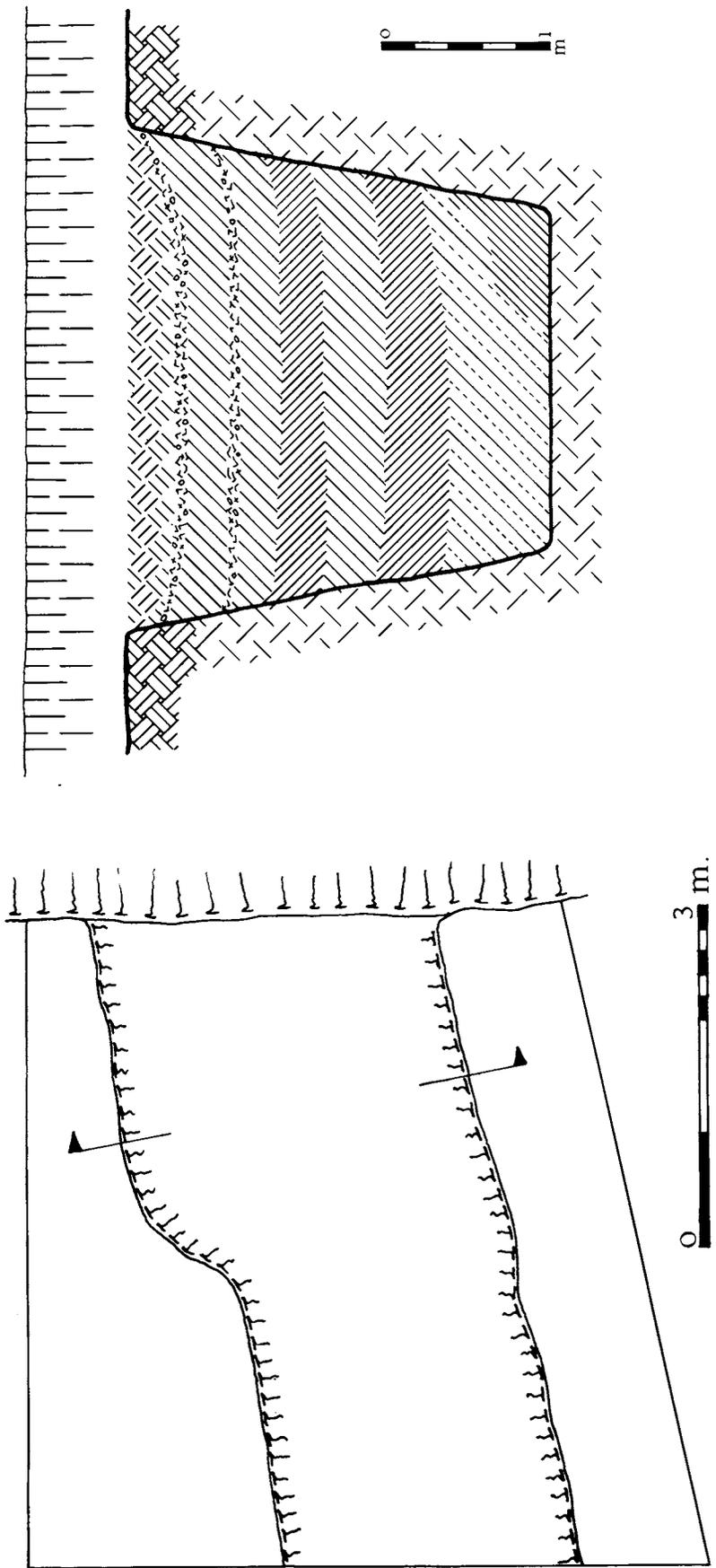


FIG. 66. La Quercia: Trench II, plan (1:60) and section (1:40)

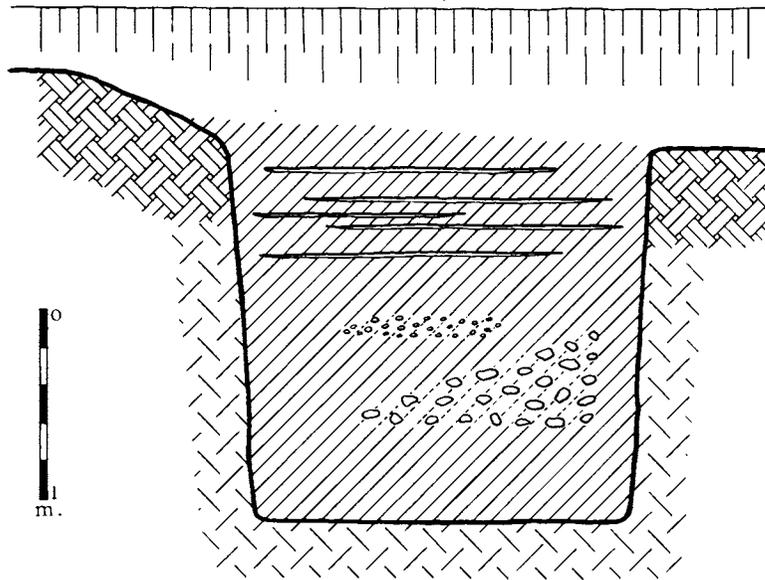


FIG. 67. La Quercia: Trench III, section (1:40)

shows a group of huts, three larger, five smaller, within a circular ditch. The diameter of this is given as 64 m. Further out was a second ditch, eccentric to the first, of roughly 230 m. diameter. It bulges out at one point into what is referred to as the 'lunette', probably the original entrance, though it is difficult to see quite how it functioned as such. Branching out from this was a third ditch on an even wider curve, but apparently incomplete. Three trenches were dug in 1950.

Trench I cleared an area of 12.2 m. by 6.4 m. within the innermost enclosing ditch. The feature disclosed to one side of the trench is shown in plan and outline section (fig. 68). No further details are given, leaving it, to say the least, puzzling.

The pottery was nearly all impressed, with some dark burnished, one 'Corvo' painted and one red-slipped sherd.

Trench II was the most important. Measuring 4.7 m. by 1.5 m. it exposed a section of the inner ditch, here 2.4 m. wide and 2.1 m. deep. Opening from the side of this and at a lower level was a domed circular chamber containing two skeletons.

There are three possibilities: first, that a much earlier chambered tomb of the *tomba a forno* type was met with in digging the ditch, which removed all its shaft and part of its dome; secondly, that a cavity was later cut in the side of the ditch, while this was still open, for use as a tomb; thirdly, after the ditch had been refilled, a shaft was cut through it to give access to a chamber cut in the adjacent harder rock.

The drawn section (fig. 69) definitely excludes the last interpretation, and is much more easily explained in terms of the first than the second. But a note on the same page of the notebook reads 'Neo. tomb cut in Neo. ditch', that is, the second explanation. On the other hand, the pottery, if the interpretation offered in the analysis below is correct, would imply the third. The tomb produced fragments of dark burnished carinated bowls, one with good

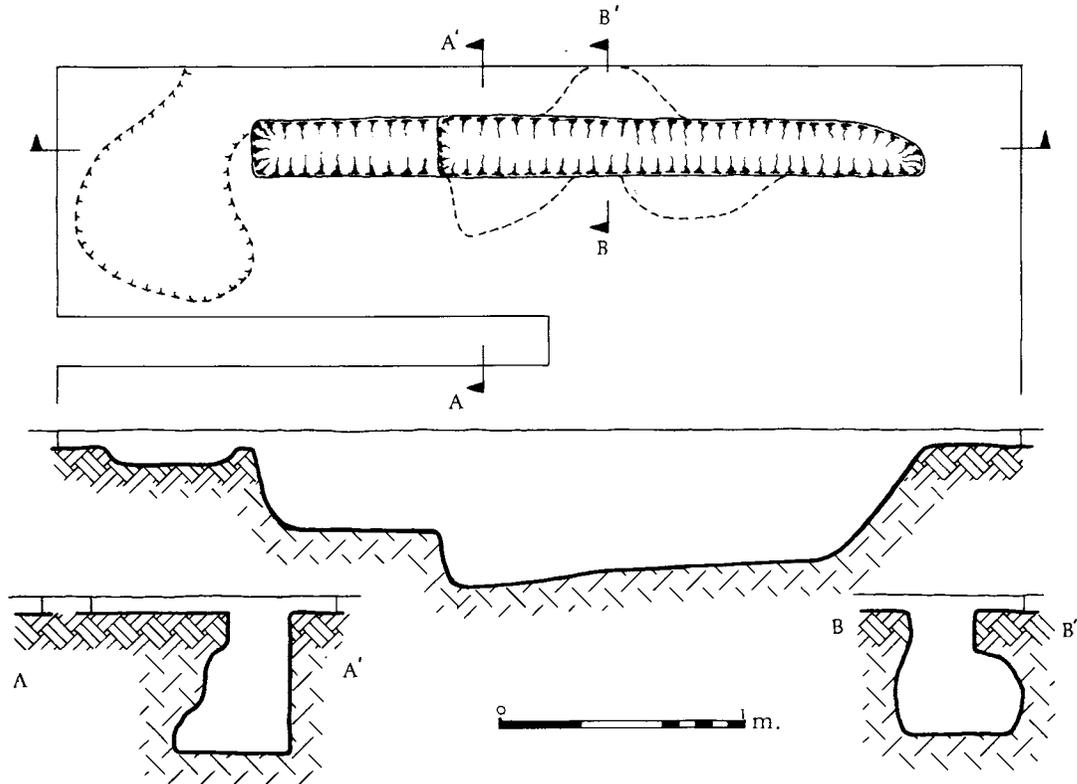


FIG. 68. Fonteviva: Trench I, plan and sections (1:30)

rocker-impressions, one 'Quercia' dark painted, two impressed, one apparently chevron-burnished (Corvo). The group is thus close to Passo di Corvo II. The ditch produced dark burnished and impressed sherds in roughly equal numbers, with one scratched sherd, and two Corvo painted sherds, all excepting the last very like the types of Passo di Corvo I. But the sherds were not very common and could be misleading, and the odd Corvo ones, for example, would support something like contemporaneity for the two. Finally, it must be pointed out, against the first suggestion, that a chambered rock-cut tomb in a Middle Neolithic context would be unique for Italy. All things considered, the present writer finds the second possibility the most acceptable. It is discussed more fully later.

The two skeletons lay at the back of the tomb at different levels, separated by some 25 cm. of deposit. The upper was crouched face up. The lower had its limbs extended, the left arm under the body, the skull damaged and face down. A flint blade was found under the pelvis.⁵

Trench III. This 7 m. trench cut the 'lunette' of the middle of the three enclosure ditches (fig. 70). The ditch section showed an original width of 3.2 m., widened to 4.9 m. by the flaking of the rock edge, as in Trench VI at Passo di Corvo. Its depth was 2.6 m. A level of stone near the bottom suggested fallen wall material. The uppermost deposit, to judge from its sherds, apparently accumulated in the hollow of the partly filled ditch at a later date. Two distinct groups of pottery are in fact present. In the lower part of the ditch-filling the sherds

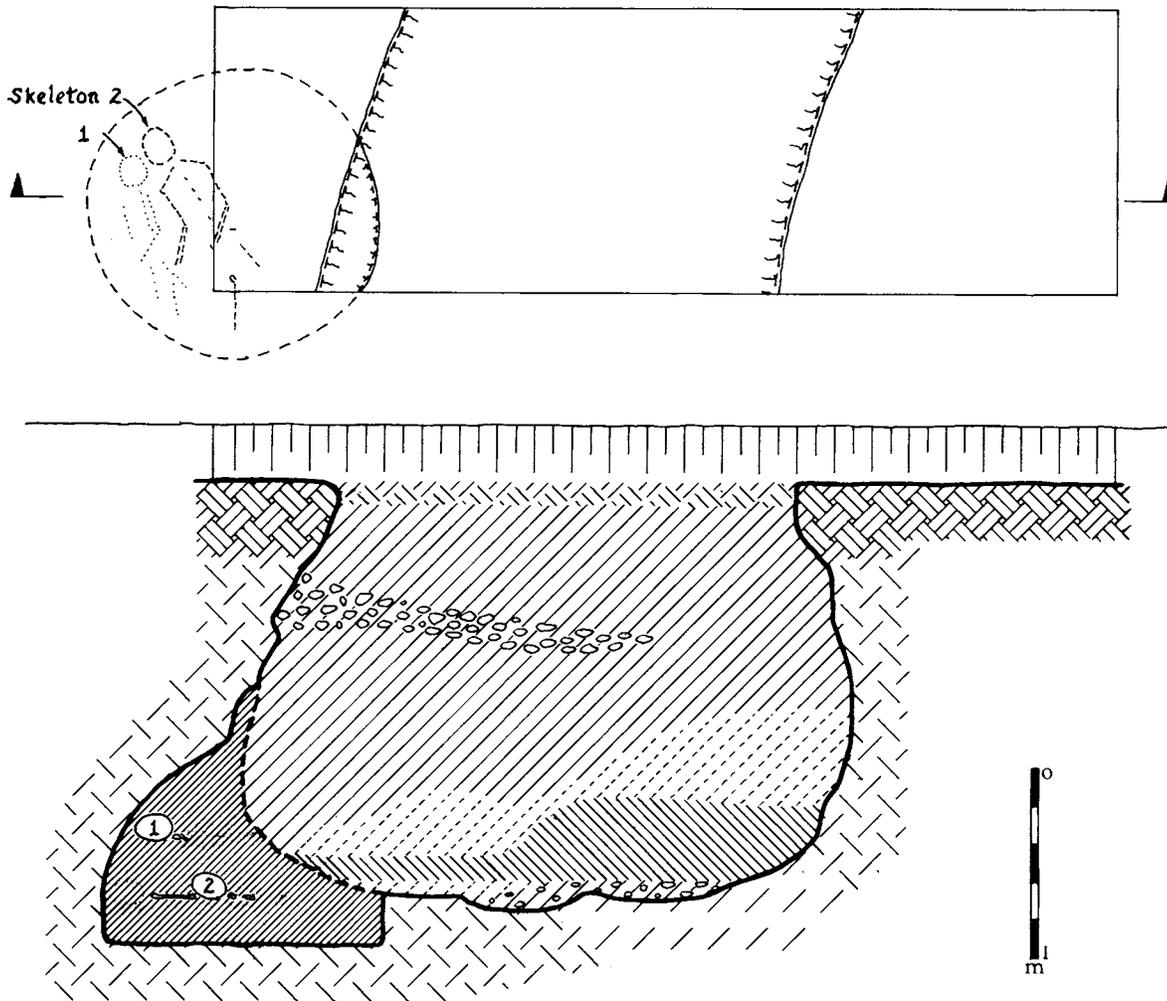


FIG. 69. Fonteviva: Trench II, plan and section (1:40)

were mainly dark burnished, with three impressed, one incised, one deep scratched and two Corvo painted. Above 1.3 m. was a handful of sherds of a type met nowhere else in this series of excavations, but with close parallels from the type-site of Serra d'Alto.

Other excavated sites

Trenches were dug at several other sites in 1949 and 1950, none with results of great importance. The notes are also much more sketchy, so there is little to be said of them. They are noted here simply for the record.

Posta d'Innanzi (193)

Three concentric ditches lay in the corner of a much larger outer enclosure.

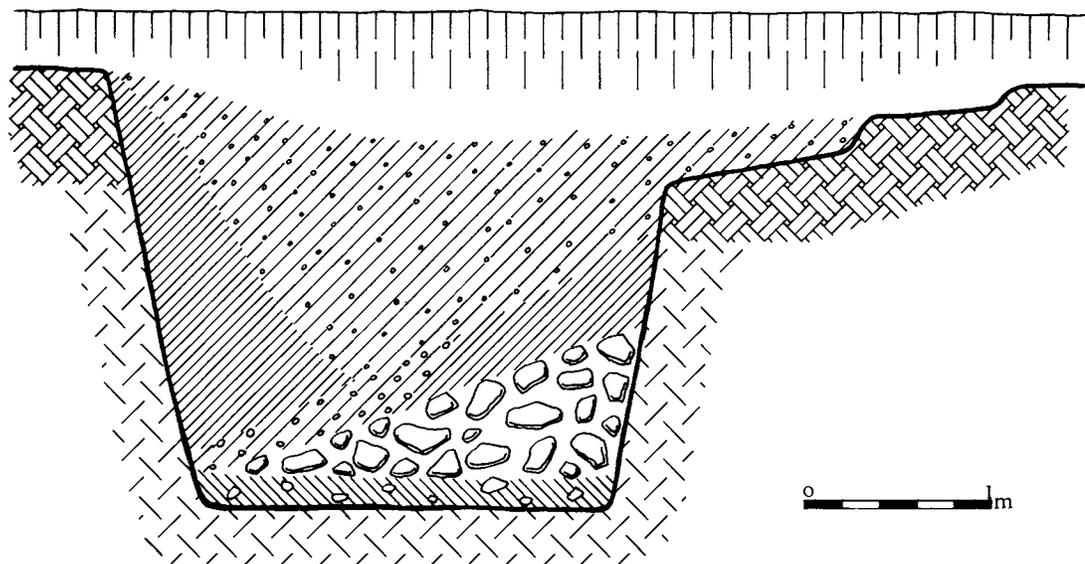


FIG. 70. Fonteviva: Trench III, section (1:40)

Bradford cut several ditch sections, but these cannot be related to the site as known from its crop-marks. The material preserved is apparently from a single trench at various levels to 2.4 m. There were no distinct differences between these, though impressed sherds were rather more frequent in the lowest 60 cm. Dark burnished ware was the commonest, accompanied by a few sherds of fine buff or Corvo painted ware throughout. The site matches culturally the main Passo di Corvo village.

Coppa Cavone

A section of a Neolithic ditch was cut during the investigation of a Roman centuriation system in 1949 and 1950. The only record is a statement that it was 5.8 m. wide.

The material was scanty and inconclusive. From the surface came two impressed sherds and a fine fragment of grey burnished *vaso a tocco*. From the ditch were seventeen impressed sherds, seven rocker-patterned and six dark burnished.

EXCAVATIONS IN 1964

By G. D. B. Jones

When it became apparent that the results of Bradford's work and the corroborative excavation of 1963 went only part of the way to answering crucial questions relating, in particular, to the Neolithic compounds, the Apulia Committee, at the urging of the late Professor Sir Ian Richmond, decided on further excavation. The expense involved precluded

any attempt to strip an entire homestead site — that will, it is hoped, one day form a project to be completed by Italian archaeologists. The author was commissioned by the Committee, amidst the excavation programme at Lucera Castle and Salpi, to undertake the partial stripping of a Neolithic compound. The extraordinarily well-defined remains at La Panetteria near Lucera (p. 38, and frontispiece) lay in an area untouched by excavation and so provided an excellent new point for investigation. One of the compounds, in particular, had an inner and outer ditch system that suggested either two-phase development and/or a division between animals and humans. At the same time the excavations conducted by the author at Lucera Castle, though primarily concerned with other problems, produced stratified Neolithic material, in two places that are described below. Taken together the two excavations of 1964 provided an important new corpus of information that extended the range of knowledge beyond the results of the previous work.

La Panetteria (I, figs. 12, 71-4, pls. XLIV - XLVIa)

The excavations undertaken at the Neolithic site of La Panetteria in August 1964 were designed to increase the amount of information available about the internal features of the compounds of the Neolithic settlements, while keeping the scope of the excavations within relatively modest bounds. Whereas previous work had, broadly speaking, been concentrated on outer ditch sections and the pottery sequence they produced, the excavation at La Panetteria was concerned with the details of the compounds, and in particular two problems: first, whether the occurrence of a major and a minor compound joined together necessarily implied two separate periods of occupation, as one might suppose from a glance at the air photographs; and secondly, whether there were any structural remains (huts, hearths, etc.) within the internal living area of the compounds.

To meet these requirements, compound no. 10 (which lay on land available for excavation) at La Panetteria was suitable. It was the only compound on the site with both an inner and an outer semicircular ditch, the latter running from the northern dip of the former, and curving through approximately 220 degrees to create an entrance on the west side of the site (see fig. 71 for a general plan of the individual site). At the same time the lesser enclosure was appreciably smaller (39 m. by 32 m.) than most of those in the settlement, and so offered a reasonably compact area for clearance in search of structural features.

In summary, the excavation showed, after a careful excavation of ditch sections, no evidence of separate periods of ditch construction implying an expansion of the smaller compound (see pl. XLIV). This becomes an important consideration in the interpretation of aerial photographs of the Neolithic sites. The inference is, therefore, that both compound ditches were cut simultaneously, perhaps to create a division between livestock and humans. In the smaller compound no trace of a hut or dwelling could be found. Nevertheless, the amount of pottery and flint found there in comparison with the other area excavated on the site makes it clear that some kind of human habitation was involved.

The excavation comprised three trenches, designed to examine the inner compound, the entrance area and the ditches belonging to the inner and outer compounds. Trench 1 was originally L-shaped in plan and designed to examine the centre of the inner compound and relate it to the inner ditch at two points along the southern and eastern sides. Ultimately the

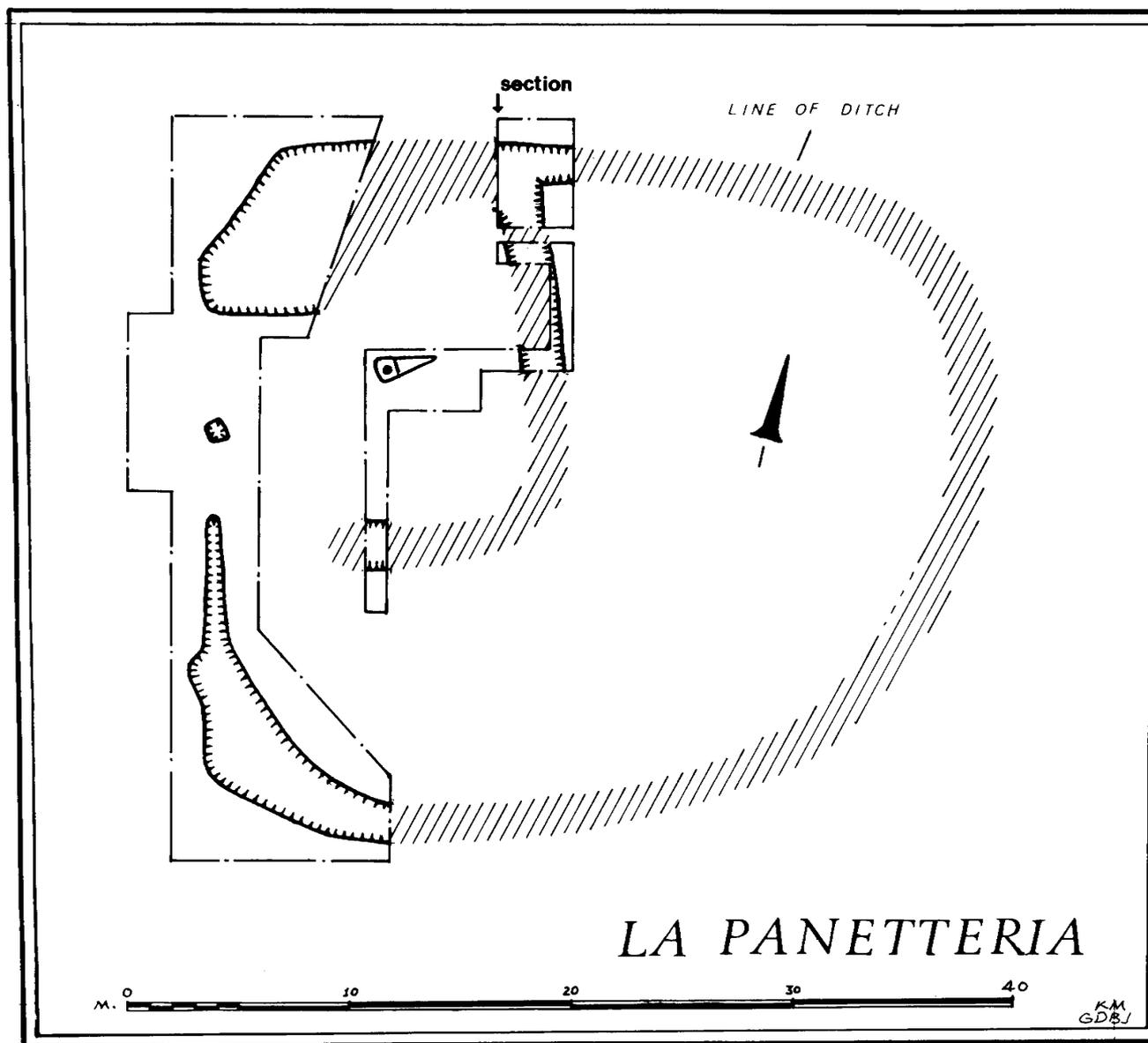
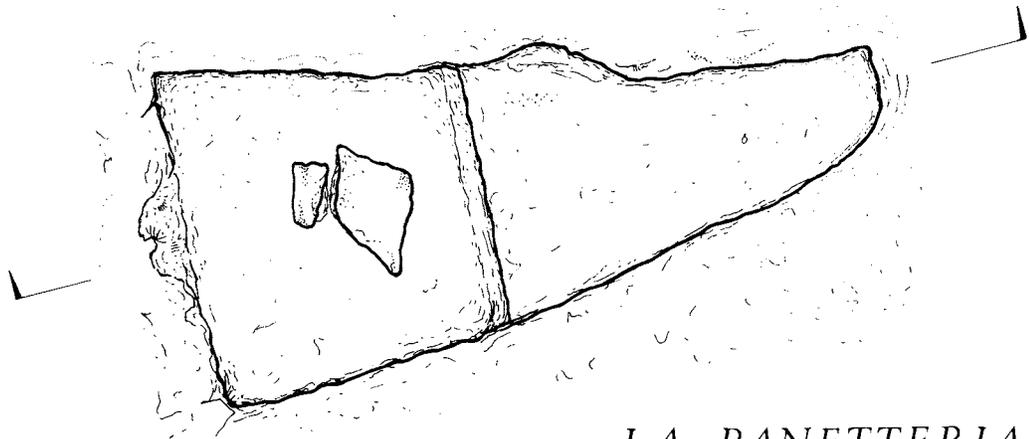
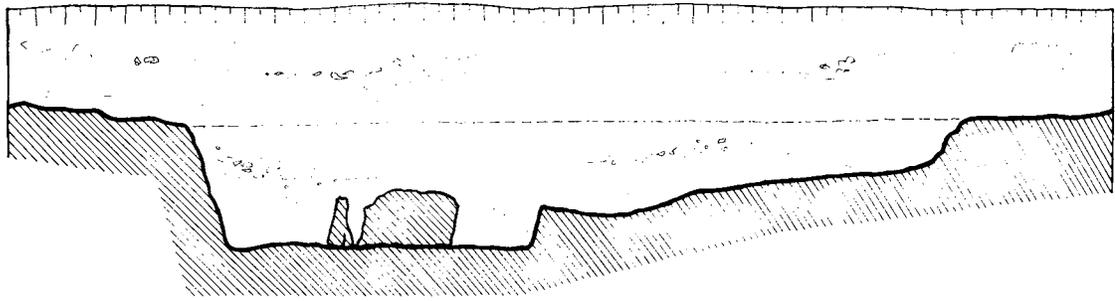


FIG. 71. La Panetteria: general plan of excavated compound (1:300)

trench was extended northwards to demarcate the edge of the inner ditch and provide another section at the north-eastern corner of the inner compound. The southern section through the ditch of the inner compound was U-shaped in profile, 1.7 m. across and 1.05 m. deep. The profile on the eastern side was identical. The contents of the ditch were the same as those for the major ditch section described below and need not be described in detail here. The area of the interior that was cleared represents over a quarter of the total space available.

As emphasized elsewhere (p. 174), no trace of any substantial structure could be located in the surface of the *crosta* bedrock lying 0.5 m. below ground surface in this area. The feature that did emerge, however, was an interesting one, namely a two-level slot aligned in an E – W direction in the centre of the inner compound (fig. 72). This wedge-shaped depression consisted of a slot 2.35 m. long cut into the bedrock. On the eastern side the slot itself was 15 – 25 cm. deep. The near-vertical step in the centre then created a trapezoidal pit reaching a depth of *c.* 35 cm. The walls of the pit were vertical and the central area contained a block of limestone *crosta* that appeared to be part of the original bedrock deliberately left in position. The feature's purpose is unclear. The initial interpretation as an oven or large hearth is difficult to sustain in the absence of charcoal, which can survive readily enough in the soil, as was shown in the nearby excavation at Lucera Castle (p. 144). Moreover, the identification as an oven does not take account of the vertical step in the centre of the feature, nor the purpose of the elongated eastern end of the wedge. One might suggest that the pit could have been used for brief periods for water, though this would certainly have disappeared within hours into the *crosta*. If the cutting naturally formed part of a human dwelling, then no interpretation can be offered. Yet the presence of humans at this point on the site is very positive, despite the absence of any visible structural features on the surface of the *crosta*. This area produced a relatively large quantity of pottery, much larger, for instance, than that along the southern side of the outer compound. More important, it is the only area to have produced daub and flints as well as pottery. The hard yellow-brown lumps of clay forming the remains of the daub could clearly be recognized in the subsoil and occasionally bore the impressions of twigs and branches. One must conclude, therefore, that humans probably lived in the inner compound, whether accompanied by animals or not. Additionally, it is worth noting that the variety of wares found in the inner compound (see table 7, p. 204) makes it clear that no one specialized activity, such as the preparation of cheese from milk, went on in this area. In the context, then, the outer compound with its reduced quantity of pottery is most reasonably interpreted as being used primarily for the accommodation of cattle. In the great majority of compounds, however, which do not contain major and minor elements, humans and animals mixed. This particular compound at La Panetteria represents a certain degree of sophistication, and one must be careful to remember that it represents, not a sequence of development, but a homogeneous layout.

This was established by the excavation of the main ditch junction in Trench 2. As already stated, the purpose of this part of the excavation was to examine the junction between the ditches of the inner and outer compounds to discover whether the two features were contemporary or not. The results demonstrated the contemporaneity of both features. This was established by very careful clearance of the ditch junction, which revealed that stratigraphically identical sections could be produced from both inner and outer ditches. For



LA PANETTERIA
Compound 10



FIG. 72. La Panetteria: central feature, section and plan (1:25)

convenience the most informative of the sections, namely that across the outer ditch, is reproduced in fig. 73. All the ground above the level of the limestone *crosta* may be regarded as disturbed by modern deep ploughing. This is quite clearly shown by the narrow belt of *crosta* that has been dragged across the top of the ditches by the passage of the plough. Beneath this level, however, the ditch contents are undisturbed. The uppermost level (3) represented a normal soil-infilling of the upper half of the ditch when the site had been abandoned. It is not surprising, therefore, to find fragments of daub in the levels that were derived from the structures in the inner compound. After this the character of the infilling changes. Level 4, for instance, is the product of fairly rapid silting comprising an elongated wedge, largely of small stones, resting on top of another layer (5) that contained a tell-tale white streak of *crosta* brought down from the sides of the bank. At the corner hand-sized

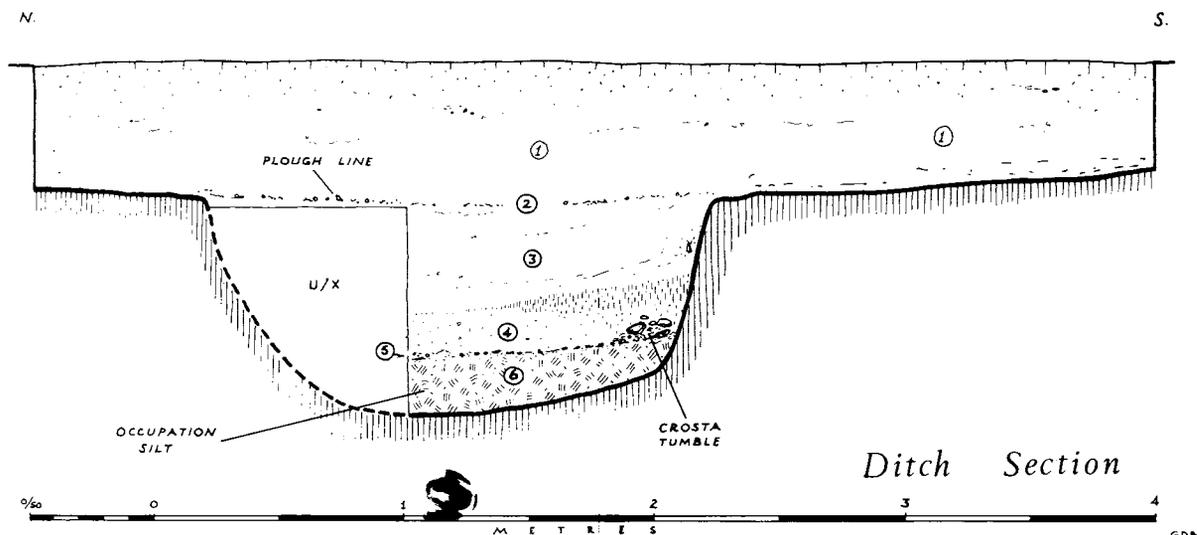


FIG. 73. La Panetteria: ditch section (1:30)

lumps of *crosta* were trapped in section where they had fallen from the side of the ditch. Such a feature is best interpreted as the product of erosion following heavy rain, or more probably frost-cracking in the winter months, the severity of which has been emphasized in the first part of this book (p. 7). The process is now better known from the results of the Overton Down experiment;⁶ the chalk soil in the latter case is closely comparable with the Apulian *crosta*, and the section revealed in the ditch bears close resemblance to the initial stages of weathering recorded at Overton Down. We may therefore be confident in identifying levels 4 and 5 as the results of fast weathering in the year or so after the abandonment of the site. The initial fast erosion of the sides had spread a continuous layer of *crosta* and small stones (5) across the silted material (6) accumulated in the ditch bottom during the period when the site was actually occupied. This level was *c.* 20 cm. deep and rich in vegetable matter and pottery from the occupation period (see table 7). The contents of the ditch, which were considerable, will be discussed below (p. 145).

The lowest level should be viewed against the evidence of the ditch as a whole. If we accept, as suggested, that levels 5 and 6 represent the results of fast erosion of the ditch sides, probably in winter frosts, then in the levels above them the process of erosion gradually slows until the ditch itself was filled. What is more significant is the limited amount of accumulation in the ditch bottom during the period when the site was occupied. Despite the proximity of humans and animals, and clear evidence from a considerable quantity of pottery recovered that the ditch served in part as a refuse dump, the initial accumulation of only 20 cm. seems relatively slight. This encourages the excavator to think that the site, whether typical of the majority on the Tavoliere or not, was occupied for only a brief period, perhaps simply for one season. This would explain the apparent dereliction of the site after a relatively short period and form a logical link with the possibility that the Neolithic population concerned practised transhumance, a tradition that was known in the Tavoliere from the Roman period up to the twentieth century. Certainly circumstances such as these

would explain the dense agglomeration of the Neolithic village, and at times the apparent duplication of settlement within restricted areas. Transhumance will be described in greater detail in the Roman and medieval volumes of the series.

The overall plan of the entrance on the western side is shown in fig. 71. It comprises the two ends of the outer circuit ditch which, prior to modification at the southern side, lay approximately 14.5 m. apart. The huge northern ditch reached a maximum width of 6.2 m. at its bulbous end and its interior was not excavated, as the task was rendered superfluous by the results from Trench 2 described above. The southern end of the circuit was cleared, however, and it was found that the bulbous end had been extended by a secondary operation in the form of a narrow trench approximately 5.75 m. long by 0.7 m. wide and 1.1 m. deep, that greatly reduced the width of the entrance. The transition from broad to narrow ditch is illustrated in pl. XLV. It had been hoped that the entrance would reveal some trace of fencing or other form of barrier. This was only partly realized by the location of one feature roughly in the centre of the area between the two ditches. This was a small, almost rectangular slot cut into the *crosta* roughly in the middle of the entrance (fig. 74). It measured 80 cm. by 85 cm. across the top and was sunk into the *crosta* to a depth of 42 cm. on one side, although ploughing had abraded the opposite western edge. The obvious function of the feature directly in line between the ends of the ditches appears to be as part of the entrance arrangements. What form these took remains unknown, but the likeliest system employed would have been a thorn hedge dragged into or out of position at will. Perhaps some central post was placed in position to reduce the width of the gateway permanently at one stage.

The material from the site is set out in table 7 (p. 204). As already mentioned, it shows that flints and daub from the human habitation area were limited to the inner compound and, in the latter case, the upper filling of part of the ditch. The pottery reveals a different cultural stage from the material recovered from excavations at Lucera Castle. Impressed ware is very much a minority product at this stage of the Neolithic and, along with coarse wares, 'Corvo' and dark burnished materials predominate. Culturally, then, the site might

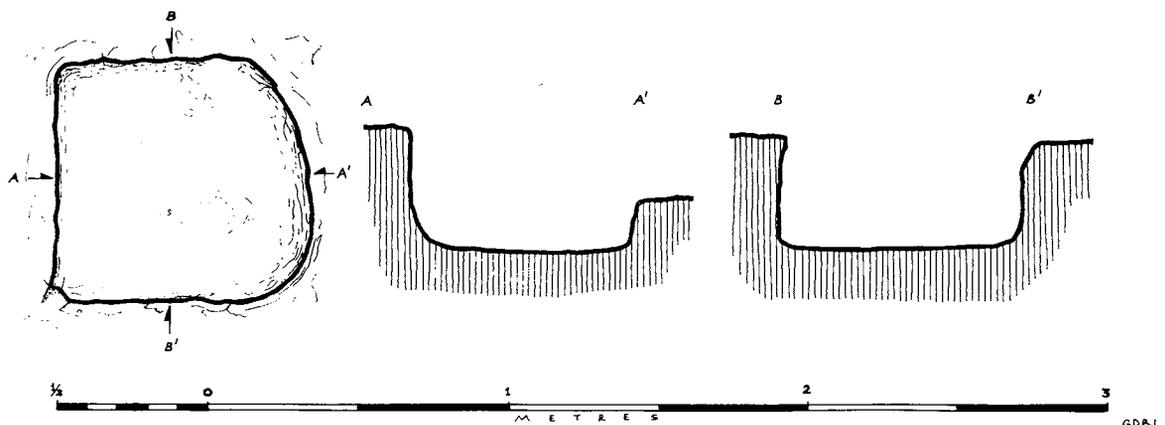


FIG. 74. La Panetteria: entrance feature, plan and sections (1:25)

be compared with the later stages of Passo di Corvo when 'Corvo' ware was gradually catching up with the volume of dark burnished wares that predominated in the early levels. Likewise, the figures support the argument that 'Corvo' ware is later than impressed ware, as at Campo di Fiori, and later than 'Quercia' ware as found in the Large Circle at Passo di Corvo (Trenches III – VI). Hitherto, no trench in the Tavoliere has produced levels of impressed and 'Quercia' wares simultaneously to confirm that the latter may derive from the former. The evidence is, however, now available both from the Panetteria material described here and also from the Lucera Castle excavations described below. For a fuller analysis of the pottery and the relative chronology involved, see pp. 145 ff.

Lucera Castle (10, fig. 75, pls. XLVib – XLVII)

In the summer of 1964 a major programme of excavation was launched in the interior of Lucera Castle at the kind invitation of the Soprintendenza agli Monumenti through the good

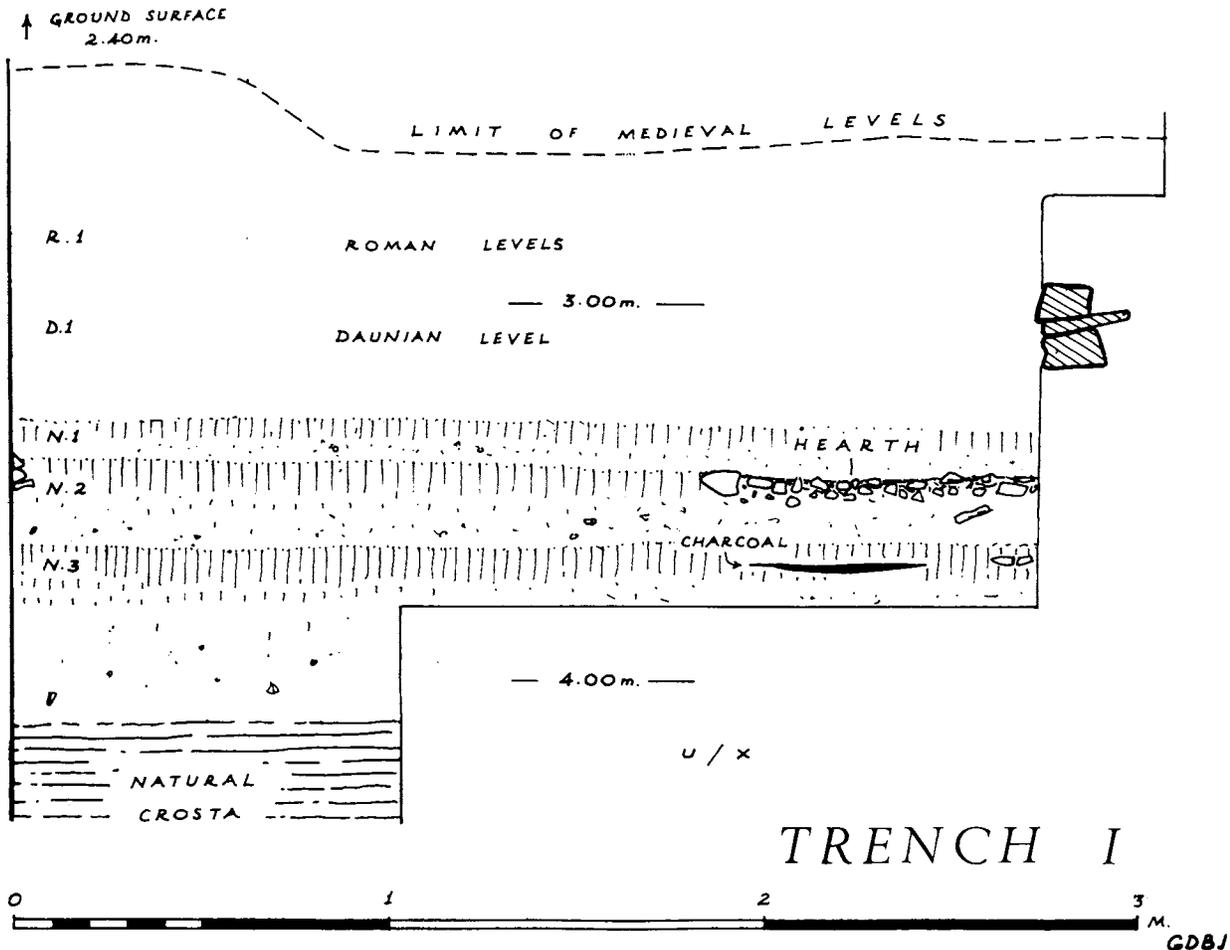


FIG. 75. Lucera Castle 1964: Trench I, Neolithic levels, section (1:20)

offices of Dr Schettini of the Bari Museum. Details of these medieval excavations will be dealt with in the third volume of the series. The work did, however, uncover traces of Neolithic occupation at two points on the end of the commanding ridge now covered by the remains of the castle. This is hardly surprising in view of Lucera's outstanding position at the western end of one of the most commanding E – W ridges in the Tavoliere. Neolithic material was encountered first beneath the original trial-sounding in the interior close to the southern wall of the castle (Trench 1, fig. 75). The medieval material reached a depth of 2.6 m. Below this were stratified remains of the Roman, Daunian and prehistoric periods. The first two do not concern us here and will be covered in the second volume of the series.

The Neolithic material began at a depth of 3.3 m., with an occupation level of earth and gravel mixed with charcoal that also produced a fair amount of pottery. Below this, in level N.2, more substantial evidence appeared in the form of a hearth; it consisted of a spread of pebbles with an arc of larger pebbles surviving along part of the edge (pl. XLVIIa). The surface of the stone area was covered with a thin spread of charcoal. The hearth was associated with a hard gravel and pebble spread running across the northern side of the trench area and out of the excavated section. The third level (N.3), at a depth of 3.75 m., comprised a hard trample of soil thickly interspersed with charcoal. An area of burning, in the form of a 40 cm. spread of charcoal reaching a thickness of nearly 3 cm., lay beneath the hearth area (pl. XLVIIa). Occasional stones were found in this level, but they could not be related to any plan within the area available. This level sat on the Neolithic ground surface; a further 35 cm. intervened before the limestone *crosta* forming the natural bedrock.

Table 8 (p. 205) sets out a list of the material recovered from the three stratified levels. Although the sample is small, some importance should be attached to it because of its archaeological context. Stratified pottery sequences have, of course, been recovered from ditches (see tables 8 and 9), but this is the first occasion on which it was possible to recognize a genuine stratified build-up of the Neolithic ground surface, thanks to the absence of any modern farming activities such as have affected other sites. Moreover, the rise in soil level of over 45 cm. in the Neolithic period argues that a considerable time-span is involved and not a brief period of occupation. This is partly suggested, and perhaps confirmed, by the changes in pottery types discernible even in the statistically small sample analysed in table 8. Impressed wares, along with plain coarse wares, dominate the range in the earliest phase. This supports the thesis that, typologically, impressed wares occur at the beginning of the ceramic range, though this requires careful application in cultural terms.

All the trenches cut at Lucera Castle were primarily concerned with problems relating to the medieval occupation. Trench III, however, produced a further evidence of Neolithic occupation. The trench was cut against the west wall of the famous castle erected on the site by Frederic II and now entirely enclosed by the Angevin circuit wall. The details of the trench will naturally form part of the medieval volume in the series. Alongside the easternmost of the wells revealed in the section, and only 20 cm. from the wall of Frederick's castle, a bag-shaped Neolithic pit was uncovered. Its top measured 57 cm. across and was a regular circle in shape. The interior of the pit was wider (85 cm.), and the edge of the pit had been broken away on the north-western side where it had been cut by the shaft sunk in the creation of the neighbouring medieval well. The Neolithic pit is shown in pl. XLVIIb and the details of the contents will be found in table 9, p. 205. Its depth was 1.2 m.

THE MATERIAL

By D. H. Trump

Pottery

By far the most important material recovered from the Tavoliere sites was the pottery, which was found in great quantity. Leaving aside a few later wares in the surface levels, to be described below, it could be divided, on the basis of fabric and vessel-shape, into eight groups, and further subdivided according to technique of decoration. The different types of decoration associated with a given group were frequently found together on a single sherd, but very rarely occurred with decorations of other groups.

