BRONZE AGE CULTURES IN CENTRAL AND EASTERN EUROPE

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BY

MARIJA GIMBUTAS

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FOREWORD

This volume should not be considered Part II of the author's *Prehistory of Eastern Europe* (1956). Since it was central Europe that played the formative role on the continent during the Bronze Age, the present monograph takes on a wider scope and is independent of the former book.

This monograph is meant for the student of European archaeology, not for the lay reader. This year is not yet the date for a fluently readable book on the Bronze Age of Europe to appear. We are in the period of a "gold rush" of discovery. The spontaneity of research and the increasing accumulation of archaeological material exists without being evaluated, analysis and synthesis always being behind the pace of excavation. My task, therefore, was to summarize and evaluate the first hand sources of about fifteen countries. I believed that drawing together as much information as possible in order to make the complicated cultural history of the second millennium B.C. more understandable, could not be postponed.

Unfortunately, the book must appear before the new dating techniques, particularly the Carbon 14 method, could become of wider use in central and eastern Europe, and before the results of the analyses of metal objects have been published. I release this work without the feeling that it is as I wished it to be, but in writing this sort of monograph I hoped to help the younger members of the family of archaeologists by making the heretofore unknown sources accessible and summarized in a familiar language, as well as bringing forward new facts, concepts, hypotheses, classifications, and labels.

ACKNOWLEDGMENTS

During the years of preparation of this volume many institutions and individual scholars have offered their assistance and co-operation for which I wish to express my profound gratitude.

Without the auspices and facilities of the Peabody Museum of Archaeology and Ethnology of Harvard University and its branch, the American School of Prehistoric Research, the Senior Post-doctoral Fellowships granted by the National Science Foundation during 1956-1960, and the grants for technical expenses by the Wenner-Gren Foundation in 1954 and the American Philosophical Society in 1958, this project would have been impossible. For friendly co-operation, criticism, advice, and for reading and editing my manuscript, I am greatly indebted to Dr. Hugh Hencken, Director of the American School of Prehistoric Research, and to Professor Stuart Piggott of the University of Edinburgh, a visiting lecturer at Harvard in 1961, who read the whole manuscript. For constant and valued assistance I wish to thank Miss Margaret Currier, Librarian of the Peabody Museum, and my colleagues of Harvard University: Dr. George Hanfmann of the Fogg Art Museum, and Professor of Classical Archaeology; Dr. Bruce Howe, Fellow of the Peabody Museum; and Professor Roman Jakobson of the Comparative Linguistics and the Slavic Languages Departments. My special thanks belong to Priscilla Reynolds for her devotedness in editing the final version of the manuscript, and to my students Jonathan Gell and Augustus J. Sordinas for reading some chapters.

Through correspondence, by personal meetings with numerous colleagues, and during my study tours through the archaeological museums of central, eastern, and northern Europe and to the new excavations, I obtained invaluable information and illustrations. With deep appreciation I wish to mention here a long list of scholars and their institutions (alphabetically by countries) who have generously helped in building this book.

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Cambridge, Massachusetts — Marija Gimbutas

June, 1963

CONTENTS

ABBREVIATIONS OF SERIAL PUBLICATIONS AND INSTITUTIONS

ACTES de la ... Session, Congrès International des Sciences Préhistoriques et Protohistoriques.
AfA - Archiv für Anthropologie, Braunschweig
AJA - American Journal of Archaeology
Altpreussen - Altpreussen, Vierteljahresschrift, Königsberg i Pr.
Altschlesien - Altschlesien, Mitteilungen des schlesischen Altertumvereins, Breslau (Wrocław)
AN - Akademija Nauk SSSR
ANUA - Akademija Nauk Ukrainskoj SSR
Arkh. Pam. USSR - Arkheologichni pam'jatki URSR (Archaeological finds of the Ukrainian SSR), Akademija Nauk Ukrainskoj RSR, Kiev
Arkheologicheskij Sbornik – Arkheologicheskij Sbornik. Trudy Gosudarstvennogo Istoricheskogo Muzeja, Moscow
Arkheologija - Arkheologija, Akademija Nauk URSR, Institut Arkheolohiji, Kiev
BMFEA - Bulletin of the Museum of Far Eastern Antiquities, Stockholm
BSA - The annual of the British School at Athens, London
Dolgozatok - Dolgozatok a M. kir. Ferencz József tudományegyetem archaeologiai intézeteböl, Szeged
ESA - Eurasia Septentrionalis Antiqua. Zeitschrift für Erforschung der osteuropäischen und nordasiatischen Archäologie und Ethnographie, Helsinki
Fontes Praehistorici - Fontes Praehistorici. Annales Musei Archaeologici Posnaniensis, Muzeum Archeologiczne, Poznań
FUF - Finnisch-Ugrische Forschungen, Zeitschrift für finnisch-ugrische Sprach- und Volkskunde, Helsinki
GAIMK - Gosudarstvennaja Akademija Istorii Material'noj Kul'tury (The State Academy for the History of Material Culture)
Germania - Germania. Römisch-germanische Kommission, Frankfurt a/Main
GIM - Gosudarstvennyj Istoricheskij Muzej
IAK - Izvestija Arkheologicheskoj Komissii, Moscow, 1901-1918
IIMK - Institut Istorii Material'noj Kul'tury, Moscow-Leningrad
JMV - Jahresschrift für Mitteldeutsche Vorgeschichte, Halle/Saale
JST - Jahresschrift für die Vorgeschichte der sächsisch-thüringischen Länder, Halle/Saale
KSIA - Kratkie Soobshchenija Instituta Arkheologii. Akademija Nauk Ukrainskoj SSR, Kiev
KSIE - Kratkie Soobshchenija Instituta Etnografii, Akademija Nauk SSSR, Moscow
KSIIMK - Kratkie soobshchenija o dokladakh i polevykh issledovanijakh Instituta Istorii Material'noj Kul'tury, Akademija Nauk SSSR, Moscow
MAGW - Mitteilungen der Anthropologischen Gesellschaft in Wien
MAK - Materialy po Arkheologii Kavkaza, Moscow, 1888-1916
Man - Man. A monthly record of anthropological science, The Royal Anthropological Institute, London
Mannus Z. - Mannus, Zeitschrift für Vorgeschichte, Würzburg
MAR - Materialy po Arkheologii Rossii, S. Petersburg, 1888-1918
Medd. - Meddelanden från Lunds Universitets Historiska Museum

MIA - Materialy i Issledovanija po Arkheologii SSSR, Akademija Nauk SSSR, IIMK
OAK - Otchet Arkheologicheskoj Komisii
PIDO - Problemy istorii doklassovogo obschchestva, Moscow
PPS - Proceedings of the Prehistoric Society, London
RANIION - Rosijskaja Assotsjatsija Nauchno-Issledovatel'skikh Institutov Obshchestvennykh Nauk. Institut Arkheologii i Iskustvoznanija. Trudy Otdelenija Arkheologii, Moscow
RAO - Russkoe Arkheologicheskoe Obshchestvo, Moscow
Reallexicon - Reallexicon der Vorgeschichte. Edited by M. Ebert, Berlin 1924-1932.
SA - Sovetskaja Arkheologija, Akademija Nauk SSSR, Moscow-Leningrad
SAN Gruz. SSR - Soobshchenija Akademii Nauk Gruzinskoj SSR
Sb. Prussia - Sitzungsberichte der Altertumsgesellschaft Prussia, Königsberg i Pr.
SCIV - Studii si Cercetări de Istoria Veche, Rumanian Academy of Sciences
SE - Sovetskaja Ėtnografija, Akademija Nauk SSSR, Moscow-Leningrad
SMYA - Suomen Muinaismuistoyhdistyksen Aikakauskirja. Finska Fornminnesföreningens Tidskrift. Zeitschrift für finnische Altertumskunde, Helsinki
Sprawozdania PAU - Sprawozdania Państwowej Akademii Umiejętności, Kraków
Sprawozdania PMA - Sprawozdania Państwowego Muzeum Archeologicznego, Warsaw
Trudy AS - Trudy I-XV Vserossijskikh arkheologicheskikh s'ezdov
Trudy GIM (TGIM) - Trudy Gosudarstvennogo Istoricheskogo Muzeja, Moscow
UZKabNII - Uchenye Zapiski Kabardinskogo Nauchnogo Istoricheskogo Instituta, Nal'chik
VDI - Vestnik Drevnej Istorii
WMBH - Wissenschaftliche Mitteilungen aus Bosnien und Herzegowina, Sarajevo.
WPZ - Wiener Prähistorische Zeitschrift, Vienna
ZfE - Zeitschrift für Ethnologie, Berlin
ZUOLE - Zapiski Uralskogo obshchestva ljubitelej estestvoznanija