The evidence for chronological sequence of these groups will be reviewed later. This section is devoted to a factual description of the wares represented, with full illustration.

Impressed ware (figs. 76 – 82, pl. XLVIII)

This group is named from the most characteristic of its several types of decoration. It is of a type already distinguished under that name over a wide area of the Mediterranean, so that to coin a new name is both unnecessary and confusing.

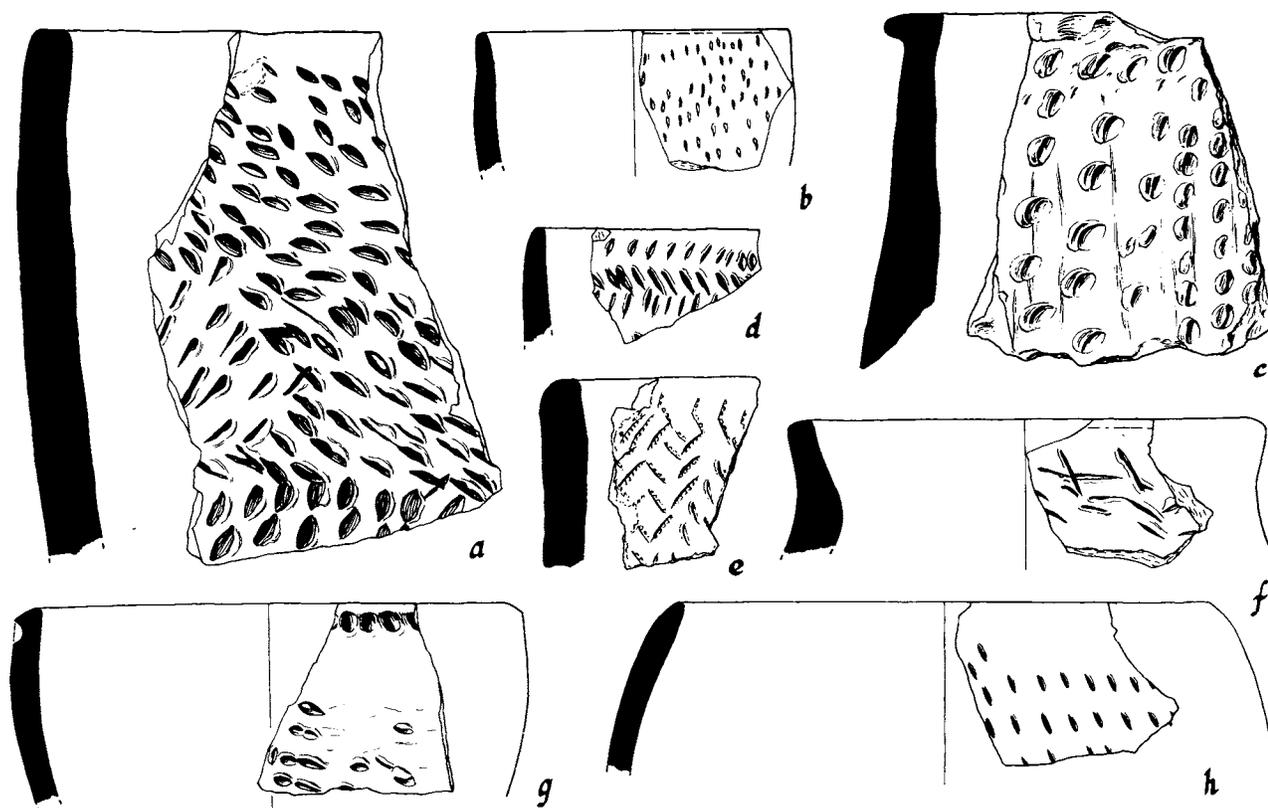


FIG. 76. Impressed ware: impressed decoration, rims. La Quercia: *a*, II, 2.10; *d*, I, 2.90; *f*, I, 1.40; *g*, I, 1.70; *h*, II; *c* and *e*, unprovenanced. *b*, Passo di Corvo VI, o (1/3)

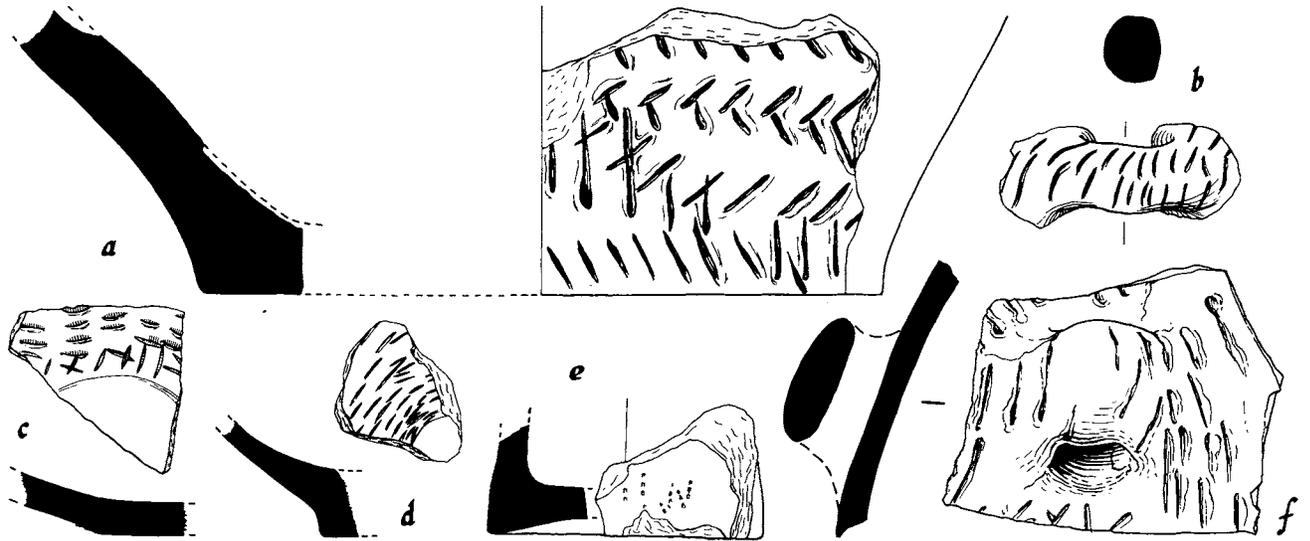


FIG. 77. Impressed ware: impressed decoration, bases and handles. La Quercia: *a*, I, 1.70; *b*, II, 2.10; *f*, unprovenanced. Campo di Fiori: *c* and *e*, I, 2.30; *d*, I, 2.10 (1/3)

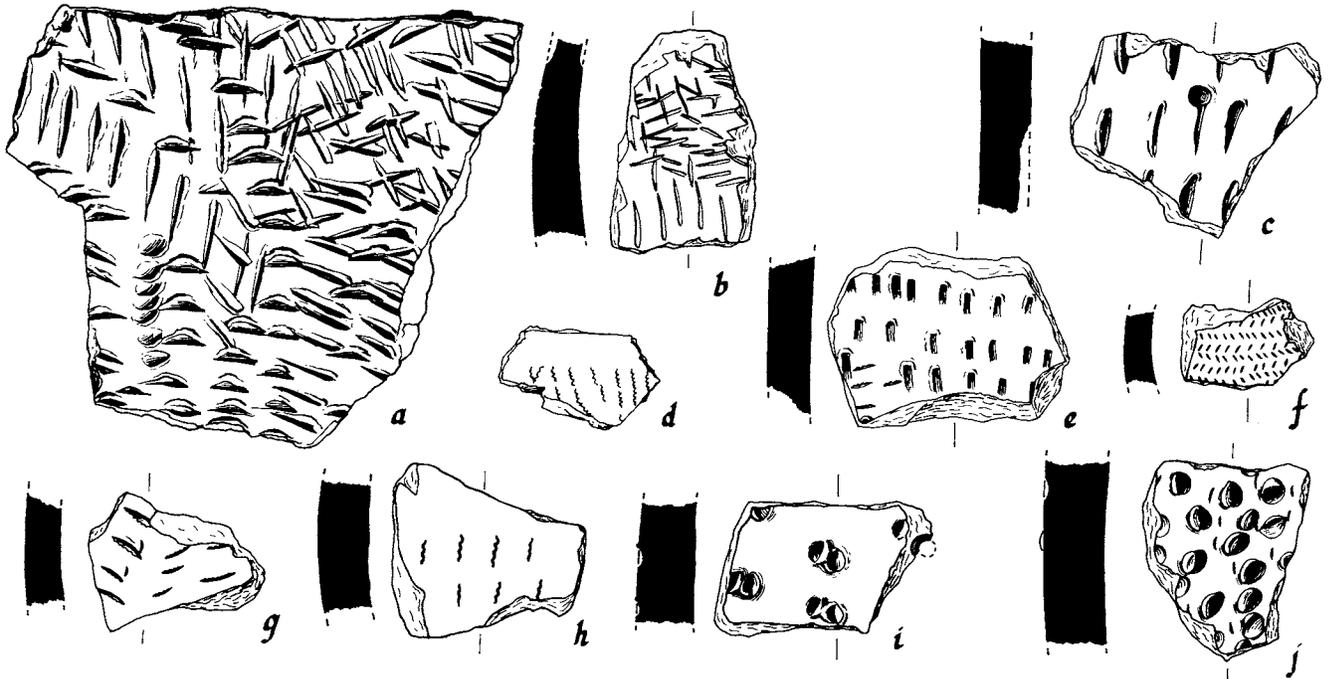


FIG. 78. Impressed ware: impressed decoration, body sherds. Campo di Fiori: *b*, *c*, *f*, *h* and *i*, I, 2.30; *e*, I, 1.70; *g*, I, 1.80. *j*, Fonteviva III, 1.80. *a* and *d*, La Quercia unprovenanced (1/3)

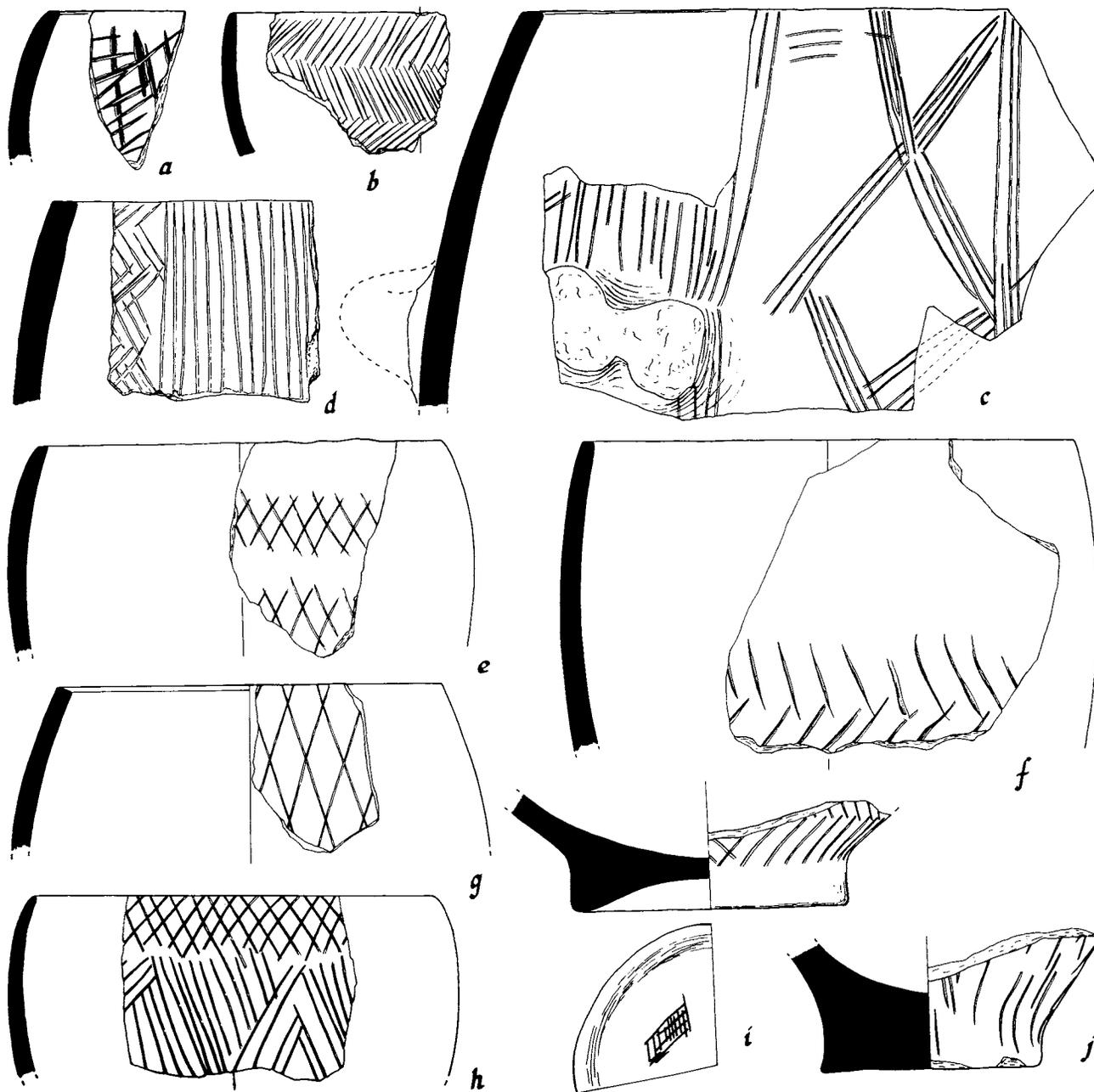


FIG. 79. Impressed ware: incised decoration. La Quercia: *a* and *e*, I, 2.10; *b* and *g*, I, 1.30; *c* and *h*, unprovenanced; *d*, II, 0.70; *f*, I, 2.0; *j*, I, 2.90. *i*, Campo di Fiori I, 2.30 (1/3)

The fabric tends to be thick, rather coarse and as a rule without burnishing. Though the body may be dark in colour, the surface is almost always pale, buff, yellow, pinkish or grey, and uniform on any one vessel.

No completely restorable shape was found. The general impression is of medium to large,

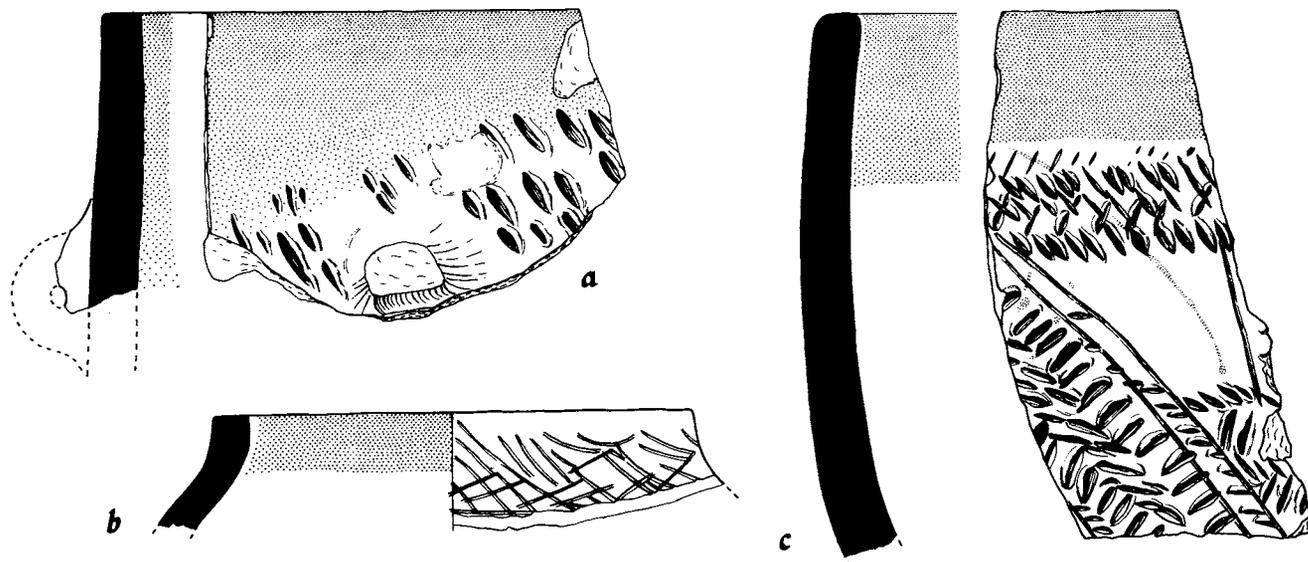


FIG. 80. Impressed ware: slipped jars. La Quercia: *a*, I, 1.70; *b*, unprovenanced; *c*, I, 0 ($\frac{1}{3}$)

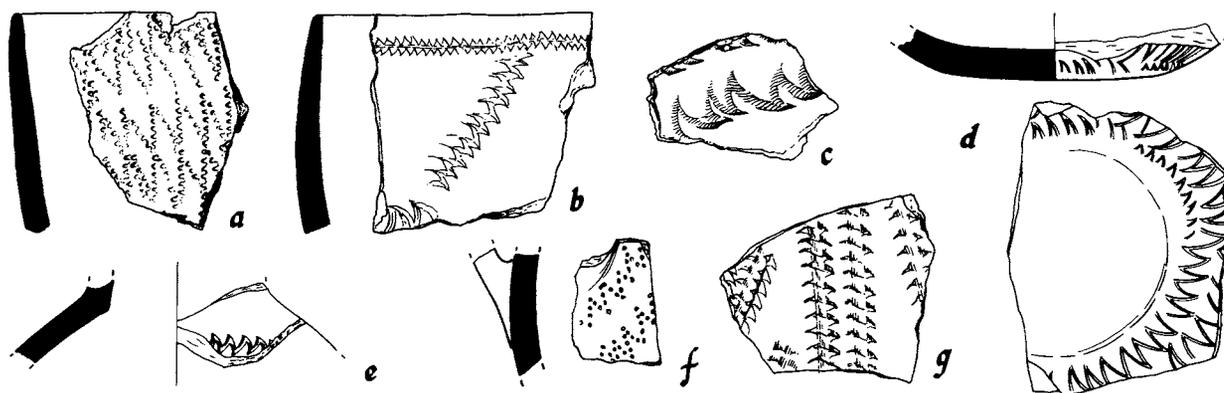


FIG. 81. Impressed ware: rocker decoration. La Quercia: *b*, *c* and *g*, unprovenanced; *d*, I, 0; *e*, II, 1.80. *a*, Fonteviva II; *f*, Campo di Fiori I, 1.0 ($\frac{1}{3}$)

ovoid, rather ungainly, jars with heavy out-turned bases and rims that tend to be thick and convex, vertical or nearly vertical. Lumpy handles occur, though rarely.

Decoration, lavish, varied and unsophisticated, is almost invariably present. It is carried out in a variety of techniques, often two or more on the same vessel, and, as already stated, any one technique may be associated with any other in the group. One exceptional sherd from Villano II (fig. 82*f*) has as many as four techniques present on it. Fabric and vessel shape remain the same whatever the decoration employed. There are four types of decoration, two more or less standard ones, three less common.

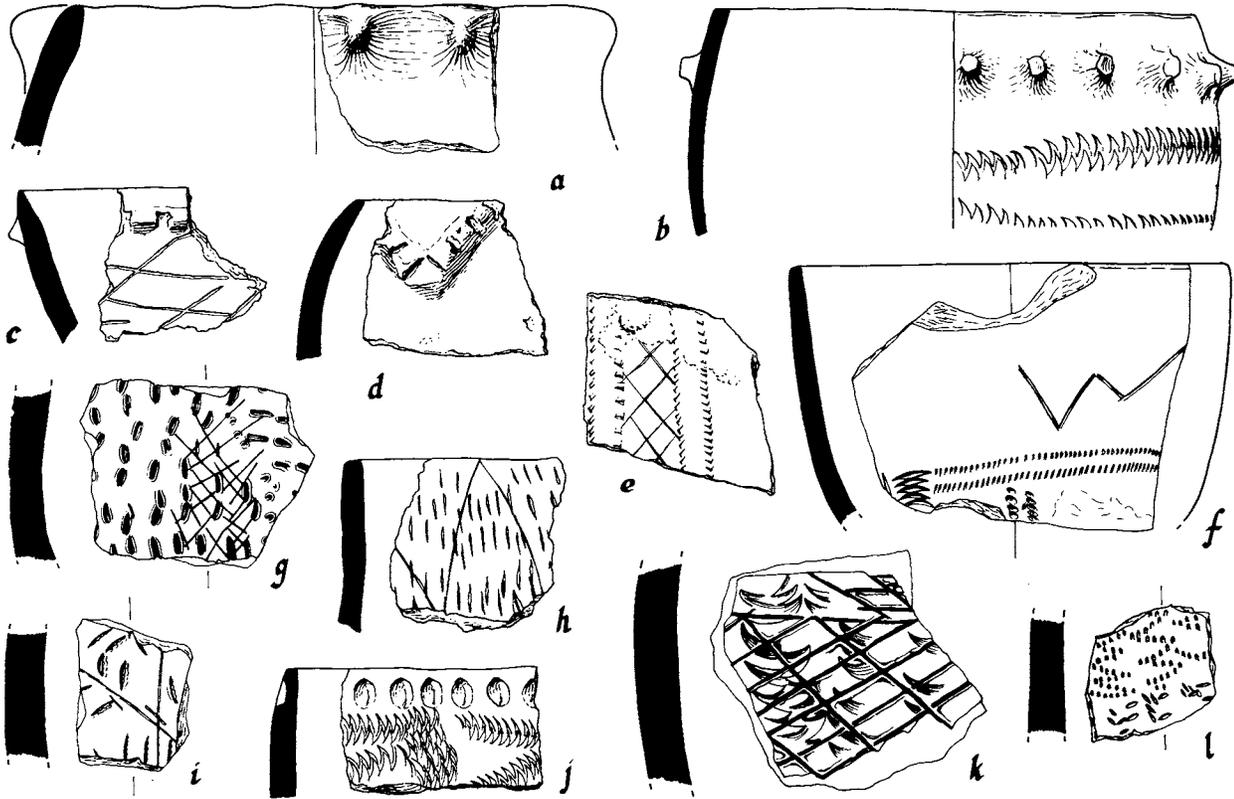


FIG. 82. Impressed ware: relief and mixed decorations. La Quercia; *a*, II, 2.10; *b*, *d*, *h* and *j*, unprovenanced; *e*, II, 1.0; *k*, I, 1.50. *c*, Fonteviva III; *f*, Villano II; *g* and *i*, Campo di Fiori I, 2.10; *l*, Campo di Fiori I, 1.80 ($\frac{1}{3}$)

Impressions consist of jabs in the unfired clay produced by a great variety of points, edges, shells, finger-tips or the like. The object seems to have been to cover the whole surface of the vessel from rim to base. Sometimes the impressions are completely random, more often they run in more or less regular, sloping rows, either set roughly herring-bone-wise, or all in one direction. These seem to be the nearest approach to designs made by the potters.

The range of decoration achieved is illustrated in pl. XLVIII and figs. 76 – 8, illustrating also some of the more typical vessel shapes of this ware. Examples of impressions associated with other forms of decoration are given in fig. 82.

Incisions. It is not always possible to make a clear distinction between incised and impressed decoration, since a long, continuous edge impressed upon the unfired surface produces an effect little different from incision with a point. In typical examples, however, one can see where the clay was pushed up and aside by the motion of the point through it. It is seldom neatly done, generally looking more like a hasty slashing of the surface.

More feeling for design, though still of the simplest, appears in the incised technique, as, for example, alternate diagonal hatching, diagonal cross-hatch all over or in horizontal bands, as well as random slashing. The fact that no sherd from the lower part of a vessel is

soft-incised suggests that the same simple sense of design kept the decoration to the upper part of the vessel, where it would show to best advantage.

A selection of sherds of this type on its own appears in fig. 79, and with other techniques in fig. 82.

Red-slipped lips. Painting as such almost never occurs on this ware. Examples of impressions or incisions on the same sherds as 'Quercia' painting are very scarce, and none is found with 'Corvo' painting.

There is, however, a class of heavy square-lipped vessels with a band of bright red or brown slip at the lip, sometimes alone but more usually with the lower wall impressed or incised. Examples appear in fig. 80.

Knobs and cordons are also infrequent. Knobs occur in a single horizontal row near the lip of the vessel, and are usually of coarse and rather irregular form. Recorded examples appear alone, associated with incision before firing or with rocker pattern (two cases), fig. 82*a* and *b*. Impressed cordons, fig. 82*c* and *d*, are even scarcer.

Rocker pattern is carried out by rocking a short, hard edge on the surface of the wet clay, moving it forward each time by pivoting on the forward corner. The result is an angular zigzag comprised of lines, straight or curved according to whether the edge employed was straight or convex (fig. 81). On impressed ware the type of edge used is normally toothed or serrated, so that the zigzag appears dotted. The sherds are too small to reveal either the designs thus formed or the shapes of the vessels which bore them. The fabric is identical with the standard impressed ware described above (see figs. 81 and 82).

'Quercia' ware (figs. 83 – 94, pls. XLIX – LI)

This ware, which had not previously been distinguished, occurred almost exclusively and in enormous quantity at the site at La Quercia (p. 130).

The fabric is fairly thick but invariably dark, with the surface nearly always polished on one or both faces. It varies greatly in colour, from light orange-buff to very dark grey, but much the most common shade is the central part of this range, a smoky buff or buff-grey. Reds are never found and clear browns only rarely. The great majority of sherds are decorated in one or both of two techniques to be described below, painting and rocker pattern. The vessels can be conveniently divided into three groups, open, intermediate and closed.

Open bowls are by far the most common (figs. 83 and 84). The usual form has a square lip and a fairly straight wall, rising from a flat base. There is often an external pierced lug or small handle, set a little below the rim. These bowls are often quite large, and characteristically painted and burnished internally, smoothed and rocker-patterned externally. A form with thinner and more curving wall and a simple rounded lip is less certainly flat-based: an example from Coppa Cavone (fig. 92*b*) has a rounded base. One from Villano II (fig. 91) was provided with four short feet. In the absence of other complete vessels or large sherds there may well have been many more of this form. Small versions of this shape have tag-handles projecting from the lip to make spoons or dippers (fig. 86*c-f*). Slightly deeper curved bowls also occur, approaching sugar basin form, often painted inside and out (fig. 85). One has a spout projecting just below the lip (fig. 86*a*).

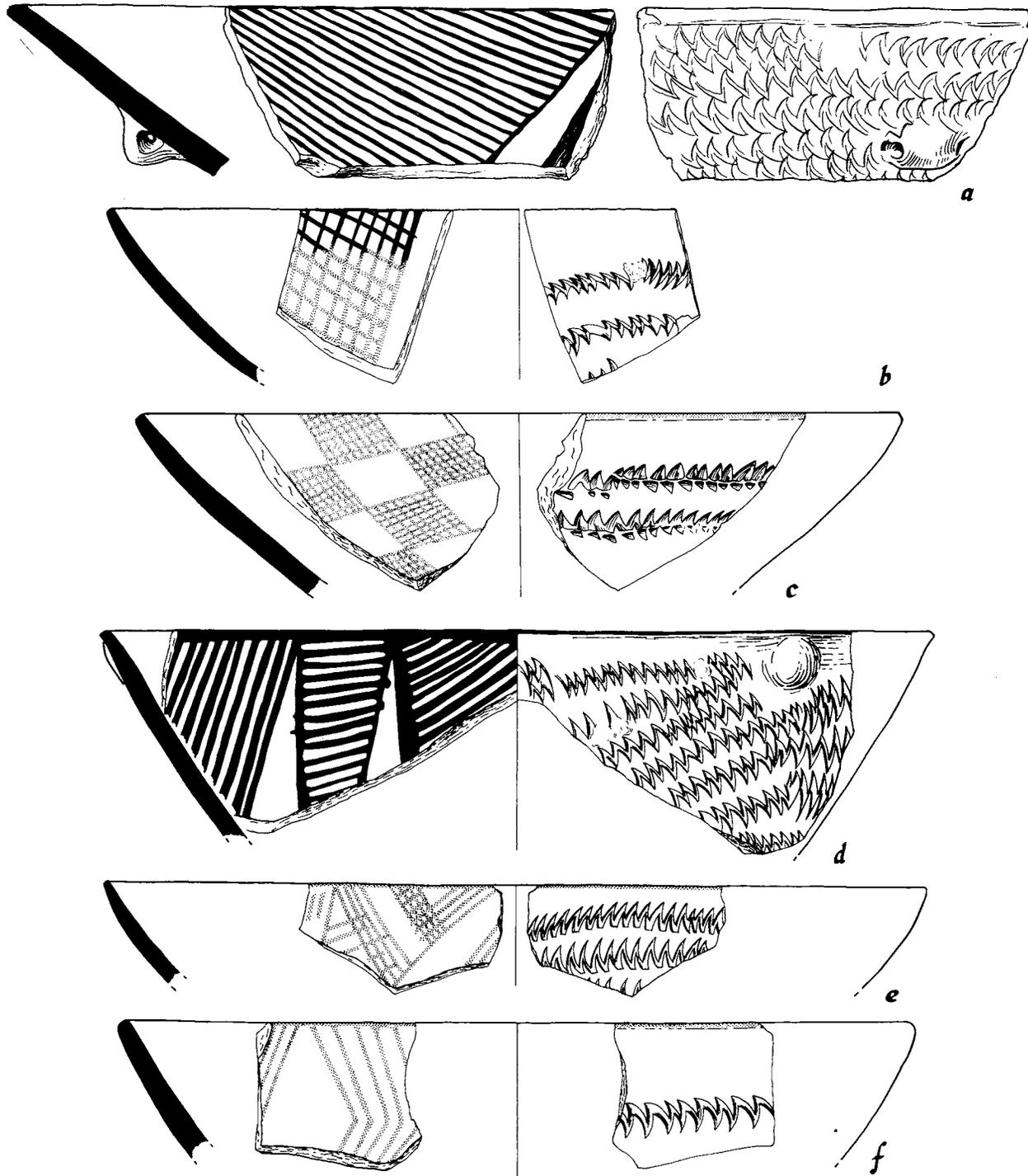


FIG. 83. Quercia ware: painted open bowls. La Quercia: *a* and *b*, I, 0.90; *c*, unprovenanced; *d* and *e*, II, 2.10; *f*, II, 0.60 ($\frac{1}{3}$)

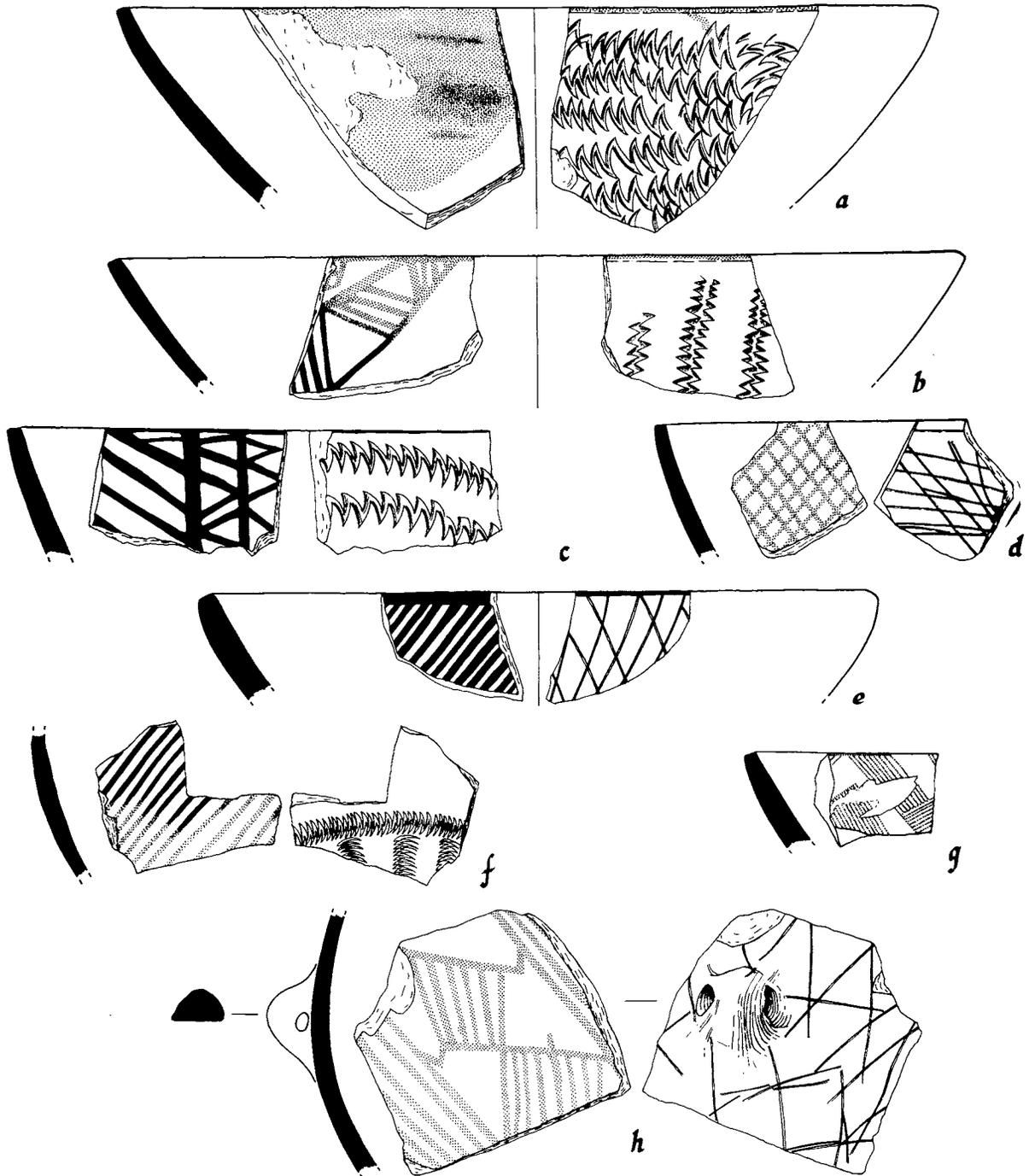


FIG. 84. Quercia ware: painted open bowls. La Quercia: *a* and *c*, III, 1.80; *b* and *d*, II, 1.10; *e*, II, 2.90; *f*, I, 1.30; *g*, I, 2.40 ($\frac{1}{3}$)

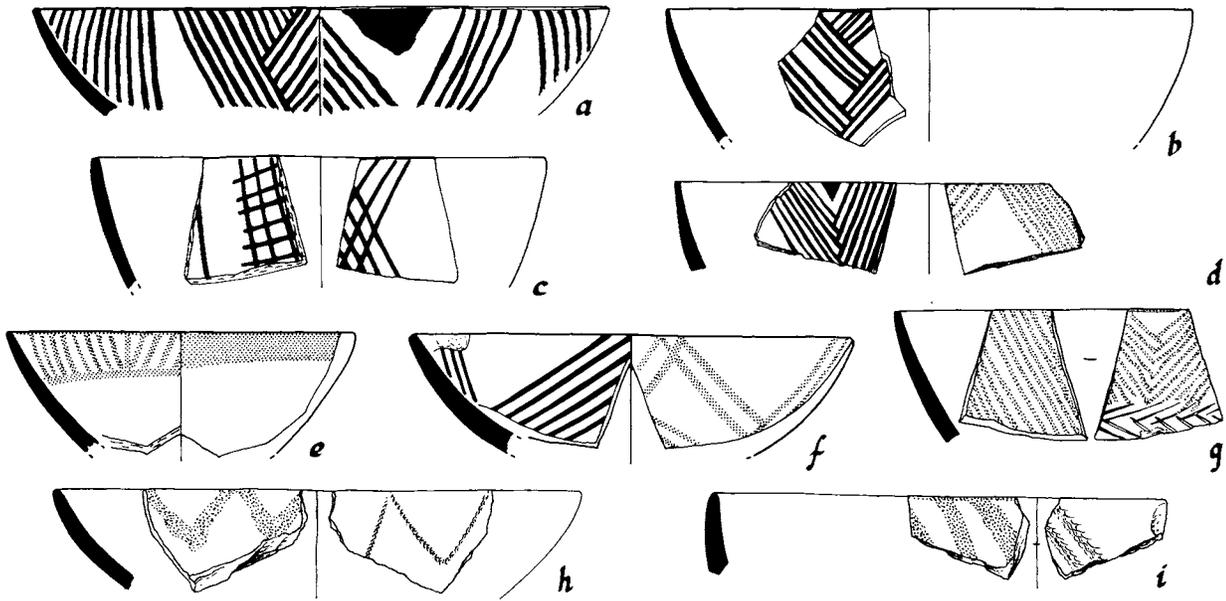


FIG. 85. Quercia ware: painted curved bowls. La Quercia: *a* and *c*, unprovenanced; *b*, II, 0.45; *d*, I, 0.90; *e*, II, 1.10; *f*, II, 0; *g*, I, 1.70; *h* and *i*, surface ($\frac{1}{3}$)

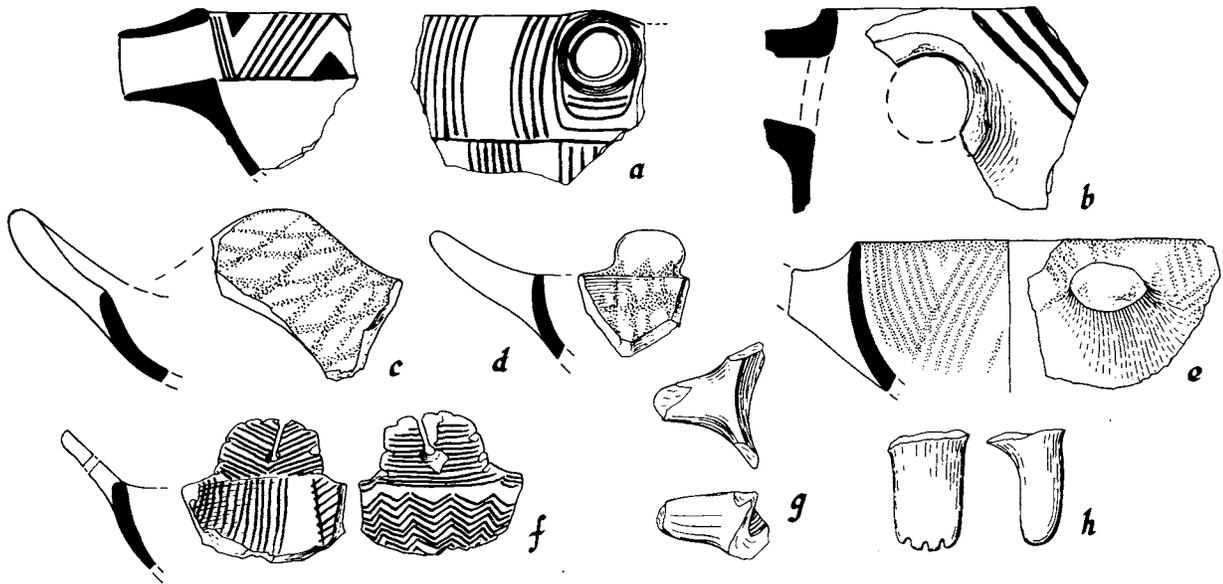


FIG. 86. Quercia ware: painted spouts, dippers, etc. La Quercia: *a*, unprovenanced; *b*, *d*, *e* and *f*, surface; *c*, I, 1.70; *g*, II, 0; *h*, II, 1.20 ($\frac{1}{3}$)

The second, intermediate type of vessel can be described, better, as a deep bowl or as an open-mouthed ovoid jar (fig. 88). Examples tend to be of much larger size and are decorated externally only. A band of painting between the maximum diameter and the lip rises above a rocker-patterned lower wall. One particularly fine and elaborate example comes from La Quercia (fig. 87); another spout occurs on a surface sherd of this form (fig. 86*b*).

The third type, a necked ovoid jar, is fairly uniform in body shape, but very variable in the form of neck (fig. 89). This is clearly a separate element from the shoulder and is normally straight, but can be vertical or may slope either inwards or outwards. Lumpy, vertical or horizontal handles are not infrequent. The size of the jars varies fairly widely too. One unusual form from Passo di Corvo IX A has a carination between shoulder and body. These jars are frequently painted, rarely rocker-patterned.

Rocker pattern. Notched edges, common in the impressed ware, are never found. Occasionally a concave edge, or one with central gap, was employed, to give an interrupted zigzag creating two separate rows of outward-pointing Vs. Normally, however, the zigzag is smooth and continuous (fig. 83). In another variant form the rocker edge is hard, short and certainly employed on the clay when fairly hard, fig. 92*d* and *g*. This is very close to scratched ware, and will be mentioned again in that connection. These zigzags generally run horizontally round the vessel, less often diagonally or vertically, rarely in more elaborate designs. Two more elaborate examples are on vessels already mentioned, from Coppa Cavone and Villano II, figs. 92*b* and 91. The former bears an interrupted rocker chevron on the outside, probably one of an original four. The latter is quartered internally by rocker bands, while externally the surviving fragment has a chevron pendant from the lip and what must be a simple

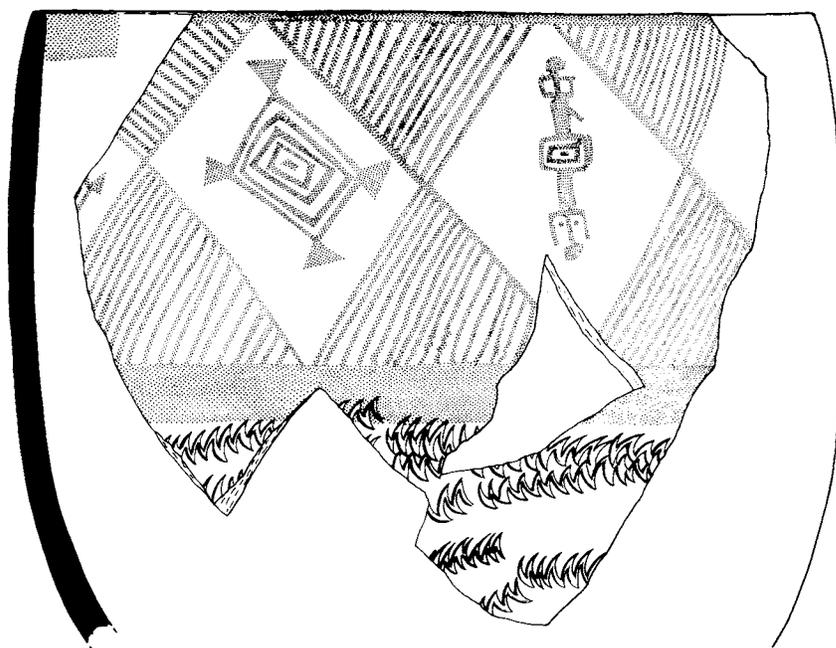


FIG. 87. Large elaborately decorated ovoid jar: La Quercia ($\frac{1}{3}$)

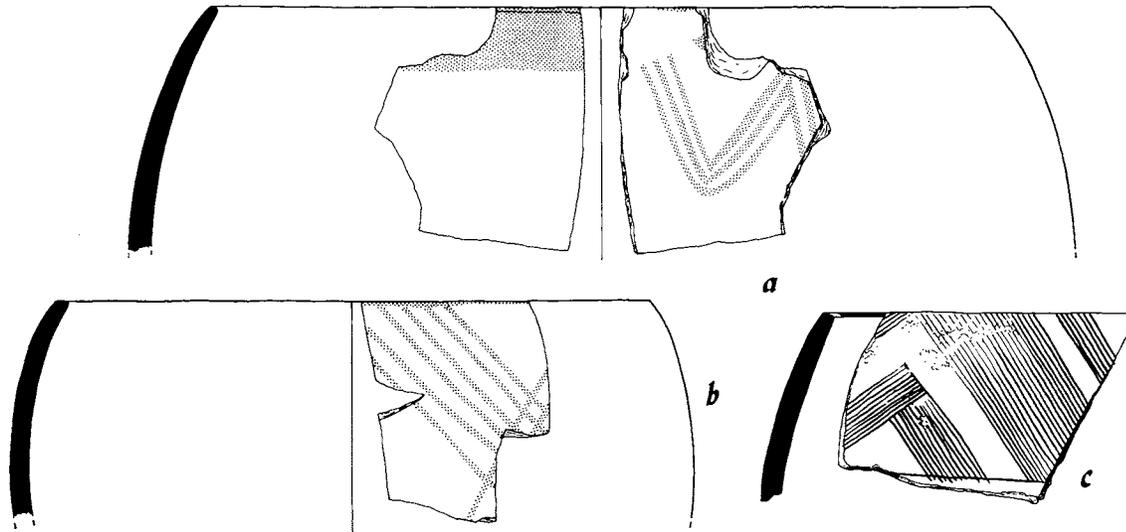


FIG. 88. Quercia ware: painted ovoid jars. La Quercia: *a*, II, 1.80; *b*, II, 1.20; *c*, I, 0 ($\frac{1}{3}$)

human figure with legs apart and arms raised standing between the feet. Chevron and human figures were probably repeated four times round the vessel.

The usual distribution of this decoration has been briefly referred to in the section on vessel shapes — outside open vessels and on the lower body of intermediate ones, rarely on jars. The footed bowl from Villano II exhibits the only known example of rocker pattern inside a vessel. Similarly, rocker patterns are rarely found on a burnished surface, though often on well-smoothed vessels.

Paint. The colour of the paint varies even more than that of the vessel to which it is applied. Where the pottery through oxidation has fired to a light colour, the paint tends to be a rich crimson red; where the surface is reduced, this usually becomes brown, grey or black. Sometimes both paint and surface emerge from the baking virtually indistinguishable in colour, a uniform dark grey, or a freak of firing may, rarely, produce a red design on dark grey or, conversely, a black one on light buff.

Painting is more widespread than the rocker patterns. It occurs inside open bowls, inside and outside slightly deeper bowls and ladles, on the shoulder of ovoid jars and all over the outer surface of the narrower-mouthed necked jars. Painted surfaces were invariably burnished subsequently, the painting often being slightly smeared in consequence.

The paint is applied in fairly narrow lines, 1 to 4 mm. wide, almost invariably forming bands or areas of single, cross or chevron hatching. The designs are simple, geometric, and rectilinear — in bands, triangles, chequer-work and the like. A very few curvilinear motifs occur, multiple or rayed circles, 'bulls'-eyes' or 'suns' (fig. 93). An exceptional motif occurs on the finest sherd of this ware (fig. 87), which has been interpreted, not very convincingly, as a stylized human figure. Such figures are indeed known — that from Villano II in rocker pattern will be recalled — but in a style quite different from the painted ones.

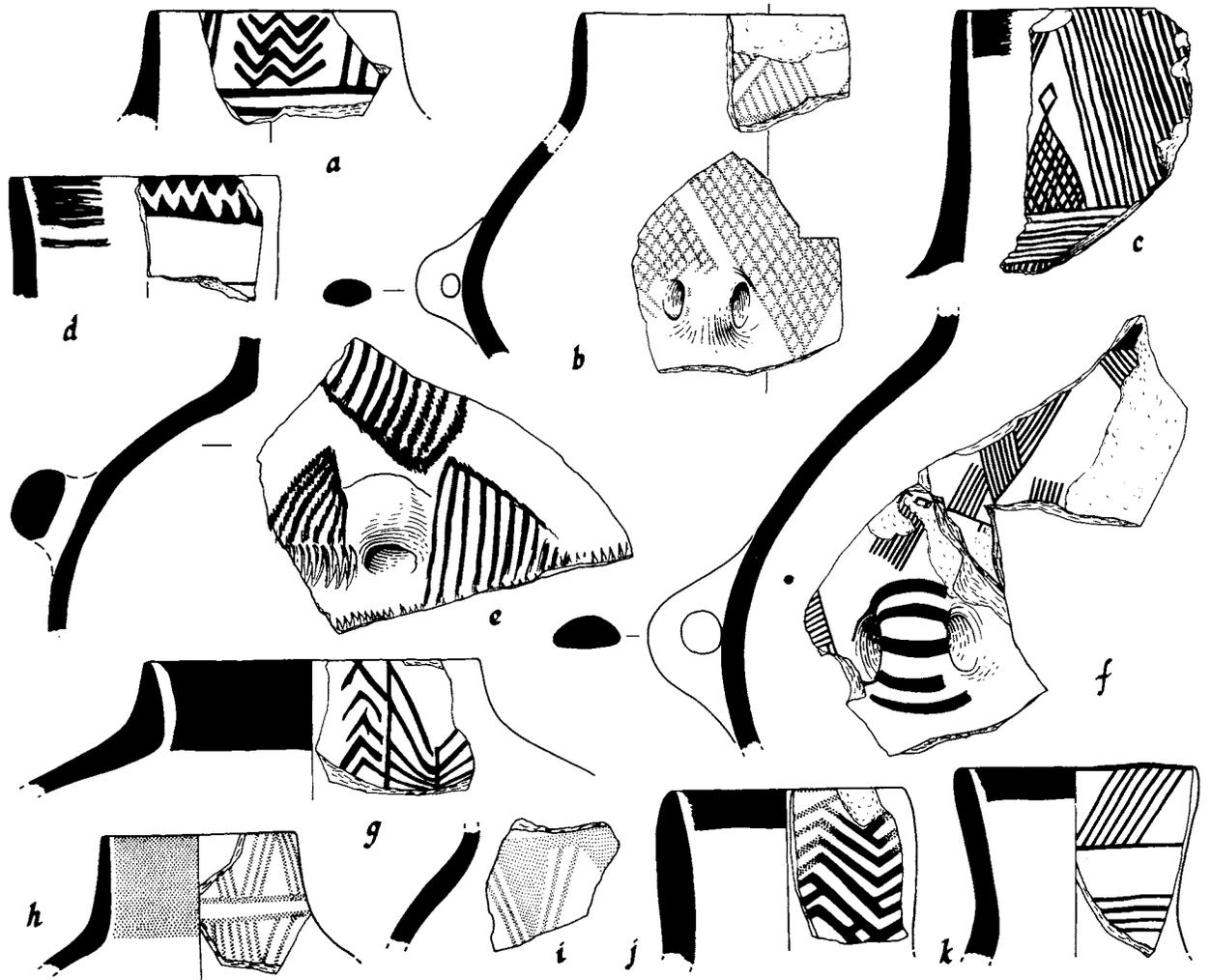


FIG. 89. Quercia ware: painted jars. La Quercia: *a*, *b*, *j* and *k*, II, 0; *c*, II, 1.0; *d*, I, 1.40; *e*, surface; *f* and *g*, I, 2.10; *h*, II, 1.20; *i*, Passo di Corvo X, 2.90 ($\frac{1}{3}$)

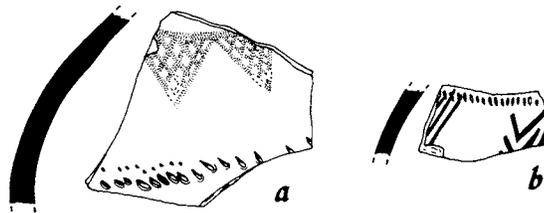


FIG. 90. Quercia ware: mixed decorations. La Quercia: *a*, I, 0; *b*, II, 0 ($\frac{1}{3}$)

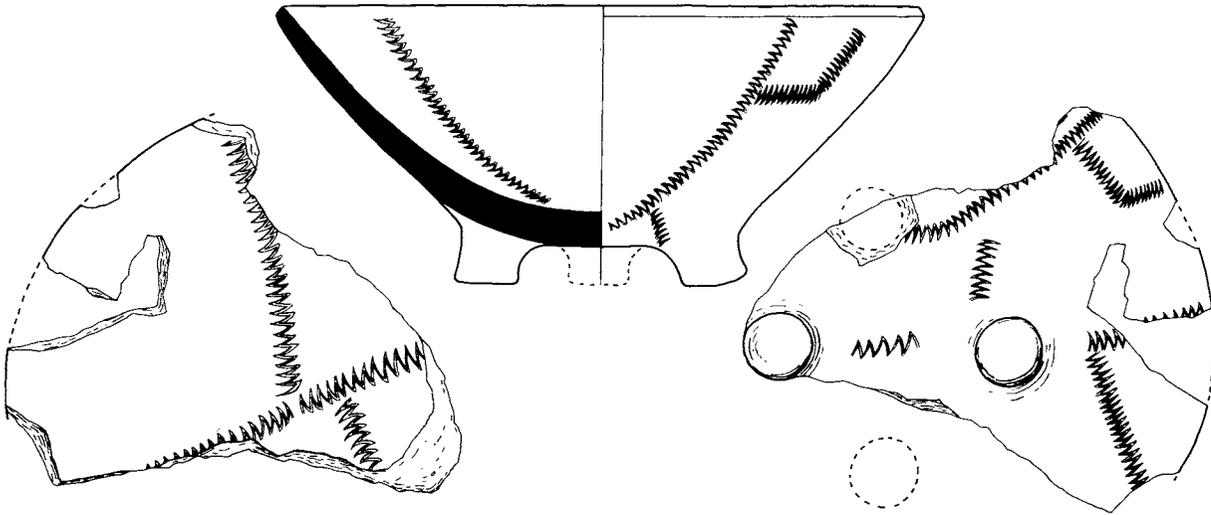


FIG. 91. Footed bowl with rocker-patterned human figure: Villano II ($\frac{1}{3}$)

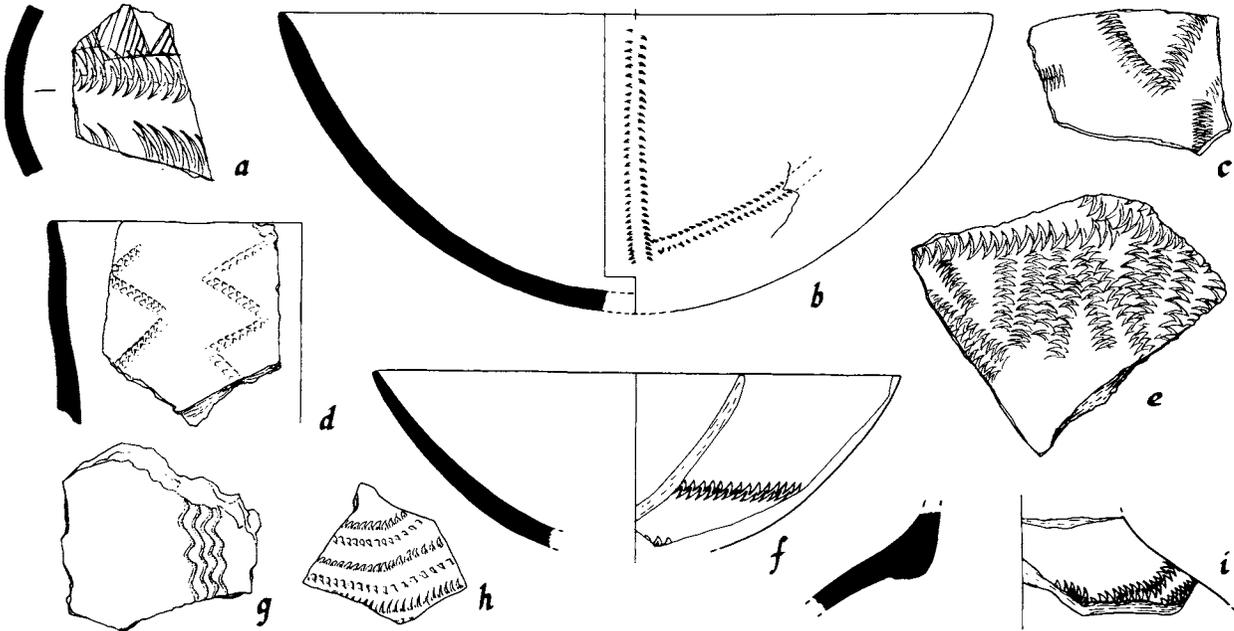


FIG. 92. Quercia ware: rockered patterns. La Quercia: *a*, I, 0; *c*, *e* and *h*, unprovenanced; *d* and *g*, surface; *f*, II, 1.20; *i*, II, 1.80. *b*, Coppa Cavone ($\frac{1}{3}$)

Other techniques. Four figures in relief, all from La Quercia and all on the lips of vessels (pl. XLIX and fig. 94) are certainly intended as human.

The most attractive (fig. 94*b*), on a high-sided bowl, is a concave disc with raised edges for the face, with a knob-nose and pit-mouth. Nostrils are shown, but not eyes. The cheeks and chin are rayed in paint (tattoo marks?) and the design continues down the wall in what may

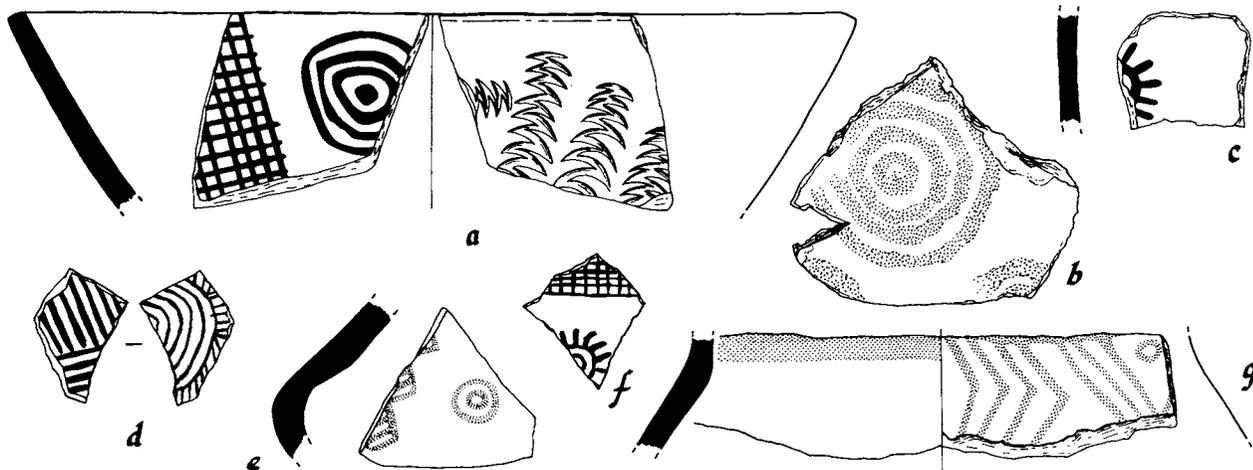


FIG. 93. Quercia ware: painted curvilinear designs. La Quercia: *a*, II, 1.20; *b*, surface, *c*, *d* and *f*, II, 0; *g*, II, 0.60. *e*, Campo di Fiori I, 2.30 ($\frac{1}{3}$)

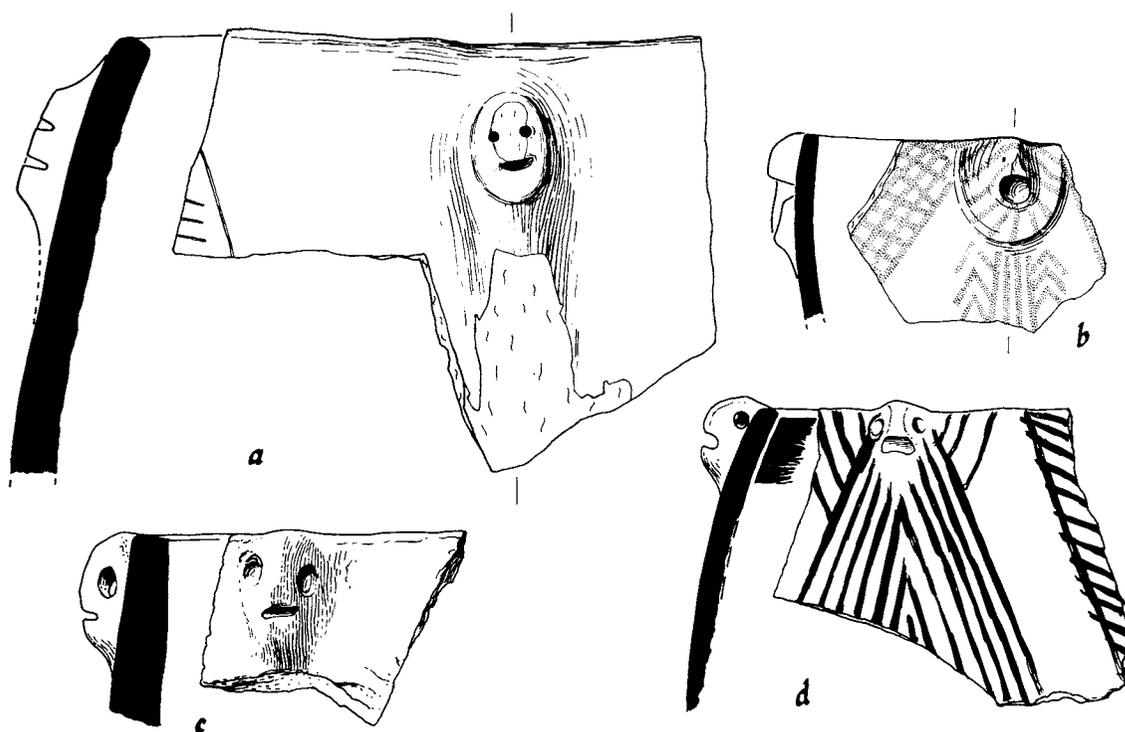


FIG. 94. Quercia ware: relief-decorated, faces. La Quercia surface ($\frac{1}{3}$)

have been meant for a stylized body. The corner of it which survives suggests a centipede rather than a human.

A second (fig. 94*a*), on an unpainted ovoid jar, has a face in the form of a simple, flat raised disc, eyes and mouth represented by holes, and no nose shown. A scar on the wall of the vessel shows that the rest of the body was once present, irregularities at the sides even suggesting short raised arms, but the outline is too ragged for the form of the body to be clear. Though much simpler, this figure is again not unpleasing. The face is cheerful, if inane.

The third and fourth, also on ovoid jars, are frightening creatures. In each of these, a simple oval knob is given a gash for a mouth and two pits for eyes. As the gash was made downwards the mouth turns down unpleasantly and the eye-pits, being carelessly added at slightly different levels, have a decided cast. One vessel is again painted in a form which could be interpreted as a stylized figure, as can practically any geometric form.

Very occasional sherds show influence from the impressed ware group, by the association of decorations proper to that group with the decorations or fabric of this. Two sherds having both paint and impressions are illustrated in fig. 90. Three, in which the rocker pattern is replaced by incision, are shown in fig. 84*d*, *e* and *h*.

Scratched ware (Matera) (fig. 95, pl. LII*a*)

Sherds decorated in scratched technique turned up in small numbers at all sites and levels. A selection is illustrated in fig. 95. As a type site of this ware Matera has been suggested and

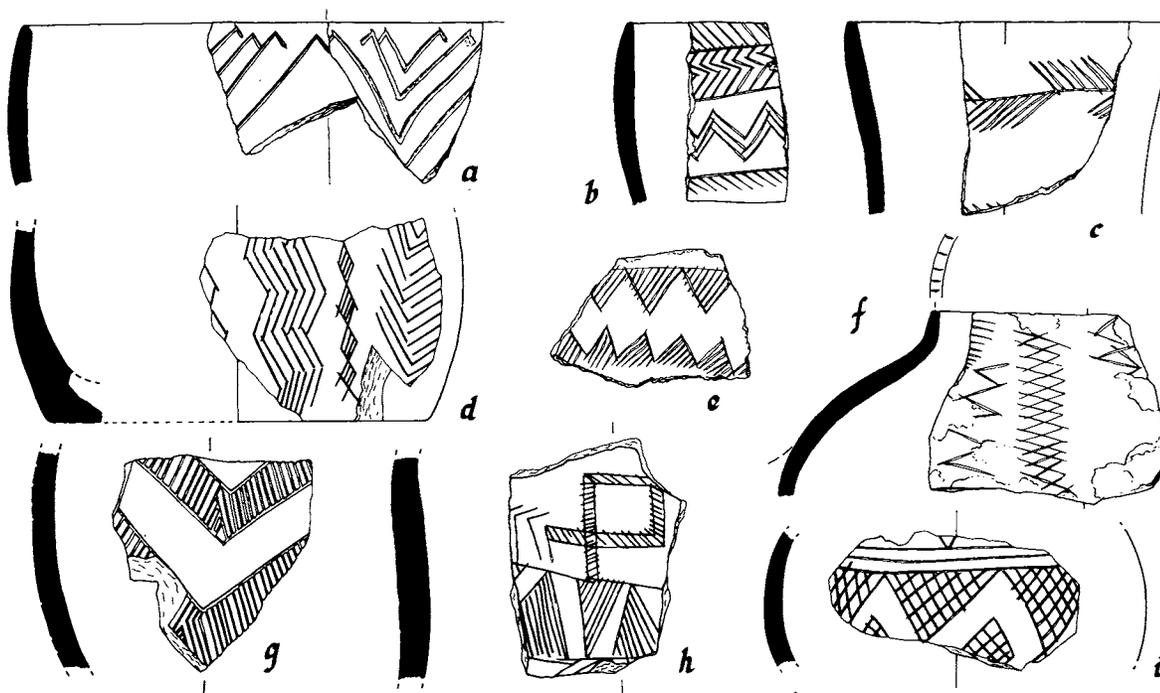


FIG. 95. Scratched ware. La Quercia: *a*, *b* and *f*, surface; *c* and *d*, II, o; *h*, unprovenanced. *e*, Campo di Fiori I, 2.10; *g*, Fonteviva III; *i*, Campo di Fiori I, 2.30 ($\frac{1}{3}$)

will serve well. The scarcity of the ware in the Foggiano certainly implies that it was not at home there.

The fabric is in general rather thinner, the surface well burnished and the colour range centred on a warm brown. Shapes can rarely be distinguished. A few sherds are certainly from deep necks or bulging bodies of jars, or, less frequently, from deep bowls.

The design is scratched on the surface after firing or, occasionally, immediately before. This gives the lines a characteristic flaky or ragged appearance as small spalls of the hard surface were brought off on either side. Normally the scratching is shallow, the resistance of the surface being sufficient to prevent anything like a gouged line being produced. Thicker lines, as in fig. 95*a*, were almost certainly done before the vessel was baked. An intermediate form between scratched and rockered techniques, found only at La Quercia, is one in which the line is best described as rocker-gouged. It has been already mentioned and illustrated (fig. 92*d* and *g*). It has interesting connections with Ariano and Matera, and will be referred to again in the discussion on southern Italy below.

Any resemblance between the designs and those of Quercia painted ware is probably coincidental, and due to the fact that both are based on a simple geometric repertoire. Some designs are very roughly executed, but most are much neater than those incised upon the impressed ware, and more delicate than those painted upon Quercia ware. Hatched bands, chevrons, triangles, etc., form the main elements, with many variations. The effect is often rather more elaborate than anything in wares previously dealt with. A few have transversely scratched rims.

Dark burnished ware (fig. 96; pl. LIII*a*, upper)

This is probably the commonest single ware in the Bradford collection, certainly the dullest, and is the sole ware entirely without decoration. The lack of decoration probably explains why the group had not previously been distinguished, though examples of it are known over much of southern Italy. Similarly, its ubiquity does not allow any particular type site to be picked, and a more general name has to be sought.

The paste, a little different from most of Quercia ware or the scratched wares, is dark and varies from fine to medium-coarse. The surface is nearly always dark and well burnished. The vessels can also be very much thinner than either of the previous wares, though they are normally of comparable thickness. It is the absence of decoration and the shapes (fig. 96) that distinguish it as something separate.

There are three basic shapes, each susceptible of variation. The standard, most characteristic, form is the carinated bowl, in a wide variety ranging from a round-shouldered bowl with in-sloping collar (fig. 96*m*), practically the Italian *vaso a tocco*, to others with the shoulder closed up to give an external rib (fig. 96*j* and *k*) or with a simple carination between the open body and the neck (fig. 96*d* and *f-i*), which can stand at any slope or, again, the carination can soften into a simple curve. The second class is of simple tronco-conic dishes with a rolled or thickened lip (fig. 96*a-c* and *e*), not found in the other types described. The third and more uncommon shape is a thin ovoid vessel, from its size and proportions best called a beaker (fig. 96*l* and *n-p*). There is a great quantity of material, differing in such simple details, so that no strands of development can be distinguished with any degree of confidence.

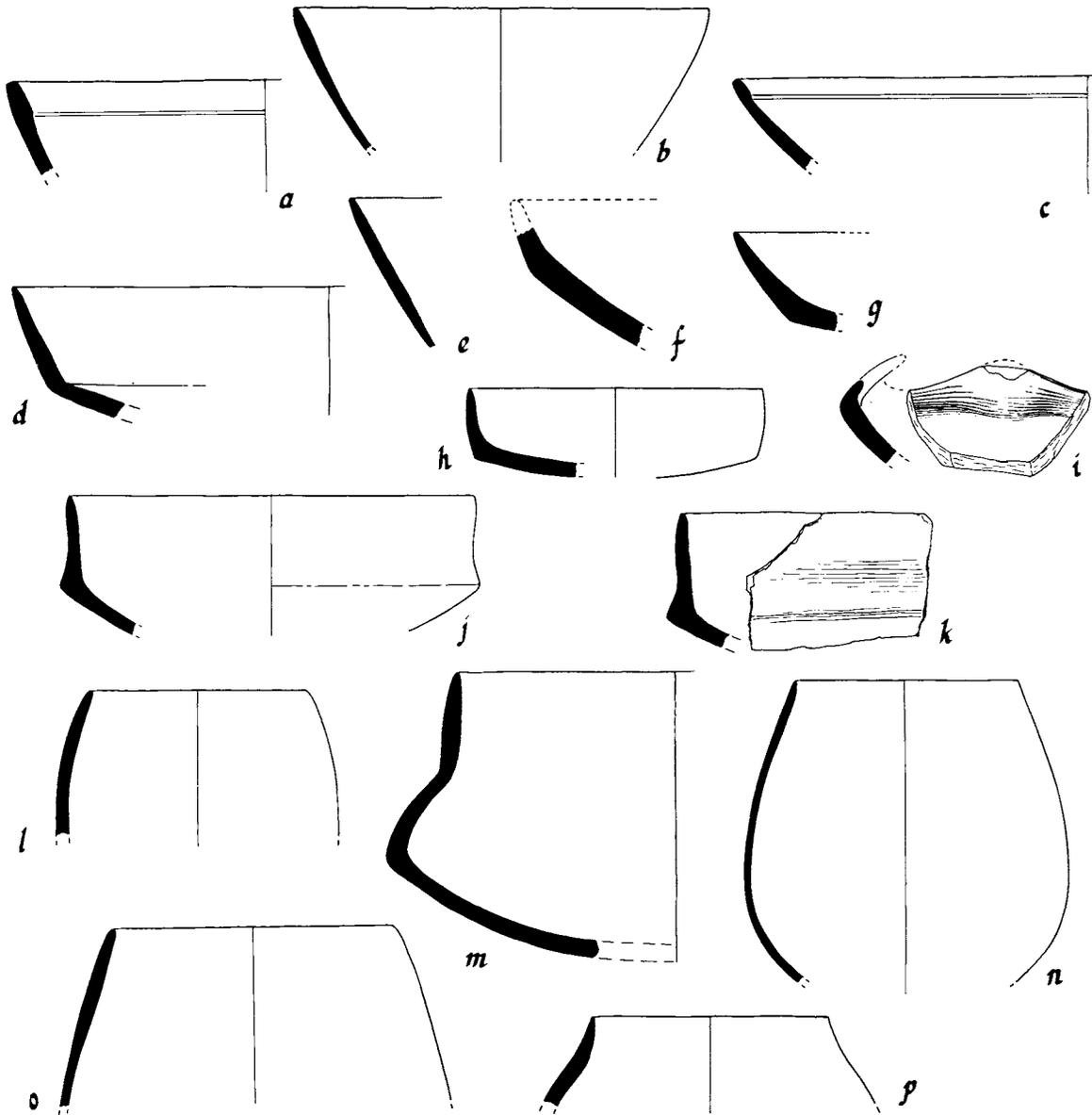


FIG. 96. Dark burnished ware. Passo di Corvo: *a*, X, 1.40; *b* and *g*, X, 2.40; *c*, VI, 0.60; *d*, *e* and *k*, VII S, 2.0; *f*, VI, 0.40; *h*, VII W, 0.80; *j*, IX, 1.80; *l*, VI, 0.25; *n*, IX, 1.20; *o*, VI, 1.20; *p*, X, 1.40. *i*, Posta d'Innanzi, 2.0; *m*, Coppa Cavone ($\frac{1}{3}$)

In the Foggiano this dark burnished ware seems to have been fairly common at all levels and all sites, reaching abundance at some, as, for example, Passo di Corvo III. A curious exception is La Quercia, where it is distinctly scarce, although at Passo di Corvo II, here considered broadly contemporary, it is present in some quantity. One can only suggest a variation in local taste.

Corvo ware (figs. 97–8, pl. LIIb)

This ware has long been recognized under the term *dipinto a fasce larghe*. This description, however, is very misleading, since the excavations reported here have clearly shown that only a comparatively small proportion of sherds are painted at all; and although some unpainted fragments may, of course, belong to the undecorated parts of painted vessels,

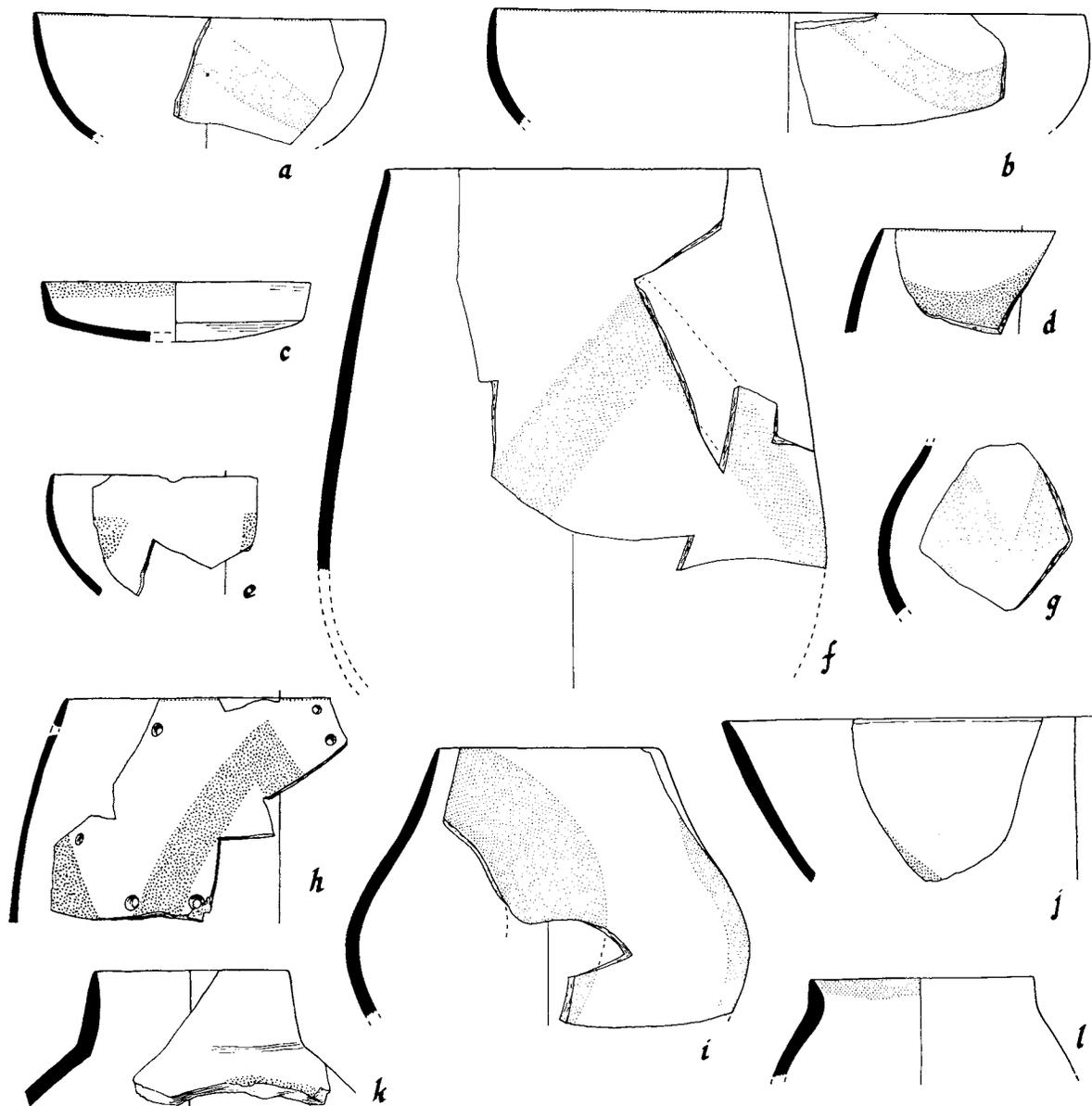


FIG. 97. Corvo ware: painted. Passo di Corvo: *a*, VII N, 2.0; *b* and *i*, VII ing. 4; II, *c*, *j* and *k*, unprovenanced; *d*, VI, 0; *e*, X, 0.40; *f*, X, 0.70; *g*, VII W, 0.40; *h*, X, 1.40; *l*, VI, 0.90 ($\frac{1}{3}$)

these must still have been in the minority. Another objection is that the term came into use in contrast to *dipinto a fasce strette*, which is itself now broken down into a number of apparently unrelated groups, of which Quercia could be counted one. Passo di Corvo itself, in the third period of its occupation, provides a suitable type site. Scaloria, a cave behind Manfredonia,⁷ is sometimes used for this purpose, but is in fact better applied solely to another version of this ware, and one not found in the Tavoliere, in which the red bands are margined in black.

The fabric is clearly distinguished from all others on these sites by its fineness and yellow-buff colour. A few of the thinner sherds included with the dark burnished ware are marginal, since accidents of firing may have given them light grey instead of buff coloration. Variation of colour on individual sherds is practically unknown, suggesting much greater skill in firing as well as in shaping. Sherds are often of very uniform eggshell thinness, and the surface may then be cream-slipped, polished or both. Further decoration is described below. The ware seems, understandably, to have been highly prized, since many vessels were repaired in antiquity (fig. 97*h*).

The shapes cannot be easily marked off from each other, intermediate forms abounding. They range from a straight-sided, open dish, to bowls with shallow or deeper curved walls, and a wide variety of single- or double-curved beakers or goblets (fig. 97). A few sherds with angular necks should really be classed as jars. Flat bases are so rare that round bottoms must be postulated and were probably the rule. There are no handles of any kind.

Red paint. A brilliant scarlet or vermilion paint was applied in one or both of two ways. Many vessels have a line of it at the rim, either very thin on its very top or spreading down in a fairly narrow band on the inside. The more striking decoration, however, is in broad bands boldly applied to the outside of the walls. Designs are of the simplest — swags, straight bands or single chevrons — but no less effective in their simplicity.

The text figures over-emphasize the frequency of painted decoration. Where two sherds of identical shape occurred, the painted one has naturally been reproduced, in order to illustrate both features. In Trench VI at Passo di Corvo, for example, the proportion was roughly one painted to four plain (based on over 350 sherds).

White and polychrome painted. Though red paint was the general rule, white occurs also, more often applied to an uncoated surface than to the cream slip, against which it would hardly have shown. It occurs either alone, or in association with red paint, or over it. Only a few

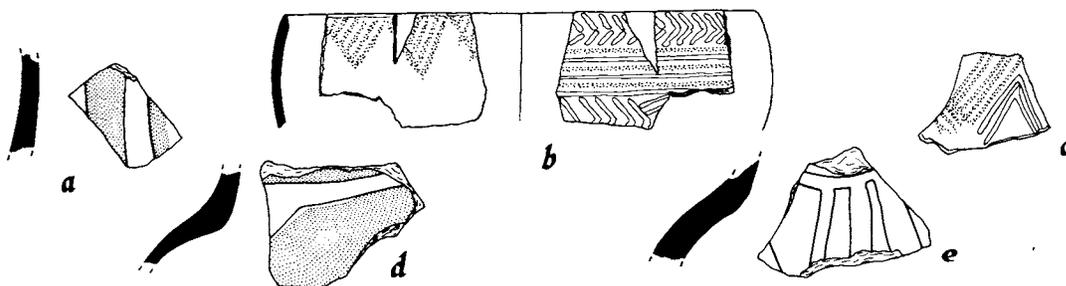


FIG. 98. Corvo ware: polychrome painted. Passo di Corvo: *a* and *e*, X, 3.0; *d*, VII N, 0.70. La Quercia: *b*, surface; *c*, II, 1.0 ($\frac{1}{3}$)

sherds (fig. 98*b* and *c* are good examples) suggest any subtlety in the wider scope thus offered. The number of white-painted sherds from jars should be noted, but this may be an accident of survival.

Pattern burnish. A handful of sherds of this ware, usually but not always unpainted, shows an unusual and unexplained feature. In certain angles of light it can be seen that the surface is diapered with extremely regular shinier lines, presumably produced during the burnishing process. The only sherds on which this was really clear (fig. 100*f*) had fired irregularly to part pink, part grey. In the pattern-burnished lines, if such they really were, the two colours had tended to run into each other. In other sherds these lines are never obvious.

Their usual arrangement is in closely spaced chevrons, far finer than anything produced in paint at the time. One sherd has vertical parallels hanging inside the lip (fig. 100*e*). The oddest of all (fig. 100*g*), has a shinier broad oblique band containing small circular or oval islands of duller surface. It is difficult to see how this could be produced by burnishing, or indeed in any other way.

Serra d'Alto ware (fig. 99)

In the upper level of Trench III at Fonteviva lay a group of sherds (fig. 99) obviously different from anything previously mentioned.

All are in fine buff ware, paler and harder than Corvo ware. The surface bears a cream slip which, on two pieces, is painted in dark purple-brown. Three sherds are from globular beakers with short vertical lips, one from an open bowl, one from a deeper jar and one from a slightly hollowed base which might go with any of these forms. One beaker and the bowl have distinctive splayed cylindrical lugs and the associations of the group are equally clearly given by the painted decoration. Its colour, the use of the wavy line alone (on top of one of the handles) or between parallels, and the trumpet lugs, are the hallmarks of Serra d'Alto ware, known widely across southern Italy and into Sicily.

Oddities (fig. 100)

Four vessels represented among the sherds are so unusual as to deserve special mention, in order to put them on record against the time when their significance may become apparent.

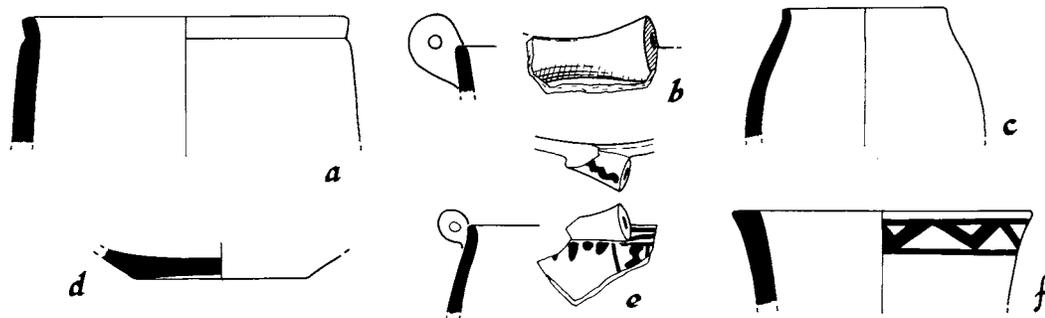


FIG. 99. Serra d'Alto ware. Fonteviva III, above 1.30 (1/3)

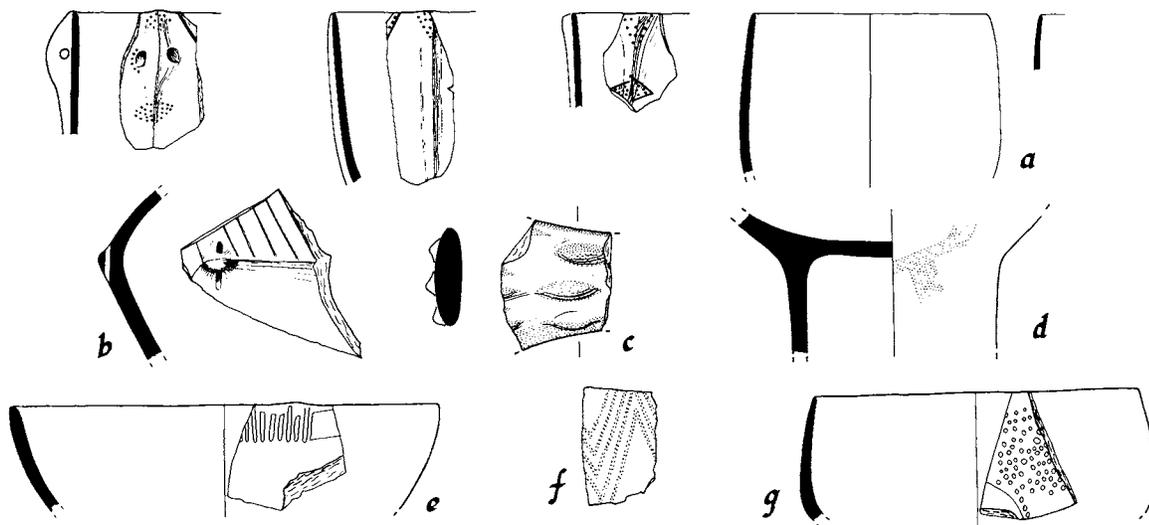


FIG. 100. Oddities. Passo di Corvo: *a*, VI, various levels; *b*, VI, 0.25; *c*, VII S, 1.70; *e*, VI, 0.90; *f*, X, 0; *g*, VI, 0.40. *d*, Posta d'Innanzi, 2.0 ($\frac{1}{3}$)

In Trench VI at Passo di Corvo a number of sherds scattered through the ditch fill belonged to a single, remarkable vessel. They are of a distinctive ginger fabric with grey polished surface. Their small size and irregular shape prevented an accurate restoration of the vessel form, that offered in fig. 100*a* being no more than tentative. What emerges is a small cup with three (possibly four originally) vertical ribs running at least the greater part of the height. One rib is pierced as a handle. From the lip lightly dotted triangles depend over the ribs. Lower are horizontal lozenges in the same position and in the same technique, some enclosed with lines (see also pl. LIII*a*, lower).

The second vessel, from the same deposit, is of grey burnished ware. It is markedly angled in three dimensions, though which run horizontally and which vertically is not clear. One wall is very much thinner than the other two and exhibits light diagonal scratching. The sherd might be from a square canister, though the angle perforated as a lug makes this puzzling (fig. 100*b*).

The third sherd, from Passo di Corvo, Trench VII, belongs to a broad strap-handle of buff ware, cream-slipped (fig. 100*c*). It bears lentil-shaped bosses, and these and the margins are painted in deep red. It is vaguely akin to Corvo ware, in which, however, studs and handles are quite unknown.

The fourth piece, from Posta d'Innanzi, is a cream-slipped pink ware. Its peculiarity lies firstly in its shape, a bowl on a high cylindrical pedestal, secondly in its decoration, broadish bands of faint purple paint (fig. 100*d*). It lay at a depth of 2.3 m., which would seem to preclude Serra d'Alto or Iron Age contexts, even if parallels could be found in them.

The remaining three sherds illustrated (fig. 100*e* - *g*) are pattern-burnished Corvo wares and have been described above (p. 164).

Later wares (fig. 101)

Though nothing later than the Serra d'Alto ware at Fonteviva came from within the ditch fill on any of the excavated sites, a few other sherds of prehistoric date were found in the ploughsoil and on the surface.

The Apennine Culture, Middle to Late Bronze Age, was represented by a rather crude single-handled cup from La Quercia (fig. 101*b*). Though Apennine ware is common on the margins of the area, in the very rich sites at Coppa Nevigata⁸ and, a little further off, Ariano,⁹ and in a less rich site at Canne,¹⁰ it obviously played very little part in the Tavoliere itself. Another sherd, from Passo di Corvo IX A (fig. 101*c*) may be of the same ware or even later.

A certain amount of Iron Age pottery with deep purple paint (fig. 101*a* and *d*), loosely grouped under the general heading of 'Apulian geometric', turned up on several sites. Though the finer funerary wares have received a certain amount of study, the ordinary domestic pottery of the period is too little known for much to be said of the examples here. Discoveries in undisturbed levels, preferably stratified, must be awaited.

Roman pottery occurred in greater or less quantity at many sites, but falls beyond the scope of this section of the report.

Stone (figs. 102 - 3; pl. LIII*b*)

Worked stone occurred freely in Passo di Corvo III and less commonly elsewhere. It is uniformly dull. Chert of various colours was the usual raw material, though some obsidian had been traded in. Flint is not found in the Tavoliere, but is readily available in the limestone of both the Gargano and to a lesser extent the Apennines. The obsidian is of the distinctively Lipari type, and probably reached Apulia by sea to Campania and thence through the Ariano pass, where it is found frequently on the site of La Starza.¹¹

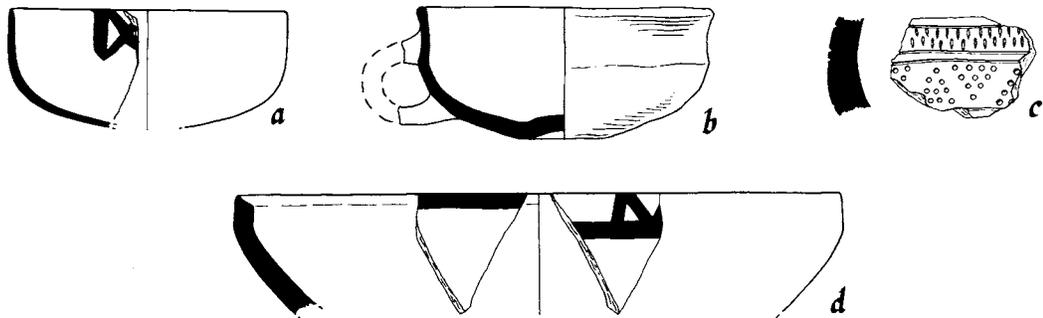


FIG. 101. Later wares. *a* and *c*, Passo di Corvo IX B; *b*, La Quercia surface; *d*, Passo di Corvo VI, o
($\frac{1}{3}$)

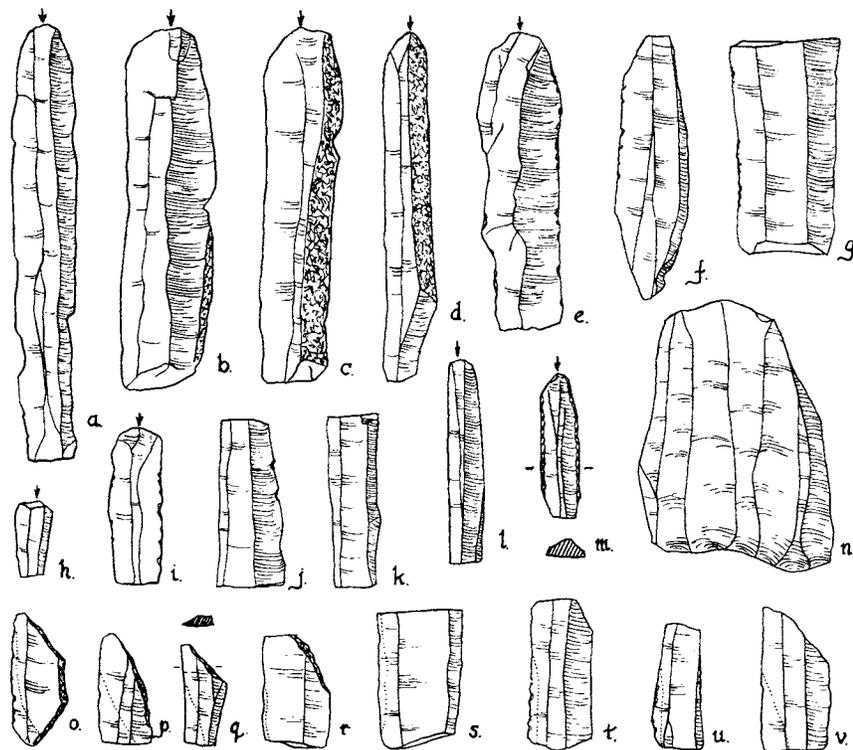


FIG. 102. Blades: *h* and *i* obsidian, the rest flint. Passo di Corvo: *a*, IX A, 2.10; *b* - *c*, X, 0.75; *e* and *m*, V, 0.50; *g*, *j*, *k* and *o* - *s*, VI, 0; *i*, surface; *n* and *v*, VII S., 0.30. *d*, Fonteviva II; *f* and *u*, La Quercia, surface; *h* and *l*, unprovenanced; *t*, La Quercia I (1/2)

From these materials were produced in great quantity small, fairly narrow blades which were then utilized without any further working (fig. 102*a* - *l*). A few were blunted for hafting and some of these in particular show recognizable areas of 'sickle gloss', the shine produced by the polishing action of silica in grass or cereal stems (fig. 102*o* - *r*). Such gloss also occurs on a small proportion of the unblunted blades (fig. 102*s* - *v*). Only one example of a flint blunted on both edges was noted (fig. 102*m*). Otherwise the only subsequent flaking is the removal by usage of tiny spalls from some blades (fig. 102*e* - *g* and *i*). A core for the production of blades of this type was found at Passo di Corvo, Trench VII S. (fig. 102*n*).