TRANSLITERATION

OF RUSSIAN LETTERS

а — a	е — e	к — k	п — p	ф — f	щ — shch
б — b	ж — zh	л — l	р — r	х — kh	ъ — ”
в — v	з — z	м — m	с — s	ц — ts	ы — y
г — g	и — i	н — n	т — t	ч — ch	ь — ’
д — d	й — j	о — o	у — u	ш — sh	э — ė
					ю — ju
					я — ja

OF UKRAINIAN LETTERS

а — a	є — je	й — j	п — p	х — kh	я — ja
б — b	ж — zh	к — k	р — r	ц — ts	ь — ’
в — v	з — z	л — l	с — s	ч — ch	’ — ”
г — h	и — y	м — m	т — t	ш — sh	
д — d	і — i	н — n	у — u	щ — shch	
е — e	ї — ji	о — o	ф — f	ю — ju	

Note: The larger cities and more popular names used in geographic atlases or other written English ources are left in the traditional form of spelling.

INTRODUCTION

The materials for this monograph have been accumulating for over a century. Thousands of Bronze Age cemeteries, habitation sites, hoards, and isolated finds have been excavated. The earliest discoveries in central Europe were sporadic and accidental and occurred many centuries before the science of archaeology was born. For example, one of the first records of Late Bronze Age pots appeared five hundred years ago, although the excavator little realized what he had found. Jan Długosz (1415-1480), in his *Historia Polonica*, mentioned that:

...in Poland miraculous things are happening. For instance, in the village of Nochów near Szrem (district of Poznań) and in the village of Kozielsk near Łękno pots of various shapes and sizes are growing by themselves without any human help.
... They are soft while in the earth, resting in their "birthpits", but after they are excavated, they harden in the wind and sun and become strong... And it is particularly amazing to me that their innate reproduction seems never to decrease although the earth is not open... (Długosz, *Opera Omnia*, 1873, vol. X, p. 57).

Today we know that these pots belonged to the Lusatian Urnfield people, and even now "their innate reproduction" has not decreased. After these discoveries, 400 years went by before scientific excavations were begun. In only the last few decades of the nineteenth century, Early Bronze Age Únětician royal graves in Saxony and the Únětice cemetery itself in Bohemia were uncovered; the stratified "tell" sites at Tószeg on the Tisza River in Hungary and at Pecica on the Mureș River in western Rumania, the Faskau cemetery in the central Caucasus, and the Turbino cemetery on the upper Kama River west of the middle Urals were excavated, and fascinating collections of isolated bronze artifacts and bronze hoards from Hungary, Czechoslovakia, and Germany were described and published. At the turn of the twentieth century, the Timber-grave culture in south Russia was discovered and in the Baltic area, and southern Scandinavia when a series of huge barrows was revealed. In 1912 and 1914 came the discoveries of the Borodino royal hoard in Bessarabia and the Sejma cemetery in northern central Russia.

Although important finds have accumulated throughout the past hundred years, the most vital information has been supplied by the recent large-scale excavations; even 15 years ago it would not have been possible to speak of a number of cultural groups and chronological phases. What was known before World War II is only a fragment of what is known today.

To date there have been no syntheses of Bronze Age cultures in central and eastern Europe, nor any fixed and indisputable chronological classifications. The vast amount of uncorrelated material available means that this monograph must deal with many details, with descriptions of particular finds and sites, and with typological and commercial relations between cultures, in addition to defining general cultural developments and separate cultural groups. In the first place, a framework must be constructed which includes every find, grave, hoard, or habitation site, many of which have been wrongly dated: hence the first part of the book is entirely devoted to questions of chronology, obviously an essential step in the reconstructing of cultural entities in their proper sequence. The book, then, has two divisions: one

horizontal, the other vertical - the similar fragments must be placed together in the same box before the boxes can be arranged in the most meaningful relationship.

Again, the bulk of the text is a natural response to the necessity of covering all the presently large, and always increasing, body of information on the Bronze Age cultures in Europe. My task will be fulfilled if this skeleton framework proves of use for future syntheses.

The area covered in this volume extends from Germany and Hungary on the west to the Ural Mountains on the east, from the Baltic and Arctic Seas on the north to the lower Danube and the Black and Caspian Seas on the south. The period under examination covers approximately one thousand years: from the early second millennium to the early first millennium B.C., from the period when large scale copper manufacturing began in central Europe to the times when iron gradually supplanted bronze.

The north Caucasian metallurgical center, active from *ca.* 2200 B.C., supplied southern Russia and the Ukraine with copper artifacts. The central European copper-producing areas in the Carpathian Mountains gradually gained importance during the latter part of the third and the first part of the second millennium B.C., but not until *ca.* 1800 B.C. were large-scale exploitations started in this area. The transition from a Neolithic to a Bronze Age level was a long one, and all areas were not synchronized in their development. The farther north and hence the farther from metallurgical centers, the later the Bronze Age occurred.

The end of the third and the beginning of the second millennium B.C., does not, then, demarcate the beginning of the "Bronze Age" in the strict sense of the term. "Bronze" is copper with a high percentage of tin, and a true bronze should contain about 90 percent copper and about 10 percent tin. However, in the early stage of metal technology such bronze was not used either in the northern Caucasus or in central Europe. Instead, copper-arsenic or copper-antimony alloys were used. Metal technology had a different history in each metallurgical center, depending on the existence of certain minerals in the area. Hence, the term "Bronze Age" can be a misnomer. Archaeologists apply it in a broad sense: current studies in metallurgy tend to define the beginning of the Bronze Age as when experiments with various alloys started. At the present stage of research it is known that a premeditated admixture of copper with arsenic, antimony, tin, and, in some cases, multicomponant copper-antimony-lead alloys occurred in the Caucasus and the Carpathian region not later than in the last centuries of the third millennium B.C. The problem of the use of native copper is still hypothetical.

Nuclear Areas, Spheres of Influence, and the Spread of Metallurgy

There were several nuclear areas from which influences radiated in certain directions, forming several cultural spheres of influence. There were three main metallurgical centers: one in the Caucasus Mountains, another in the southern Urals, and the third in the central European mountainous region. The cultures grouped around these centers played leading roles and exercised considerable influence on their culturally inferior neighbors. The three cultural spheres of influence are marked by different types of metal artifacts. To the first sphere belonged central Europe, the Baltic area, and southern Scandinavia; to the second, the Caucasus and the northern Pontic area (the eastern Ukraine); to the third, the lower Volga area, southern Russia in the strict sense. In the border areas like the western Ukraine and eastern Rumania (Moldavia), the central European and Caucasian spheres overlapped. These metallurgical centers and their spheres of influence are shown in figure 1.

From central Europe knowledge of metallurgy spread northward, thus creating the Northern Area Bronze Age culture (in northern Germany and southern Scandinavia) and the Baltic culture (in the southeastern Baltic area: northern and eastern Poland, East Prussia, Lithuania, and Latvia). These groups developed their own metal industries during the third quarter of the second millennium B.C. The northern Carpathian area was influenced chiefly by the metallurgical center in the southern

FIG. 1. Metallurgical centers and their spheres of influence during the Early and Middle Bronze Age. *I.* central European: *a.* Carpathian; *b.* south German and Bohemian; *II.* Caucasian; *III.* southern Ural.

Carpathians. In the beginning of the second millennium B.C., local metallurgy already existed north of the Black Sea, but weapon, ornament, and tool forms were chiefly adaptations of Caucasian models. The products of the southern Ural center spread all over the lower Volga basin, that is over the area occupied by the Timber-grave culture, the Andronovo culture east of the southern Urals in Siberia, the eastern branch of the central Russian Fat'janovo culture, and the Turbino culture in the Kama River basin and the middle Urals.