Three heavier tools of flaked flint were simple, small axes of rough form, a kind found often in the Gargano. They came respectively from Passo di Corvo Trench VII S. and VII N. and from the surface by the roadside near Masseria Schifata, just west of Villano. These are illustrated in fig. 103*a* - *c*.

Ground stone was very much rarer and was found only at Passo di Corvo. From Trench VII S. came the cutting edge of a small polished axe (fig. 103*e*), and a larger pestle (fig. 103*d*), and from the lowest level of Trench VI the butt of another tool which could have been either an axe or a pestle (fig. 103*f*). These tools are made from a fine compact grey stone of metamorphic origin. A small fragment of a saddle quern in black lava, derived from either M. Vulture or Vesuvius, was also recovered from Trench VI.

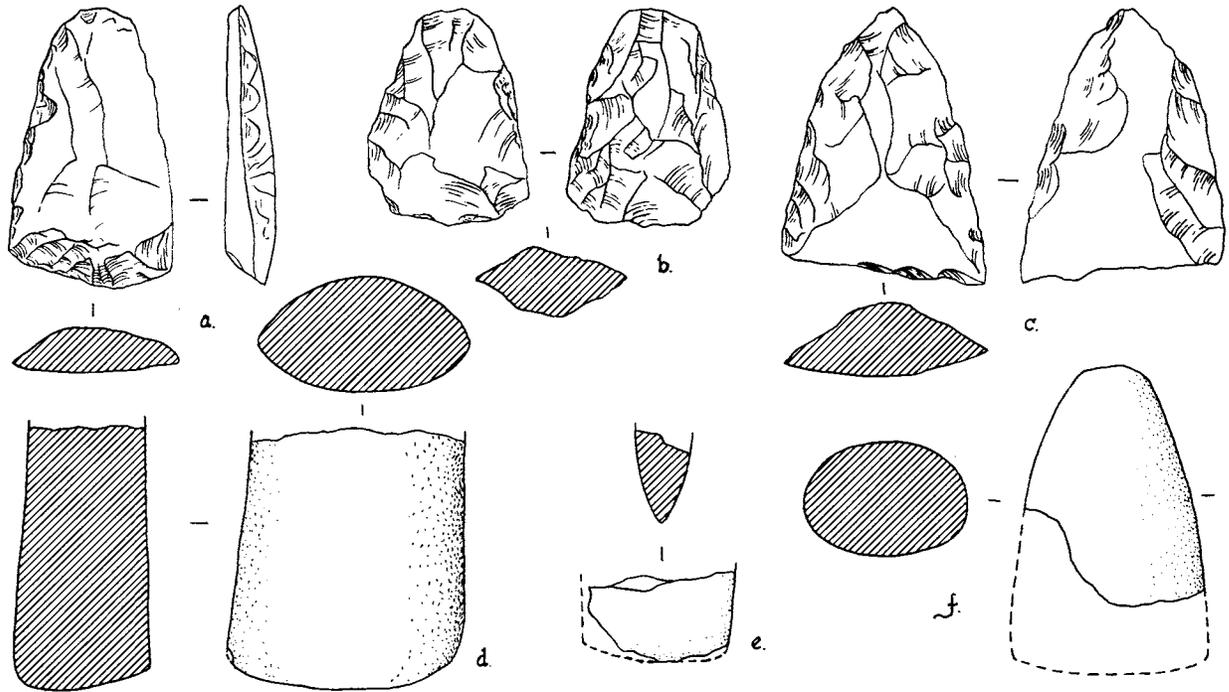


FIG. 103. Stone tools. Passo di Corvo: *a*, VII S., 0.45; *b*, VII N., 0.45; *d*, VII S., 0.40; *e*, VII S., 1.80; *f*, VI, 2.0. *c*, Masseria Schifata, surface ($\frac{1}{2}$)

Bone

All the usual domestic animals — sheep/goat, cow, pig and dog — were represented, the first two heavily preponderating. However, there was insufficient material for statistically valid conclusions to be drawn.

Worked bone was extraordinarily scarce. A few small and undistinguished awl points and a bone spatula were the sum total.

Discussion

The sequence

The first point to make is that sherds of practically all the types described above came from practically every level of every trench. Though early sherds occurring in late levels can be dismissed as accidental, the converse occurs too frequently to be ignored. Coincidence on single sherds of decorations associated with different wares emphasizes this. It is, however, clear that different wares became dominant at different times, and to this extent can be spoken of as 'early' and 'late', so that sites and features can be dated relatively by their means. The scratched ware is never dominant, and may not even have been made locally. It

can be fitted into the sequence but forms no real part of it. Similarly the 'oddities' and later wares must be left aside.

For the order of the other five wares there is a little stratigraphic evidence, as yet far from sufficient. Briefly, Corvo ware is later than impressed ware at Campo di Fiori, and later than Quercia ware in the big circle at Passo di Corvo (Trenches III to VI), while Serra d'Alto ware is later than impressed ware at Fonteviva. For further evidence we have to turn to typology and external connections.

That the first Neolithic settlers in Italy and Sicily made only impressed ware pottery has long been generally held. The only real proof of this is at Coppa Nevigata,¹² where the lowest level had a pure impressed ware associated with a primitive microlithic flint industry, the Sipontian. Unfortunately the site was then abandoned until well into the Bronze Age, and therefore provides no clue to later Neolithic cultural development. However, if the Coppa Nevigata evidence is accepted the Tavoliere impressed ware, even if mixed with elements of later origin, must go at the head of the sequence there, and the stratigraphic evidence, for what it is worth, also supports this.

The rocker decoration survives from the impressed ware as a major element in Quercia ware, while soft-incision and impression also occur, in much smaller quantities. Quercia ware is, then, at least in part derived from impressed ware, though more distant from the source and so presumably later in time, though no trench produced levels of both impressed and Quercia wares to confirm this. The even more important painted element is equally obviously foreign to the area.

Scratched sherds, though widely scattered, seem commoner in this association than any other, and can be put roughly parallel to Quercia. The rocker-gouged sherds will be remembered, and the occasional association of scratched and ordinary rocker pattern. Its relative dating is important for correlating the Tavoliere sequence with others in southern Italy, as considered in the next section.

The dark burnished ware is more difficult to place. It occurred in some quantity at Campo di Fiori, barely at all at La Quercia, was dominant at Passo di Corvo II, and still very frequent in Passo di Corvo III. Apart from at La Quercia, which seems to stand aside from the developments north of Foggia, the burnished ware's peak of popularity seems to occur later than that of Quercia ware, but before that of Corvo. It has, however, a far longer life than any other ware in the area. To place Quercia ware before the impressed would solve the difficulty posed by the La Quercia site itself, but would raise others even more serious. Variation of taste must be held responsible.

Corvo is the best defined in the sequence stratigraphically. It occurs sporadically in earlier levels, is assuming importance in the lower levels of Passo di Corvo VI, has almost caught up with dark burnished ware in the upper levels, and stands clearly dominant in, for example, Trench VII.

The Serra d'Alto ware from Fonteviva forms a pure group separate from the overlapping wares above. It must belong to a later period of time. Indeed, it has every appearance of lateness when compared with examples elsewhere. In particular, the splayed lugs derive from the Late Neolithic Diana complex of Sicily.¹³ Not only must it be later than Corvo, but there is almost certainly a hiatus between the two, corresponding with the earlier and purer Serra d'Alto,¹⁴ which has not yet been found in the plain.

The Neolithic in southern Italy

The sequence adduced for the Tavoliere must now be related to others in southern Italy. Two are available for comparison. A third in Lipari varies greatly in different periods in its dependence upon the neighbouring regions, Sicily and Campania. It must be used with caution outside the Lipari Islands themselves.

In the Materano little new evidence has come to light since R. B. K. Stevenson's synthesis many years ago.¹⁵ There is therefore little point in repeating it except in simple outline. It is primarily a typological sequence and will almost certainly eventually prove to be a series of overlapping wares, as in the Tavoliere. Period I is marked by an impressed ware group very similar to that studied above. It has not yet been found in isolation and may possibly be everywhere mixed as at Campo di Fiori. Period II is represented by a very rich development of scratched (Matera) ware running parallel with the appearance of wares painted in broad red stripes on buff grounds. (The commonness of rocker-gouged decoration, producing designs identical with those simply scratched, is worthy of note.) A ware with marginal painting (Scaloria)¹⁶ could belong to either this period or the next. Period III is subdivided into an earlier and later Serra d'Alto, first boldly painted vessels with large handles, then taut profiles, finicky designs and developed splayed lugs.¹⁷

There is no stratigraphy from the area, which must be borne in mind when comparing this sequence with that of the Foggiano. For example, despite an overlap, the painted ware of period II, now called Corvo, is probably on the whole later than the Matera scratched ware. With this minor alteration, the similarities between the two groups are fairly close, there being only two major exceptions. Matera ware is found rarely or not at all in the north. A painted ware similar to that of La Quercia occurs in the south, but only sporadically — Stevenson took no note of it. It never bears rocker pattern. As mentioned above, both are in part derivatives of impressed ware. Scaloria and early Serra d'Alto are not found in the Tavoliere villages, which would appear to have been abandoned, with the exception of minor reoccupation at Fonteviva, before their introduction. The apparent absence of unpainted Corvo ware in the south is almost certainly illusory, since sherds occur in the Matera museum from the Grotta dei Pipistrelli. Their lack of decoration has allowed them to escape notice, and new excavations of pure sites would probably reveal them in quantity. At least one bowl with exaggerated carination very like the dark burnished ones of the Tavoliere occurs there too, in a slightly different ware. Though the dark burnished ware may well exist in the south, its real home is higher up the peninsula.

A prehistoric pottery sequence has recently been built up by the writer at the site of La Starza, near Ariano Irpino¹⁸ and only 60 km. south-west of Foggia. Though again without stratigraphy in this earlier period, pure levels were found, making it much more reliable than the Matera sequence. Again it can be summarized briefly.

First, a pure though poor impressed ware, without accompanying painted sherds, but too poor for this to be necessarily significant. Second, a fine burnished ware decorated with C-impressed, rocker-gouged or scratched designs. A few surface sherds of Quercia ware, one very close to fig. 85*a* and *d*, probably belong here. Third, a very poor level with a few sherds only, dark burnished and scratched. As these deposits were scattered, missing ones in the sequence are always possible. Fourth, a richer level of early Serra d'Alto with a little Corvo (a surface sherd was polychrome-painted and pattern-burnished) and Diana. Fifth,

immediately overlying the last, a great depth of late Lagozza ware,¹⁹ basically a dark burnished ware, but more closely related to material from the Abruzzi and the Marche than to anything in Apulia. Above this were the successive stages of the Bronze Age Apennine ware, not found between here and Nevigata.

This sequence is as concrete as the Tavoliere one, and so can be compared in detail. The first Ariano phase is closely parallel to the first Tavoliere one, both being characterized by impressed ware. The next has some Matera scratched ware, but is mostly of a different type not found east or south, the C-impressed. It is even more clearly dependent on impressed ware than are the Matera or Quercia wares. Its bowls differ from Quercia ones only in their decoration. The rocker-gouged sherds provide another distinctive link. The third was poorly represented and might equate roughly with Corvo, though proof is lacking. Corvo ware certainly survived into the fourth stage at Ariano, though by then the parallels were much closer at Matera than on the Tavoliere. The fifth seems to run parallel to the late Serra d'Alto of Fonteviva and the Materano. It is the standard Copper Age ware of mid-Italy.

There is clearly a common pattern to these. The primary settlement in each area has virtually identical pottery, the impressed ware. From this root, however, later development follows different courses — to Quercia in the Tavoliere (under renewed influence from the east?), to C-impressed at Ariano, to scratched at Matera. The latter ware is found sporadically in each of the other two areas. Then the Tavoliere and Matera swing together with Corvo ware, only a few sherds of which reach Ariano. Later still, though the Tavoliere sites themselves are abandoned, north and south Apulia share Scaloria ware. Following this, early Serra d'Alto occurs in both, and at Ariano too. Then, however, Ariano is reorientated towards the First Lagozza Culture of central Italy while Serra d'Alto continues in its later form in Apulia, reaching the Tavoliere only sporadically. Ariano, north and south Apulia are not again reunited until the Apennine Culture developed, though there are still regional variations; and even so it hardly touches more than the edge of the Tavoliere, at Coppa Nevigata and Canne, with the one cup from Quercia. Present evidence is therefore consistent with the view that at this time only the occasional visitor still came to the many great villages of the Tavoliere, long since abandoned. Of course, new discoveries in the Foggiano itself may yet change this picture.

Looking even further afield, southern Italy is not geographically isolated, but open to influences from outside, in particular from across the narrow mouth of the Adriatic, a mere 72 km. across. Though some of the changes in the Apulian cultural sequence, such as the appearance of scratched wares, now seem to be local developments, others, notably the introduction of painted pottery in its various styles, would be much more easily explained as introductions from an area where there was a long and varied tradition of pot painting. Recent work higher up the Adriatic has demonstrated just such influences from Dalmatia on the Italian Ripoli ware.²⁰ Geographically the Tavoliere looks beneath the brows of the Gargano directly towards Albania, and it is there that its connections should be sought. So little research has been carried out in that area that to say that the comparative material we have is scanty is putting it, perhaps, unnecessarily mildly.

Finally, some attempt must be made to fit these sequences into the generally accepted Neolithic system. Much time could be, indeed has been, wasted on this sport. The writer offers the following as a general suggestion only. He would regard the impressed ware group

as falling at the end of the Early Neolithic, by reason of its many close similarities to the primary unmixed Early Neolithic of Coppa Nevigata. Quercia, with its parallels at Matera and Ariano (C-impressed), would open a Middle Neolithic, followed by dark burnish and Corvo. To the Late Neolithic would belong the Scaloria margined ware, with its first appearance of the meander, and early Serra d'Alto. Alongside these, Diana elements, derived from another line of development in Neolithic Sicily, begin to make their appearance. The fusion of these two produces late Serra d'Alto, the form of it we see at Fonteviva. New cultural influences are visible in the Copper Age: the rock-cut tombs, for example, and the Lagozza-derived dark burnished ware at Ariano. From these roots appear ultimately the Apennine Bronze Age, but these later developments did not show themselves out on the Tavoliere. The plains were not resettled until the full Iron Age, by the historical Daunians.

Postscript

This text was submitted in November 1963, and has inevitably been overtaken to some extent by more recent research.

CHAPTER IV

SYNTHESIS

NEOLITHIC ECONOMY AND SOCIETY IN THE TAVOLIERE

IN Chapter II the author has already analysed in detail the raw information provided by the aerial photographs about the Neolithic sites. With the environmental setting of Chapter I in mind it remains to re-examine the evidence in the light of the various excavation results and also against a socio-anthropological background. There is an important *caveat* to be remembered throughout. No complete village has been stripped in its entirety. This must remain logically the most important sequel to the catalogue provided by this survey for future work.

First to set out the overall conclusions already summarized in John Bradford's *Ancient Landscapes* (1957): over 250 sites of village and homestead character have been located from the air-photographic evidence of the Bradford collection. They range in size from 0.2 ha. to the exceptional size of Passo di Corvo (172 ha.). Densely concentrated in the Tavoliere, the sites are all cognate and can readily be separated from the wealth of Roman and medieval material located in the same area. The detailed variations in ditch and compound layout have already been described in Chapter II (p. 34), and in greater detail under the individual site descriptions. We are here concerned with more fundamental questions relating to social and economic organization. The number of compounds within a village may vary from a handful in the case of small homesteads, where one would imagine a family unit involved, to over 100 in some of the largest village settlements.

The establishment of a settlement hierarchy (p. 178) through site morphology derived from the abundant aerial cover is a goal that differentiates the evidence of the Neolithic Tavoliere from almost any other corpus of European prehistoric material. That same aerial cover offers at times sufficiently detailed evidence to permit socio-anthropological analysis of settlement processes and the possibility of a fruitful intermeshing with future retrieval strategies.

The interpretation of these settlement processes can be pursued at both macro and micro level. Some internal compounds, for instance, were clearly larger than others. In particular on some sites, largely at either end of the spatial scale, one compound could be said to be larger or more important than the rest in terms of size and/or situation. Whether this represents a difference in status, or function, or simply the product of the number of persons involved are immediate questions that arise. In terms of site morphology, some of the evidence from the rest of this section will show how dangerous it is to interpret the presence of an inner enclosure surrounded by an outer, perhaps multiple, ditch system as representing a straightforward chronological sequence. Ethnographic parallels cited later in this section, for instance, can suggest that such layouts might equally well be contemporary. Similarly, when one looks at the two Fonteviva sites (p. 99), for instance, they form a similar plan at very different scales of development. It is for this reason that one inclines to think that sites of

all sizes except the largest were probably present from an early stage of the Neolithic development of the Tavoliere. Even some of the smallest examples, such as Fonteviva B, clearly have an outermost enclosure, whose interpretation remains uncertain. It might represent an area for the pasturing of herds at night or in particular seasons, or possibly the demarcation of an area for arable production.

This brings us to one crux of the problems presented by the Neolithic economy in the Tavoliere, the evident importance of the compounds within the settlement area and the nature of the ditches surrounding them. The ethnographic models as well as the excavation evidence suggest that they fulfilled protective and proprietorial roles, as well as possible others, notably, as Professor Tinè has suggested, the collection of rainfall.¹ The probability that the compounds, which should not be confused with actual hut perimeters, served as shelter primarily for humans and as storehouses (p. 137) rests mainly on the presence of large quantities of pottery in the same area (see further, p. 145). This point seems established by Trench VII at Passo di Corvo. Yet symbiosis with cattle, sheep and goats is highly probable, as the larger-scale excavation of the inner compound at La Panetteria suggested that a division between humans and livestock may be apparent. The compounds further relate to the question of how mixed the Neolithic economy may have been. Sites that contain relatively few compounds can be closely paralleled with cattle-raising villages in East Africa today. On the other hand, the densely packed interiors of some sites find their closest ethnographic parallels in African villages dependent on a more mixed economy with a greater proportion of arable. So we are left with the question of how mixed Neolithic agronomy might have been in the Tavoliere and ultimately how typical the Tavoliere sites were of the Neolithic in lowland Italy.

Before we turn to this aspect in detail, it is best to confirm the results that have emerged from the excavations. In the first place, it should be emphasized that all features suggested by the air photographs have been shown to exist where excavation has taken place. Indeed, at La Panetteria, for instance, it was possible to lay out trenches within a few centimetres of the features to be located. Yet there is a converse to this derived from negative evidence. The wealth of examination given to the air photographs has never suggested the appearance of actual structures in the crop-marks showing the internal compounds. The absence of such features as post-holes, storage pits and drainage trenches from the extremely detailed aerial cover suggests strongly that internal features were flimsy. We may therefore accept, I believe, that the structures in the compounds (and at times outside them altogether) were of ephemeral character. Substantial quantities of daub were noted in the excavation of the inner compound of La Panetteria. The recovery of the plan of a stone-built structure by Manfredini at M. Aquilone (= Masseria Maremorto III,), suggests that limestone may have served as building material along the periphery of the Gargano.² The implication would be that generally light structures of wattle and daub stood along the side of the compound ditches, along either the interior or the exterior, and at times around the main peripheral ditches of the villages, as shown by many ethnographic parallels. Moreover, following ethnographic evidence further still, we may assume that these buildings were not simply human dwellings, but also granaries and other forms of storehouses which, in the context of a primitive community, were packed in buildings indistinguishable from those designed for humans.

As Dr Trump has pointed out in the previous section, at Passo di Corvo VII and La Quercia I stone walls were located along the inner lip of the ditch, belonging in the former case to a compound and in the latter to a village. It is reasonable to suggest that several more ditches may have had stone walls along their inside edge, if only because in some cases the narrow width would have been insufficient as a barrier in itself. The walls in any case seem more designed as demarcation lines than actual barriers, with the exception, of course, of the major outer ditch systems at the larger village sites. The depth of these is in itself surprising, but this may be explained in geological terms. Once the hard top of the *crosta pugliese* is cut, then the underlying sedimentary limestone can be cut with far less effort, and this explains the bag-shaped profile of many of the ditches below the top of the *crosta* (see, for example, pl. IXa). Alternatively, as Professor Tinè has suggested, the water-collecting properties of the ditches would be enhanced by excavation to this depth.

Economy, chronology and retrieval factors

Current knowledge and theories relating to the Neolithic of south-eastern Italy derive predominantly from localities other than the Tavoliere. As such, the conceptual frameworks currently available are very largely artefact-orientated in being overwhelmingly centred on problems of the ceramic sequence. Most of the stratified sites systematically examined, such as the cave shelters of the Gargano or the Brindisi littoral, have received little or no study of their resource territory, because little progress was, or could be, expected towards understanding the associated landscape, let alone the socio-anthropological development of the settlements themselves. This is not the case with the largest corpus of material from Apulia, namely that from the Tavoliere, which remains by far the largest agglomeration of Neolithic evidence from lowland Italy. It is unfortunate that, although the material has long been known in its essentials either from the partial publication of the original aerial cover or Colonel G. Schmidt's later surveys/re-photography of the principal sites, relatively little progress has been made towards the manifest objective of comprehensively stripping a settlement. None of the excavations published here was designed to tackle such a scale of problems. The response clearly had to derive from Italian archaeologists and has been forthcoming to varying degrees from the work of Tinè at Passo di Corvo, the largest of all the Tavoliere settlements, and the excavations of Manfredini and Cassano at Bivio S. Giovanni Rotondo (M. Aquilone).

While the results of these excavations are at various stages of publication,³ they can be summarized briefly. In all cases the air-photographic indications of perimeter and compound ditches were confirmed, structural evidence within the compounds was limited, although post-hole patterns have been recovered and also evidence of a stone-built structure at Bivio S. Giovanni Rotondo. Environmental material does not survive well, but evidence of emmer, barley and legumes has been recovered. Likewise, bones of sheep, goat and cattle have been found, with the former preponderating. While additional evidence, for instance in relation to the consumption of edible snails, is needed, the greatest *desideratum* is probably the recovery of animal remains in sufficiently large quantities to allow more meaningful generalizations to be formulated. The overwhelmingly predominant material recovered from both excavation and surface retrieval remains the ceramic assemblages on which attempts to formulate a chronology for the Neolithic have recently been largely based.

The basic classification of the southern Italian Neolithic period was worked out in terms of pottery by Stevenson in the course of the last war, when he was held prisoner by the Italians, but was able to study the material housed in the Taranto Museum.⁴ The scheme he evolved was a tripartite one which he interpreted as evidence of three immigrant groups: first, an Early Neolithic of impressed wares, a Middle Neolithic of red-painted wares (*ceramica dipinta a fasce larghe*) together with Matera scratched ware, and finally a Late Neolithic of painted Serra d'Alto ware, which in due course evolved into a more elaborate sub-phase. Work in the post-war years by Bernabò-Brea on the acropolis of Lipari in the Aeolian Islands by and large confirmed Stevenson's typological evolutions, but with one significant difference.⁵ Bernabò-Brea accepted the first immigration of Neolithic colonists with impressed ware, but suggested that later developments in pottery styles were not accompanied by any significant change in population. Red-painted and Matera scratched wares have appeared in Middle Neolithic contexts, accompanied first by impressed wares that themselves disappeared in the second Middle Neolithic sub-phase, when trichrome-painted wares were developed. In the final Middle Neolithic sub-phase, Serra d'Alto ware predominated, and in the Late Neolithic painted wares were almost wholly replaced by Diana pottery, which is an undecorated, but highly burnished red ware.

In recent years the validity of the concept of the Early Neolithic as defined by a 'pure' impressed ware, i.e. impressed wares unaccompanied by painted wares, has been seriously criticized by Whitehouse.⁶ The reason for this is that pure impressed ware levels have so far been located on only a handful of Neolithic sites in southern Italy. On the other hand, a large number of sites have been shown to possess impressed wares in association with painted pottery of different types. Whitehouse argued that the difference between such sites was social and economic rather than chronological. If we accept this hypothesis, then Neolithic farmers introduced both impressed and red-painted wares to south-eastern Italy c. 5000 B.C., while the existing Mesolithic population adopted only the first ware, which characterized the poorer cultural equipment of economically inferior communities. While the economic and social divisions implied by this hypothesis remain unproven, Whitehouse's basic criticism of the concept of an Early Neolithic phase defined by impressed ware alone and in isolation appears to be valid.

When we turn to problems of chronology, then the lack of evidence becomes critical. Unfortunately very few of the excavations in the Tavoliere have recovered material suitable for C14 dating, a situation that may partially reflect the chemical nature of the subsoil, but more probably simply the lack of extensive area-excavation. On the other hand, several settlements in regions of secondary settlement in Calabria or the Apennines have produced dates. Two sites from central Italy, Penne di Pescara and Grotta Piccioni, Bolognano, have both yielded impressed and red-painted wares and carbon dates of 6758 ± 135 bp (c. 4600 bc; Pi. 101) and 6427 ± 103 bp (c. 4300 bc; Pi. 46) respectively. In Calabria the Grotta del Romito, Papasidero, with a mixed Neolithic assemblage, has given a date of 6420 ± 70 bp (c. 4470 bc; R. 223). In the same area the result 5605 ± 85 bp (c. 3500 bc; R. 285) from the Grotta del Santuario della Madonna at Praia di Mare (which produced red-painted and impressed ware) should perhaps be considered with caution.⁷ Most recently from the Tavoliere, however, Tinè (*op. cit.*) brackets Tavernola between c. 5050 ± 100 bc and c. 4950 ± 65 bc with Scaloria Bassa centred on c. 3650 ± 70 bc.

Within the period, Dr Ruth Whitehouse has already exposed the dangers of recognizing the existence of an Early Neolithic phase defined by the use of impressed wares accompanied on occasion by plain burnished wares but never by painted pottery. The introduction of painted wares (both the widespread painted variety generally termed *dipinta a fasce larghe* = red-painted ware, and wares of more local distribution such as the La Quercia variety) has been taken to mark the middle of the Neolithic. The well-known site of Coppa Nevigata in the Candelaro area (214, p. 106) is one of the very few settlements to produce sufficient material to make one relatively certain of a pure impressed ware stage.

This site has often been taken as typical of the earliest Neolithic farmers of Apulia. It produced no animal remains at all and no indications of agricultural activity. On the other hand, it yielded very large amounts of seashell belonging exclusively to one type of cockle, the *Cardium edule*, found in the silty mud of estuaries and lagoons. The subsistence economy was thus based exclusively on the collection of this variety of shellfish from the seasonal lagoon formed at the mouth of the Candelaro (see p. 14). The stone artefacts at Coppa Nevigata were mainly microliths of the so-called Sipontian industry (as yet known only on this site), specifically developed to facilitate the opening of cockles. Yet this small rocky projection into the Candelaro marshes has been taken as an outpost of the first Neolithic farmers in Italy. It shows how excessive concentration on taxonomic indicators, in this case pottery and a specialized microlith industry, are liable to blind one to elementary truths of local geography.

A glance at fig. 4 shows that Coppa Nevigata was always scarcely viable as an agrarian settlement, with seasonal lagoons to the east and large areas of bare limestone in the immediate hinterland to the west. The proposed site catchment area adumbrated by Jarman and Webley⁸ is completely invalidated by the fact that to the south and south-west Coppa Nevigata is flanked by large, medium and small Neolithic villages along the north and south banks of the Candelaro, villages that yield evidence of the same edible cockle. The site is in fact atypical of the Neolithic as it developed amongst the neighbouring settlements. The explanation is both geological and geographical, as explained on p. 25. On the north-eastern side of the Candelaro occurs the first western scarp of the Gargano massif (albeit of minor proportions) demarcating the boundary between the sedimentary deposits of the Tavoliere and the limestone of the peninsula. A few kilometres further east caves provide the location of Neolithic sites, namely the Grotta di Occhiopinto and Grotta Scaloria sites near Manfredonia. West of Manfredonia the low height of the limestone scarp has prevented the occurrence of caves; the implication is that the Neolithic sites would simply adopt suitable projections, such as Coppa Nevigata, in lieu of caves as bases for the gathering economy on which they were founded. Coppa Nevigata belongs perhaps more with the Gargano tradition and not with more evolved sites of the Tavoliere. Unfortunately, quarrying has now removed any further chance of meaningful investigation at Coppa Nevigata. It should be conceded that on the evidence available it remains impossible to tell whether the site relates to pre-agricultural foraging, foraging in tandem with agriculture, or otherwise.

This is not to say that Coppa Nevigata is not important. It has a C14 dating in the late seventh millennium for the impressed ware phase, which provides the one underpinning for the absolute dating of the Neolithic in the Tavoliere. The danger lies in over-emphasizing its possible significance in relation to the numerous developed and probably analogous village

layouts existing nearby around Bivio S. Giovanni Rotondo. The latter, termed M. Aquilone by its recent Italian excavators, has, like Passo di Corvo, produced only limited information towards establishing an absolute chronology. The moral is obvious enough. Until a broad range of radiocarbon dates is forthcoming from stratified contexts across the Tavoliere, little progress in refining the chronological sequence will be forthcoming. An up-to-date summary of chronological information now available appears in Sargent (see note 5).

MORPHOLOGY AND THE SETTLEMENT HIERARCHY (figs. 104 – 13)

The discussion of individual features inevitably raises the more fundamental question of differentiating the various kinds of site amongst the 256 in the Tavoliere. In the descriptive catalogue some attempt has often been made towards pointing out similarities of layout between various settlements, and these must now be examined in greater detail. The treatment will be in ascending order of complexity. The obvious description of the simplest form of settlement is a homestead, which in its most primitive form appears as a circular single-ditched enclosure (Type I). As examples of the simplest form, one can cite Villano I, II and IV (**27**, **28** and **30**), Mantovano I and II (**6** and **7**), Posticchio I (**16**) and, perhaps the clearest example from all the cover available, Giardino (**163**) (fig. 105). These are not the sum total of the group; far from it. They simply represent the examples where the aerial cover allows the sites to be seen in some detail. It is clear from Masseria Melillo and Giardino that in the elementary form no internal ditch feature need be expected. The same applies to practically all the other sites of this character. Instead, and one might again cite Masseria Melillo (**25**) and Giardino in this respect, there are indications of a dark area presumably derived from the principal living area in the interior. This is shown most clearly at Masseria Melillo (pl. VIa) and was corroborated in another context by the excavation of a similar mark in a compound at La Panetteria (see frontispiece; pp. 137 ff.). One point is perhaps already apparent from the examples cited. These extremely simple homesteads are best exemplified in the area of Lucera East and do not appear in comparable density elsewhere in the Tavoliere. This may be simply a reflection of the aerial cover available, and comparable sites would be difficult to locate on areas of vineyards and olive groves such as preponderate around Foggia and Cerignola.

The development of simple homestead plans is adumbrated by the important site at Masseria Melillo (**25**). It exhibits on the northern side a single-ditched annexe. This gives an indication of the way in which the sites were expanded. Development normally took the form of extending the site by the creation of an annexe by a second ditched enclosure, while the presumed living area remained in one corner of the complex (pl. VIa). The Marandrea site (**162**) on the Salpi coastal area forms a classic example of this kind (Type IIA), because the angle of the ditch layout is such as to demonstrate that the inner and outer compounds must have been cut as one simultaneous plan. There are also, in these more expanded sites, indications of improved arrangements in the inner nucleus. Marandrea itself exhibits two

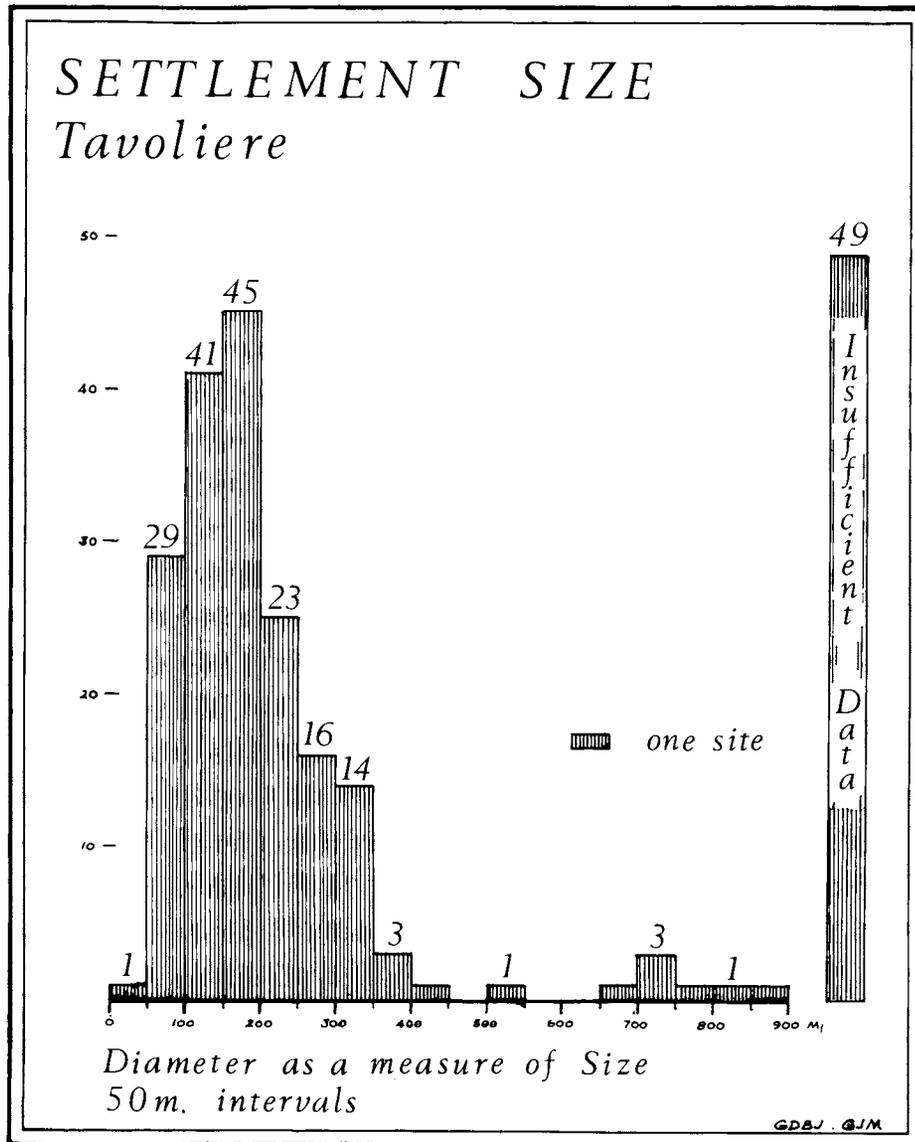


FIG. 104. Distribution of settlement sizes in the Tavoliere

adjoining compounds in its interior. More typical perhaps is Panetteria di Barone II (47) where there appears to be one single penannular compound within the homestead nucleus.

A more spacious arrangement (Type IIB) is exemplified by a number of sites, particularly such well-documented examples as Fonteviva (192), Masseria Stellatella (227), Fuoco d'Angelone (200) and perhaps Masseria Cascavilla (194). In these cases a single compound forming the apparent centre of the site (the reason for the caution of this interpretation is given on pp. 195 ff.) was surrounded by an outer ditch that did not derive from the inner

compound. Penannular compounds can occasionally be found in, or even outside, the outer ditched circuit (e.g. at Fuoco d'Angelone). This is only a short step from the development of a third enclosure, as well shown at Fonteviva. There are difficulties, however, in a straightforward assertion of this interpretation. In some cases it is perfectly possible that the inner compound belongs to a completely different period from that of the larger circuit or

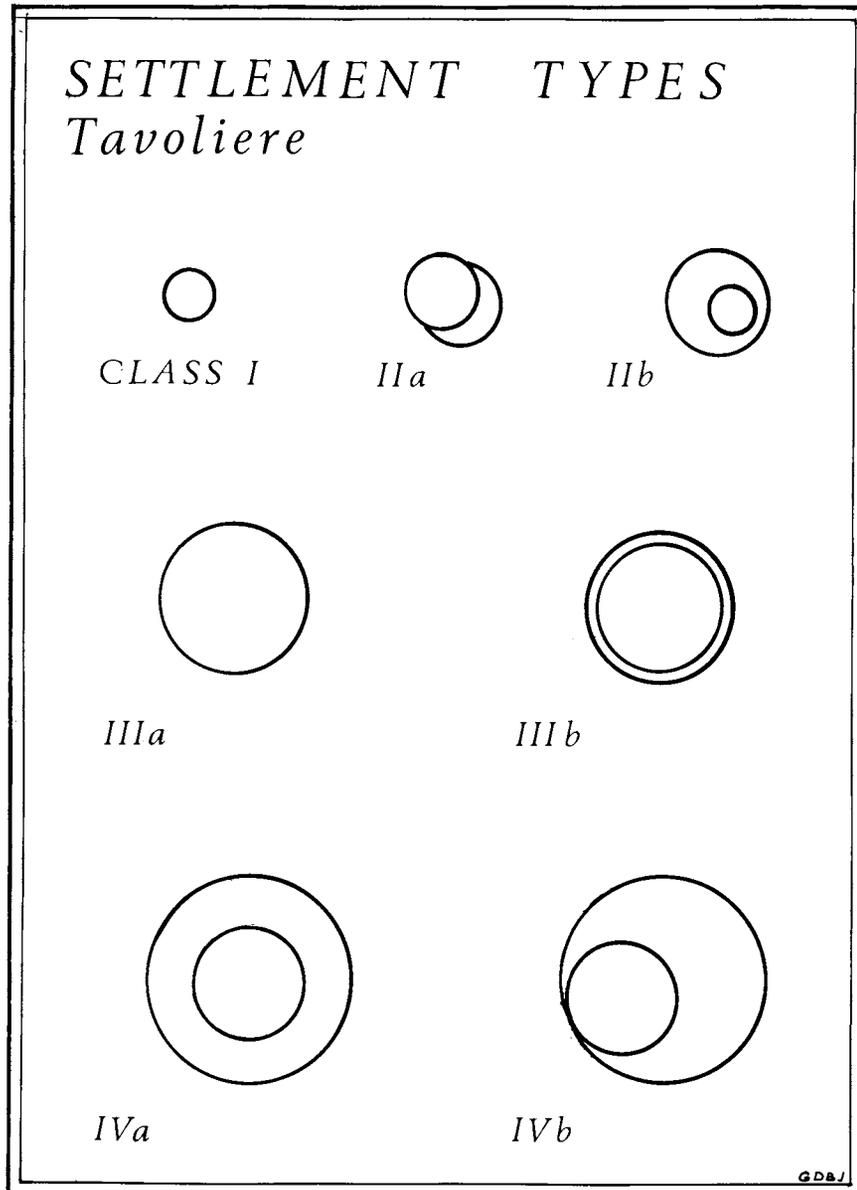


FIG. 105. Settlement types in the Tavoliere

circuits. This brings us face to face with the question of major compounds occupying predominant positions in terms of size within a site. The largest single example lies at Passo di Corvo (198), but more relevant for sites of the scale under discussion is Bivio S. Giovanni Rotondo (204) (= M. Aquilone), where a development of this class of site (Type IIB) still appears to retain the small central compound, if it belongs to the same period of settlement. In all the arrangements visible on good-quality aerial cover there is no indication that the whole of the outer enclosed area was ever filled with compounds, i.e. a premium was placed on the creation of an enclosed space, whether for arable or pastoral activities. It is possible to postulate the enclosure of stock for safety's sake, or alternatively the exclusion of stock from cultivated areas. This fundamental question is discussed further on p. 195.

An alternative arrangement, though a far less common one, is shown by a number of small, double-ditched sites that appear to have been laid out as a unit. A hint of an intermediate stage is perhaps apparent at Marana di Fontanfigura (138), where a simple homestead appears to be surrounded by two related perimeter ditches. Posta Farano and Campo di Fiori (183 and 197) show how such a scheme might develop, but the clearest example is Stazione di Amendola II (185), which has important socio-economic implications for any discussion of this group (Type IIC). It is clear, for instance, that a large area of the interior was left free of compounds, which are only seven in number and lie clustered along the southern side of the settlement. The question to ask is why the whole of the site was not developed.

This is of particular relevance because, in ascending scale of settlement, the next category (Type IIIA) might be termed the medium – large single-ditched enclosure (fig. 105). All the examples of this type are characterized by the dense packing of the interior with compounds along the familiar pattern. Posta Alesi (187), S. Cecilia II and III (48 and 49), Masseria Belvedere II (189) and Fuoco d'Angelone (200) are instances that spring to mind where the aerial cover is of a quality to allow this statement to be made firmly; indeed, one can assume that it is true for practically all the sites in this category. Firm emphasis must be placed on this fact, because no such premium appears to have been placed upon space in the sites discussed earlier. Yet the change of pattern in this category is also apparent in the next (Type IIIB), the multi-ditched medium – large settlements. All the examples of this group are closely comparable. Normally the sites in question have a double ditch and tend to be almost regular circles in shape, except at places like Masseria Acquasalsa (13) and Masseria Pantano (175), where they adapt the edge of a small scarp. The principal examples are La Panetteria I (1), Masseria Fongo (180), Masseria Bongo (71), Posta Barone Grella (155), S. Tecchia (190), Tressanti (160), Castiglione (172), Posta Villano (26) and Villano III (29), as well as Grassano (89), the fragmentary plan of which clearly places it in the same class. This group calls for little comment. As with the previous, less-complicated layout, stock must have been pastured beyond the perimeter ditches.

It was clearly the requirements of stock or arable production that explain the layout of the major double-enclosure sites that continue the catalogue of increasing complexity in settlement pattern. They were designed to create a large outer annexe around the main inhabited nucleus (Type IVA). The two classic instances, Masseria Schifata (19) and Masseria Palmori I (20) lie close together in the Lucera East region and their similarities have already been emphasized (p. 45). There also exist what one might regard as halfway

stages to this category of major site; Masseria Belvedere I (188) and Posta d'Innanzi (193) follow the same overall plan, with the difference that the inner enclosure is surrounded by a single ditch. In scale these sites belong to this major group. In the case of Posta d'Innanzi there is moreover an annexe (pl. XXVIIa) that in plan anticipates the arrangement at Passo di Corvo (198). When one looks for this class further afield then the pattern is visible further south at S. Cecilia (49), in an almost similar layout. It can be seen that the site of La Quercia (72), with its inner and outer pairs of four ditches, represents a special form of the same type taking advantage of a position on the steep scarp overlooking a river valley. An interesting antecedent of the inner unit involved can be seen nearby in the site of Masseria La Vedova II (114). There is an alternative version (Type IVB) of the double enclosure, however, shown best at Masseria Fragella (39). The principle is the same, except that the outer ditches derive from the inner perimeter, in the northern corner in the case in point. It would be difficult to argue that these large layouts are other than homogeneous and contemporary. This is not to say that considerable changes did not occur in the interior, or that the various functions of the layout were rigidly demarcated. Compounds, for instance, occur in the outer enclosure at Masseria Fragella and appear to overlie part of the inner ditch system in one particular area. Unfortunately, the two major northern sites, Motta del Lupo (216) and Madonna del Oliveto (235), yield no detailed information of this kind.

The Masseria Fragella site is important for another reason. Elements in its plan explain the layout of Passo di Corvo (198), the largest of the Tavoliere sites and one that, as is now apparent, stands in a class by itself. It represents perhaps the most evolved form of Neolithic layout in the area. Once again it is clear from the relationship of the inner to the outer enclosure that the design represents an integrated unit. The difference in this case is that the encircling multi-ditched outer enclosure is abandoned in favour of placing the main settlement one side of the overall layout. As already mentioned, the enormous external annexe is paralleled at Posta d'Innanzi. The arrangement is shown in principle on a somewhat reduced scale at the Fragella site, and the more economic (in terms of manpower) arrangement at Passo di Corvo can be claimed to represent the most advanced Neolithic layout in southern Italy. It is also apparently by far the largest, rivalled only by lesser examples in the Foggia plain which are themselves of extraordinary size. Passo di Corvo ranks as the largest known Neolithic site in Europe, and is twice the size of Köln Lindenthal and Mayen in Germany and appreciably larger than Michelsberg or Lengyel in Hungary. When one includes the annexe and living area as a single integrated unit, then the length of Passo di Corvo (*c.* 1,480 m.) exceeds even that of the fortified Neolithic centre of Urmitz.

The foregoing suggestions for the classification of the Tavoliere Neolithic sites are based in the first instance on morphology and size. The statistical supporting evidence for this can be examined in a number of ways. Calculations of size show that, where all the information is available, 156 sites, or 82 per cent of the sample, cover no less than 4 ha. These contain sites of Classes I, IIA and IIB. A further thirty-one sites, or 16 per cent, lie in the 4 – 12 ha. category. Predominantly this group contains sites of Classes IIIA and IIIB. The remaining 2 per cent, representing the major sites, extend from 16 ha. up to 28 ha., the largest being the enormous complex of Passo de Corvo. The information which is expressed on the accompanying pages, in tabulated form, can be viewed in a number of ways. Figure 107 compares settlement size by using the site diameter at its broadest as a relative indicator of

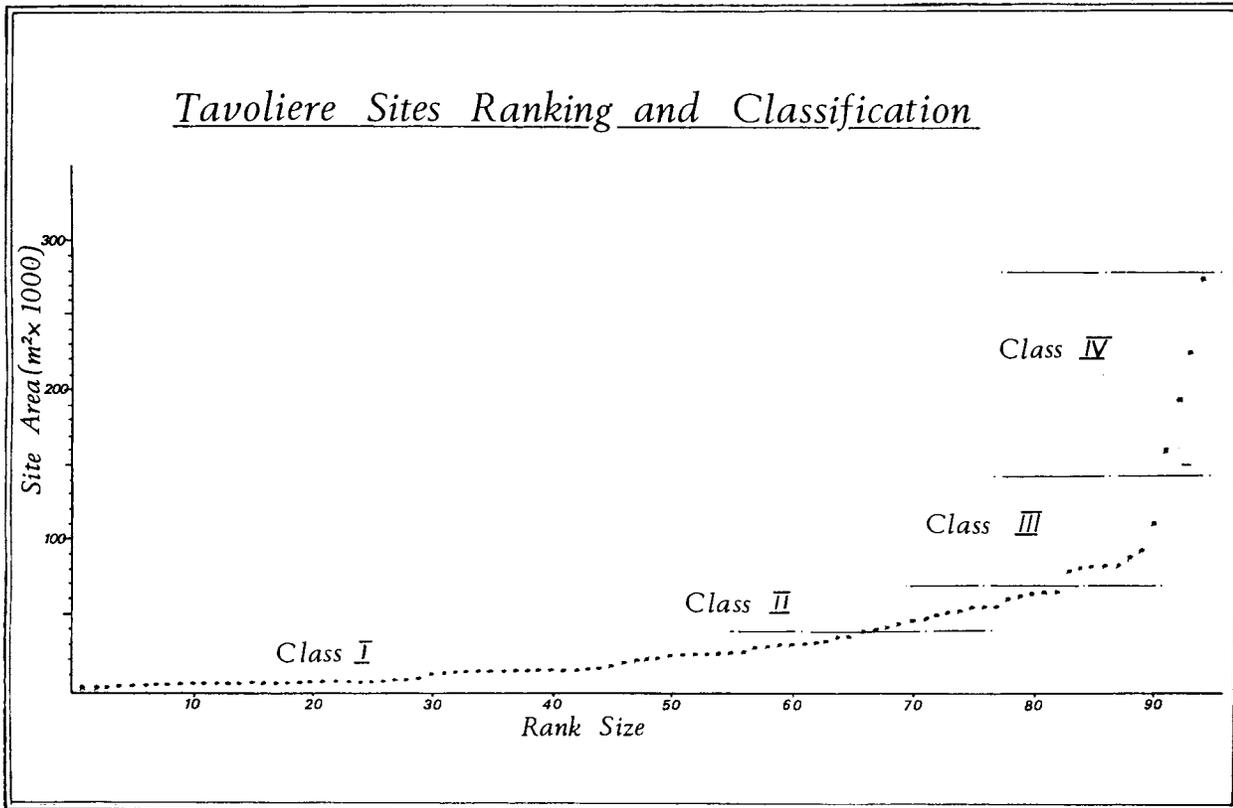


FIG. 106. Ranking and classification of the Tavoliere sites

size. This histogram indicates the general grouping of Class III sites, as well as the major agglomeration of settlements in the 1 – 200 m. diameter category. The clearest point to emerge, perhaps, is confirmation of the Class IV sites that form a separate group. This is even more apparent from the calculation of size in fig. 108, where 191 sites in which the air-photographic evidence allows have been examined with a view to estimating their area. In this case the separate nature of Class III sites emerges more accurately, as does even more the abnormal nature of the Class IV sites headed by Passo de Corvo. The separate nature of the Class IV settlements is further emphasized by a consideration of the comparative sizes of the inner core and the outer enclosure in thirty-two sites where the evidence allows detailed estimates to be made (fig. 109). In this way the size of the outer compounds at such major sites as Posta d'Innanzi, Masseria Schifata and Masseria Palmori clearly distinguishes them in terms of scale from the bulk of the material. Again, the main exception is the quite abnormal size of the associated enclosure at Passo de Corvo, which is wholly out of proportion with the evidence elsewhere.⁹

If distinctions on grounds of size do not emerge between sites of Classes I and II, then it is important to note that within the general size group only 32 per cent occupy less than 1 ha. This means that the remaining two-thirds forming the basic settlement units and lying in the

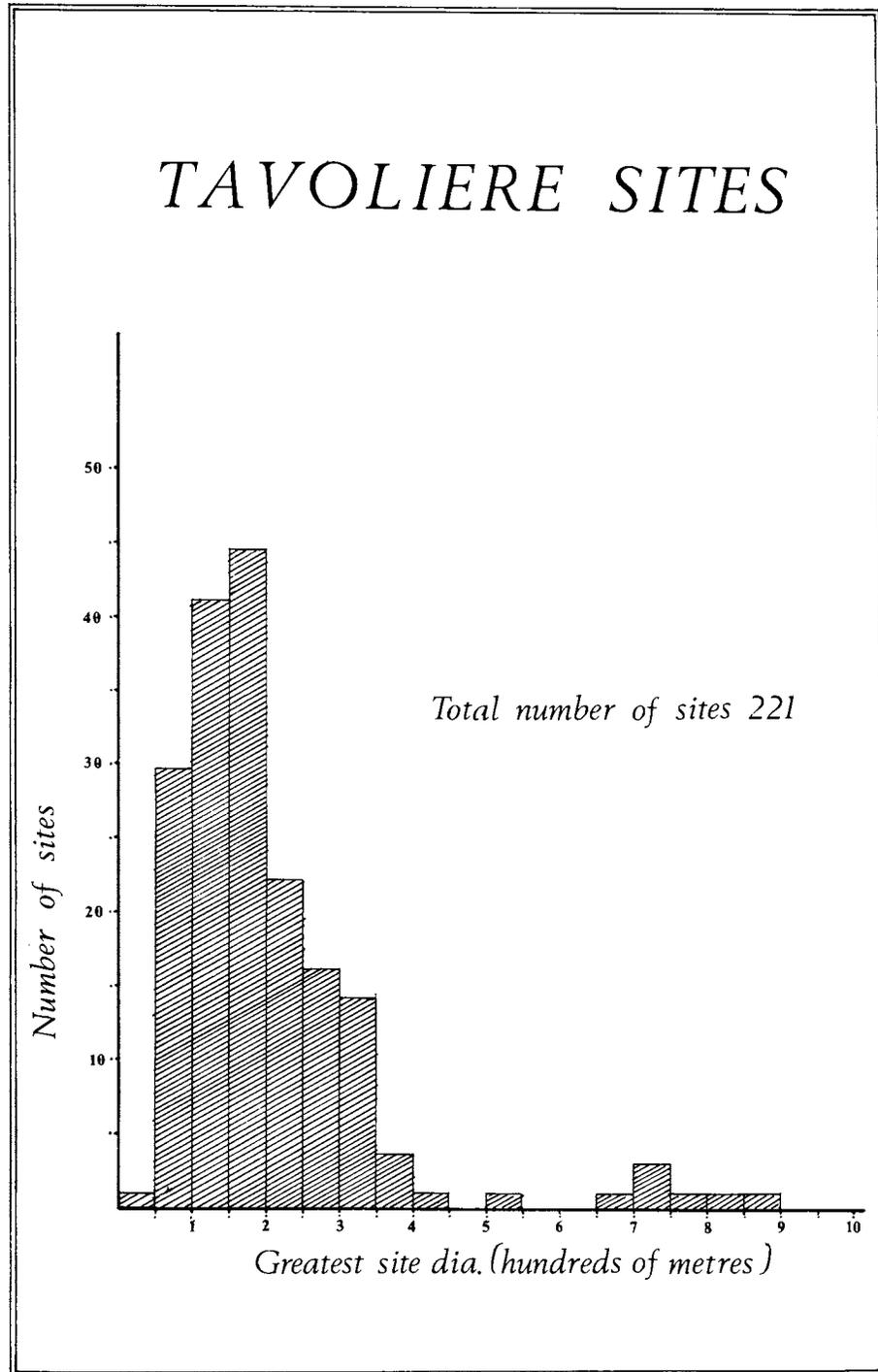


FIG. 107. Settlement sizes in the Tavoliere: by diameter

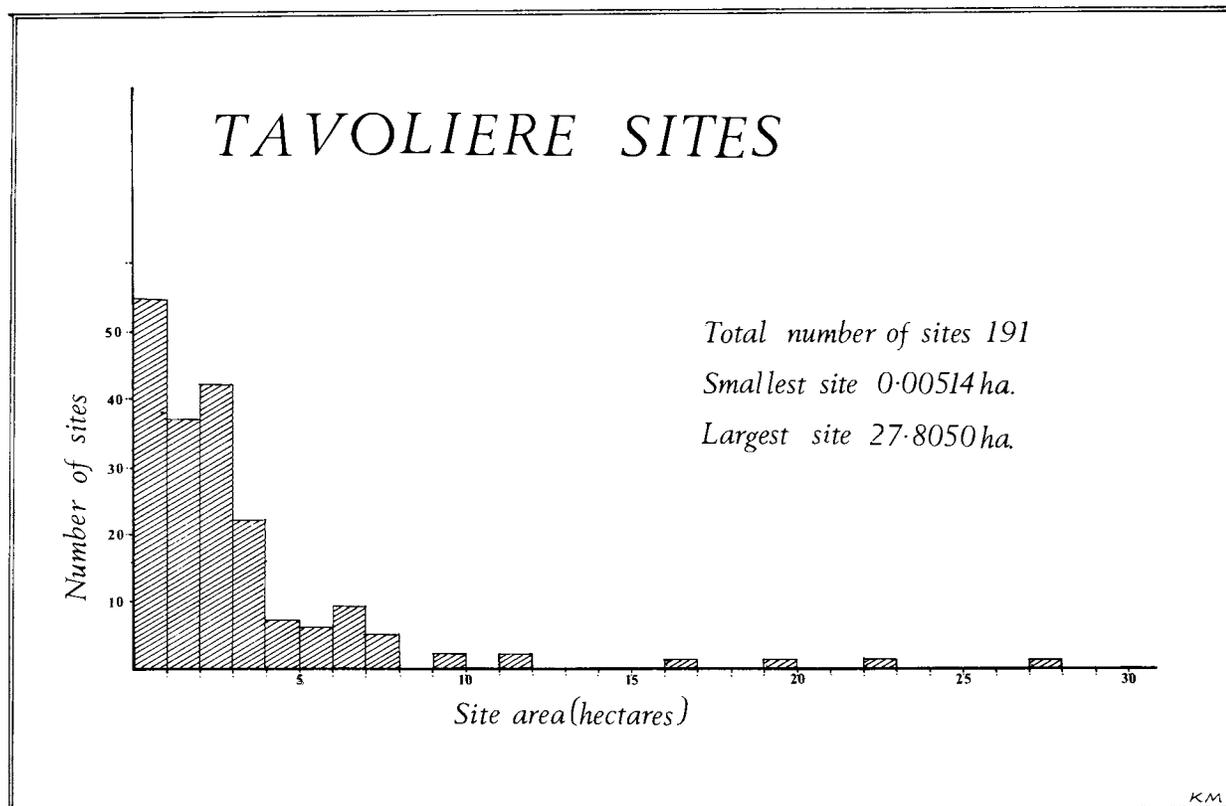


FIG. 108. Settlement sizes in the Tavoliere: by area

2-4 ha. category form the greater proportion of the size category. This has important implications for any future discussion of population levels in the Neolithic Tavoliere. Elsewhere it has been suggested that the average settlement unit in the Aegean lowland arable area occupied less than 1 ha. Specifically, an average size of between 0.8 and 0.4 ha. has been suggested, and recent survey in Thessaly has produced a very comparable size range.¹⁰ It is clear that on the Tavoliere the predominant class of site was on average greater than has been supposed elsewhere. While the presence of increased numbers of animals means that this may not necessarily have involved increased human population, the probability remains that this was the case. Widely varying estimates of prehistoric population figures (currently ranging from 100 to 300 persons per hectare of settlement) make it difficult to press the arithmetic meaningfully.¹¹ Yet the undoubted grouping of the great majority of Tavoliere sites in areas of less than 4 ha. tends to support the conclusions of recent ethnographic work amongst 'Neolithic' cultivators of New Guinea, which suggests that to maintain internal order relatively egalitarian societies such as the Tavoliere sites appear to represent (on the evidence of internal compound layout) functioned best as population groups of between 70 and 350 persons.¹² While the larger, hierarchically

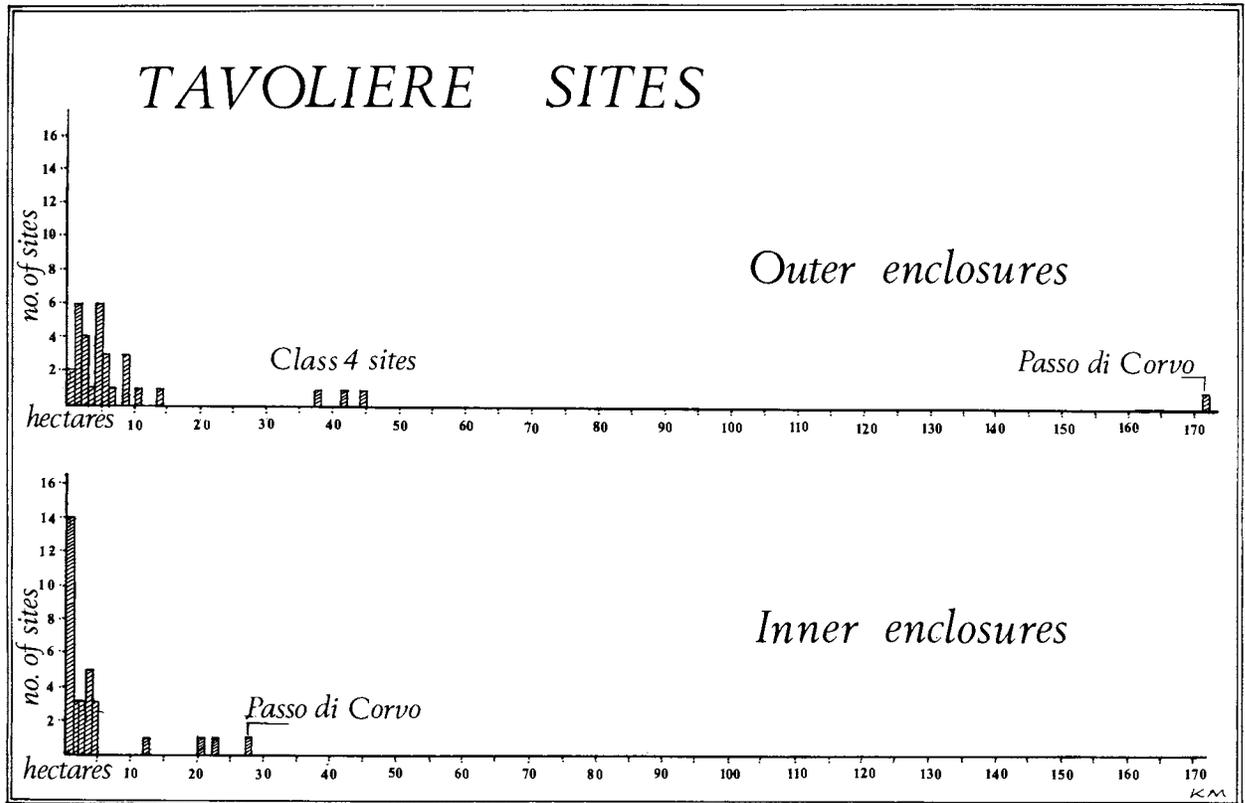
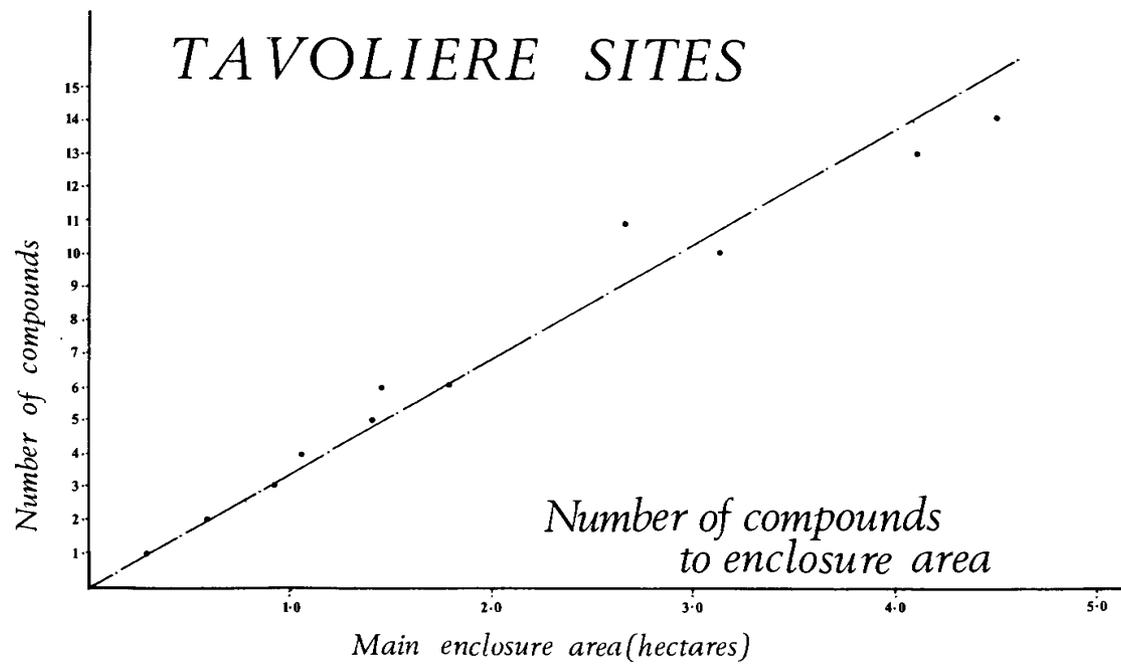


FIG. 109. Site areas: outer and inner enclosures

differentiated communities emerged at some stage, we may therefore say that communities of under 400 persons remained the predominant class.

The nature of the compounds within the sites can be expressed in a number of ways. The principal difficulty lies in the recovery of complete evidence from any one site, as, thanks to the vagaries of the air-photographic cover, in so many cases it is not possible to arrive at a finite picture of the internal composition of a particular settlement. A number of sites from a variety of classes enable us to calculate in general terms the areas that a compound and its immediate environment may occupy within a site. The settlements of Posta di Colle and La Panetteria are examples where the interior contains a known number of compounds, namely thirteen and fourteen respectively, which may be examined against the overall area. These and ten other sites are plotted out in a scatter diagram (fig. 110, left) and suggest a general similarity of space usage; in both the prime examples the sub-area in question amounts to approximately 3,200 sq. m. per compound and immediate periphery. One of the sites in question, La Panetteria, also provides the most detailed evidence for the actual size of compounds; the fourteen examples there have been described in detail in the main site catalogue. Their overall dimensions are also expressed in a histogram of compound areas to be found on fig. 110, right. The range of sizes involved extends from just over 13 m. across to as large as 34.2 m. This appears to be generally representative of most sites. How far the case



Class	Range	Frequency	% of Total
1	13.2 - 18.45	5	33.33
2	18.45 - 23.7	3	20.00
3	23.7 - 28.95	5	33.33
4	28.95 - 34.2	2	13.33

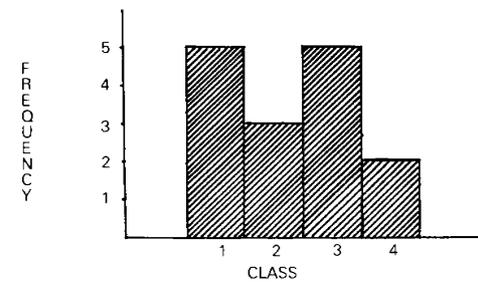


FIG. 110. Compound sizes and their distributions: left, Posta di Colle, La Panetteria and other sites (see p. 188); right, the compounds at La Panetteria (see p. 39)

of Passo de Corvo should be seen as atypical is also in question. There 70 per cent of the compounds' dimensions lay within the bracket 13.5 – 21.5 m., 10 per cent lay within the 27.5 – 45.5 m. range, while 20 per cent of the sample made up the intervening area.

The division of site categories now calls for application on a broader canvas. Even allowing for the poorer quality of the aerial photographs covering the southern part of the Tavoliere, one point is clear (fig. 7). The major settlements of the Tavoliere lie in the central and northern portions of the zone. They thus occur along the two historically important axes, i.e. that to the north along the Adriatic littoral and that towards Campania across the Apennines. Moreover, the distribution of the major sites stems directly from the Amendola – Candelaro area at the northern tip of the Gulf of Manfredonia, the part of the Tavoliere to which the current would naturally bring seaborne migrants (p. 114). None of the southern sites belongs to the major class; instead they represent an extensive collection of medium and lesser settlements, whose distribution pattern along the valley scarps becomes ever more predictable as the mean height of the land rises to the limestone plateau of Le Murge. Above all, the southern Tavoliere is the zone of the small settlement, the home of the extended family unit.

Spatial analysis

Outer enclosures

The various features of settlement layout and their functions have been largely assumed so far, but now require consideration in detail. The role of the outer enclosure, for instance, has been taken as proven in some cases. The clearest example is provided by the Masseria Schifata site (19), where there appear to be no compounds at all in the outer enclosed area. Two other sites in the major double-enclosure category serve to fill out the picture. At Masseria Fragella (39) certainly, and at S. Cecilia (49) possibly, one can see compounds clustered on the outer side of the exit from the inner enclosure. This would be a natural sequential development in a thriving community, and at Fragella compounds fill most of the outer enclosure. Whereas the compounds at S. Cecilia appear to be limited to the area of the connecting entrance, at Fragella they fill the bulk of the second outer enclosure. The precision of evidence available is naturally controlled by the quality of the aerial cover to hand, and unfortunately one can only say tentatively that the Masseria Palmori site (20) follows the pattern of its neighbour, Masseria Schifata. The whole process can be observed *in parvo* at Marandrea (162), shown in pl. XXa and fig. 36. Thanks to the precise detail available, this emerges as one of the critical sites of the whole Tavoliere. There are indications of a group of compounds clustered at the seaward entrance to the main enclosure. Significantly, perhaps, they are appreciably smaller in size than the two internal compounds on the site. If they are not intended for living accommodation, then the stock that they held must, *ipso facto*, have been animals to be kept apart from those of the inhabitants of the internal enclosure. Thus at one stroke differences are apparent in terms of ownership and perhaps social organization.

Compounds and occupation patterns

The whole system of compounds familiar from the Tavoliere sites implies the separate

ownership of stock. That crops were worked individually is much less likely. If the annexes familiar on some of the larger sites were used for cultivation, then there are certainly no signs of divisions and, while not wishing to deny the probability of mixed farming, the importance of crop production in this Apulian context may be overrated. Some of the healthiest tribes in Africa, for instance, such as the Ba Ila tribe, one of whose centres is examined on p. 195, live primarily on a milk diet. One has only to think of the *buffale*, a type of ox still common in the Candelaro area and an important source of cheese production, to realize the possibilities in this direction. Moreover, it is easier to explain the apparently rapid turnover of sites through exhaustion of grazing (combined with the severity of the summer drought) rather than exhaustion of arable.

At the same time the development or non-development of compounds at the entrance of the outer enclosure, and subsequently in the outer enclosure as a whole, can serve as a valuable general indication of the length of occupation any of the sites in this category may have enjoyed. Thus the Schifata and Palmori settlements probably had a shorter life than at S. Cecilia, which in turn does not exhibit the, ultimately, full utilization of space shown at Masseria Fragella. All these are examples of major settlement centres. Similar indications are not available from smaller types except in rare instances such as Marandrea, discussed above. If one tries to determine the length of occupation on any given site then the evidence seems indicative of relatively short periods, unless refinement of the pottery dating ultimately changes the picture. Frequent evidence for the reuse of certain topographically suitable areas, *especially scarp-edge positions*, by a variety of settlements of varying size and layout points very firmly in this direction. One thinks in particular of such areas as the Palmori-Schifata zone (fig. 16, the S. Cecilia area (fig. 19), Casone (fig. 50), Marana di Fontanafigura (fig. 31), and Grassano (fig. 27). In all these areas it would be very difficult to conceive of the various sites being occupied simultaneously, which is the factor that makes it difficult to draw up meaningful site territories. At the same time none of the Tavoliere sites shows evidence of a *tel* formation indicative of prolonged occupation. Comparison with some of the known medieval centres such as Salpi or S. Leonardo makes this point very forcefully. Normally modern ploughing has removed any trace of stratigraphy from ground level. The only exception to this so far comes from the excavations within Lucera Castle, where the Neolithic remains are sealed by accumulations of the Daunian, Roman and medieval periods. During the Neolithic occupation-period the ground level rose by some 45 cm. (p. 144). This should be set against the highly strategic position of the Castle site and the fact that several phases of Neolithic occupation are involved, although naturally the super-incumbent features make this impossible to determine over a large area.

Compounds and seasonal winds

One particular feature of the corpus of information available from the Tavoliere sites concerns the orientation of the internal compounds. One of the most obvious characteristics of a number of sites is the way in which all, or the great majority of, the internal compounds are orientated in approximately the same direction. This characteristic can be observed across sites spanning the whole of the Tavoliere from S. Severo to Stornarella, with something of a gap in the middle for reasons relating almost certainly to lack of aerial cover.

The relatively small number of samples used here, taken only from those places where there exists full and detailed evidence on the aerial cover, probably stands for a considerably larger sample, the evidence for which is obscured in one way or another on other photographs. At first sight it might appear that the orientation of the compounds might relate to the entrance, especially when the settlement stands on the lip of a scarp overlooking one of the broad Tavoliere valleys. This, for instance, is probably the case with sites **19**, **20**, and **21** overlooking the T. Salsola, north-east of Lucera (fig. 15). This is definitely not the case, however, at Stazione Amendola (**184-5**) where the compounds face away from both the entrance and the scarp edge (fig. 43). Likewise, at sites **136** and **139** south of Stornarella, the compounds lie at right-angles away from the axis of the associated valley.

The explanation is therefore likely to be more complicated in several cases, and this perhaps emerges most clearly from the diagram of the orientation of compounds (figs. 111 and 112). The effect of orienting internal compounds in a particular direction might imply a structured society and a degree of coercive order that went beyond individual family. The standardized orientation of compounds can be seen as another argument for regarding the Tavoliere settlements as of major importance in the emergence of organized prehistoric societies. Alternatively, without excluding a degree of social organization, compound orientation can also be seen as a logical response to natural phenomena. At the practical level the effect of orienting a compound in a particular direction would be for its circuit palisade, or more likely a simple wall or thorn fence set on top of the upcast from the ditch, to reduce the effect of the wind blowing from the opposite quarter. Once plotted out in this fashion (fig. 111), it is clear that this may well have been the intention. Equally, at the hottest times of the year in the Tavoliere every breath of wind is welcome.

The climate can be divided into five categories of weather, often lasting up to a week in duration, sometimes longer. The long-lasting anticyclones predominating in the summer months generally have light northerly winds associated with them. There is at times a fresher, cooler wind from the north-west (*maestrale*) deriving from the Atlantic system. The *grecale*, on the other hand, is altogether more violent and blows from the north-east, from the same quarter as the winter *bora* (north-north-east). The dust-laden *scirocco* blows from the south to the south-east. Its effects are probably longer lasting than the *libeccio*, the violent wind from the Sahara, also known as the *Favonio*, which causes considerable crop damage, particularly if it blows in summer.

What can be made of these patterns? The clearest factor is obviously the avoidance of the north-east winds (*grecale* and *bora*) and much of the *scirocco*, if not the *Favonio*. The choice of a northward orientation to take advantage of cooling breezes in the fine summer months, and the west to south-western alignment to diminish the effects of the *bora* and *grecale* in the winter and other seasons, can be seen, if taken together, to suggest the same overall interpretation: namely, that the sites were occupied for periods of at least months at a time. The quantity of the sample does not, however, allow us to argue further, and the occurrence of compound-orientation does not appear to relate to any particular class of site, although because of their size, settlements of Class I cannot be taken into the argument. Nor, because certain sites were laid out with seasonal wind direction in mind, can it be necessarily argued that the sites in question were only occupied on a seasonal basis, not least because of the possibility of transhumance by part of the human population (fig. 112).

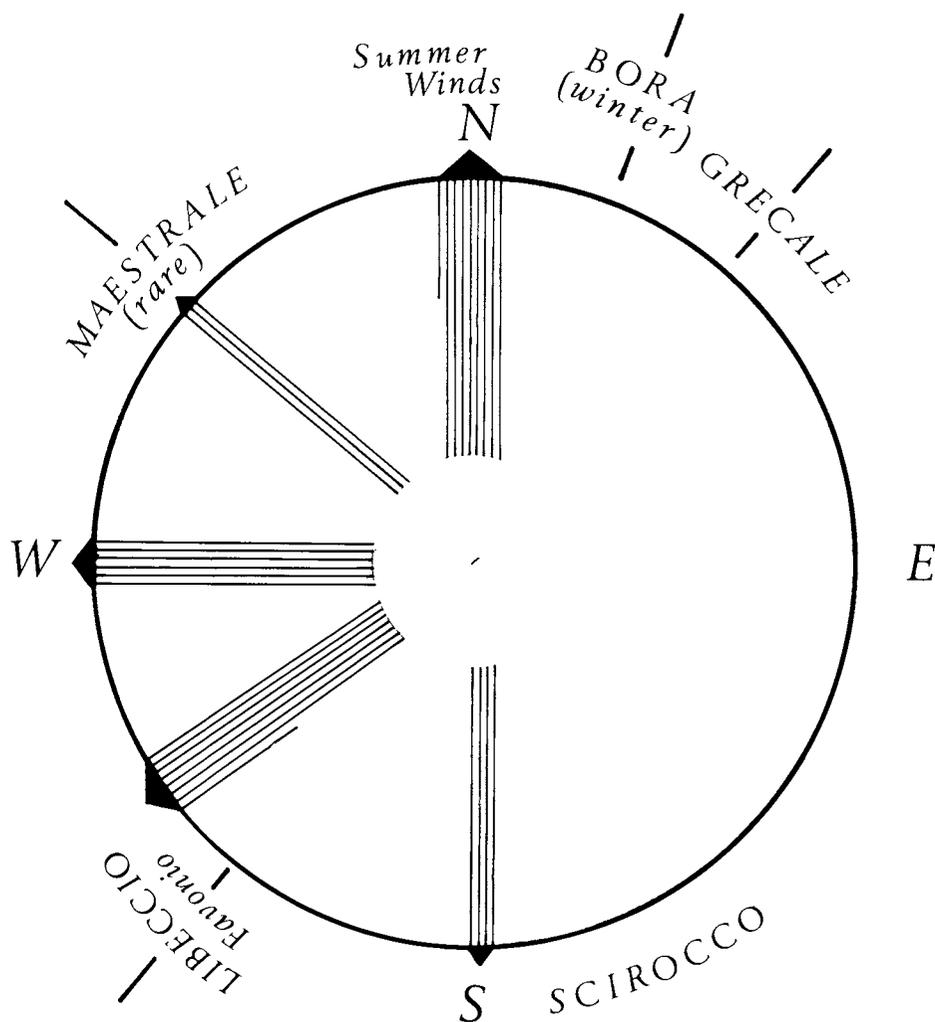


FIG. 111. Compound orientation I: internal compounds and wind direction

Ditch circuits

The role of the entrances is inevitably bound up with that of the ditch circuits. Here there are considerable difficulties owing to the lack of highly detailed aerial cover over the whole of a particular site; indeed, the height from which the great majority of southern Tavoliere sites has been photographed renders such detail out of the question. Nonetheless, the information

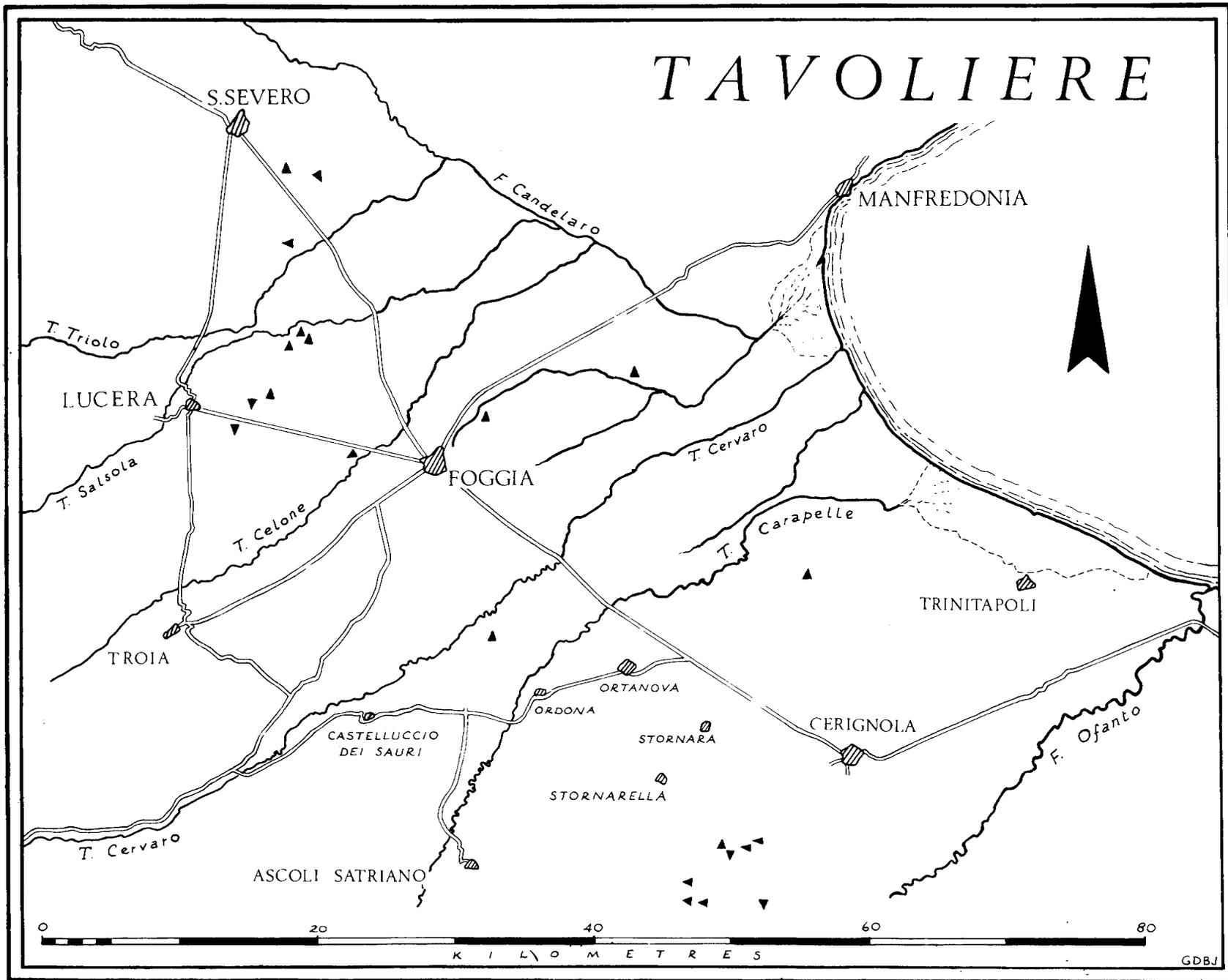


FIG. 112. Compound orientation II: location (1:400,000)

available at some sites is both surprising and significant. In the first place it is apparent that the occurrence of a linked sequence of entrances through more than one ditch is in fact exceptional. Perhaps Masseria Fongo (p. 36) is the detailed layout that demonstrates most clearly that the various entrances occur at irregular points in the ditch circuits, i.e. that humans or livestock trying to move out through the perimeter ditches did not do so in a straight line. This suggests that no great premium was set on communication with the periphery of the settlement. This surprising conclusion is supported by the evidence of a number of other sites where detailed information is available.

If the pattern can be extended throughout the majority of the larger Tavoliere sites, then it means that the area between the perimeter ditches was the zone of particular importance. Indeed the massive double-ditched site at Masseria Schifata (19) appears to have no entrance leading out to the exterior, though the quality of the aerial cover does not allow absolute certainty on this point. Once one realizes that on the larger sites the area between the ditches is of greater importance than access to the area beyond, then other factors fall into place. It explains, for instance, the way in which entrances occur at random in the various ditch circuits. While obviously the ditches must have played some defensive role (against marauding animals rather than humans?), if a premium were placed on defence against human attack, then the entrances would have been grouped tightly together in line for greater protection in the manner familiar from hillforts. The explanation therefore probably lies in the pasturing of livestock within the perimeter ditches of the outer circumference. This in turn would explain the nature of many of the entrance gaps themselves. Most are apparently simple gaps in the circuit ditch, presumably, if excavated, flanked by post-holes for the suspension of gates. Yet a fair percentage of the gateways belong to another cognate variety. In this, one of the ditches extends round the entrance area in a quarter-circle in the manner of an external *clavicula*. For detailed comparative material from an excavated example we can look later in time at an early Beaker-period cattle kraal at Anlō in the Netherlands in 1957–8 (fig. 113). This shows an excavated version of such an entrance, for which the best parallel is perhaps again from Masseria Fongo (p. 36). The function of the out-turned ditch is to prevent the passage of more than one beast at a time through the entrance gap, and so prevent a stampede or rush of livestock. In the Apulian context it is a device that survives into the Roman period and can be demonstrated in several farms belonging to the Republican centuriation system of Lucera. In themselves these entrances, that link various areas between perimeter ditches, are evidence of use of the area for pasturing. Naturally the pattern is apparent only on the larger sites; in smaller settlements without elaborate ditch systems stock must have been pastured outside as circumstances best allowed. It is therefore highly interesting to observe at Stazione di Amendola II a suspected elaboration of the simpler Type II layout (p. 34, fig. 43) with an entrance of unique layout. The southward-facing exit appears clearly in terms of crop-marks, suggesting a dual arrangement that perhaps underwent modification (fig. 113). The entrance was divided in two by a ditch extension swinging in from a perimeter circuit; while one half led to the exterior, therefore, the other actually led directly to the grazing area between the two ditches. Although the evidence of the crop-marks might suggest that the entrance was modified from one role to another, rather than that both occurred simultaneously, this does not affect the basic argument that at times entrances from the internal compound led directly

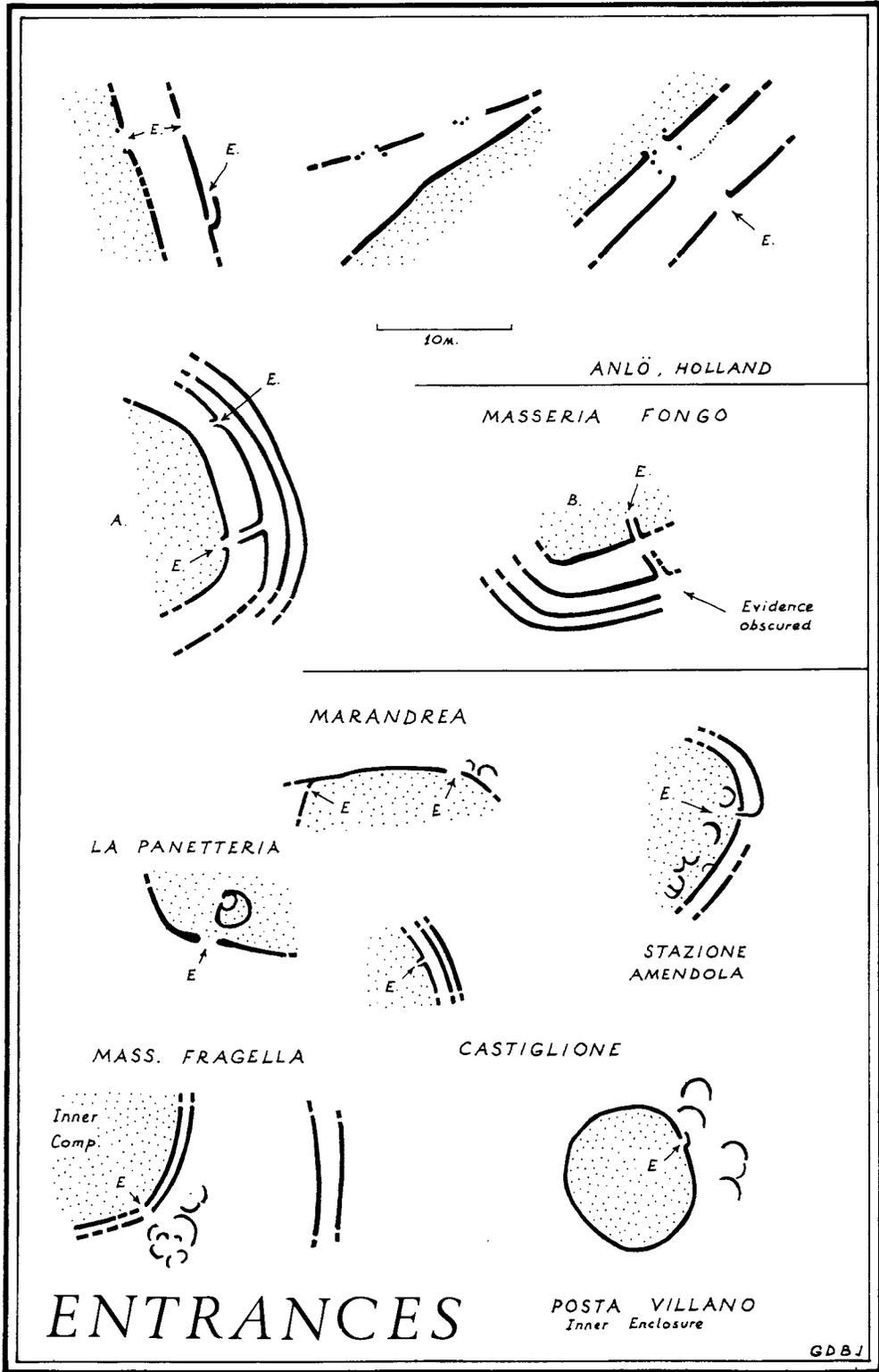


FIG. 113. Entrance types

into the area between perimeter ditches and that these can often be regarded as pasturing zones with inner and outer boundary ditches.

ETHNOGRAPHIC INTERPRETATIONS

When we turn to the interpretation in social terms of the material offered by the Apulian Neolithic sites, then we at once enter a realm where archaeology is not competent to take us far. We become dependent on the comparative evidence offered by social anthropology and an analysis of comparable material, particularly from south and eastern Africa. If prehistorians have been reluctant to follow this path in the past, then the reason lies primarily in the restricted amount of evidence that has been available for Neolithic settlement layout, or the special nature — religious rather than secular — of the sites concerned. Yet in this case a very proper caution must yield to some extent; Apulia offers a much greater body of corporate evidence for domestic layout than has previously been available. Much of the comparative evidence in the following paragraphs is derived from recent studies in Africa, and it shows us some of the lines along which interpretation of the Apulian sites can proceed and some of the pitfalls as well.¹³

It would be as well to specify some of the salient features of the Apulian sites before proceeding any further, namely the associated enclosure, the predominance of one internal compound evident at some sites, whether through size or position in a settlement, and the presence of compounds outside the perimeter ditch or ditches of the site. There has quite naturally been a tendency, for instance, to interpret the external compounds as secondary to the settlement as a whole. As a starting point for modern comparisons to help our interpretations, we might look at the Ba Ila village of Chief Mukobela in Zambia. The village shown in pls. LIV – LVa consists of several hundred huts with an entrance on the western side flanked by trees of the spirit grove, where prayers are offered for the cattle as they set out to graze. From the single gateway, tracks radiate fan-wise to the individual cattle pens, of which there are over fifty. It is the pens that are the more important, rather than the actual living huts, and the pens can vary in size from the minute to that of the chief, the obvious nucleus right in the centre of the village. The living quarters are controlled by and grouped around the cattle pens, huts, kitchens and granaries with thatched roofs on mud-plastered walls, all features that in archaeological terms would be difficult to detect through excavation. Pride of place goes to the chief's compound, containing a main area to accommodate his cattle and shown in detail in pl. LIVb surrounded by the huts for his friends and his wives. In this case the largest hut for his favourite wife is built in the European style. To give some idea of the overall scale of the village, the Ba Ila group owns about 5,000 cattle, all known personally and by name to their respective owners; it is the cattle that are the most precious of all the tribal possessions. The Ila people are well fed, primarily on milk products, and their health is above average.

Several points emerge from this initial comparison; the emphasis on the chief's compound has several parallels in the Tavoliere, not least in the largest compound at Passo di Corvo. The compounds themselves at Ba Ila are built with thorn or brushwood hedges. It would be

relatively easy to claim that the great majority of the compounds in the Tavoliere sites also represented cattle compounds, with the difference that their limits were defined by a ditch, although a brushwood fence could always have been added around the internal perimeter. Certainly it would be impossible to interpret any but a very few of the Neolithic compounds from Apulia as hut circles of the type that we are familiar with in this country. In the first place, the ditches themselves on examination have all proved too deep and too wide to be treated as foundation trenches, and in any case the ditches are almost without exception too wide in diameter to form part of any hut or similar structure. Perhaps this is an obvious point; nonetheless, it is one that needs emphasizing and can be made in another way by looking at the Marandrea site (pl. XXa), where the non-circular compound visible in the interior of the site is clearly more suited to act as a cattle compound than to be directly associated with dwellings.

It is worth remembering, however, that there are a number of dissimilarities. Only a few of the Apulian sites, such as Stazione Amendola, have the same spacious layout with the compounds largely or wholly restricted to the perimeter area. The majority of the Apulian sites exhibit a greater density of compounds in the interior, but nearly always spread across the central area. At the same time the circuit defences appear to be more elaborate in the Apulian examples, there being often two or three ditches cut in the *crosta* as opposed to the single thorn hedge seen in the comparative material from Africa. Similarly the Apulian examples tend to have more elaborate entrances than the African counterparts; indeed the Neolithic site entrances often appear to have achieved a considerable degree of sophistication, as shown in the Masseria Fongo site (pl. XXIIIa).

So far we have been looking at the overall pattern of the larger sites. When one looks at Neolithic settlements of small or medium size, then some of the analogies from Africa may be continued. The close parallel to a medium or a small site shown in pl. LVb comes from an air photograph of Kavirondo near Kisumu in Kenya. Once again, as in the Zambian village discussed above, the emphasis is on the importance of cattle. The Kavirondo people are above all pastoral and their area is closely settled with a succession of kraals following the basic pattern illustrated in the above-mentioned plate. We can see that in these cases the cattle pen is the central feature of the Kraal (cf. pl. LVIa), presumably placed there for protection, and that the living areas are peripheral to it and are surrounded by a second wall. The immediate application of this example is to warn against the danger of interpreting sites in Apulia which could be said to follow the same pattern as belonging to two periods. These kraals are laid out as one unit, the inner compound simply being reserved for the tribe's most prized possession, its cattle. The smaller site at Masseria Fonteviva (192, pl. XXVIIb), the Campo di Fiori site near Passo di Corvo (197, pl. XXIX), the Masseria S. Cecilia site (50, pl. XVa) and the Casella Anticaglia (44, pl. XIIb) could all be interpreted as following this pattern, which seems to be important for the smaller sites of the area.