Cultures: their Continuity and Expansion

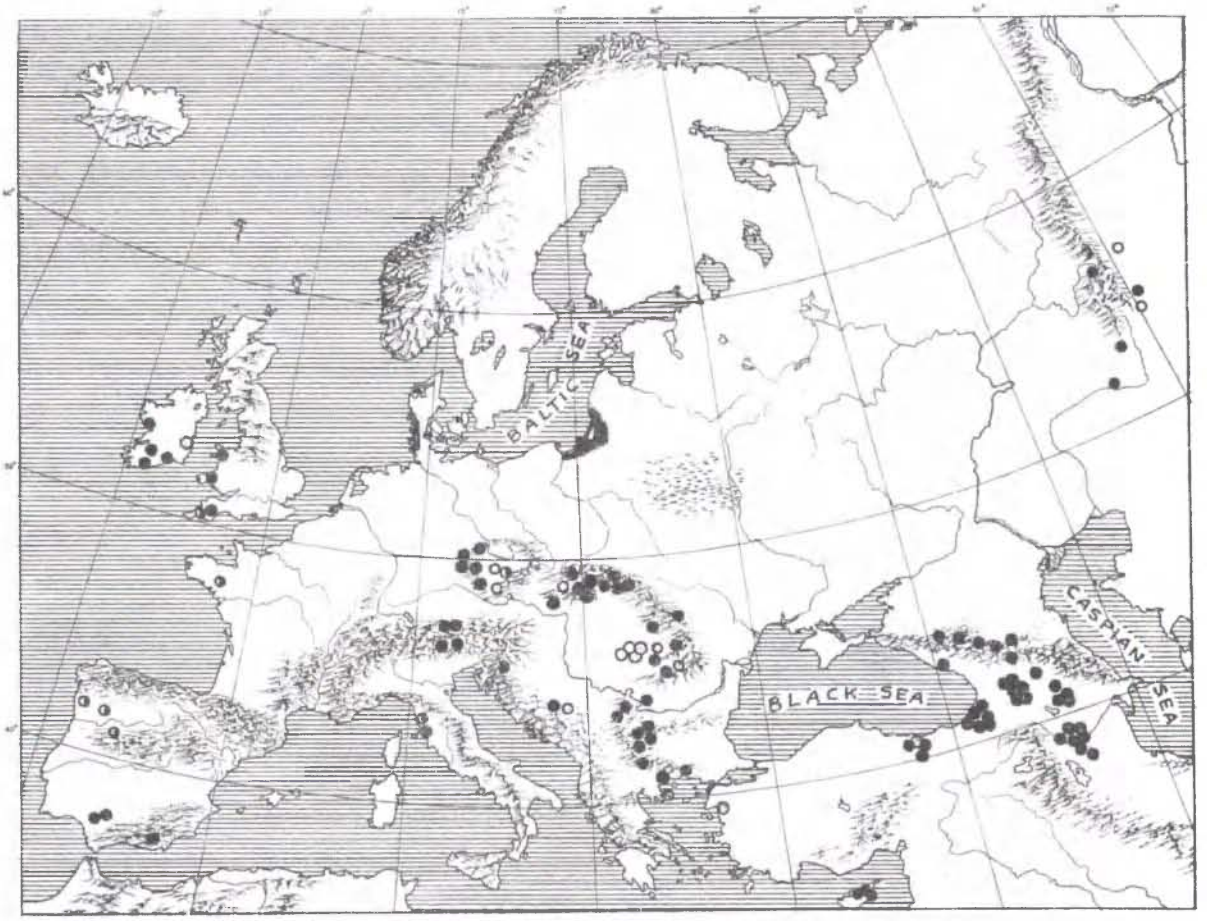
The major goal of this monograph is to define the central and east European Bronze Age cultures, and the formation, distribution, continuity, and expansion or disintegration of each. None of the cultures treated in this volume has been previously described period by period. Reports have been made on separate assemblages, hoards, or a single period of a culture, and there have been monographs dealing with the archaeology of a given country or a province. Not even the central European Únětice-Tumulus-Urnfield cultural continuity, the greatest Bronze Age sequence of Europe, has been described as a whole; only typological descriptions of finds have prevailed for this area. Nor has the north Carpathian group been treated in its entirety, although its chronological phases, like the Bilopotok or Komarov stages, have been described. The Baltic culture in East Prussia, western Lithuania, and western Latvia has been dealt with, but its western part in eastern Pomerania has either been treated separately without a label or grouped with the Northern Area Bronze Age. The Bronze Age culture north of the Black Sea in the eastern Ukraine, the Crimea, and the northern Caucasus, has been lumped together with the Timber-grave culture of southern Russia completely confusing the picture of Cimmerian and Scythian origins. Only recently, after several decades of very intensive excavations has it become possible to isolate certain cultural units. Such is the case in the eastern part of Russia; the large cultural bloc between central Russia and northwestern Siberia, until lately ill-defined, is now called the Turbino culture.

Here I shall review the cultural groups of the area specified above, starting with the central European cultures, proceeding to the cultural groups in the north Pontic and Caucasian areas, the Volga River and the Urals, and finally dealing with the northern Russian groups. Each of these had its own cultural pattern, although certain similarities with other groups arose from commercial association or from similar natural resources.

Trade routes, which originated in the central European, Caucasian, and southern Ural copper areas, in the amber areas of the southeastern Baltic and Jutland, and in the gold centers of Ireland, Bohemia, and Transylvania (fig. 2), criss-crossed the European continent, bringing many cultures into contact with each other. Commercial ties with the Mediterranean, mainly the Mycenaean culture, and with the Near East via the Caucasus, continually brought new influences to bear on the cultures we are considering.

On the basis of archaeological evidence of social structure, settlement patterns, art, and religion, these cultures can be classified into two large blocs: southern and northern. These blocs are not cultural spheres recognizable by the distribution of technological forms; they are rather two large ethnic families. The village type, architecture, social structure, burial rites, and art are indisputably alike in the North Pontic, Timber-grave, central Russian Fat'janovo, North Carpathian, east central European-Transylvanian Otomani, eastern Rumanian Monteoru, central European Únětice-Tumulus-Urnfield, southeastern Baltic, and western Russian cultures. These people lived in fortified villages on elevations or high riverbanks and in rectangular timber houses; the use of vehicles and bridled horses is evident in almost all of these groups. They buried their dead in graves which were imitations of houses and built of timber, stone, or other materials, usually under barrows. They held in high esteem the sun, fire, and domestic animals, including horses as seen from sacrificial places, grave offerings, the transition to cremation rites, and the use of symbols in art.

The northern Baltic area, northern Russia, and northwestern Siberia encompass the cultural groups of the northern bloc. These differ from the southern in burial rites (burial in the extended position, the absence of barrows and of the house-grave idea, the absence of cremation, etc.), in pottery (primitive, round-based), in decorative motifs (entirely different: dentate stamp impressions predominant), and in house type (semi-subterranean houses connected by corridors). The cultures of the northern bloc, being more primitive, show much more similarity over an enormous territory. One of the largest groups, the Turbino culture, spread from northwestern Siberia to the upper Volga basin in central Russia. It continued into and persisted during the Iron Age. Toward the end of the Bronze Age and during the