When we turn to a more detailed examination of the interior, then it is obvious that many of the detailed problems cannot be solved by archaeological means. Nonetheless, it is worth attempting interpretation of various features again in the light of modern material. We have already noted the tendency for comparable modern material from African villages to place an emphasis on the peripheral location of huts. Where the emphasis lies not on a pastoral, but on an arable economy, then the size of the settlement can naturally be reduced because

the all-important livestock compounds are no longer present. That this was the case, i.e. that the emphasis on pastoralism was much reduced in some cases, is suggested by some of the Apulian sites. Parallels, though of course lacking a circuit ditch, occur in East Africa, where the headman's hut occupies a central position as opposed to those of the rest of the inhabitants. Indeed this kind of pattern can be observed at several sites in the Neolithic Tavoliere, particularly on the higher ground to the south, where the sites are in any case smaller in scale. Settlements **146** and **153** shown in fig. 32 are clear examples of small sites where the emphasis on a central hut or huts is clear, a characteristic that also applies to site **155** (p. 80), one of the largest in the area. When the scale is still further reduced, and one might assume that the headman is the head of an integrated family unit, then the social distinctions surrounding his hut disappear, and this situation is again paralleled in East Africa.

In these two contrasting cases we seem to be dealing with social differences between the settlement of what is strictly a family homestead and something on a larger scale. The question of family links deserves attention because several cases exist where compounds have clearly been grouped together to form an integrated unit. As a possible parallel one might cite the very detailed information available from the westerly site of Masseria La Lamia. Although we are dealing in the modern examples with huts rather than compounds, it is as well to realize the complexities that can arise in situations like this, when the overlap between compounds and living huts is a confused one, because several of the huts perform the role that would have been filled by compounds in the Apulian context, namely for housing livestock. It is not unnatural in this particular context to imagine the changes and additions in building plan to occupy a lengthy period. Yet caution is advisable on this point. Personal friendships and hostilities can control the changes in hut shapes and locations; furthermore the flimsy nature of the building materials renders frequent reconstruction necessary.

This, too, is a warning against placing reliance upon complex arrangements in the interior of sites as necessarily diagnostic of lengthy occupation. The living quarters, as shown at La Panetteria (p. 139) were flimsy and movable, leaving practically no archaeological trace. A glance at pl. *LVIb* will show the kind of structure involved. The scene is not an old photograph, but a picture of a shepherd's camp at Piglio, not 40 km. south-east of Rome in 1961. The shepherds in question were practising transhumance, and this is again a question that deserves to be borne in mind in relation to the Apulian settlements.

The ephemeral nature of the building materials involved is important because in the preceding section a clear distinction between modern hut-compounds and Apulian ditched compounds has been deliberately blurred. Full interpretation of the role of the compounds is not easy. A disproportionate amount of discussion has centred on the role of the ditches, which clearly have protective, proprietorial and potentially other functions.

Far more important in overall terms is the social interpretation of the role of the compounds. Inevitably that question leads us into the field of ethnography, where available ethnographic parallels are limited in trying to evolve a fit between Neolithic households and their domestic structures in a primitive society, let alone one involving ditched compounds as demarcating family units.

It is a commonplace that relationships vary according to social, cultural, economic and

environmental factors and that marked variations can occur even within restricted areas. The tendency is for ethnographers to produce 'normative statements' that the archaeologists seize upon to identify types of settlement or household units. In reality one must ask whether primitive societies exhibit a norm for structures as opposed to a series of socially and functionally graded uses for structures in varying states of status and maintenance. This is well shown in David's extensive study of Fulani compounds,¹⁴ where morphologically similar basic living units exhibited a functional hierarchy related to their state of repair, as set out in fig. 114.

The kind of multi-role structural sequence identified in Fowley's study might have interesting applications to elements of the Tavoliere material.¹⁵ For instance, it has already been suggested (p. 139) that the bipartite compound excavated at La Panetteria north of Lucera is best understood as one in which the minor element was principally for human occupation; the remainder, it was suggested might be seen as housing animals. While this hypothesis might well be true in its essentials, it may on the other hand be too simplistic in ignoring social change with the family unit. Thus Fowley's analysis of one compound (drawn out in fig. 114) shows the effect of the death of the head of a family. The elder son constructs a

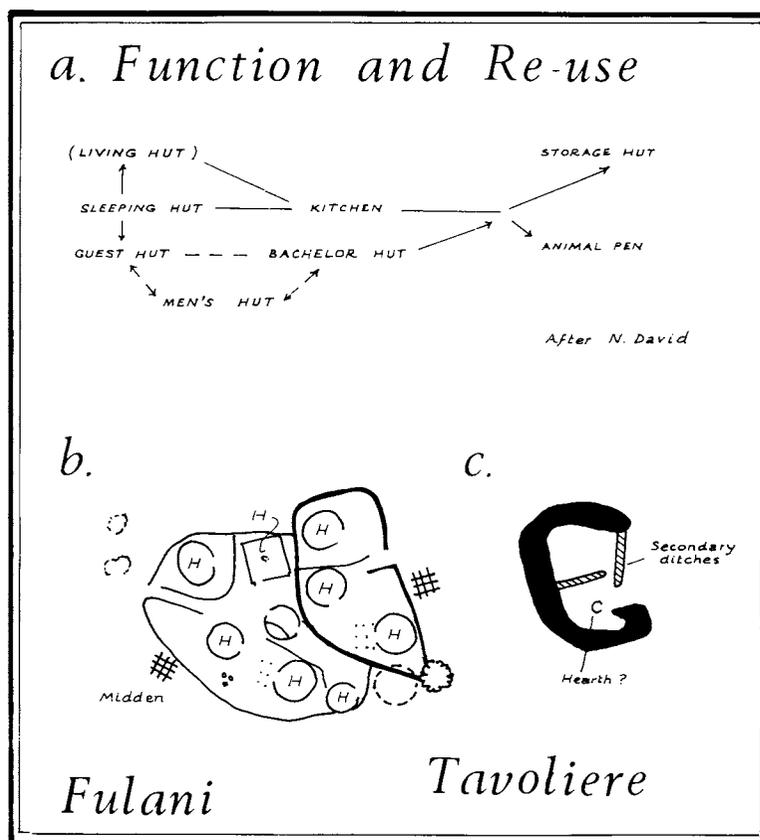


FIG. 114. Comparative living arrangements

physically larger compound backing onto the original site. There are strong parallels to this apparent in the evidence from Masseria La Lamia (73). The other point of interest here is the reorganization of the original compound. The widow moved into the smaller portion of the enclosure, which was partitioned off to allow the younger son and his wife to take over the main living space. These changes as expressed in plan form find a close parallel in one of the more complicated inner compounds observed as Masseria S. Giusta (218), drawn out in fig. 114c. Like the original Fulani family compound, it appears to have been divided by a small partition in the form of a median ditch which was matched along the exterior by the cutting of another narrow ditch from the butt-end of the broad compound perimeter. Even from the air-photographic evidence it is clear that this change must be viewed as a secondary development, that is very likely to have carried much the same social connotations identified amongst the Fulani today.

Herein lies the ultimate fascination of analysing the evidence of the Neolithic settlements of the Tavoliere. The application of ethnographic parallels clearly has a major role to play in future detailed study; meanwhile, more large-scale excavations combining the full range of environmental and interpretative techniques currently available to the archaeologist are an essential prerequisite to progress in the interpretation of what remains the largest cognate group of Neolithic settlements in Europe.

APPENDIX I
THE FINDS TABLES

By D. H. Trump and G. D. B. Jones

TABLE 1. Passo di Corvo I (Campo di Fiori) Trench I
(see p. 119)

<i>Depth (m.)</i>	<i>0.90</i>	<i>1.80</i>	<i>2.35</i>	<i>2.50</i>
'Corvo' painted	1	—	—	—
Flints	1	1	1	—
Dark burnished	9	14	15	—
Scratched	—	2	4	—
'Quercia' painted	1	4	—	—
+ rocker	1	3	4	—
Rocker-patterned	3	6	14	—
+ impressed	—	1	—	—
Impressed	7	36	66	—
+ incised	—	1	—	—
Incised	—	3	4	—

TABLE 2. Passo di Corvo II (Large Circle) Trenches III and IV (see p. 121)

<i>Depth (m.)</i>	<i>0</i>	<i>0.60</i>	<i>1.35</i>	<i>2.00</i>	<i>2.45</i>	<i>2.85</i>	<i>3.00 (bottom)</i>	<i>IV all levels</i>
Apulian Geometric	—	—	—	—	—	—	—	1
Fine buff	12	—	—	—	—	—	—	8
Flint	6	1	—	1	—	—	—	5
Dark burnished	36	11	missing	32	39	1	—	20
Scratched	—	—	—	1	1	—	—	—
'Quercia' painted	—	1	—	4	6	4	—	—
+ rocker	—	—	—	—	—	1	—	—
Rocker	—	—	—	1	1	1	—	—
Impressed	—	—	—	7	1	2	—	—

TABLE 3. Passo di Corvo, Trenches V and VI (see p. 122)

Depth (m.)	V surface					VI surface				
	0	0.40	0	0.25	0.60	0.90	1.10	1.30	1.60	1.90 (bottom)
Roman	1	—	—	—	—	—	—	—	—	—
Apulian Geometric	—	—	3	—	—	—	—	—	—	—
'Corvo' painted red	—	—	3	31	8	5	12	2	1	6
polychrome	—	—	1	—	1	—	—	—	—	—
rim line only	—	—	—	6	—	—	1	—	—	—
Buff ware	3	—	18	142	45	21	18	9	13	11
Pattern burnish	—	—	—	—	1	—	1	—	—	—
Dark burnished	7	147	25	345	328	244	147	114	10	153
Scratched	—	1	—	—	—	—	—	—	—	—
'Quercia' painted	—	11	1	3	3	—	1	—	—	2
+ rocker	—	—	—	—	—	1	—	—	—	—
Rocker	—	1	—	—	2	—	1	—	2	—
Impressed	—	9	2	3	9	2	3	4	5	3
Incised	—	1	—	1	1	1	1	1	—	1
Coarse ware	2	2	1	58	31	12	11	10	20	10
pink	4	25	—	37	20	10	21	9	1	6
very thick	—	7	2	22	8	2	—	7	2	6
Other objects	—	1 sp. whorl	1 spoon	—	—	1 sp. whorl	—	—	—	—
Stone: obsidian	—	—	2	1	—	3	—	—	—	2
flint	—	32	16	44	39	28	14	4	2	1
with sickle gloss	—	—	1	4	1	—	—	—	—	—
Other objects	—	—	—	—	—	—	—	1 gr.st.	1 st.bl.	1 axe butt
Bone: sheep/goat	1	4	—	30	16	6	2	2	2	5
cow	—	—	—	21	4	2	4	5	5	4
pig	—	—	—	2	1	1	2	—	—	—
dog	—	—	—	1	—	—	—	—	—	—
awls	—	—	1	1	—	—	—	—	—	—
Shell	—	3	—	—	3	—	—	—	—	—

APULIA

TABLE 6. La Quercia, Trench II (see p. 130)

<i>Depth (m.)</i>	<i>0</i>	<i>0.60</i>	<i>1.05</i>	<i>1.85</i>	<i>2.45</i>	<i>2.90</i>	<i>3.20</i>
'Corvo' painted	5	5	6	—	—	—	—
polychrome	—	1	—	—	—	—	—
Fine buff	4	6	4	—	—	—	—
Dark burnish	2	4	5	1	1	1	—
Scratched	6	—	5	3	1	1	—
'Quercia' painted	80	68	139	66	39	19	—
+ rocker	28	28	91	31	33	18	—
+ incised	1	—	4	6	3	1	—
+ impressed	1	—	—	—	1	3	—
+ scratched	—	—	1	1	—	—	—
broad painted	—	—	2	—	—	—	—
+ rocker	—	—	—	1	1	—	—
Rocker	44	13	47	30	29	52	—
+ incised	2	1	—	—	3	1	—
+ impressed	—	—	1	—	—	—	—
+ both	—	—	—	1	—	—	—
+ scratched	—	1	—	—	—	—	—
Incised	26	13	37	30	32	8	—
+ impressed	—	—	—	—	1	—	—
Impressed	8	2	5	6	18	5	—

TABLE 7. La Panetteria (see p. 137)

	<i>Inner</i>	<i>Ditch Junction</i>			<i>Eastern</i>
	<i>Compound</i>	<i>0.45 m.</i>	<i>0.55 m.</i>	<i>0.65 m.</i>	
Flint	6	—	—	—	—
Daub	4	3	—	—	—
'Corvo' painted	21	—	5	15	4
rim painted	3	—	—	1	—
Dark burnished	28	—	4	9	11
Light burnished	5	—	—	7	—
Coarse	94	22	20	18	29
Scratched	1	—	—	—	—
'Quercia'	1	—	—	—	—

TABLE 8. Lucera Castle Trench I (see p. 144)

	<i>Level</i>		
	<i>N.1</i> 3'30 m.	<i>N.2</i> 3'45 m.	<i>N.3</i> 3'75 m.
Scratched ware	—	—	1
Light burnished and scratched	—	—	1
Light burnished	15	1	5
Dark burnished	6	—	—
Impressed	—	—	11
Coarse	35	11	12
Pattern burnished	—	—	1
'Quercia' + rocker pattern	—	—	1
'Corvo'	3	—	1
Impressed cordon	1	—	—
Obsidian	1	—	—
Flint	3	—	10

TABLE 9. Lucera Castle, Neolithic pit (see p. 144)

<i>Depth (m.)</i>	0'50	1'00
Scratched ware	—	1
Light burnished and scratched	5	—
Light burnished	2	1
Dark burnished	1	—
Impressed	1	—
'Corvo'	—	3
Impressed cordon	—	1
Coarse	2	9
Flint	1	—

APPENDIX II

HUMAN SKELETAL REMAINS

The skeletal material from Passo di Corvo (198)

By G. Danby¹

The material includes fragments of four crania, a number of shafts of long bones, parts of one mandible and two maxillae, three largely complete malars and a number of very small fragments, some of them identifiable but of little value from a morphological point of view. In general the surface of the bone was sufficiently eroded to make identification of all but major muscle attachments difficult.

Number of individuals and age

The minimum number of individuals represented is four to three adults and one child of approximately 11 years. Portions of two mature skulls were aged by degrees of suture closure and size. The third adult was represented by a fragment of the right parietal. The child's age was indicated by a partially erupted canine tooth in a fragment of maxilla which was associated with a frontal bone and a fragment of parietal.

Sex

No reliable evidence as to sex is available. The parietal fragments of Skull No. 2 are rather more heavily ossified than those of Skull No. 3 and this difference is present in two pairs of femurs. Skull No. 3 shows considerable prominence in the glabella region, but the mastoid processes are not very large. This cranium is associated with a fully adult mandible of exceptionally small size which is almost certainly female. The mandibular fossae are absent, but fragments of maxilla associated directly with the cranium appear to match the lower dental arcade still *in situ* in the mandible. There is some evidence, therefore, that Cranium No. 3 may be female and Cranium No. 2 male, but this evidence is very far from conclusive.

Stature

No exact estimate of stature is possible owing to the incompleteness of the long bones, but the lengths of the femur and humerus shafts suggest medium height in the 155 – 164 cm. range.

Group characteristics

Many of the bone fragments show fragility of form, although it is difficult to know how greatly the physical condition of the bone in the state in which it has survived exaggerates this impression. The long-bone shafts are certainly slender. The femora show platymeria of a marked kind (platymeric index 70) and they combine quite heavy pilasters with slender shafts, a condition which results in an unusually high pilasteric index (111). The tibiae show platycnemia, with an index of 72 – 74. The humeri show some bowing of the type attributed by Cameron to the use of the sling, but here of doubtful significance.

The only evidence as to the head form of the specimens is derived from Cranium No. 3, which was partially reconstructed from a great many fragments. This cranium yields a cranial index of 79 – 80

(glabella-occipital length (?) 176 mm.; maximum parietal breadth (?) 141 mm.), and it shows a slight occipital boss of the kind quoted by Cameron as typical of the western Mediterranean Neolithic people. This single cranium can give no indication as to the characteristic head form of the local population, but it yields further evidence that the western Mediterranean Neolithic people were not exclusively long-headed. Brachycephals have been reported from other Neolithic sites in Italy (Volterra, Livorno) and Sicily.

There is not much evidence as to face form. Three malars display differences which indicate considerable variation in the shape of the face. The fragments of upper and lower dental arcades suggest small palates, as also do the exceptionally small teeth. Only one tooth showed dental caries and in one fragment of maxilla the second incisors are missing. The bone is fully healed and it is impossible to say whether these teeth were extracted, were lost as a result of caries, or failed to erupt. The root of the nose was not much depressed and the bridge was probably high. The suggestion is that these people had rather small faces of variable breadth and shape.

Summary

The two adults most fully represented in this material were probably of medium height, lightly boned but quite well muscled. One was certainly medium- to round-headed. Marked platymeria and platycnemia were present.

The skeletal material from Fonteviva

By C. B. Denston²

The skeletal remains received for examination consisted of two adult individuals and one immature individual. All the remains were rather fragmentary, the immature bones being more so than the adults. The bones of the adults displayed varying degrees of erosion, with the erosion being more marked on the bones of Individual 2, especially on the endocranial surface of the cranium. The bones were repaired insofar as this was possible before beginning the preparation of this report, though with the exception of one mandible none of the bones was complete.

The standard biometric measurements have been taken wherever possible, and along with the non-metrical features are recorded on the laboratory information sheets which are available for study in the archives. None of the long bones was complete, so the approximate statures of the adult individuals could not be estimated, but from the length of the shafts of the long bones it would appear the individuals were not tall, and a very tentative estimate of their stature would be in the 5 ft. to 5 ft. 6 in. range. Measurements of the skull and limb bones were taken according to the techniques of Buxton and Morant (1933), Morant (1936) and Mukherjee, Rao and Trevor (1955).³

Individual 1. Duckworth Laboratory No. Eu. 42.5.6.

Material

A cranium with the facial and basal portions rather fragmentary; a mandible with the left ramus missing; fragmentary shafts of femora, tibiae, and humeri; a few metacarpals, metatarsals and phalanges, one or two of which were complete but most of which were fragments; and a few fragments of scapulae.

Sex

Female? The morphological features were slightly more in favour of the skull belonging to a female

individual than to a male. Comparing it with that of Individual 2, which was overwhelmingly female, this skull was less feminine, and the shafts of the long bones were slightly more robust. If the pelvis had been preserved with these remains the sex could perhaps have been ascertained, but in the absence of it and the fact that some doubt arose about the sex, the evidence that the individual was a female is far from conclusive.

Age at death

35 – 45 years. This estimate of age at death was based mainly on the state of eruption and attrition of the teeth, but consideration was also given to the degree of suture closure of the cranium. No real conflict occurred between the estimates of age ascertained from the teeth and suture closure, though if no teeth had been present the upper limit of the age range based on degree of suture closure may have been up to 50 years.

Stature

No exact estimate of stature was possible owing to the incompleteness of the long bones.

General pathology

None.

Dental pathology

Fourteen teeth were *in situ* in the mandible, the two third molars never having formed (congenital absence). In the maxilla twelve teeth were *in situ*, gaps being present where the lateral incisors should have been, these teeth either having not formed during life, or having erupted and been lost *ante-mortem*. The area of the maxilla where the two third molars would have been accommodated was not preserved, so it was not possible to say whether the teeth had been present or congenitally absent as in the mandible. The teeth were small, as also were the dental arcades. Both first maxillary molars displayed a marked degree of wear at the mesial aspect of the occlusal surface, especially the right molar, and from evidence of a small carious cavity in the neck of the second right premolar which would have been in contact with the molar tooth it seems very possible that the erosion that could be seen was the result of carious decay. No other caries were noted in either the maxillary or mandibular teeth, but periodontal disease of slight to medium degrees was evident along the alveolar borders. The dentition when occluded had an edge-to-edge bite; also slight deposits of calculus adhered to some of the teeth.

Non-metrical features

A routine inspection of parts of the skull preserved revealed only slight bilateral tori of the mandible.

Summary

The cephalic index of the cranium was 76.6, putting it at the lower range of mesocephaly, and, viewed from the *norma verticalis* position, it displayed the form known as pentagonoid. It also displayed an occipital 'bun', or boss, and the frontal bone ascended vertically from the nasion. One femur shaft was complete enough to enable the anterior-posterior, and lateral diameters to be recorded, and the resulting index of the two measurements came in the range of platymeria. Platymeria is anterior-posterior flattening of the shaft just below the greater trochanter. Various explanations have been suggested to account for this antero-posterior flattening of the shaft; one school of thought is that it has nutritional causes, and another mechanical causes. Whatever the sex

of these remains, the individual they represent was not very tall; a tentative estimate of stature would be between 5 ft. and 5 ft. 6 in., possibly the latter half of the range being a more correct estimate. If the remains were of a male individual, he certainly would not have been a very robust person, taking account of the smallness of the skull and long bones, and lack of prominent areas for muscle attachment.

Individual 2. Duckworth Laboratory No. Eu. 42.5.7.

Material

A calotte (cranium minus facial portion, and base): a nearly complete mandible, fragmentary shafts of femora, tibiae, humeri, fibulae, radii, ulnae and two fragmentary clavicles.

Sex

Female. The morphological features suggested overwhelmingly that the skull was that of a female individual, this being supported by the smallness and gracility of the postcranial bones.

Age at death

35 – 45 years. The attrition of the teeth was very similar in pattern to that of Individual 1, and also, as with the previous cranium, no real conflict occurred between the estimates of age ascertained from the appearance of the teeth and suture closure.

Stature

No exact estimate of stature was possible owing to the incompleteness of the long bones.

General pathology

None.

Dental pathology

Eleven teeth were *in situ* in the mandible, with the two central incisors having been lost *ante-mortem*. Another possible *ante-mortem* loss was most of the third left molar tooth, all that was left *in situ* being the anterior root. *Post-mortem* loss had accounted for the right lateral incisor and the second left molar, both of the mandible. Only four maxillary teeth were preserved, these being the two left premolars, the first left molar, and the first right molar. As with Individual 1, the dental arcade was small and so were the teeth. Caries had affected three molar teeth of the mandible. The action of caries had eroded away nearly half of the second right molar, and all that was left of the third left molar was a carious root. The third right molar had not received such harsh treatment, but had a fair-sized hole in the mesial aspect of the neck. Resorption of the alveolar borders of the mandible suggested an extensive degree of periodontal disease, and it is very possible that abscesses had occurred in the root sockets of two of the left molars and one right molar. The teeth to the front of the mandible were rather overcrowded, and this might have been the reason for the *ante-mortem* loss of the medial incisors.

Non-metrical features

The only features to come under this heading were a few small wormian bones in the lambdoid suture.

Summary

The cephalic index of this cranium came to 74.6, which is in the higher range of dolicocephalic, and the head form viewed from *norma lateralis* was again pentagonoid. An occipital boss was again present, but not so prominent as on the previous cranium, and again the frontal bone ascended vertically from

the nasion. Both femur shafts displayed platymeria, which was more pronounced than in the femur shaft of Individual 1. From the length of the shafts of the long bones of this individual it would appear that the stature would be about the same as for the previous individual.

Individual 3. Duckworth Laboratory No. Eu. 42.5.5.

Material

Fragments of a cranium, and a fragmentary mandible; fragments of shafts of long bones, and also small fragments of various other postcranial bones including vertebrae.

Sex

Indeterminable.

Age at death

6–7 years. This estimate of age at death was based entirely on the state of eruption of the deciduous dentition, and the state of eruption and attrition of two first permanent molar teeth in the fragmentary mandible.

APPENDIX III

OCCUPATION PERIODS ESTABLISHED FOR MAJOR APULIAN SETTLEMENTS

<i>Location</i>	<i>Prehistoric</i>	<i>Daunian</i>	<i>Roman</i>		<i>Medieval</i>
			<i>Late Republican</i>	<i>Imperial</i>	
Arpi	*	*	*	*	
Ascoli Satriano		*	*	*	*
Candelaro					*
Canosa		*	*	*	*
Casa Brancia					*
Il Casone	*	*	*	*	*
Castellaccio					*
Castiglione			*	*	*
Dragonara			*	*	*
Fazioli				*	*
Foggia					*
La Guardiola					*
Lucera	*	*	*	*	*
Manfredonia					*
Motta del Lupo I					*
Motta del Lupo II		*	*		
Motta della Regina	*			*	*
Ortona		*	*	*	*
Petrulla					*
Salpi I		*	*	*	*
Salpi II	*		*	*	*
S. Andrea				*	*
S. Cecilia				*	*
Teanum		*	*	*	*
Terteviri	*				*
Torre di Lama	*	*	*	*	*
Torretta di Sezze					*
Tressanti				*	*
Tressanti Earthwork		*	*		*

APPENDIX IV

SETTLEMENT STATISTICS (compiled by K. Maude)

<i>Site number</i>	<i>Class</i>	<i>Main enclosure diam. (m.)</i>	<i>Area (sq. m.)</i>	<i>No. of compounds</i>	<i>External enclosure diam. (m.)</i>	<i>Total area (sq. m.)</i>	<i>Compound orientation</i>
1	II	240	45,238	14	—	—	—
2	I	135	14,313	6	—	—	—
3	I	110	9,503	3	—	—	—
4	I	120	11,309	—	—	—	—
5	III	340	90,792	9	—	—	—
6	I	105	8,659	1	—	—	—
7	I	80	5,026	1	—	—	—
8	?	—	—	—	—	—	—
9	?	—	—	12	—	—	—
10	?	—	—	—	—	—	—
11	?	—	—	—	—	—	—
12	?	—	—	—	—	—	—
13	II	228	40,828	2	—	—	—
14	I	167	21,903	several	—	—	—
15	I	94	6,939	4	—	—	—
16	I	130	13,273	1	—	—	W
17	I	170	22,698	—	—	—	—
18	I	160	20,106	—	—	—	—
19	IV	502	197,923	several	694	378,276	—
20	IV	540	229,022	—	740	430,084	—
21	I	133	13,892	5	177	24,605	—
22	I	53	2,206	—	—	—	—
23	I	32.5	—	—	65	3,318	—
24	?	—	—	—	—	—	—
25	I	71	3,959	—	—	—	—
26	I	92	6,647	3	228	49,828	—
27	I	36	1,017	—	—	—	—
28	I	89	6,221	—	—	—	—
29	II	280	61,575	several	—	—	N
30	?	—	—	—	—	—	—
31	II	230	41,547	13	—	—	SW
32	?	—	—	—	—	—	—
33	I	120	11,309	34	—	—	—
34	?	—	—	6	—	—	—
35	I	258	26,139	11	312	38,225	—
36	I	76	4,536	6	—	—	SW
37	I	56	2,463	1	—	—	—
38	I	175	24,052	—	—	—	—
39	II	280	61,575	several	840	554,176	W or NW
40	I	64	3,216	—	325	82,957	—
41	I	91	6,503	—	—	—	—
42	III	325	82,957	—	—	—	—

APPENDICES

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Appendix IV — cont.

<i>Site number</i>	<i>Class</i>	<i>Main enclosure diam. (m.)</i>	<i>Area (sq. m.)</i>	<i>No. of compounds</i>	<i>External enclosure diam. (m.)</i>	<i>Total area (sq. m.)</i>	<i>Compound orientation</i>
43	III	320	80,424	—	—	—	—
44	I	207	33,653	—	—	—	—
45	I	71	3,959	—	—	—	—
46	III	363×285	82,447	10	—	—	NW
47	I	78	4,778	—	187×148	22,035	—
48	I	141	15,614	—	—	—	—
49	I	199	31,102	10	—	—	—
50	IV	520×390	162,597	25	—	—	—
51	I	192	28,952	—	—	—	—
52	I	79	4,901	—	—	—	—
53	I	192	28,952	4	—	—	—
54	I	70	3,848	3	130	13,273	—
55	I	50	1,963	—	88	6,082	—
56	I	143	16,060	—	260	53,092	—
57	I	150	17,671	—	—	—	—
58	I	200	31,415	—	—	—	—
59	I	143	16,060	—	—	—	—
60	III	328	84,496	—	—	—	—
61	I	177×60	11,000	—	—	—	—
62	I	160×90	12,270	—	—	—	—
63	II	285	63,790	—	—	—	—
64	II	235	43,373	5	330	85,529	—
65	?	300	—	—	—	—	—
66	?	600	—	—	—	—	—
67	?	400	—	—	—	—	—
68	II	290×210	49,087	—	—	—	—
69	I	170	22,698	—	—	—	—
70	I	210	34,636	—	—	—	—
71	III	450×210	85,529	—	490×250	107,520	—
72	II	384 semicirc.	57,905	—	744 semicirc.	217,373	—
73	?	—	—	—	—	—	—
74	I	190	28,352	1 main & others	—	—	S
75	I	220×140	25,446	6	—	—	SW
76	I	110	9,503	1 main & others	—	—	SW
77	I	160	20,106	8+	—	—	SW
78	I	170	22,698	—	—	—	—
79	I	110	4,751	—	—	—	—
80	I	210	34,636	—	—	—	—
81	I	180	25,446	—	—	—	—
82	I	180	25,446	1	—	—	—
83	?	—	—	—	—	—	—
84	?	—	—	—	—	—	—
85	I	80	5,026	—	—	—	—
86	I	180	25,446	—	—	—	—
87	I	170	22,698	—	—	—	—
88	I	200	31,415	—	—	—	—

Appendix IV — cont.

<i>Site number</i>	<i>Class</i>	<i>Main enclosure diam. (m.)</i>	<i>Area (sq. m.)</i>	<i>No. of compounds</i>	<i>External enclosure diam. (m.)</i>	<i>Total area (sq. m.)</i>	<i>Compound orientation</i>
89	I	200	31,415	—	—	—	—
90	I	300×250	59,395	—	—	—	—
91	II	220	38,013	—	—	—	SW
92	?	—	—	—	—	—	SW
93	I	140	15,393	—	—	—	—
94	I	95	7,088	—	—	—	—
95	I	180	25,446	—	—	—	—
96	I	240×130	26,880	—	—	—	—
97	I	110	9,503	—	170	22,698	—
98	I	140	15,393	—	—	—	—
99	I	70	3,848	—	—	—	—
100	I	110	9,503	—	—	—	—
101	I	75	4,417	—	—	—	—
102	I	160	20,106	—	—	—	—
103	I	120	11,309	—	—	—	—
104	?	—	—	—	—	—	—
105	I	180	25,446	—	—	—	—
106	I	90	6,361	—	—	—	—
107	I	75	4,417	—	170	22,698	—
108	I	200	31,415	—	—	—	—
109	I	110	9,503	—	—	—	—
110	I	90	6,361	—	—	—	—
111	?	—	—	—	—	—	—
112	I	95	7,088	—	—	—	—
113	I	200	31,415	—	—	—	all directions
114	I	116	10,568	2	216	36,643	—
115	I	105	8,659	—	—	—	—
116	?	—	—	—	—	—	—
117	?	—	—	—	—	—	—
118	?	—	—	—	—	—	—
119	?	170	22,698	—	—	—	—
120	II	150	17,671	—	—	—	—
121	I	115	10,386	4	—	—	N
122	I	190	28,352	—	—	—	S
123	I	135	14,313	—	—	—	—
124	I	180	25,446	—	—	—	—
125	II	280	61,575	—	—	—	—
126	I	185	26,880	—	—	—	—
127	I	170	22,698	4	—	—	—
128	I	160	20,106	—	—	—	—
129	I	155	—	—	—	—	—
130	I	220	38,013	—	—	—	—
131	I	120	11,309	—	160	20,106	—
132	I	140	15,393	—	—	—	—
133	I	80	5,026	—	—	—	—
134	I	95	7,088	—	—	—	—
135	I	160	20,106	—	—	—	—

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Appendix IV — cont.

<i>Site number</i>	<i>Class</i>	<i>Main enclosure diam. (m.)</i>	<i>Area (sq. m.)</i>	<i>No. of compounds</i>	<i>External enclosure diam. (m.)</i>	<i>Total area (sq. m.)</i>	<i>Compound orientation</i>
136	I	180	25,446	—	—	—	—
137	I	200	31,415	—	—	—	—
138	I	105	8,659	—	—	—	—
139	II	260	53,092	—	—	—	W
140	I	150	17,671	—	—	—	—
141	I	185	26,880	—	—	—	—
142	I	200	31,415	—	—	—	—
143	I	140	15,393	—	—	—	—
144	I	140	15,393	—	—	—	—
145	I	120	11,309	—	—	—	W
146	I	135	14,313	8	—	—	W
147	I	140×80	9,503	—	—	—	—
148	I	130	13,273	—	—	—	—
149	I	200	31,415	—	—	—	—
150	I	160	20,106	—	—	—	—
151	I	200	31,415	—	—	—	—
152	I	130	13,273	—	—	—	—
153	I	90	6,361	—	—	—	—
154	I	180×130	18,869	—	—	—	—
155	II	285	63,793	—	—	—	—
156	I	200	31,415	—	—	—	—
157	I	190	28,352	—	—	—	—
158	I	175×110	15,948	—	—	—	—
159	I	85	5,674	—	—	—	—
160	?	—	—	—	—	—	N
161	I	245×198	—	—	—	—	—
162	I	196×154	—	2	291×223	51,874	—
163	I	85	5,674	—	—	—	—
164	I	85	5,674	—	145	16,512	—
165	?	—	—	—	—	—	—
166	?	—	—	—	—	—	—
167	I	180	25,446	—	—	—	N
168	I	170	11,349	—	—	—	—
169	?	—	—	—	—	—	—
170	I	160	20,106	—	—	—	—
171	?	—	—	—	—	—	—
172	III	380	113,411	—	—	—	—
173	?	—	—	—	—	—	—
174	I	200	31,415	—	—	—	—
175	II	280	61,575	—	360	101,787	—
176	I	100	7,853	—	—	—	—
177	I	140	15,393	1 large & others	—	—	SW
178	?	—	—	—	—	—	—
179	II	320×270	68,349	—	—	—	—
180	?	—	—	—	—	—	—
181	I	80	5,026	—	114	10,207	—
182	II	329×285	66,966	2	—	—	—

Appendix IV — cont.

<i>Site number</i>	<i>Class</i>	<i>Main enclosure diam. (m.)</i>	<i>Area (sq. m.)</i>	<i>No. of compounds</i>	<i>External enclosure diam. (m.)</i>	<i>Total area (sq. m.)</i>	<i>Compound orientation</i>
183	I	213×203	33,979	—	267×246	51,673	—
184	I	289×235	53,912	—	—	—	—
185	?	—	—	—	—	—	—
186	I	86×67	4,596	—	—	—	—
187	II	306×242	58,964	—	—	—	—
188	I	195×168	25,872	—	314×262	65,144	—
189	II	365×222	67,655	—	—	—	—
190	I	234×203	37,496	—	262×231	47,722	—
191	I	210×195	32,206	—	—	—	—
192	I	62×54	2,642	—	202×168	26,880	—
193	II	218×286	49,875	—	770×680	412,824	—
194	I	204×168	27,171	—	276×204	45,238	—
195	I	94	6,939	—	—	—	—
196	?	—	—	—	—	—	—
197	I	28·50	—	3	156	19,113	N
198	IV	730×460	278,050	90+	1,480	1,720,335	N
199	?	—	—	—	—	—	—
200	?	—	—	—	—	—	—
201	I	165	21,382	—	215	36,305	—
202	?	—	—	—	—	—	—
203	I	110×90	7,853	—	—	—	—
204	II	256	51,471	1	306	73,541	—
205	?	—	—	—	—	—	—
206	I	160	20,106	5	—	—	—
207	I	180	25,446	—	240	45,238	—
208	I	160	20,106	—	—	—	—
209	I	c.60×c.35	1,960	—	—	—	—
210	?	—	—	—	—	—	—
211	I	255×156	33,167	—	—	—	—
212	I	162×120	15,614	—	—	—	—
213	I	120	11,309	—	—	—	—
214	I	—	—	—	—	—	—
215	?	—	—	—	250	49,087	—
216	?	—	—	—	865	587,654	—
217	I	138	14,957	2	—	—	—
218	I	170	22,698	—	260	53,092	—
219	I	73	4,185	—	—	—	—
220	I?	—	—	—	—	—	—
221	?	—	—	—	—	—	—
222	?	200	31,415	—	—	—	—
223	II	270	57,255	—	—	—	—
224	I	97	7,389	—	—	—	—
225	?	—	—	—	—	—	—
226	?	—	—	—	—	—	—
227	I	50	1,963	—	140	15,393	—
228	?	—	—	—	—	—	—
229	III	350	96,211	—	—	—	—
230	I	150	17,671	—	—	—	—

Appendix IV — cont.

<i>Site number</i>	<i>Class</i>	<i>Main enclosure diam. (m.)</i>	<i>Area (sq. m.)</i>	<i>No. of compounds</i>	<i>External enclosure diam. (m.)</i>	<i>Total area (sq. m.)</i>	<i>Compound orientation</i>
231	?	—	—	—	—	—	—
232	I	180	25,446	4	240	45,238	—
233	I	150	17,671	6	—	—	N
234	I	120	11,309	—	330	85,529	—
235	?	—	—	—	750	441,786	—
236	?	—	—	—	—	—	—
237	?	—	—	—	—	—	—
238	—	—	—	—	—	—	—
239	—	—	—	—	—	—	—
240	—	—	—	—	—	—	—

APPENDIX V

TAVOLIÈRE SITES: RANK ORDER (compiled by K. Maude)

<i>Rank</i>	<i>Site no.</i>	<i>Size (sq. m.)</i>	<i>Rank</i>	<i>Site no.</i>	<i>Size (sq. m.)</i>	<i>Rank</i>	<i>Site no.</i>	<i>Size (sq. m.)</i>
RANK	SIZE	CLASS	I					
1	197	638	42	224	7,389	83	56	16,060
2	23	829	43	176	7,853	84	59	16,060
3	27	1,017	44	203	7,853	85	57	17,671
4	209	1,963	45	6	8,659	86	120	17,671
5	227	1,963	46	115	8,659	87	140	17,671
6	55	1,963	47	138	8,659	88	230	17,671
7	22	2,206	48	3	9,503	89	233	17,671
8	37	2,463	49	76	9,503	90	154	18,869
9	192	2,642	50	97	9,503	91	18	20,106
10	40	3,216	51	100	9,503	92	77	20,106
11	54	3,848	52	109	9,503	93	102	20,106
12	99	3,848	53	147	9,503	94	128	20,106
13	25	3,959	54	121	10,386	95	135	20,106
14	45	3,959	55	114	10,568	96	150	20,106
15	219	4,185	56	61	11,000	97	170	20,106
16	107	4,417	57	4	11,309	98	206	20,106
17	101	4,417	58	33	11,309	99	208	20,106
18	36	4,536	59	103	11,309	100	201	21,382
19	186	4,596	60	131	11,309	101	14	21,903
20	79	4,751	61	145	11,309	102	17	22,698
21	47	4,778	62	213	11,309	103	69	22,698
22	52	4,901	63	234	11,309	104	78	22,698
23	181	5,026	64	168	11,349	105	87	22,698
24	7	5,026	65	62	12,270	106	119	22,698
25	85	5,026	66	148	13,273	107	127	22,698
26	133	5,026	67	152	13,273	108	218	22,698
27	159	5,674	68	16	13,273	109	38	25,446
28	162	5,674	69	21	13,892	110	75	25,446
29	163	5,674	70	2	14,313	111	81	25,446
30	28	6,221	71	123	14,313	112	82	25,446
31	106	6,361	72	146	14,313	113	86	25,446
32	110	6,361	73	217	14,957	114	95	25,446
33	153	6,361	74	93	15,393	115	105	25,446
34	41	6,503	75	98	15,393	116	124	25,446
35	26	6,647	76	132	15,393	117	136	25,446
36	195	6,939	77	143	15,393	118	167	25,446
37	15	6,939	78	144	15,393	119	207	25,446
38	94	7,088	79	177	15,393	120	232	25,446
39	134	7,088	80	48	15,614	121	188	25,872
40	112	7,088	81	212	15,614	122	35	26,139
41	134	7,088	82	158	15,948	123	96	26,880

APPENDICES

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Appendix V — cont.

<i>Rank</i>	<i>Site no.</i>	<i>Size (sq. m.)</i>	<i>Rank</i>	<i>Site no.</i>	<i>Size (sq. m.)</i>	<i>Rank</i>	<i>Site no.</i>	<i>Size (sq. m.)</i>
124	126	26,880	147	183	33,979	168	175	61,575
125	141	26,880	148	70	34,636	169	63	63,793
126	194	27,171	149	80	34,636	170	155	63,793
127	74	28,352				171	182	66,966
128	122	28,352	RANK SIZE CLASS II			172	189	67,655
129	157	28,352	150	190	37,496	173	179	68,349
130	51	28,952	151	91	38,013			
131	53	28,952	152	120	38,013	RANK SIZE CLASS III		
132	49	31,102	153	13	40,828	174	43	80,424
133	58	31,415	154	31	41,547	175	46	82,447
134	88	31,415	155	64	43,373	176	42	82,957
135	89	31,415	156	1	45,238	177	60	84,496
136	113	31,415	157	68	49,087	178	71	85,529
137	137	31,415	158	193	49,875	179	5	90,792
138	142	31,415	159	204	51,471	180	229	96,211
139	149	31,415	160	139	53,092	181	172	113,411
140	151	31,415	161	184	53,912			
141	156	31,415	162	223	57,255	RANK SIZE CLASS IV		
142	174	31,415	163	72	57,905	182	50	162,597
143	222	31,415	164	187	58,964	183	19	197,923
144	191	32,206	165	29	61,575	184	20	229,022
145	211	33,167	166	39	61,575	185	198	278,050
146	44	33,652	167	125	61,575			

APPENDIX VI

ADDITIONAL SITES

By Keri A. Brown

During the course of a detailed re-examination of the aerial photographic evidence, a further sixteen prehistoric sites, ranging in size from the small Class I types to the Class IV site of Demanio, were discovered. They are listed below with some details of size and structure.

Area II

Borgo S. Giusto

241: ref. 334943

Ciuccariello I: a small univallate circular site 78 m. in diameter. A single large compound can be seen within.

242: ref. 329943

Ciuccariello II: adjacent to the previous site, a larger double-ditched settlement with numerous compounds within. The diameter between the external ditches is approximately 246 m. and the gap between the ditches is about 15 m. Details are obscured by Roman centuriation and the construction of the World War II aerodrome in this area.

Borgo Segezia

243: ref. 379824

S. Giusto Primo: a single-ditched site, the extent of which is uncertain owing to overlying olive groves and Roman centuriation. It is possible that a second, similar site is located a short distance to the east, as parts of a perimeter ditch can be seen. But this site is greatly obscured by centuriation.

Area III

Borgo S. Giusto

244: ref. 364883

Podere Cifeli: situated above the river Celone, this site belongs in the group found in the interfluvium of the rivers Celone and Vulgano. At 492 m. in length, it is larger than Masseria S. Marcello (**40**), but of a completely different structural form. Low-cover aerial photographs have not given any improvement in clarity of detail. However, the features seen include a sub-rectangular double ditch (triple ditches at the eastern end) and various compounds within. A possible entrance arrangement may be visible on the low-level aerial photograph, but too faintly to be certain of this interpretation.

*Foggia***245:** ref. 390905

Masseria Anglisano: a medium-sized double-ditched site of oval shape about 330 m. in length located near the river Celone, belonging to the S. Giusto group. Similar in size and form to Podere Cifeli (**244**). Various compounds can be seen within. There are confused indications of other sites nearby, obscured by centuriation and modern agriculture.

Area VI

*Castellucio de'Sauri***246:** ref. 455714

La Marina: a small, single-ditched site 120 m. in length west of Masseria Bongo (**71**). A few internal compounds are visible.

247: ref. 439717

Masseria Cisterna I: a single-ditched scarp edge site with numerous compounds, which are indistinct on the high-level cover available. It is approximately 239 m. in diameter.

248: ref. 441717

Masseria Cisterna II: 137 m. from the above site, this is also single-ditched with two square-shaped projections in the perimeter ditch. These may be some kind of entrance structure. Several compounds can be seen; however, it is probable that only a part of the total site is represented on the aerial photograph.

249: ref. 434716

Masseria Cisterna III: a simple circular site with a single ditch, 85 m. in diameter, with no internal features visible.

Area VIII

*Orta Nova***250:** ref. 645686

Masseria Pozzelle: this triple-ditched site approximately 150 m. in diameter has several interesting features. The innermost ditch seems to have had an annexe added to it, the whole surrounded by a further ditch (compare with the sequence of development at S. Marcello, **40**). The annexe has a small bulge on its eastern side, possibly indicating an entrance structure. There seem to be no compounds present in the interior. Neolithic pottery has been collected on or near the site (Tinè 1983, 28).

Area X

*Borgo Liberta***251:** ref. 653646

Forcone di Grillo II: a single-ditched, circular site can be seen, but the quality of the high-level air cover of this area does not allow any further details to be discerned.

252: ref. 654639

Forcone di Grillo I: another single-ditched circular site, but again further details are difficult to distinguish from the only available high-level aerial photograph.

Area XII

Salpi

253: ref. 863814

Masseria Anzani: several compound ditches can be seen, but no traces of an external perimeter ditch are apparent (compare with La Lamia, **73**). The full extent of this settlement is difficult to determine owing to the presence of later field systems (Roman and/or medieval) and modern agriculture.

Area XIV

Foggia

254: ref. 441911

Ospital: single-ditched circular site, approximately 216 m. in diameter. No traces of internal structures can be seen.

Area XV

Villaggio Amendola

255: ref. 490959

Posta Campanella: traces of a single-ditched site with internal compounds can be seen. Other details are obscured by modern agricultural activities, as at another site on the north side of *Masseria Donadone* (515995).

Area XVIII

S. Severo

256: ref. 370155

Demanio: faint traces of a very large double-ditched enclosure can be seen, partially obscured by olive groves. It is approximately 930 m. in width, and is 3.75 km. north-west from Madonna del Oliveto (**235**). Thus the three largest sites around S. Severo, Motta del Lupo, Madonna del Oliveto and Demanio, form a line, perhaps indicating settlement shift. In any case, it is doubtful whether these three sites were contemporary with one another. Neolithic sherds have been collected from the surface at Demanio (Tinè 1983, 26), and the probability is that it represents the site of Bradford's first trial excavation of a Neolithic site, while he was stationed nearby at the Air Photographic Intelligence Unit. Bradford refers to this site as Vignate Fraccacreta (p. 117), but no record of his results appears to have survived.

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NOTES

(See also *Select Bibliography*, p. 223)

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2. That this is still the case, see J. Bethemont and J. Pelletier, *Italy. A Geographical Introduction* (London, 1983), 165–6.
3. Including the British Academy; the 20th International Geographical Congress Fund; the L. Dudley Stamp Memorial Fund; the University of Nottingham. To all of these, I am most grateful.
4. Summarized in C. Delano Smith, *Western Mediterranean Europe* (London, 1979). My publications most relevant to the prehistoric Tavoliere are: Delano Smith 1975; 1978; 1983; 'The Tavoliere of Foggia: an aggrading coastland and its early settlement patterns', *Geoarchaeology: Earth Science and the Past*, ed. D. A. Davidson and M. L. Shackley (London, 1976), 197–212; 'Sfruttamento dei terreni agricoli e fattore socio-economici dell'agricoltura preistorica e romana in Capitanata', *Rassegna di Studi Dauni* (Foggia), iv (1976), 5–16; 'Tell-tale snails', *Geographical Magazine*, xxx (1976), 210–22; 'Coastal sedimentation, lagoons and ports in Italy', *Papers in Italian Archaeology*, ed. H. Mc.K. Blake, T. W. Potter and D. B. Whitehouse, BAR S41 (Oxford, 1978), i, 239–47; 'Valley changes: some observations from recent field and archive work in Italy', *Archaeology and Society. Prehistoric, Roman and Medieval Studies*, ed. G. Parker and R. Hodges, BAR S102 (Oxford, 1981), 239–47; Delano Smith and Smith 1973; Delano Smith and I. A. Morrison, 'The buried lagoon and lost port of Sipontum (Foggia, Italy)', *J. Nautical Archaeology*, iii, 2 (1974), 275–81.

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10. M. A. Morgan, 'Overland flow and man', in *Water, Earth and Man*, ed. R. J. Chorley (London, 1969), 239–58.
11. See discussion, pp. 13 and 19, and pls. 12 and 13 in Tinè 1983, concerning the effect of highly localized flooding and consequent silting after three days of rain in August 1979.
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14. The evidence at Passo di Corvo for relatively moist conditions during the 'climatic optimum' of the early Neolithic (rubified soils) is discussed by Delano Smith in Tinè 1983, 20.
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16. Based on J. H. von Thünen's ideas (1826) expressed most lucidly by Chisholm, 1962, and applied to a prehistoric context by C. Delano Smith, 'Late Neolithic settlement, land-use and Garrigue in the Montpellier region', *Man*, vii (1972), 397–407. Subsequent archaeological adoptions of the model (site catchment analysis) have tended to miss the point, being too rigid in their measurement of radii and insisting on a highly theoretical *circular* zonation rather than an empirical consideration of local contexts and historic parallels (which point to linear territories as often the most

- convenient shape to ensure the inclusion of land of contrasting ecological characteristics and economic possibilities). However, see Delano Smith 1978, pl. 13 and Andrew Sargent's territorial analysis of some Tavoliere sites in Cassano and Manfredini 1983.
17. Figure based on Bradford's list with additions up to 1978; see Delano Smith 1978, 105–8.
 18. Quagliatti 1936, 96–7.
 19. For an imaginative reconstruction, based on the house outline excavated in 1978 at Passo di Corvo, see Tinè 1983, pl. 57. For a comment on this, however, see Whitehouse 1986, 38.
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 22. Delano Smith 1979 (see foreword, note 4).
 23. Kindly made available by Santo Tinè, to whom I am most grateful.

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3. Ridola 1924.
4. See, for example, Masseria Cascavilla (194).
5. See p. 114; and Palma di Cesnola 1954, 1955, 1957 and *RSP*, xiii (1958), 71 ff.
6. See also now Tinè 1983, 124.
7. Pliny, *Geog.* iii.16.103.
8. Bradford and Williams-Hunt 1946, 193.
9. Pliny, *loc. cit.* (note 7).
10. See also Bradford and Williams-Hunt 1946, 196, pl. 1A.
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14. Notes of work in progress at various Palaeolithic sites on the Gargano: A. Palma di Cesnola, *RSP*, viii (1953), 199 f.; *id.* and F. Mancini, *RSP*, xi (1956), 242 f.; F. Zorzi, *RSP*, xii (1957), 272 f.; A. Palma di Cesnola, *RSP*, xiv (1959), 310 f.; F. Zorzi, *RSP*, xvi (1961), 256 f.; *id.* and F. Mezzena, *RSP*, xvii (1962), 286 f., and *RSP*, xviii (1963), 313 f.
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2. See p. 121.
3. See p. 162.
4. See pp. 150 and 162.
5. See p. 207.
6. P. A. Jewell and G. W. Dimbleby in *Experimental Archaeology*, ed. D. Ingersoll, J. E. Yellen and W. MacDonald (Columbia University Press, New York, 1977), 193–227.
7. Rellini 1934a, 75, and 1936–7.
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13. L. Bernabò-Brea, *Meligunis-Lipara*, i (Palermo, 1960).
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2. Manfredini 1968, 116 ff.; see now also Cassano and Manfredini 1983.
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4. Stevenson 1947.
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6. Whitehouse 1968a, 1968b, 1969 and other works cited in the Bibliography.
7. Alessio *et al.* 1969. For other discussion of the dates see further Whitehouse, *op. cit.*, and A. Sargent, *PPS*, li (1985), 31–40.
8. Puglisi 1975a; Jarman and Webley 1975.
9. The writer is particularly indebted to Messrs K. Maude, J. Walker and G. Briggs for the calculations that have contributed to this study, as well as to Drs G. W. W. Barker and D. G. Coombs for discussion of their implications.
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a. The edge of the Gargano massif and the start of the Tavoliere looking south from La Brancia east of S. Severo



b. The marshes along the edge of the Gulf of Manfredonia as seen from the northern edge of the prehistoric, Roman and medieval site at Salpi. The Gargano is faintly visible on the horizon



b

- a. La Panetteria III (3)
- b. Masseria Mantovano I and II (6 and 7)



a

PLATE III

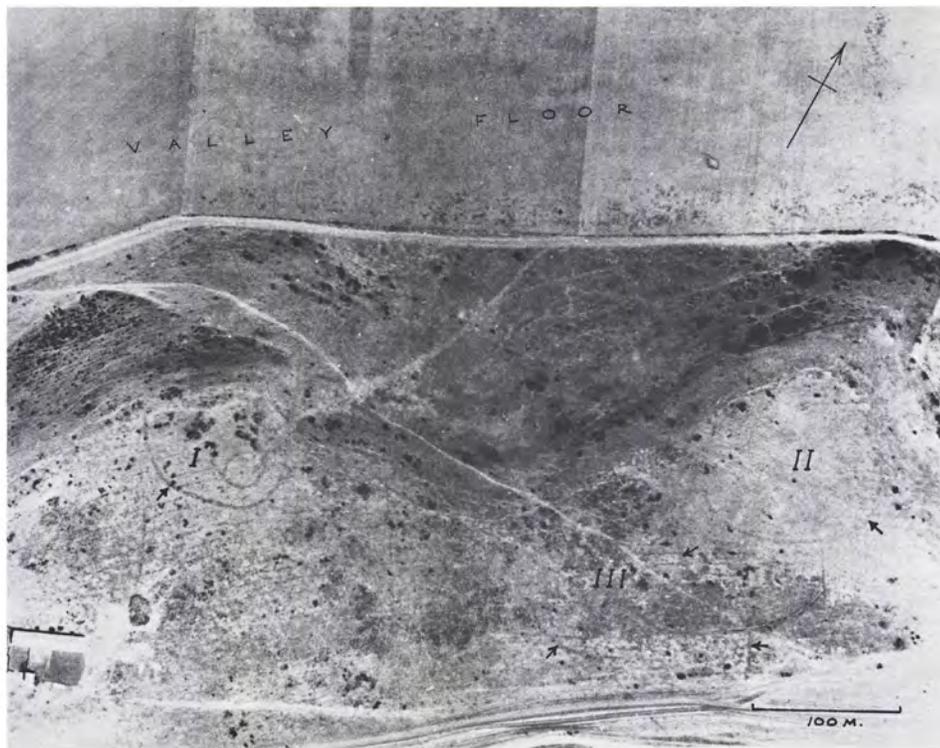


a. Motta della Regina (9)



b. Masseria Acquasalsa I (13)

PLATE IV



a. Il Posticchio I, II and III (16, 17 and 18)



b. Masseria Palmori I (20)

PLATE V



Masseria Schifata (19)

PLATE VI

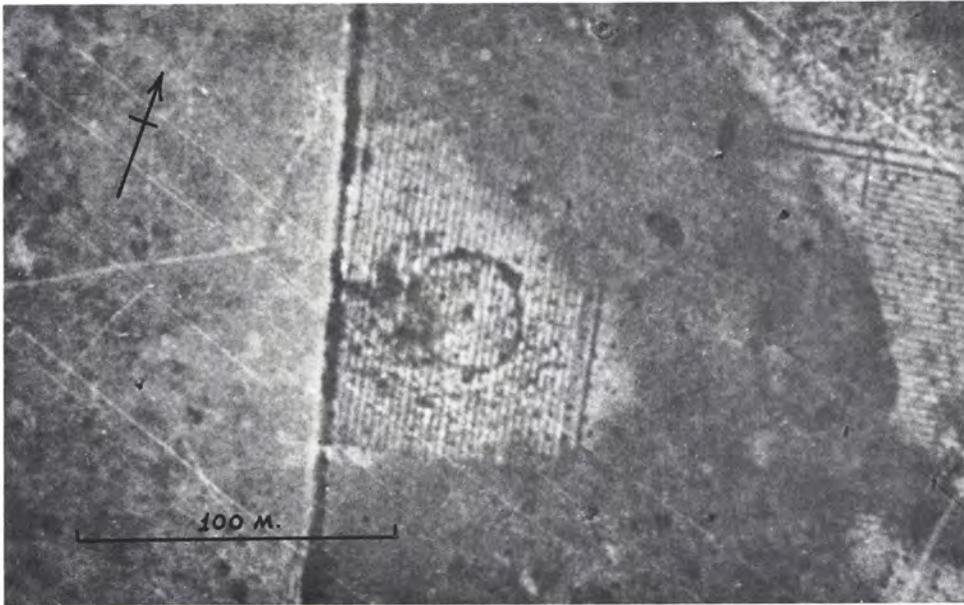


a. Masseria Melillo (25)



b. Posta Villano (26)

PLATE VII



a. Masseria Villano I (27)

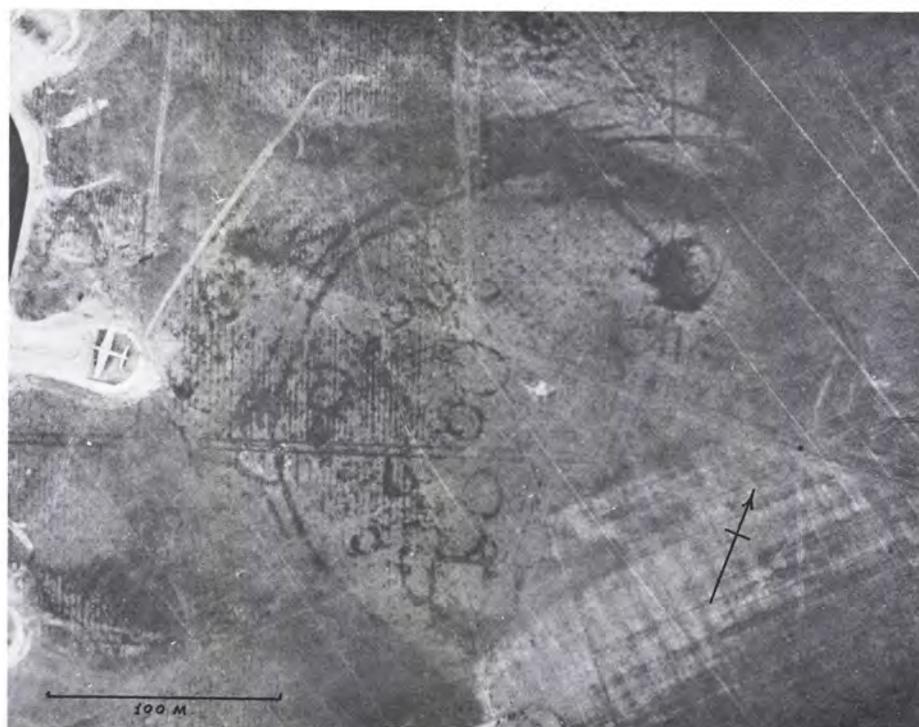


b. Masseria Villano II and III (28 and 29)

PLATE VIII



a. Masseria Villano IV (30)

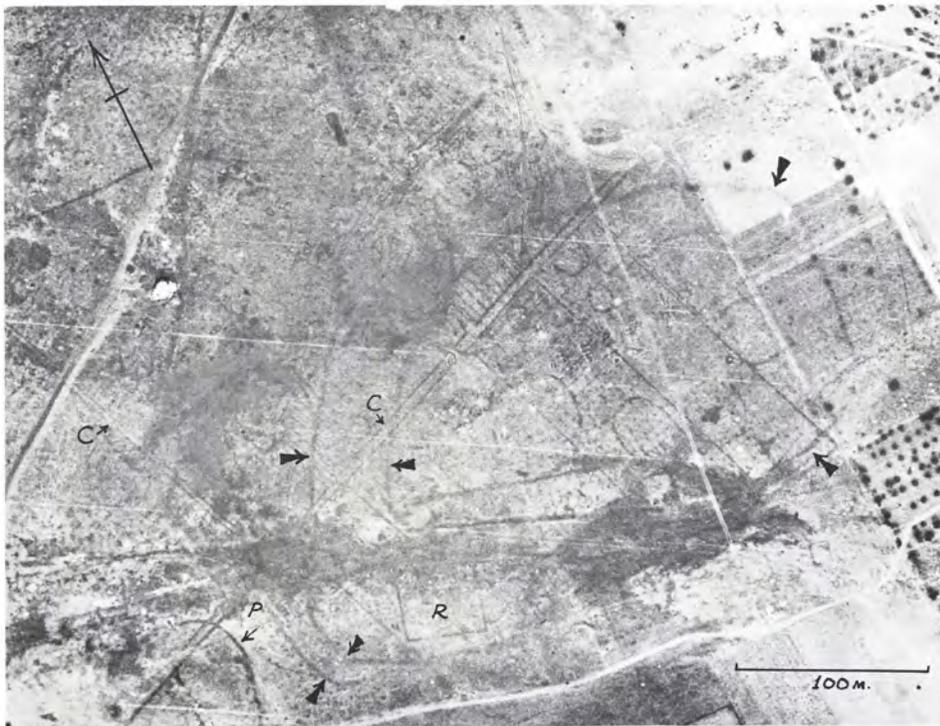


b. Posta di Colle (31)

PLATE IX



a. Lucera South-East (II), ditch section



b. Masseria Martelli I (35)

PLATE X



b. Masseria Fragella, detail



a. Masseria Fragella (39)

PLATE XI



The Borgo S. Giusto area



b. Casella Anticaglia (44)



a. Masseria S. Marcello (40)

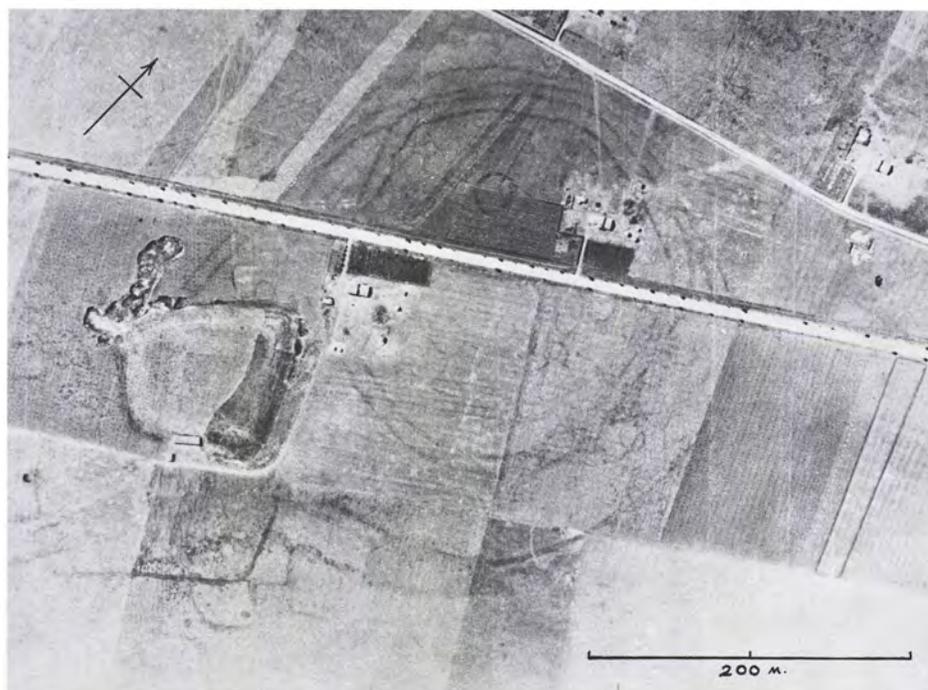


Troia East: the S. Cecilia - Panetteria di Barone area

PLATE XIV



a. Panetteria di Barone I and II (46 and 47)

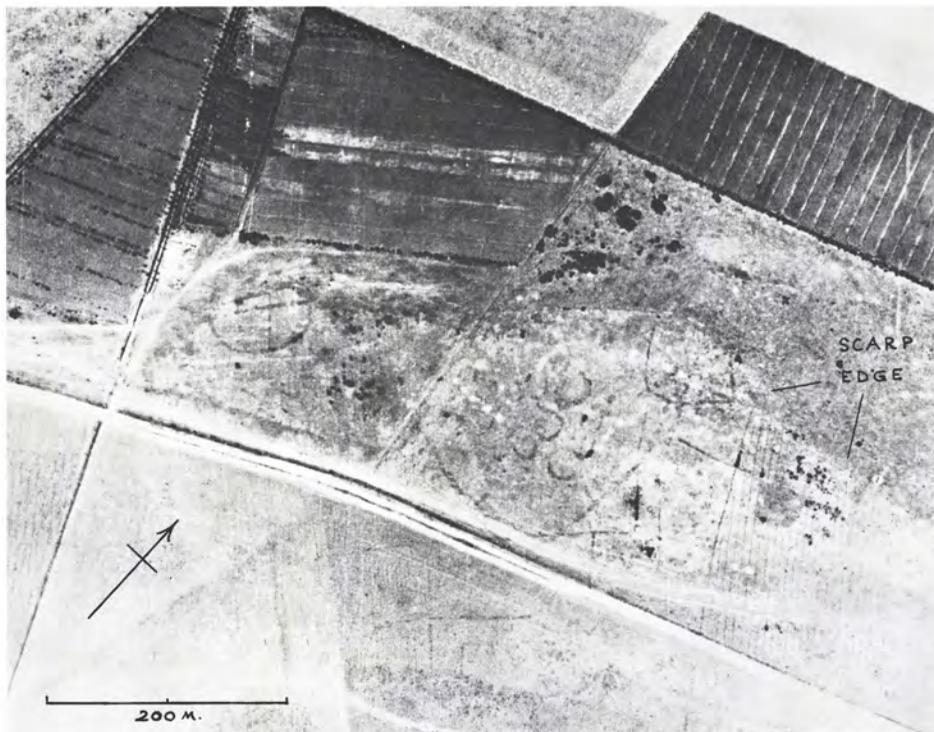


b. S. Cecilia II (49)

PLATE XV



a. Masseria S. Cecilia (50)



b. Masseria Torrebianca II and III (52 and 53)

PLATE XVI

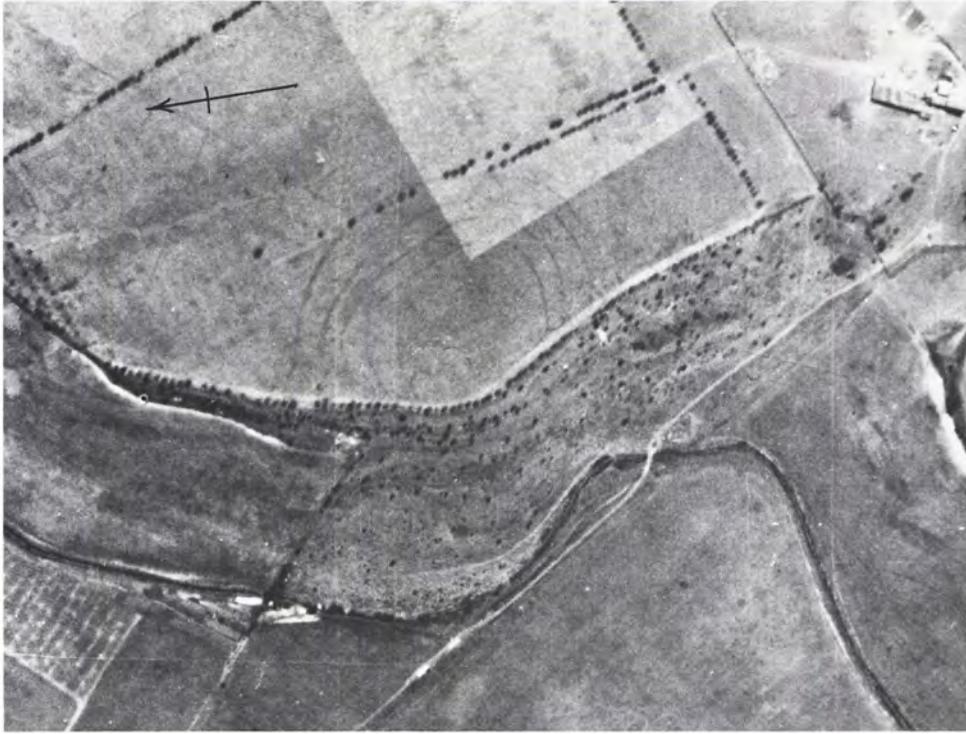


b. La Quercia (72)

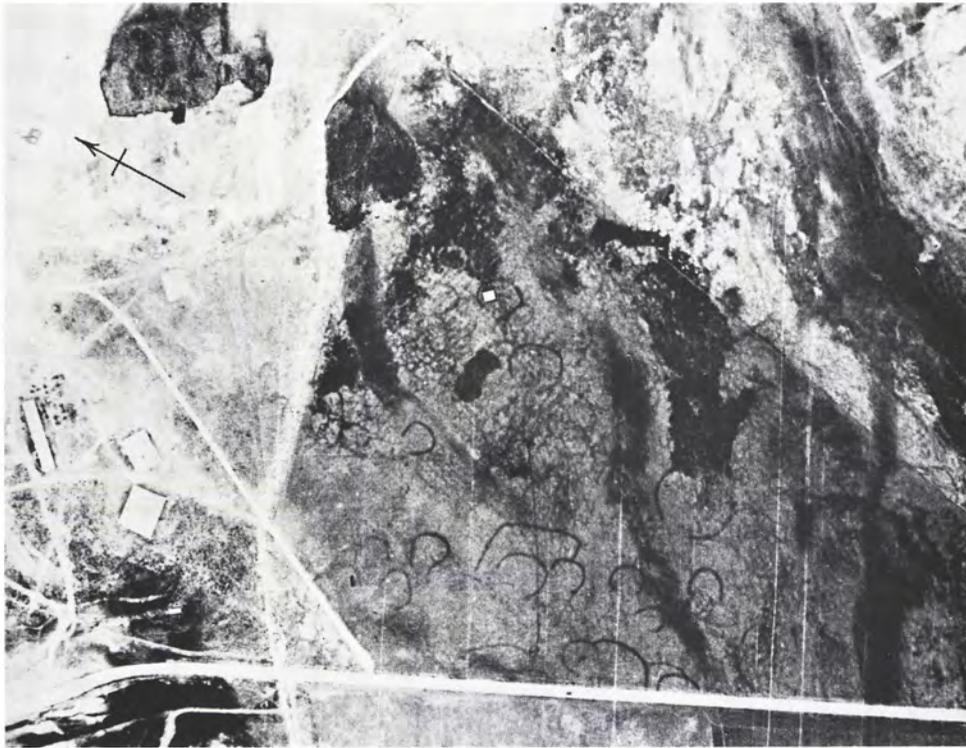


a. Masseria Bongo (71)

PLATE XVII



b. Masseria La Vedova II (114)



a. Masseria La Lamia (73)

PLATE XVIII

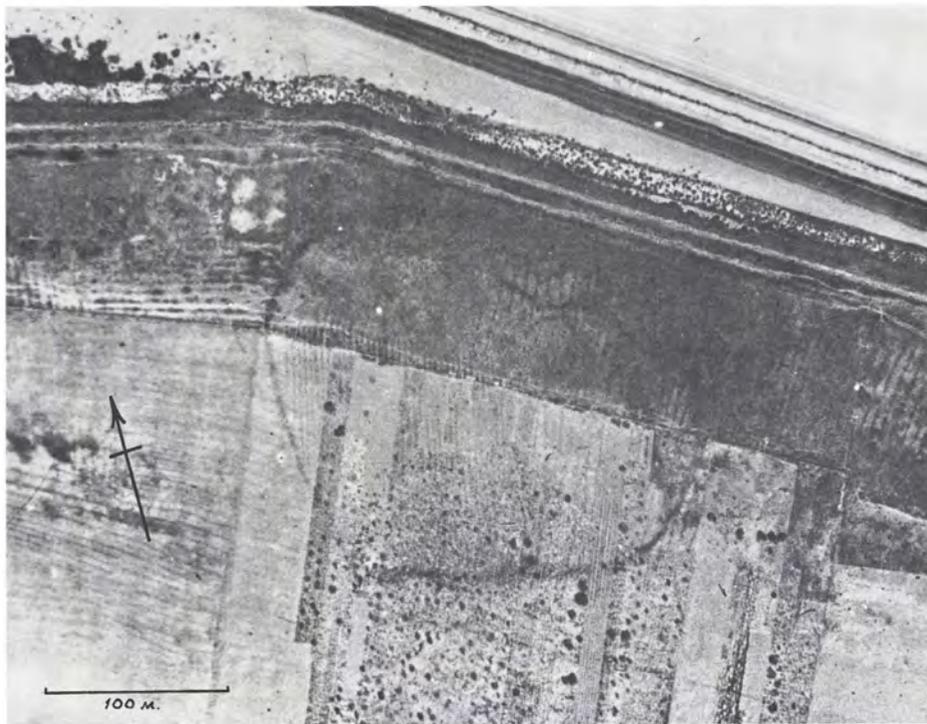


The Salpi area

PLATE XIX

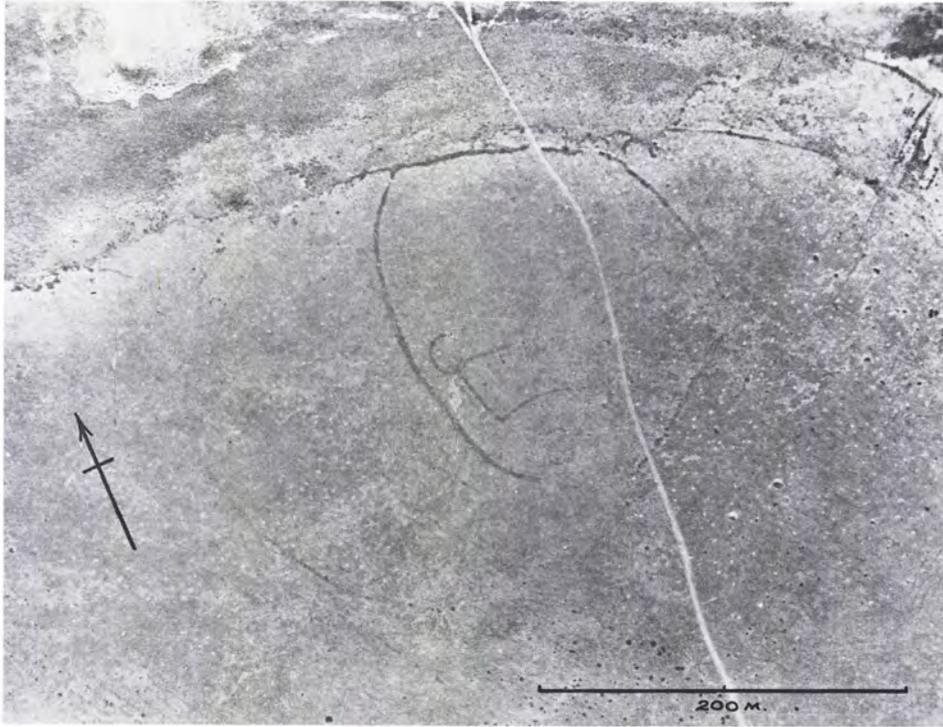


a. Tressanti (160)

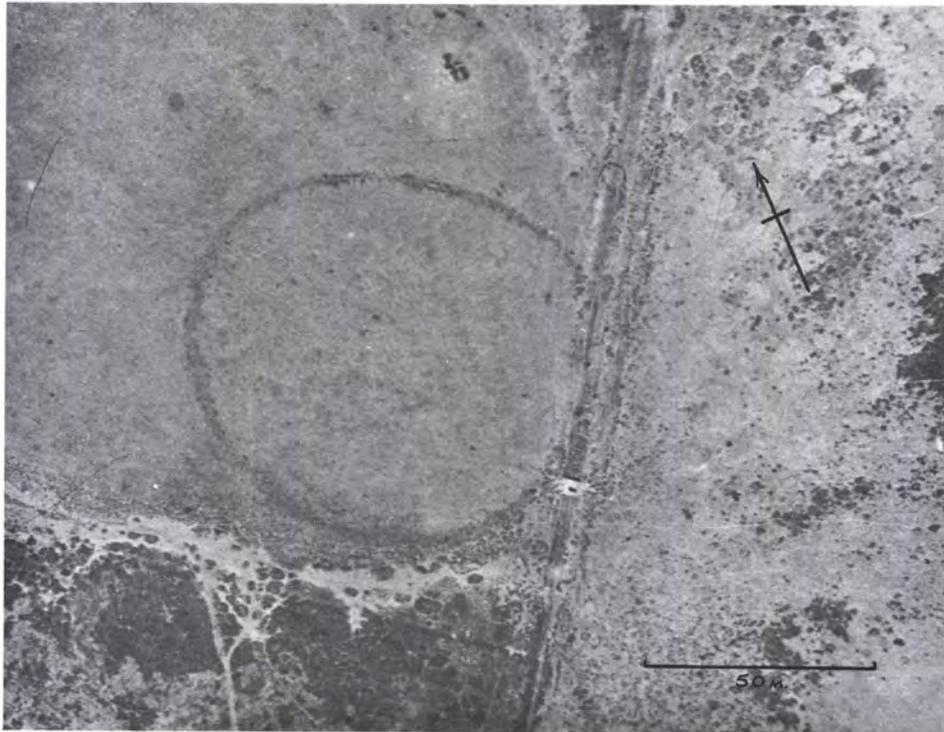


b. Marana di Salpi (161)

PLATE XX

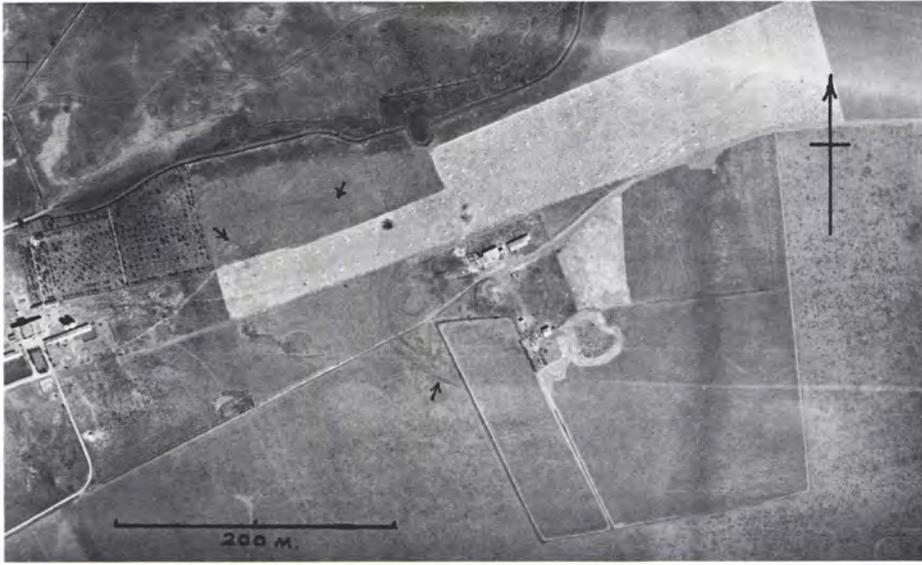


a. Marandrea (162)

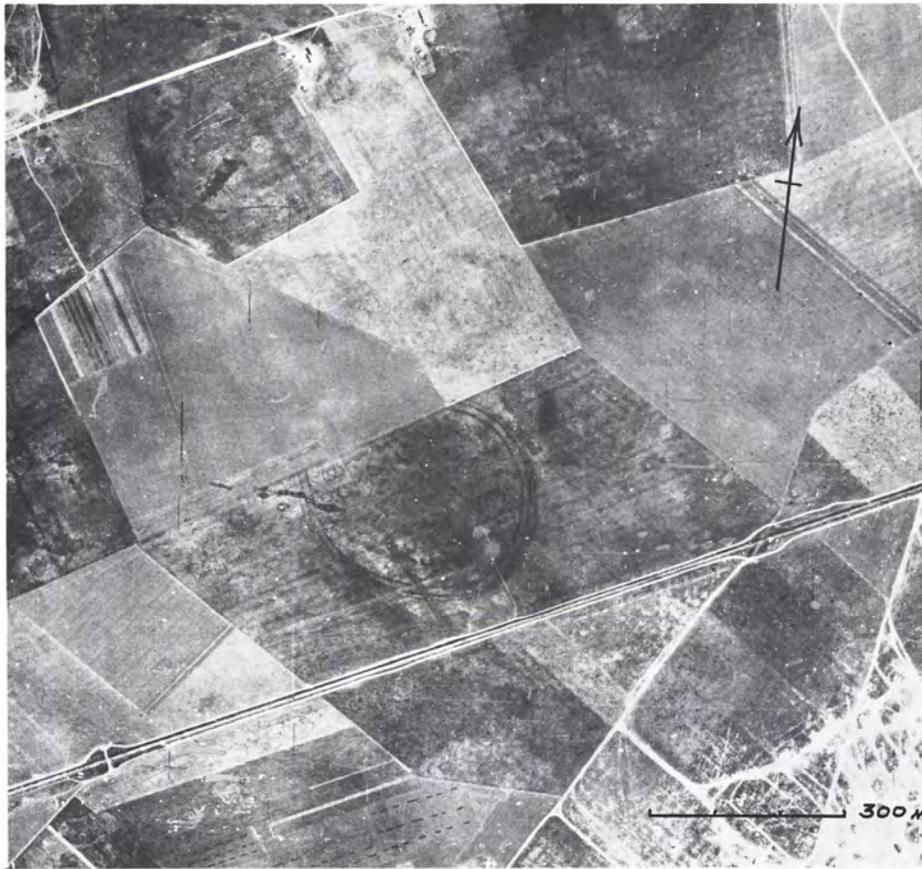


b. Canale Giardino (163)

PLATE XXI

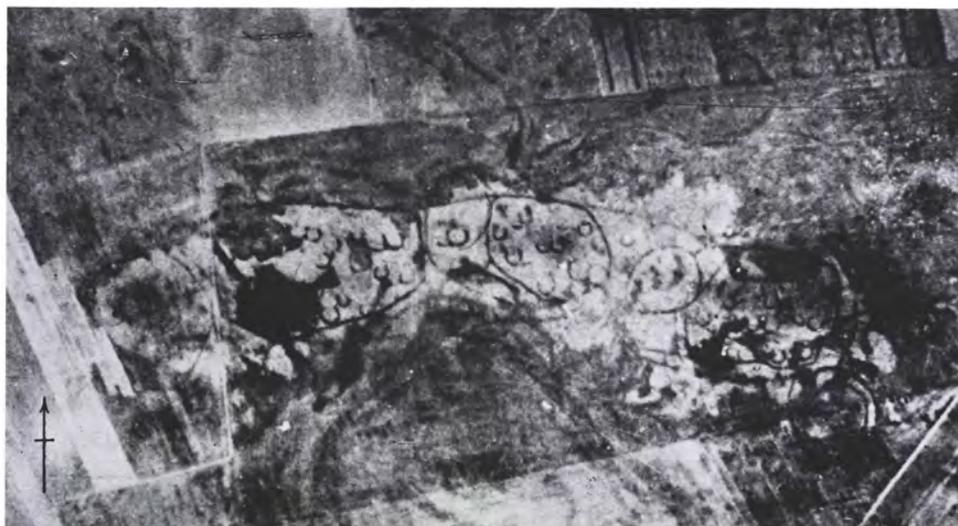


a. Masseria Santini I and II (167 and 168)



b. Castiglione III (172)

PLATE XXII

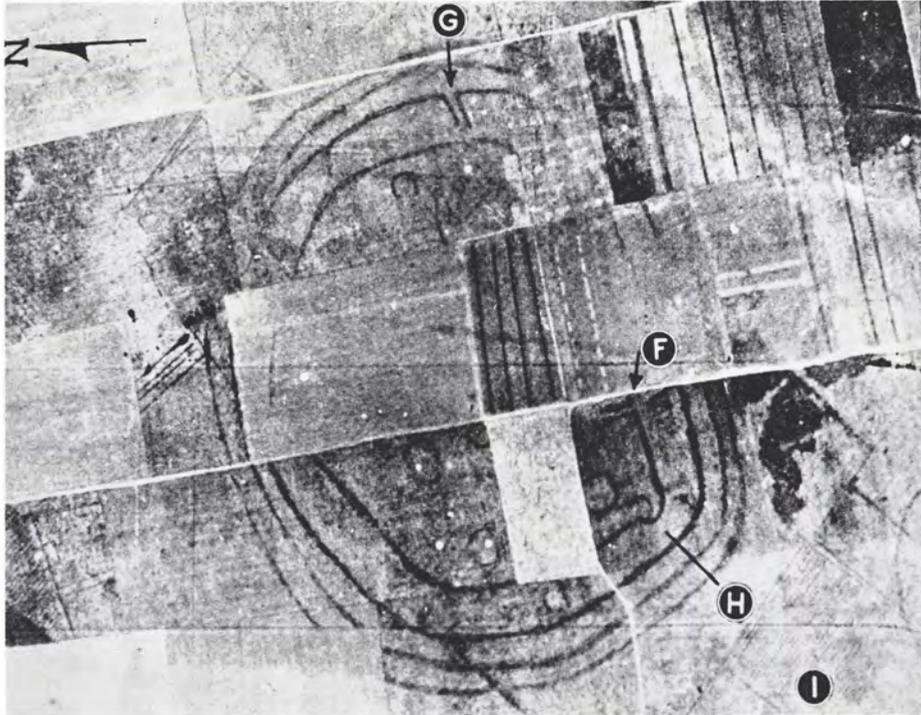


a. The Tavernola complex (173)



b. Masseria Pantano (175)

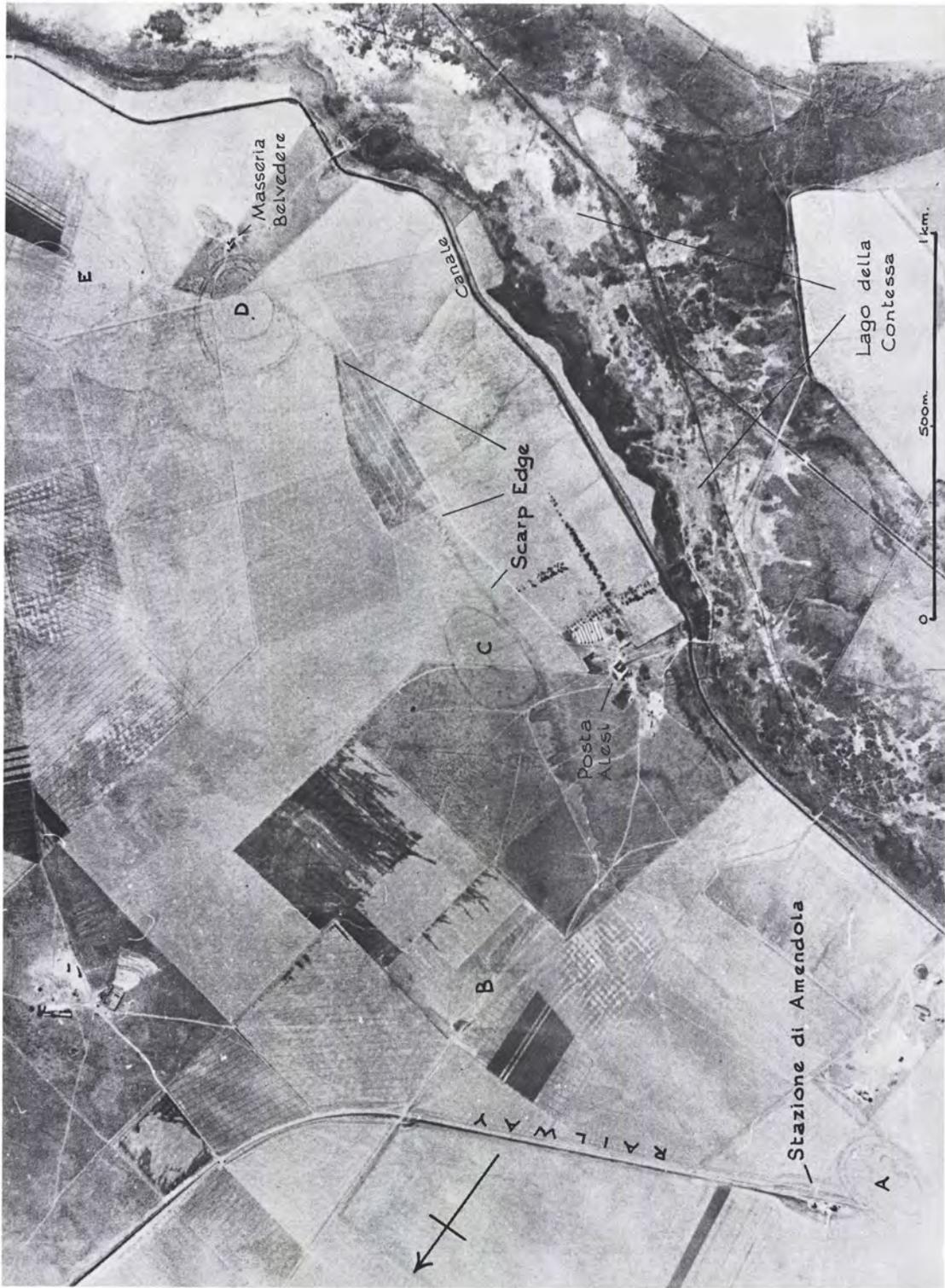
PLATE XXIII



a. Masseria Fongo (180)



b. Podere 249 (186)

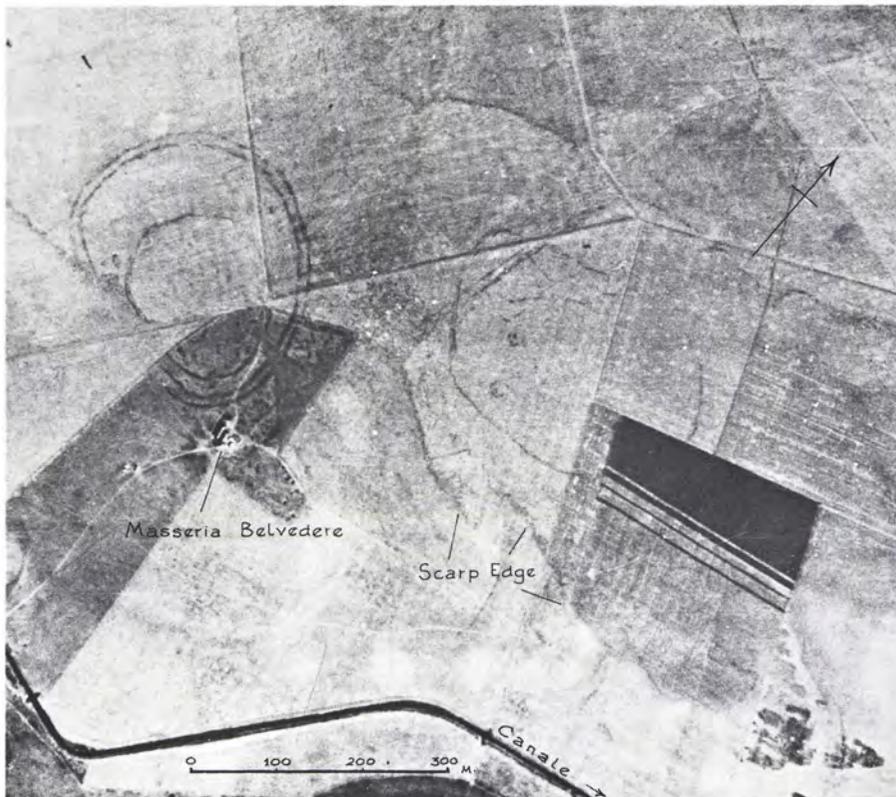


The Stazione Amendola area

PLATE XXV

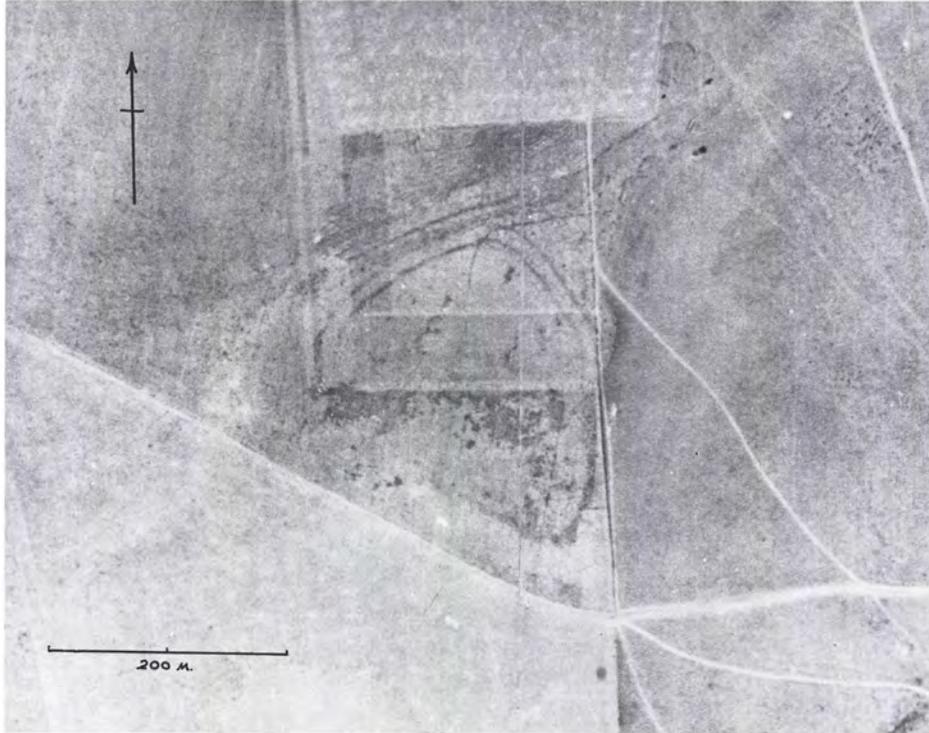


a. Stazione di Amendola I and II (184 and 185)



b. Masseria Belvedere I and II (188 and 189)