● ● ● copper ore

● ● ● tin ore

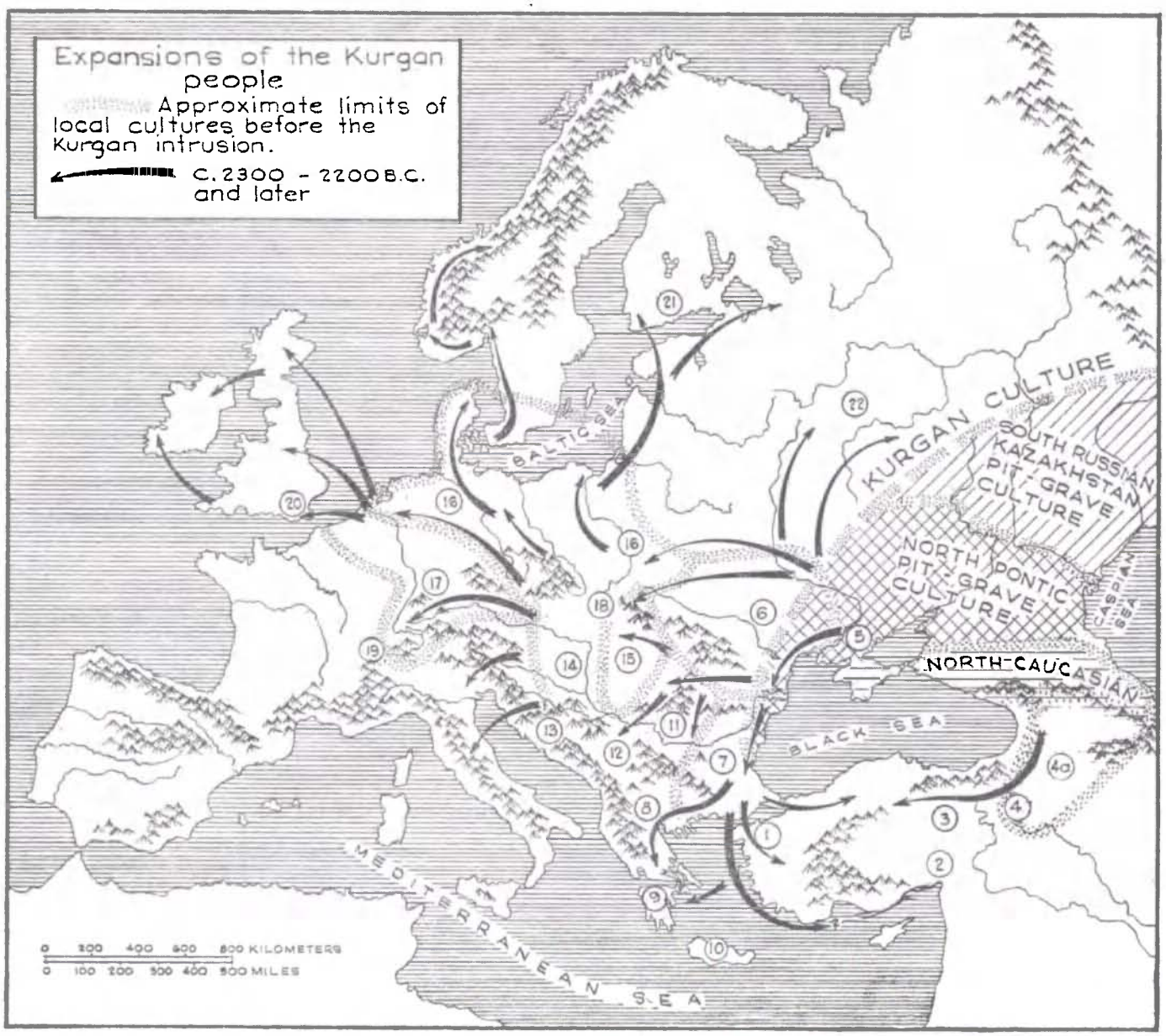
o o o gold ore

■ sources of amber

FIG. 2. Sources of copper, tin, gold, and amber in Europe.

Early Iron Age certain local cultural variations are apparent. They finally developed into Iron Age groups indistinguishable from the tribes known historically and linguistically as Finno-Ugrian, which inhabited the northern central and eastern Russian territory and beyond the Urals. West of the Turbino culture in northwestern Russia and Finno-Karelia was a Pit- and Comb-marked pottery group of hunter-fishers different from, yet related to, the Turbino culture.

The local cultural groups of the southern bloc were formed after the great expansion during the second half of the third millennium B.C. of the Kurgan Pit-grave people from the Eurasiatic steppes. A new people may have arrived no later than 2300-2200 B.C. in the eastern Balkans, the Aegean area, western Anatolia, central Europe, all of the western and eastern Baltic area, and central Russia (map 1). There is no other possible explanation of the great changes in cultural configurations and developments than an invasion of new people who were responsible for the disintegration of the old European cultures and for the creation of a new set of cultural groups. The Kurgan people must also be considered as



MAP 1.

KEY: *Arrows* indicate tentative directions of the diffusion of Kurgan elements or destruction.
Numbers indicate Neolithic, Chalcolithic and Early Bronze age cultures before the appearance of Kurgan elements.

1. Troy I and II; **2.** Cilician Early Bronze Age; **3.** Central Anatolian; **4.** and **4a.** East Anatolian and Transcaucasian Early Bronze Age; **5.** Dnieper-Donets; **6.** Tripolye (Cucuteni-Tripolye); **7.** Gumelniţa; **8.** Early Macedonian Bronze Age; **10.** Early Minoan; **11.** Salcuţa; **12.** Late Vinca – Bubanj-Hum I; **13.** Butmir; **14.** Lengyel survivals (Danubian III); **15.** Tisza survivals (Tisza-Polgár and Bodrogkeresztúr); **16.** Northern Funnel-necked Beaker (TRB) complex; **17.** Southwestern Funnel-necked Beaker complex (Michelsberg on the Rhine, Pfyn in eastern Switzerland, Altheim on the upper Danube in Bavaria); **18.** Southeastern Funnel-necked Beaker complex, succeeded by Channelled-Ware (or Baden) culture; **19.** Horgen; **20.** Windmill-Hill; **21.** Comb-marked Pottery; **22.** Pit-marked Pottery.

Note: the *Kurgan Culture* is shown after its expansion from east of the lower Volga to the Black Sea and the northern Caucasus and already differentiated into the North Caucasian (or Majkop), North Pontic Pit-grave and Catacomb-grave and South Russian-Poltavka variants (*ca.* 2200-1800 B.C.).

playing an important role in the rise of local metallurgy, since they probably brought with them metallurgical knowledge obtained in the Caucasus.

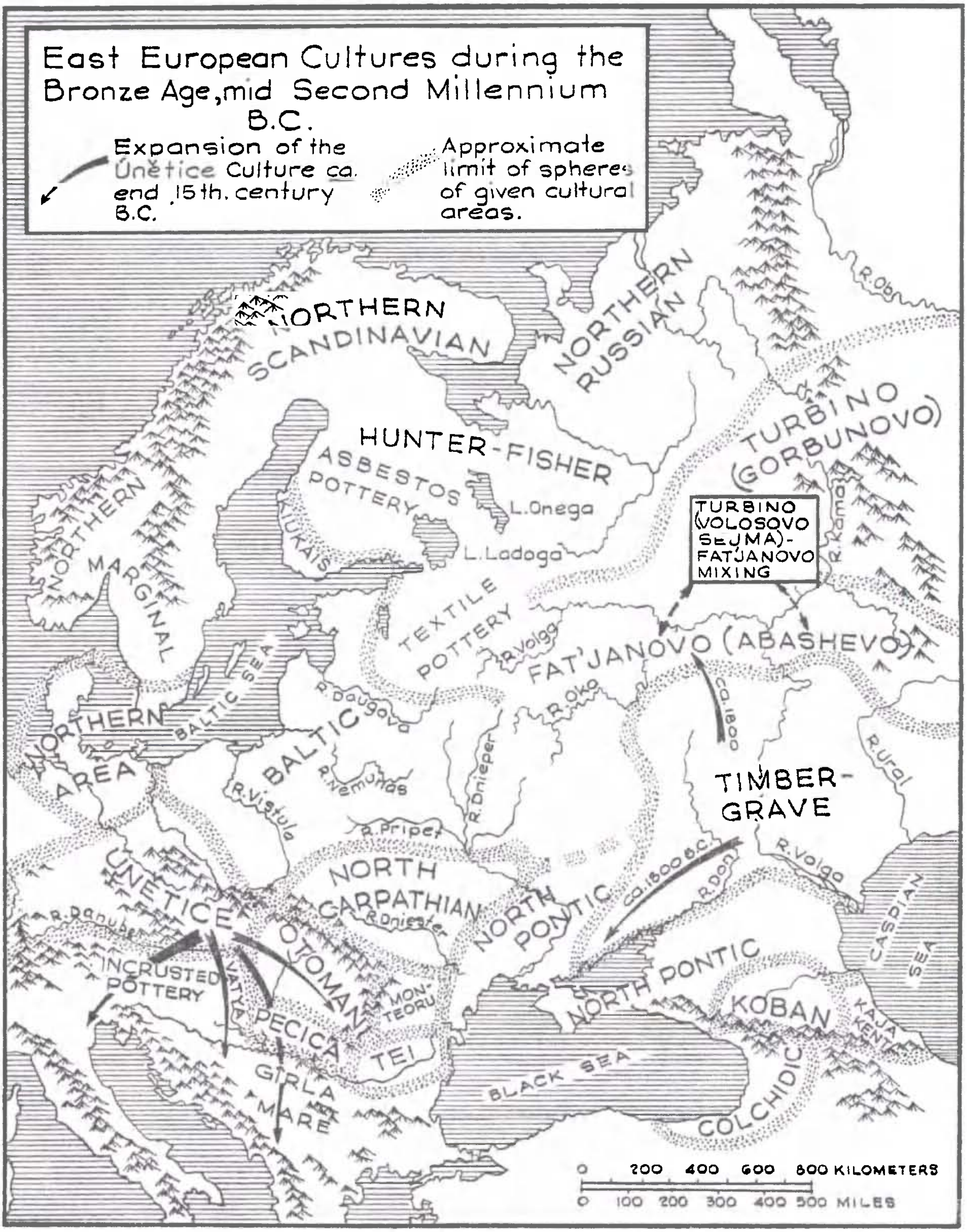
The Kurgan people came to the Black Sea area around one millennium earlier when forested conditions over the present steppe area still prevailed. Perhaps the dessication of the climate toward the end of the third millennium B.C., in combination with their possession of horses, vehicles, knowledge of metallurgy, and social and economic structure as well, have to be reckoned with among the causes for their westward, northward, and southward expansion.