PLATE XXVI



a. Masseria S. Tecchia (190)



b. Posta Farano (183)

PLATE XXVII



a. Posta d'Innanzi and Fonteviva (193 and 192)

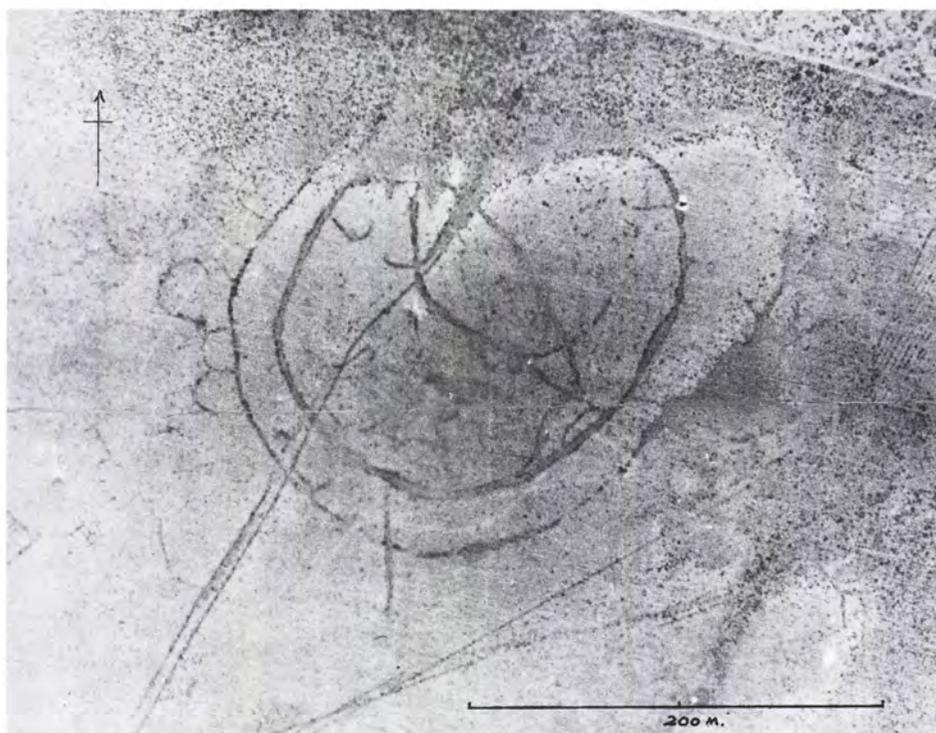


b. Fonteviva, oblique view

PLATE XXVIII

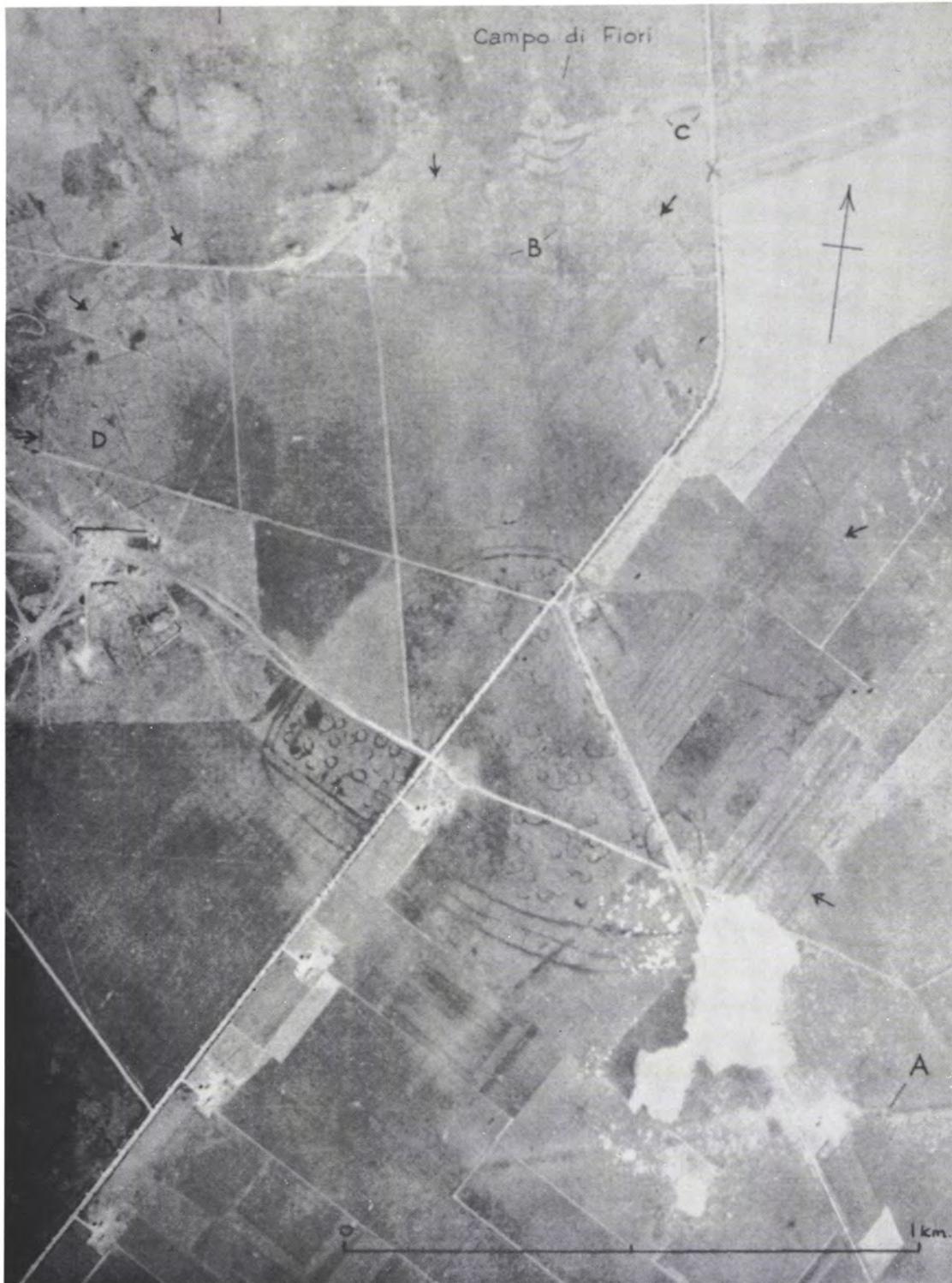


a. Masseria Petruzzo (195), ditch section

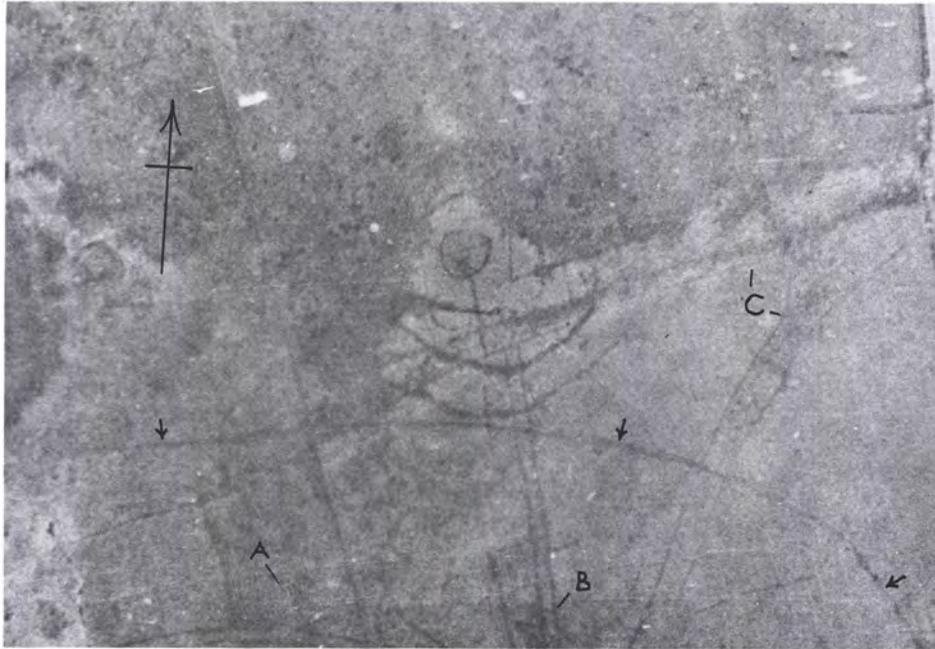


b. Masseria Cascavilla (194)

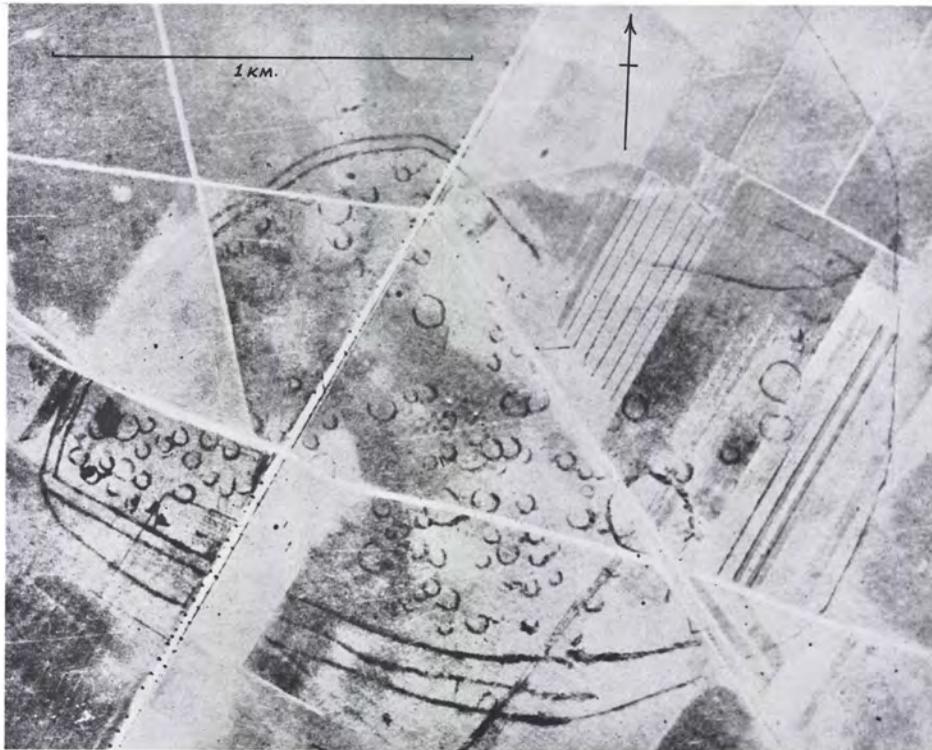
PLATE XXIX



The Passo di Corvo area

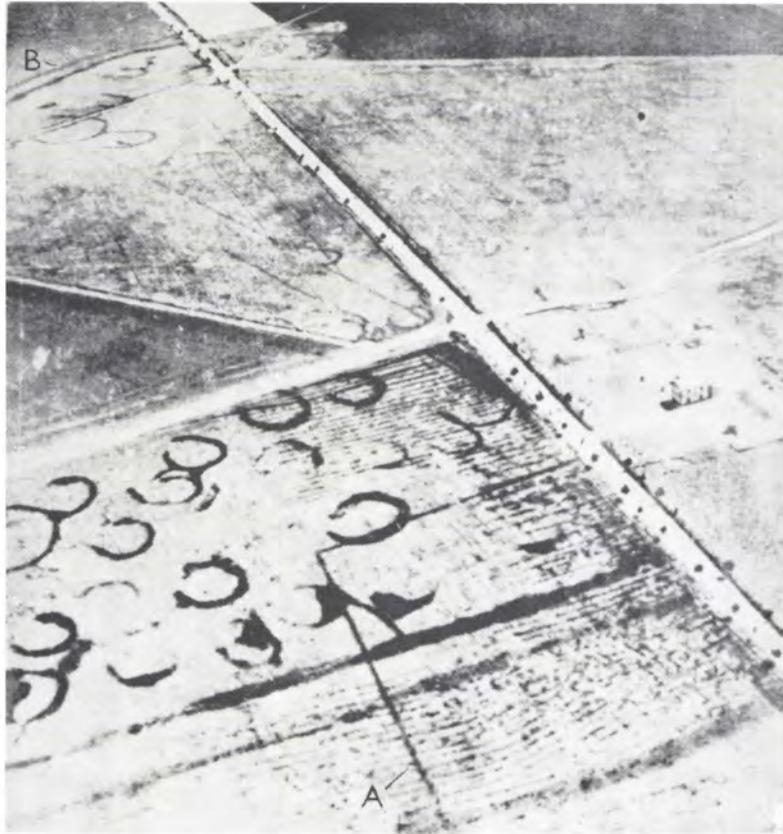


a. Campo di Fiori (197)

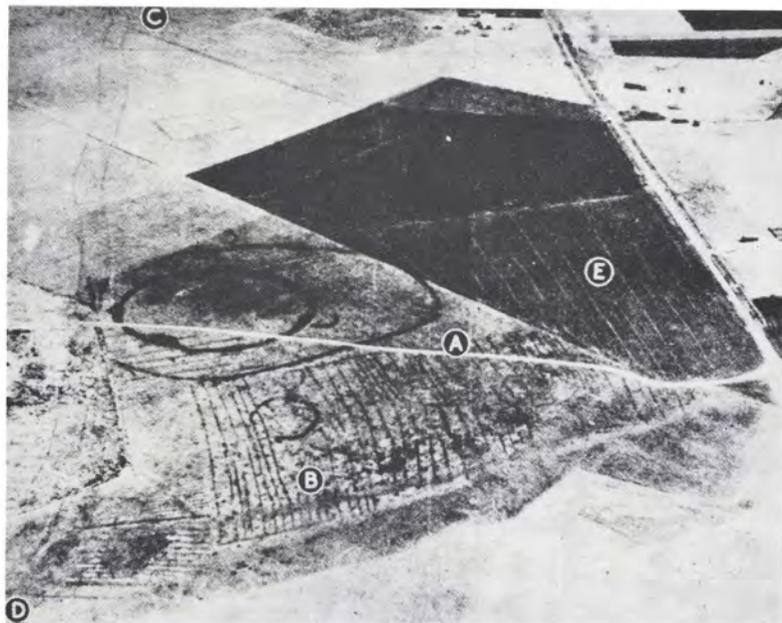


b. Passo di Corvo (198)

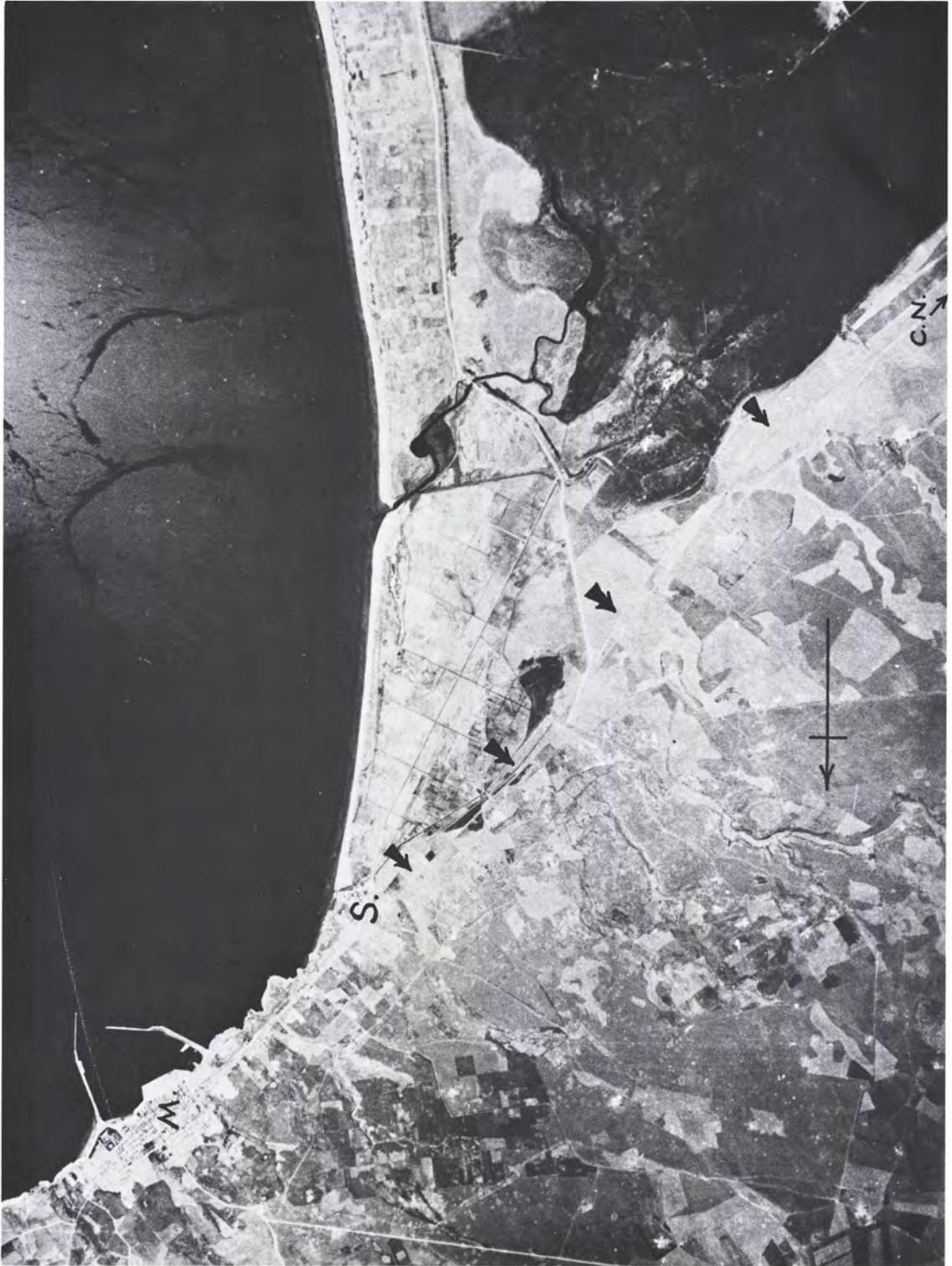
PLATE XXXI



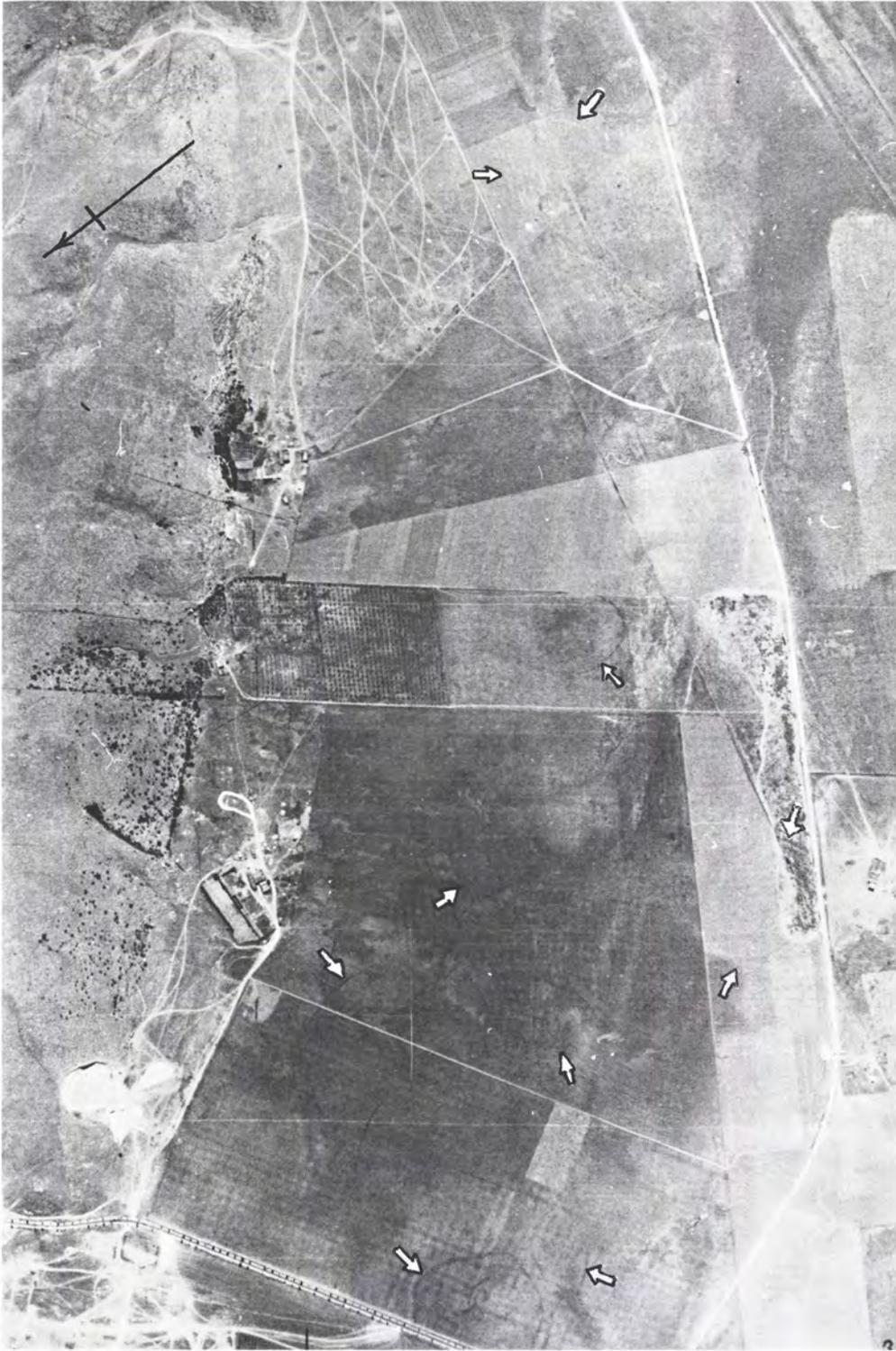
a. Passo di Corvo (198), oblique view



b. Masseria Fuoco d'Angelone (200)

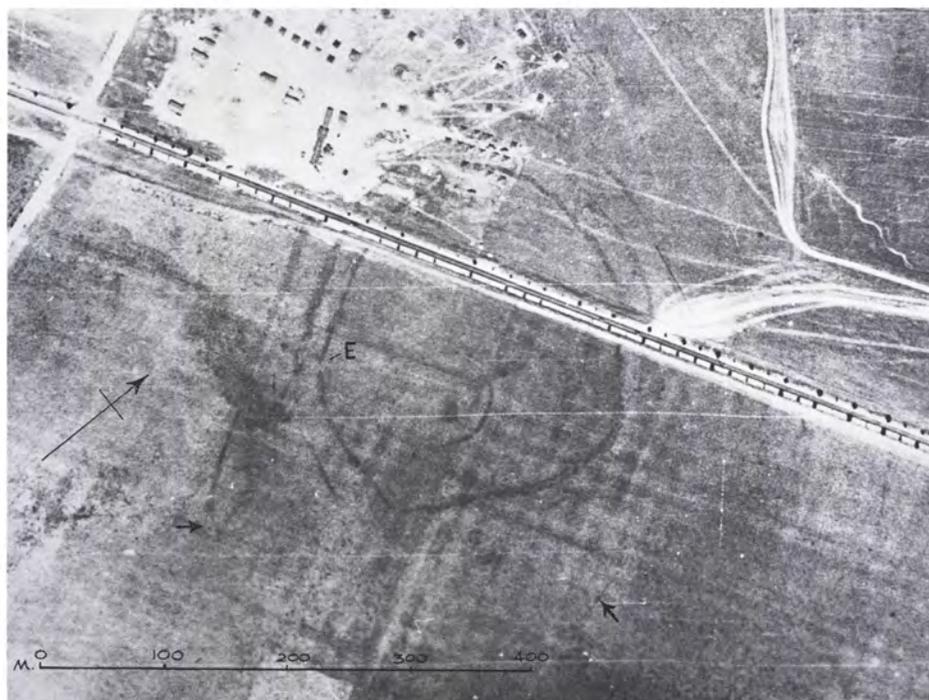


The Candellaro - Sipontum area



The Candlaro Valley

PLATE XXXIV



a. Bivio S. Giovanni Rotondo (204)



b. Angeloni (203)



Motta del Lupo (216)

PLATE XXXVI



a. Masseria Solimanti (217)



b. Masseria S. Giusta (218)

PLATE XXXVII



a. Il Casone (221)



b. Masseria Stelatella I (227)

PLATE XXXVIII



a. Masseria Cupola I and II (233 and 234)

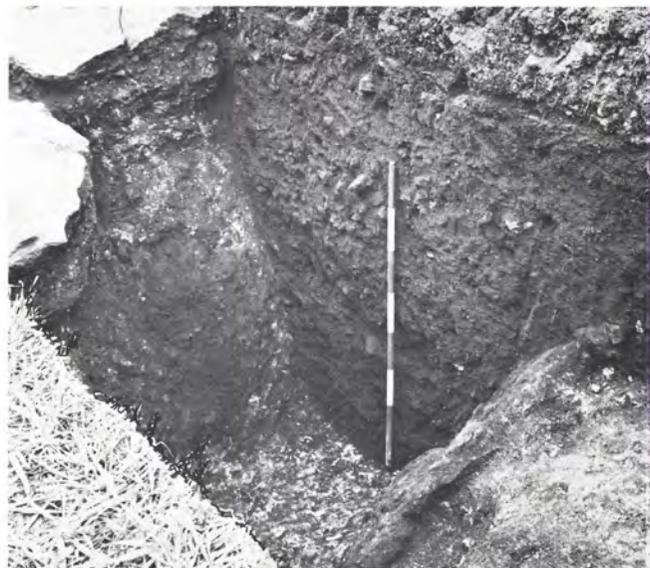


b. Madonna del Oliveto (235)

PLATE XXXIX



a. Campo di Fiori (197), ditch intersection



b. Passo di Corvo (198), Trench VI, E. face



c. Passo di Corvo, Trench VII



d. Passo di Corvo, Trench VII, revetment

PLATE XI.



a



b



c



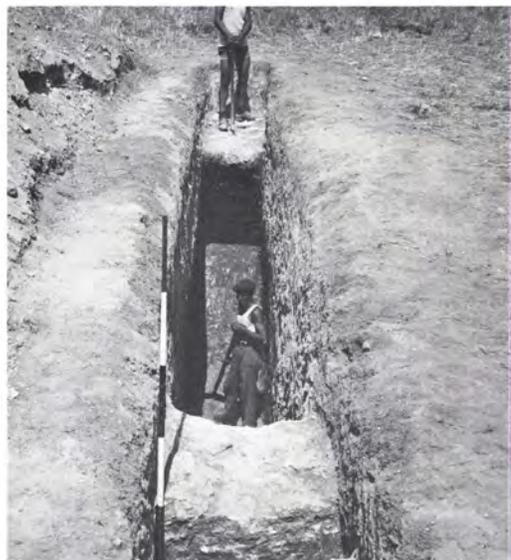
d

a - d. Passo di Corvo (198), Trench VII

PLATE XLI



a. Trench VIII



b. Trench IX



c. Trench X



d. Trench X

Passo di Corvo (198)

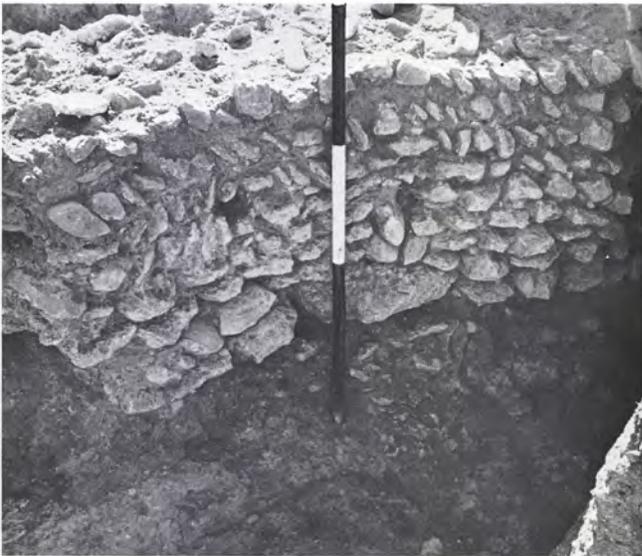
PLATE XLII



a. La Quercia (72), the escarpment



b. La Quercia, Trench I



c. La Quercia, Trench I, wall detail



d. Fonteviva (192), Trench I

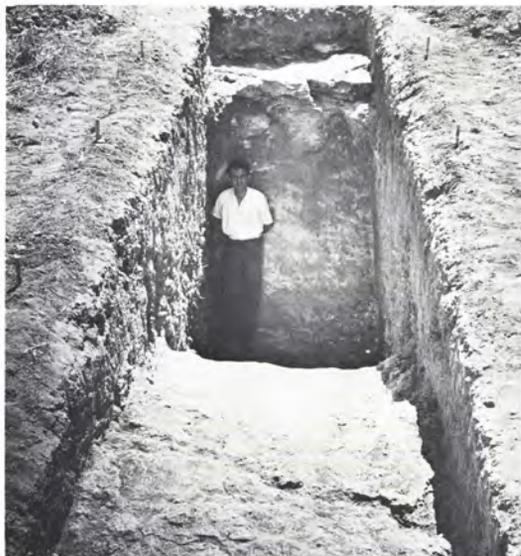
PLATE XLIII



a. Trench I



b. Trench II, the lower skeleton



c. Trench III



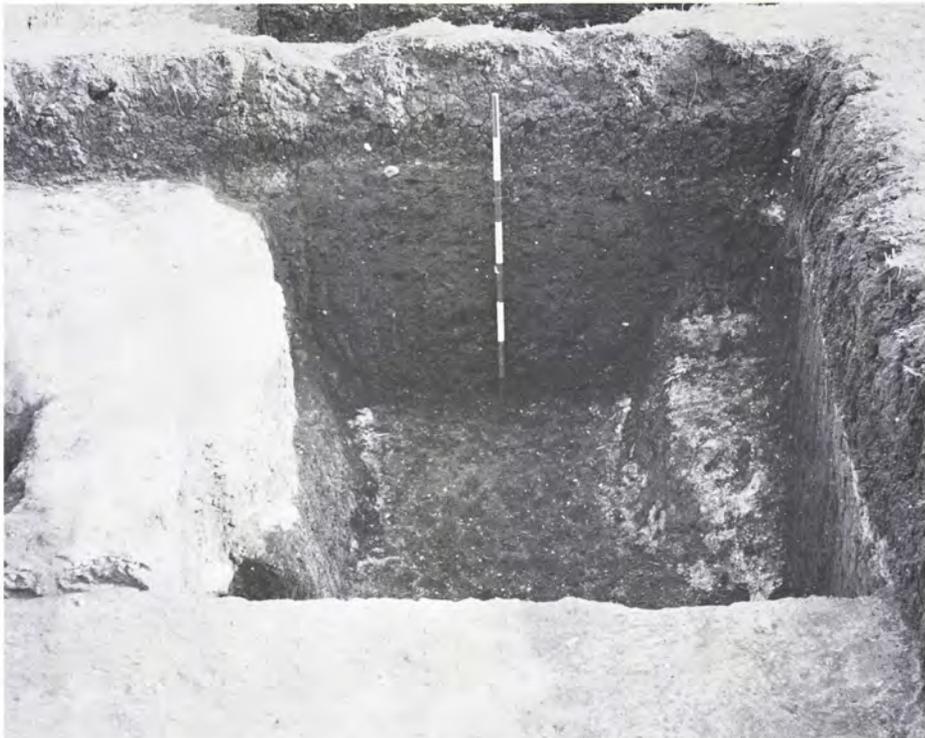
d. Trench III, edge of ditch

Fonteviva (192)

PLATE XLIV



a. Ditch section, N.



b. Ditch section, S.

La Panetteria (I)

PLATE XLV



a. Entrance feature



b. Outer ditch

La Panetteria (1)

PLATE XLVI



a. La Panetteria (I), central feature
b. Luccera Castle (IO), from west

a

PLATE XLVII



b. Pit



a. Hearth

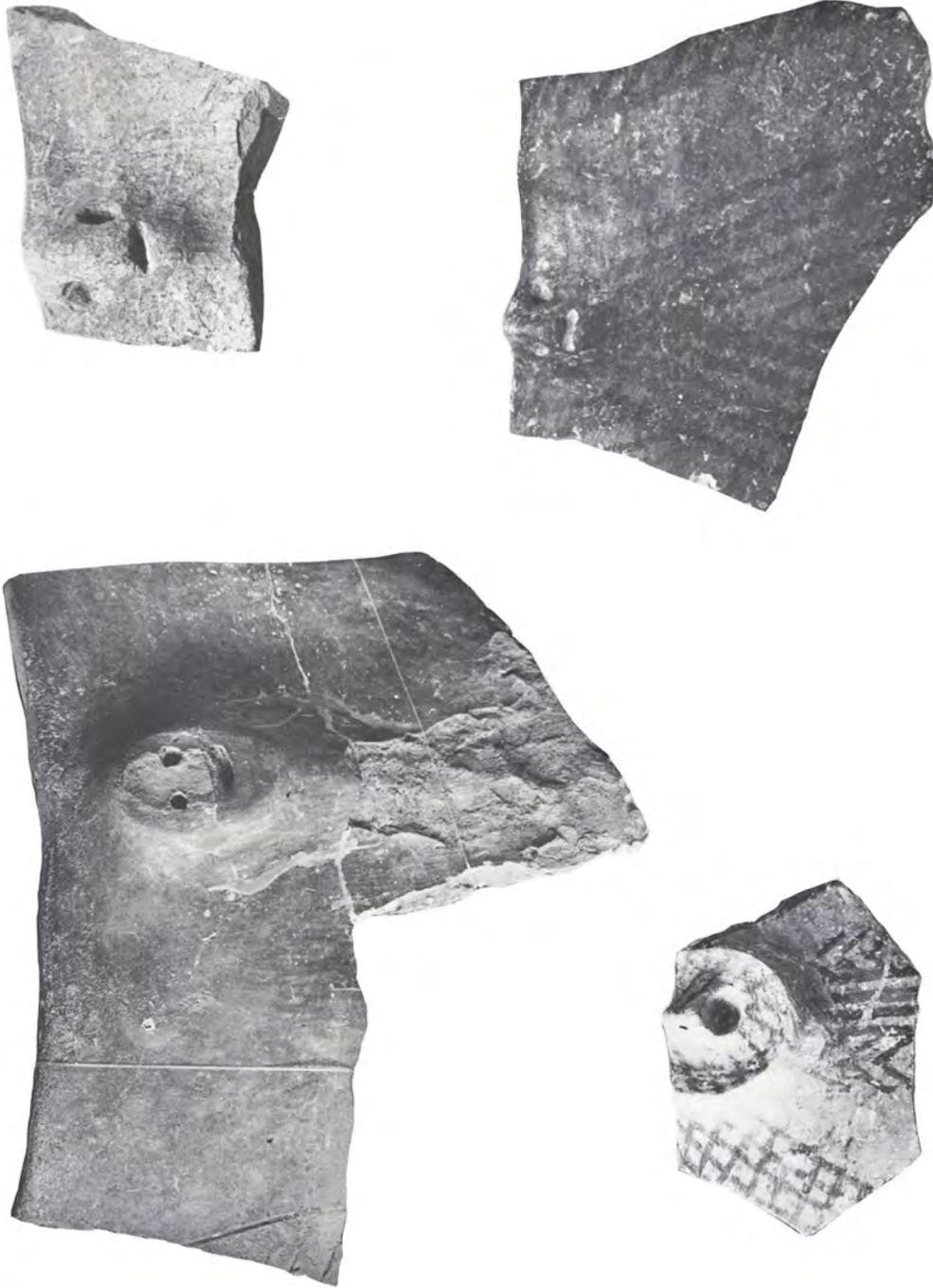
Lucera Castle (10)

PLATE XLVIII



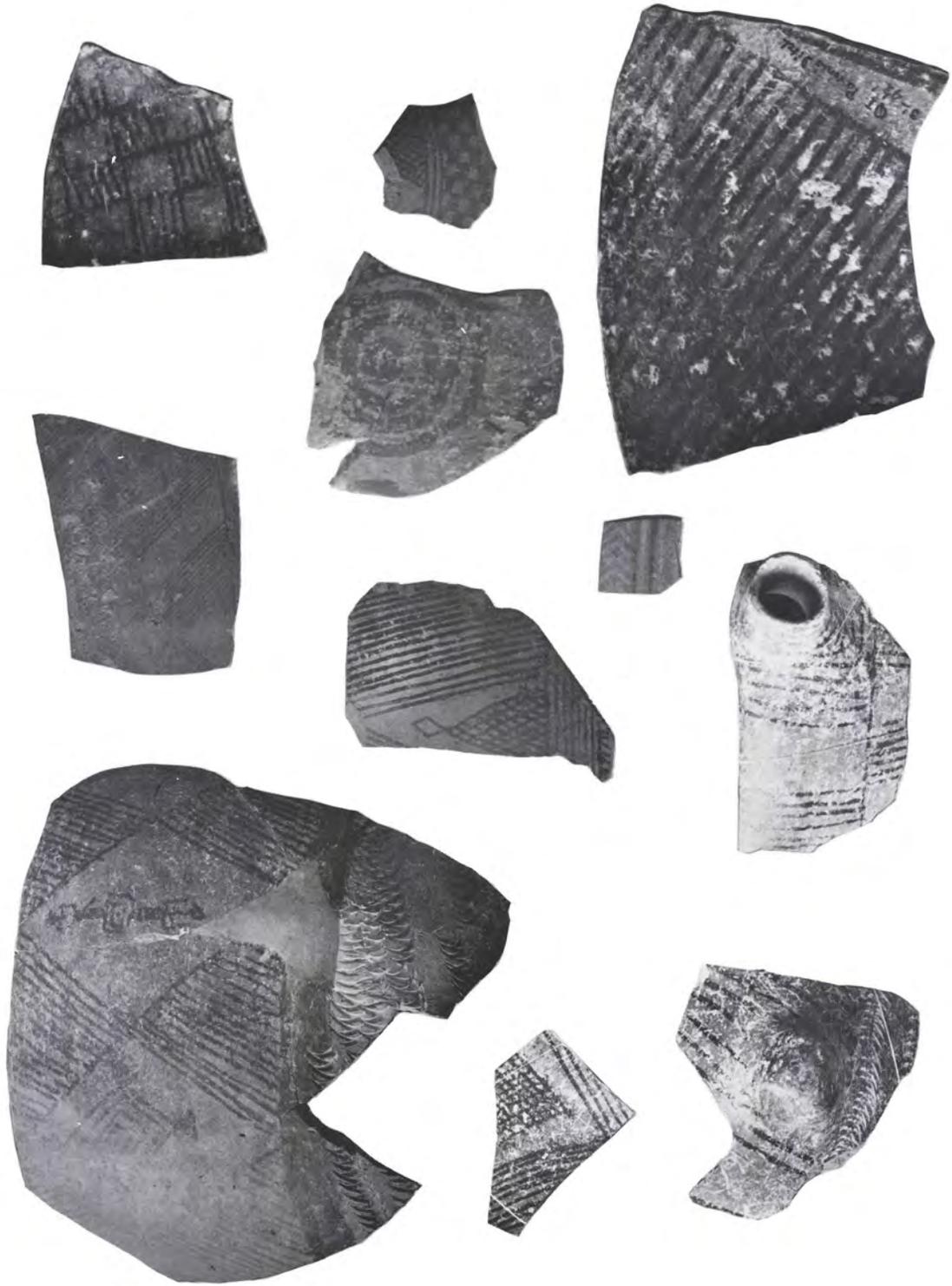
Impressed ware ($1/2$)

PLATE XLIX



Quercia ware: sherds with faces in relief (1/2)

PLATE L



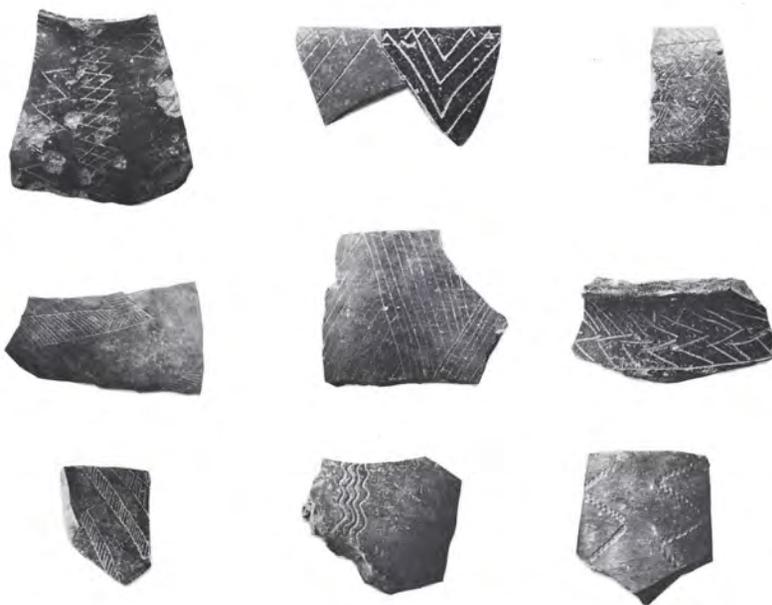
Quercia ware: painted sherds (2/5)

PLATE LI



Quercia ware: rocker-decorated sherds (1/2)

PLATE LII



a. Scratched wares ($\frac{1}{4}$)



b. Corvo wares ($\frac{1}{4}$)

PLATE LIII

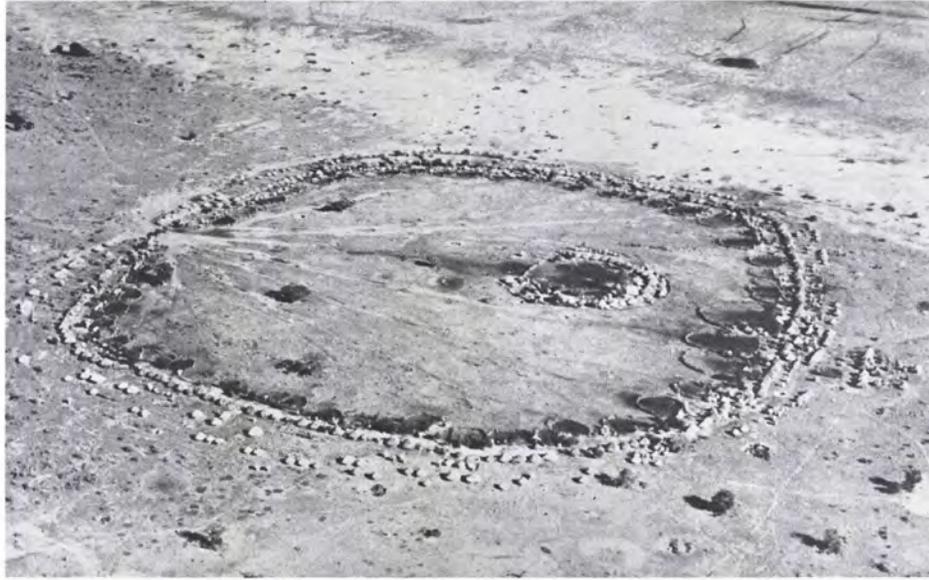


b. Flints from Passo di Corvo ($\frac{1}{2}$)



a. Special pottery (below) and dark burnished ware (above) ($\frac{2}{5}$)

PLATE LIV



a. Ba Ila village of chief Mukobela, Zambia, general view



b. Ba Ila village, chief's hut

PLATE LV



a. Ba Ila village, perimeter

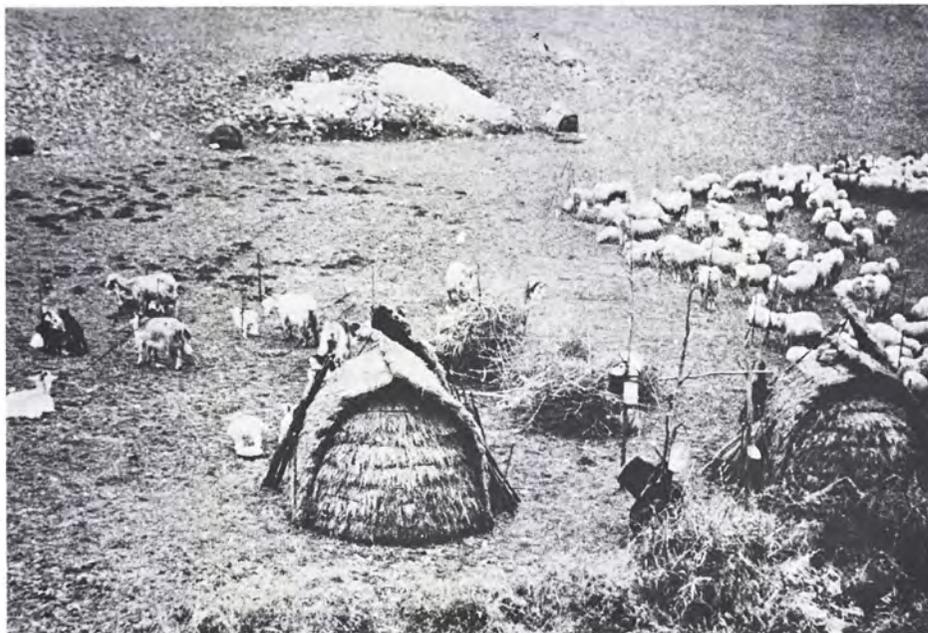


b. Kavirondo, near Kisumu, Kenya

PLATE LVI



a. Zulu kraal, South Africa



b. Shepherd emplacement during transhumance, Piglio, near Rome, 1961