These people brought to Europe cultural elements which offered a great contrast to the Painted Pottery groups of Gumelniţa and Cucuteni-Tripolye in the eastern Balkans and the western Ukraine, to the Salcuţa group in the central Balkans, to the Tisza-Polgár and Baden cultures in eastern central Europe, and to the Funnel Beaker groups in central and northern Europe. The old European cultures were disturbed, and most were sooner or later assimilated to the Kurgans, although islands of local culture survived for centuries, some persisting throughout the Early Bronze Age. The presence of a varied sub-stratum and a different physical environment led of necessity to the differentiation of the Kurgan culture into a series of local groups which emerged in the beginning of the second millennium B.C.

After the formative period of the first centuries of the second millennium B.C., a new and powerful nucleus emerged in central Europe based on exploitation of the copper sources in the western Carpathians, and later of sources in the Bohemian and central German mountains. This was the Únětice culture. Near the end of the fifteenth century B.C., the Ún̆ticians expanded into the Danubian plain in Hungary and Yugoslavia, and to Transylvania (map 2). During the subsequent periods they are called the Tumulus people. They monopolized the richest part of Europe, with its fertile lands and copper and gold mining areas. Shortly after the middle of the thirteenth century B.C., the central European people started to expand southwards to Italy, Greece, and Anatolia and brought about the destruction of the Mycenaean civilization and the Hittite Empire (map 3).

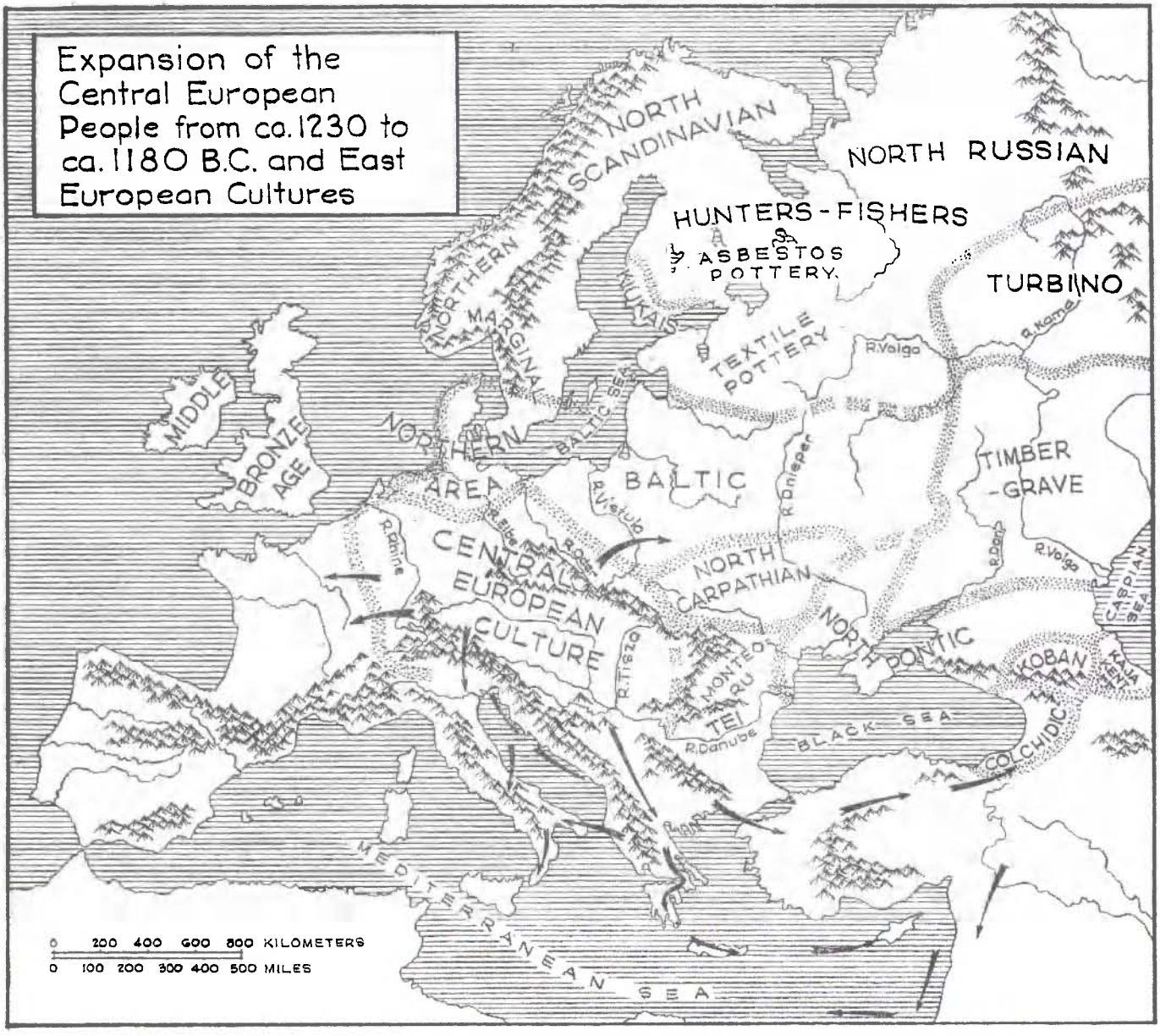
Another area of continuous unrest was the steppe region of the lower Volga and beyond. Here the Timber-grave culture was the power to be reckoned with. Early in the second millennium B.C. it spread westward to the northern shores of the Sea of Azov and to the basin of the Donets River and north into the lower Oka in central Russia (map 2). In about the last century of the second millennium B.C. the area of the lower Dnieper and lower Dniester was occupied (map 4), and this vigorous Timber-grave or proto-Scythian expansion did not cease until the eighth century B.C. and later.

The European Bronze Age was a rather tumultuous period not much less stormy than the coming Iron Age, with its further Scythian, Celtic, and Germanic migrations. The period examined in this book lies between the two great westward expansions of the inhabitants of the steppe: the Kurgan people, whom I consider Proto-Indo-Europeans, in the last quarter of the third millennium B.C., and the Scythians at the end of the eighth century B.C.

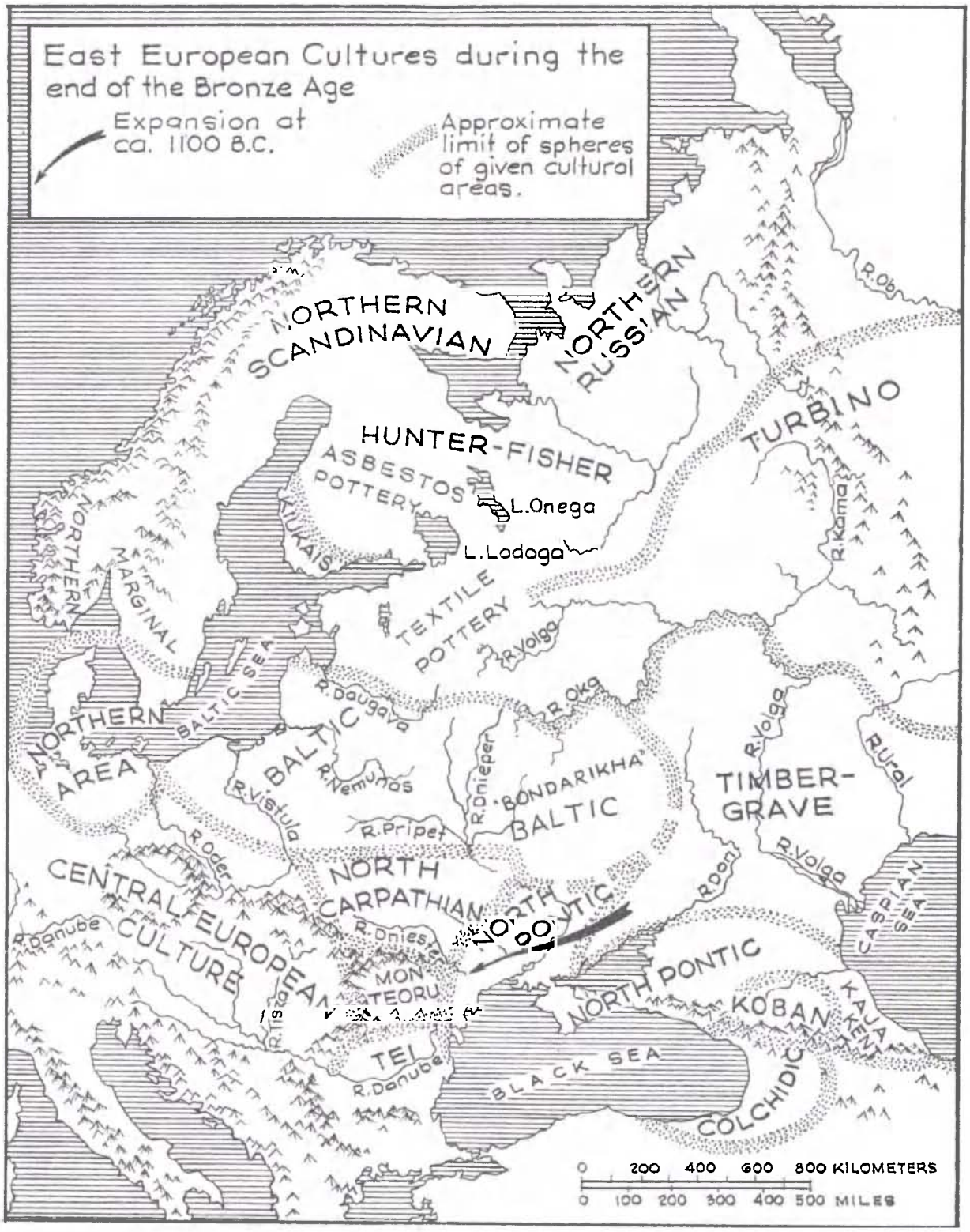


East European Cultures during the Bronze Age, mid Second Millennium B.C.
Expansion of the Únětice Culture ca. end 15th. century B.C.
Approximate limit of spheres of given cultural areas.
NORTHERN SCANDINAVIAN
NORTHERN RUSSIAN
R. Ob
HUNTER-FISHER
ASBESTOS POTTERY
L. Onega
L. Ladoga
KIUKAIS
TURBINO (GORBUNOVO)
TURBINO (VOLOSOVO SEJMA)-FATJANOVO MIXING
NORTHERN MARGINAL
TEXTILE POTTERY
R. Volga
FAT'JANOVO (ABASHEVO)
R. Kama
BALTIC SEA
R. Daugava
R. Oka
ca. 1800
NORTHERN AREA
BALTIC
R. Nemunas
R. Dnieper
R. Ural
R. Vistula
TIMBER-GRAVE
R. Pripet
NORTH CARPATHIAN
R. Dniester
NORTH PONTIC
ca. 1800 B.C.
R. Don
R. Volga
CASPIAN SEA
UNETICE
R. Danube
INCRUSTED POTTERY
VATYA
OTOMANI
MONTEORU
PECICA
TEI
GIRLA MARE
NORTH PONTIC
KOBAN
KAJAKENT
COLCHIDIC
BLACK SEA
0 200 400 600 800 KILOMETERS
0 100 200 300 400 500 MILES

MAP 2.


Expansion of the Central European People from ca. 1230 to ca. 1180 B.C. and East European Cultures
NORTH SCANDINAVIAN
NORTH RUSSIAN
HUNTERS-FISHERS
ASBESTOS POTTERY
TURBINO
NORTHERN MARGINAL
MIDDLE BRONZE AGE
NORTHERN AREA
BALTIC
TEXTILE POTTERY
R. Volga
R. Kama
R. Dnieper
TIMBER-GRAVE
CENTRAL EUROPEAN CULTURE
NORTH CARPATHIAN
NORTH PONTIC
KOBAN
COLCHIDIC
MONTEORU
TEI
BLACK SEA
CASPIAN SEA
MEDITERRANEAN SEA
0 200 400 600 800 KILOMETERS
0 100 200 300 400 500 MILES

MAP 3.


East European Cultures during the end of the Bronze Age
Expansion at ca. 1100 B.C.
Approximate limit of spheres of given cultural areas.
NORTHERN SCANDINAVIAN
NORTHERN RUSSIAN
R.Ob
HUNTER-FISHER
ASBESTOS POTTERY
L.Onega
L.Lodoga
TURBINO
R.Kama
NORTHERN MARGINAL
LUKAIS
TEXTILE POTTERY
R.Volga
NORTHERN AREA
BALTIC SEA
R.Daugava
R.Oka
BALTIC
R.Nemunas
R.Vistula
R.Dnieper
BONDARIKHA BALTIC
TIMBER-GRAVE
R.Rural
R.Pripet
R.Oder
NORTH CARPATHIAN
CENTRAL EUROPEAN CULTURE
R.Danube
R.Dniester
NORTH PONTIC
R.Don
CASPIAN SEA
MONTEORU
R.Rioni
TEI
R.Danube
BLACK SEA
NORTH PONTIC
KOBAN
KAJAKENT
COLCHIDIC
0 200 400 600 800 KILOMETERS
0 100 200 300 400 500 MILES

MAP 4.

PART ONE

STUDY IN CHRONOLOGY

INTRODUCTION

To establish the chronology I have used stratigraphy; the method of correlation based on comparisons of the assemblages; and synchronizations based on identical trade objects found in the different assemblages. Trade was transcontinental, and some objects were distributed over wide areas, allowing us to synchronize a whole chain of cultures. In fortunate instances, trade objects link the central and eastern European cultures to the historic areas in the south, providing evidence for absolute dating. In describing cultural relationships in this large territory, the synchronization of the assemblages is fundamental. Therefore, the first chapter in this volume is dedicated to defining the chronology of different cultural groups on the basis of commercial or military relations.

Climatic change as indicated by pollen analysis does not serve as effectively for the establishment of chronology in the Bronze Age as it did in the Stone Age. A Sub-Boreal climate persisted throughout the period, and radical changes in climate which would have caused greater changes in vegetation did not occur. Pollen data are, therefore, only of secondary importance. In the northern forested zone, however, where Stone Age cultural levels persisted, such data are of use. The pollens from the peat bogs in the middle Urals have shown fluctuations in climate during the Sub-Boreal period from a dry to a wetter climate and back to a dry one. These changes of short duration serve in a few cases to synchronize the archaeological material.

So far, carbon-14 dates are not available for any of the east European Bronze Age sites. In this case one must rely on cross-correlations from outside. Carbon-14 dates made for Bronze Age finds in northwestern Europe more or less agree with the archaeological dates in central Europe. For the beginning of the Bronze Age the dates of the Bell Beaker culture in Germany obtained by carbon-14 dating are of importance. They fall between *ca.* 2200-2100 and 1800-1700 B.C. In Heidmoor, district of Segeberg in Schleswig-Holstein, the Bell Beaker layer was above a Neolithic Funnel Beaker moor settlement. Wood from 5 cm below the Bell Beaker layer dated 2020 $\pm$ 170 B.C., while carbonized wood found 5 cm above the top Bell Beaker layer dated 1770 $\pm$ 150 B.C. (Münnich, 1957; Thomas, 1961; *note*: dates are not corrected for a half life of 5730 $\pm$ 30). About the same time horizon is indicated by the radiocarbon date for a sample of charred grain from a storage pit at Burgliebenau near Merseburg in eastern Germany from the time of the transition from the end Neolithic to Early Bronze Age. It was dated by the Groningen laboratory to 1950$\pm$150 B.C. (De Vries, Barendsen, Waterbolk, 1958; Thomas, 1961). The twentieth-nineteenth centuries B.C. are a very probable date for the Bell Beakers. Several carbon-14 dates for the early corded beakers were obtained in the Netherlands. One was for the beaker from Ede in southern Veluwe: 2240$\pm$120 B.C. or 4195$\pm$120 B.P.; the other for the beaker from Schaarsbergen: 2485$\pm$320 B.C. or 4435$\pm$320 B.P. (Waals and Glasbergen, 1955). These dates indicate that the earliest corded beakers precede the bell beakers in northwestern Europe. The Únětice culture in central Europe, with which a real metal culture starts, immediately succeeds the Bell Beaker and the Corded period. The radiocarbon dates for the later Bronze Age periods in the Netherlands also show the broad outlines of its chronology. The dates of samples from the tumuli of Toterfout-Halve-Mijl indicate a range between 1500$\pm$85 and 870$\pm$140 B.C. for the Tumulus culture in the Netherlands and Belgium (see summary of these dates: Thomas, 1961). Measurements of the whole series of samples from un-

disturbed deposits in stratigraphic sequences of the central and eastern European Bronze Age sites will have to be done in order to obtain the carbon-14 dates for many Bronze Age phases. The few dates available are already of great assistance since they correlate well with recent archaeological concepts.

Absolute dates referred to in this monograph are mostly derived from the chronology of Greece. Mycenaean, Submycenaean, and Protogeometric connections are very important for establishing the central European Bronze Age chronology. The Únětice-Tumulus-Urnfield culture with its very rich Bronze Age materials, obtained from thousands of hoards, graves, and from habitation sites, certainly is the backbone of the European Bronze Age chronology outside Greece. The Únětice-Tumulus-Urnfield chronology is applicable to many cultural groups adjacent to central Europe because they belong to the central European sphere of influence. Thus it applies to the Northern Area, Baltic, and North Carpathian cultures. The dates of the Caucasian sphere including the northern Pontic area are based on the absolute dates of the Near Eastern cultures to which the Caucasus was linked throughout all the periods of the Bronze Age. However, the cross-dating with the central European and Mycenaean chronology is very useful. The western Pontic area serves a transitional zone where central European and Aegean forms meet with the Caucasian products. The wide distribution of some bronzes over the North Eurasian forested plain allows us to tie the northern Russian and middle Ural assemblages to the Chinese chronology.

In many cultural groups the local stratigraphies have yielded complete sequences, thus providing us with a means of checking the chronology established on the basis of intertribal trade.

The European cultures of this time did not live in isolation. Ever since the end of the third millennium B.C., when intensive trade was carried on by the Bell Beaker and Kurgan peoples, transcontinental trading activities had been maintained. The trade routes, which tied together the various cultures of north and south or east and west, enable us to establish the contemporaneity of certain cultures. Weapons, tools, ornaments or ornamental motifs, amber and faïence beads are the indicators of the communications existing between the historic world of the Near East and Egypt, Greece, Crete, and the so-called "barbarian" north. They also suggest the nature of the interrelationship of local cultures with one another. The spread of copper or bronze, gold or silver earrings, hair-rings, pins, bracelets, neck-rings, axes, daggers, swords, bronze vessels, etc., into marginal zones gives us some hope of cross-dating even the most widely separated cultures here.

Hence, by tracing the distribution of articles used in trade or brought by moving peoples, and by studying the local stratigraphies and typological developments, we can determine which cultures were contemporaneous. It is necessary to stress here that trade objects alone are not sufficient bases for a synchronic framework. Items such as amber or faïence beads were used in trade over a long time and their forms did not change appreciably. Therefore, in many instances they are merely evidence of commerical contacts but do not fix any definite time horizon. Of importance are the *assemblages* of finds – the hoards, graves, and collections from habitation sites – in which certain "diagnostic" forms prevalent over a large territory appear in association with other finds. The 'diagnostic' forms, such as pins, fibulae or swords, represent constant innovations, they belong to the dynamic side of life, and therefore serve as time markers. In all the periods there never occurred such a break in a culture that all forms stopped existing at the same time and completely new forms appeared. Even in the case of migrations, we cannot find the rapid disappearance of local forms. Only foreign elements appear in abundance and, from the merger of old and new, hybrid forms are gradually born.

In this chapter I will attempt to synchronize the cultures of central Europe, eastern central Europe north of the Danube, the Baltic area and Russia with those of Greece and Italy, and, in some instances, with those of the Near East. The purpose is: 1) to build a chronological framework on which the further description of cultures will be based, and 2) to show commercial relations. Only the most indicative examples which witness the intercultural relations or date the assemblages will be shown. Many of the indicative or diagnostic forms showing connections between central Europe and Greece or Italy have

been studied already by a number of archaeologists in recent decades (Childe, Hawkes, Merhart, Milojčić, Müller-Karpe, and others). I shall repeat them again with additions, extensions to the east, and with my own views on the problem of synchronization.

The use of different labeling systems in central, northern, eastern central, western Europe, in the Caucasus, the Pontic area, the Urals and elsewhere causes great confusion for anyone attempting to view the chronological sequence over a large area. Therefore, the use of dated epochs is preferable by far, and it is possible to use dates because of the many ties to the historical south. However, for some dates used in the chronological tables a margin of error of from 50 to 100 years must be allowed.

The period under examination is traditionally apportioned into three major divisions, the Early, Middle, and Late Bronze Ages, and each of them into intervals lasting from 100 (or less) to 150 (or more) years each. My dates which I apply to all of central and eastern Europe, based on cultural developments of central European Únětice-Tumulus-Urnfield culture, are:

Early Bronze Age, *ca.* 1800 B.C. - 1450 B.C.
Middle Bronze Age, *ca.* 1450 B.C. - 1250 B.C.
Late Bronze Age, *ca.* 1250 B.C. - 750 B.C.

The Early Bronze Age is a period of progressing metallurgy in central Europe, the Caucasus, and the southern Urals. This is a time of the formation of vigorous cultures like the Únětice in central Europe, Otomani in Transylvania, or the Timber-grave culture in the lower Volga basin. A considerable efflorescence of metallurgy is seen in the sixteenth and fifteenth centuries B.C. when bronze artifacts in greater numbers spread even to the marginal areas.

The five centuries or so preceding the European Bronze Age belong to the Chalcolithic period in most parts of Europe except the southern Carpathian basin and the Ponto-Caucasian region. In the latter areas Early Bronze Age started in the third millennium B.C., but is called "Copper Age".

The *Middle Bronze Age* is marked in central Europe by growth and expansion of the Tumulus people, the heirs of the Early Bronze Age Úněticians. This entirely changed the cultural pattern and grouping in eastern central Europe. Strong central European influences spread over a large part of Europe between eastern France, southern Scandinavia, the east Baltic area, the lower Danube and the northern Adriatic coasts. In southern Russia (the lower Volga area) this is the flourishing period of the Timber-grave culture, and in northeastern Russia, of the Turbino culture.

The *Late Bronze Age* is the Urnfield period in central Europe, that is, domination by the same Únětice-Tumulus people who now use cremation instead of inhumation in burial. The influence of the Urnfield culture in connection with its expansion southward in the second half of the thirteenth and the beginning of the twelfth centuries B.C. covered not only the whole middle part of Europe, but also the Apennine Peninsula, the Adriatic, the Aegean and the eastern Mediterranean areas. The metal industry reached its apogee. The Urnfield period is divided into five chronological phases, Urnfield I-V. Until about 750/700 B.C. iron did not penetrate most of the cultures described, and where it did in southern parts of central Europe since the twelfth century B.C., it was still of little significance. Around 1100 B.C. the Timber-grave people launched a forceful expansion toward the west to the lower Dnieper and lower Dniester basins. From this date on, they dominated in the northern Pontic region. In the late eighth century B.C. the same steppe people appeared in eastern central Europe causing changes in ethnic configurations and bringing oriental elements to Europe. The rise of the Early Iron Age and the Hallstatt culture was roughly coincident with these new events.

I

EARLY BRONZE AGE

Ca. 1800 B.C. - *ca.* 1450 B.C.

A. EARLY BRONZE AGE FROM CA. 1800 B.C. – CA. 1650 B.C.

Three streams of influences were responsible for the birth of the central European Bronze Age:

1) the Caucasian, brought by the Eurasiatic steppe or *Kurgan* people around 2300-2200 B.C.;
2) the Near Eastern, obtained by trade via the Balkans, the Aegean, and the eastern Mediterranean;
3) the western European Bell Beaker, brought by groups of the mobile folk who before the end of the third millennium or around 2000 B.C. reached central Europe as far as Hungary and southern Poland.

The Caucasian, Near Eastern and Bell Beaker metal forms were imitated by central European smiths. Around 1800 B.C. from this merger an individual metal culture arose, created by the peoples of Kurgan origin, the Únětician in central Europe and the Otomanians in Transylvania.

All of the influences mentioned have played their roles in molding the shape of the European Early Bronze Age. Central European dagger forms owe much to the Bell Beaker and Caucasian shapes, axe forms to the Caucasian and Near Eastern shapes, and almost all ornaments to the Near Eastern ornament forms.

1. *Commercial relations between eastern central Europe and the Near East*

Commercial relations between eastern central Europe (the middle and lower Danube area) continued from Neolithic times into the first centuries of the second millennium B.C. The Pecica people (also known as Periam) in the lower Tisza basin were the chief transmitters of the Near Eastern metal forms to the north. The Únětician and Otomanians apparently had no direct trade relations with the eastern Mediterranean; oriental metal objects were obtained through intertribal exchange. Gradually these spread to the whole Danube basin: to the Nagyrév group on the middle Danube south of Budapest, to the Kisapostag group in western Hungary, and ultimately to their northern neighbors.

The trade routes probably were about the same as during the Neolithic and Chalcolithic times: central Balkan Morava and Vardar (Axios) rivers, the Aegean Sea, the western and southern coasts of Asia Minor leading to Cilicia, Cyprus, Syria, and Palestine (fig. 3, *3*).

Almost all metal artifacts used by the Pecica people and imitated by their northern neighbors have analogies or prototypes in the Near East between Egypt and northern Iran, the most numerous and closest parallels being along the Syrian-Palestinian coast and on Cyprus. These are: neck-rings with rolled ends, curved shank pins with knot heads, called Cypriote pins, or with simple spiral or loop heads, sheet-metal belt plates with rolled ends and embossed decoration, cylinders wound of thin copper wire, double-wire spiral rings, earrings with flattened ends, plain spiral bracelets, and double-spiral pendants. Since a great number of these ornaments were found in the site at Byblos, Syria, for the sake of convenience they may be labeled "Byblos types" (Dunand, 1937). In Byblos they date from the period between 2100 to 1750 B.C. Roughly the same date is indicated by the other sites in Syria, Palestine, Iraq, and Iran. The same types of neck-rings, loop-headed pins, and cylinders wound of thin wire are

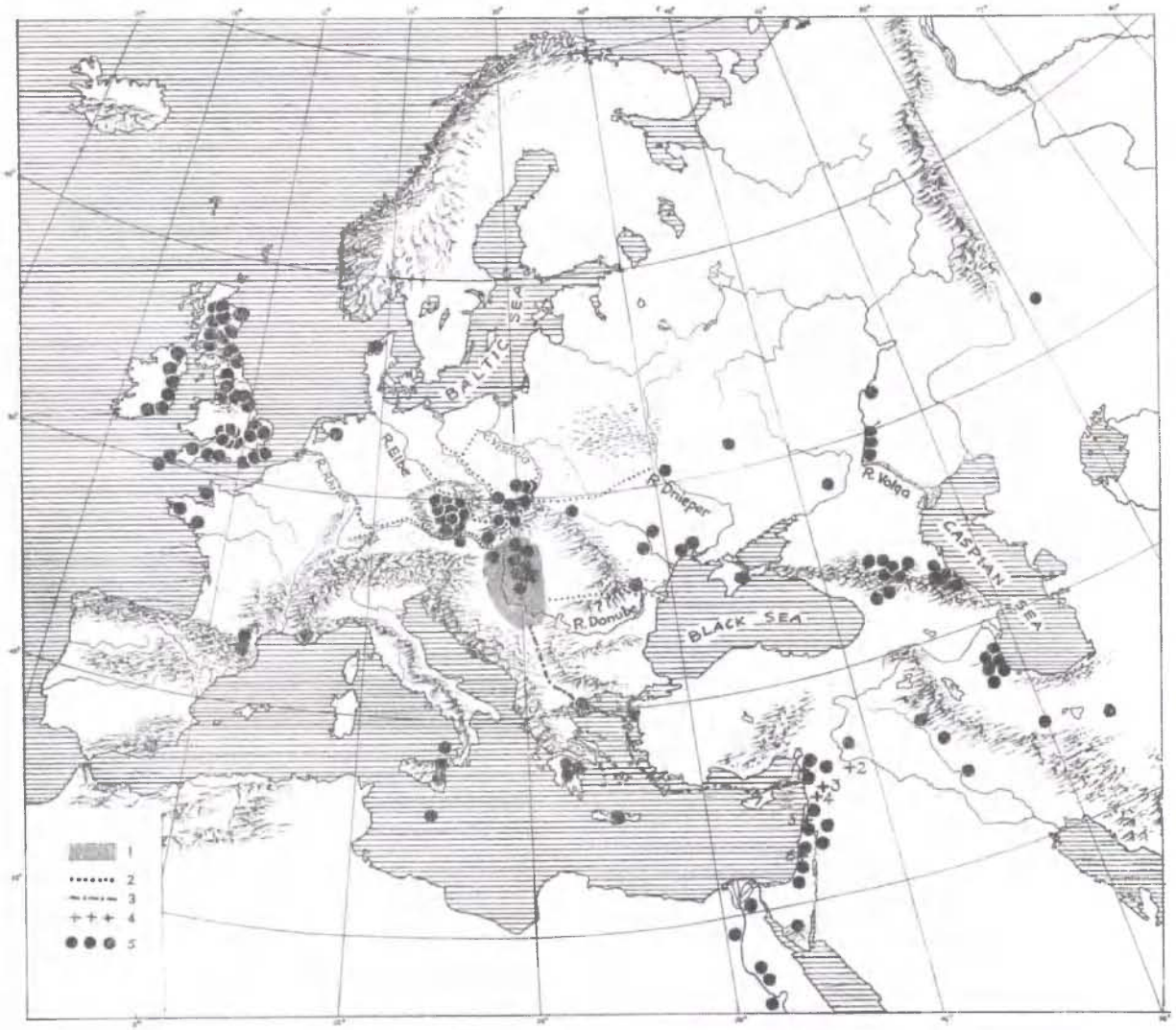


FIG. 3. Near Eastern influences on central European Early Bronze Age and the distribution of faïence beads.

1. Area of heavy distribution of imports or their imitations of Near Eastern ornaments and daggers.
2. Routes of diffusion of metal types produced in central Europe but modeled on Near Eastern examples.
3. Trade between central Europe and the Near East.
4. Near Eastern sites in which close parallels to east central European ornaments are found: 1. Ugarit (Ras Shamra); 2. El Hamman; 3. Tell As; 4. Hama; 5. Byblos; 6. Megiddo; 7. Cyprus.
5. Distribution of faïence beads between the beginning of the second millennium and *ca.* fourteenth century *B.C.* Based on Stone and Thomas, 1957, with additions.

known from the Middle Ugarit 1 level at Ras Shamra (Schaeffer, 1949, pp. 49-60), and neck-rings from level II at Hama, Syria, dated to 2000-1750 B.C. (Schaeffer, 1949, p. 107). North of Hama the cemetery at Tell As, dated to *ca.* 2100-1750 B.C., yielded the same series of ornaments which have analogies in Byblos and central Europe (Mesnil du Buisson, 1932, pp. 171-188), and there are many more sites in Iraq, Iran, Palestine, Syria, and Anatolia containing neck-rings, bracelets, spiral finger-rings, earrings or hair-rings with flattened ends, wire cylinders, double-spiral pendants, and curved shank pins with looped tops or knot heads.

There is no doubt that the ornaments just mentioned, as well as flanged and flat axes, "Cypriote" daggers (fig. 4, *2*), and riveted daggers first were made in the Near East and then were distributed to eastern central Europe, as they are dated at a much earlier period in the Near East, many of the prototypes

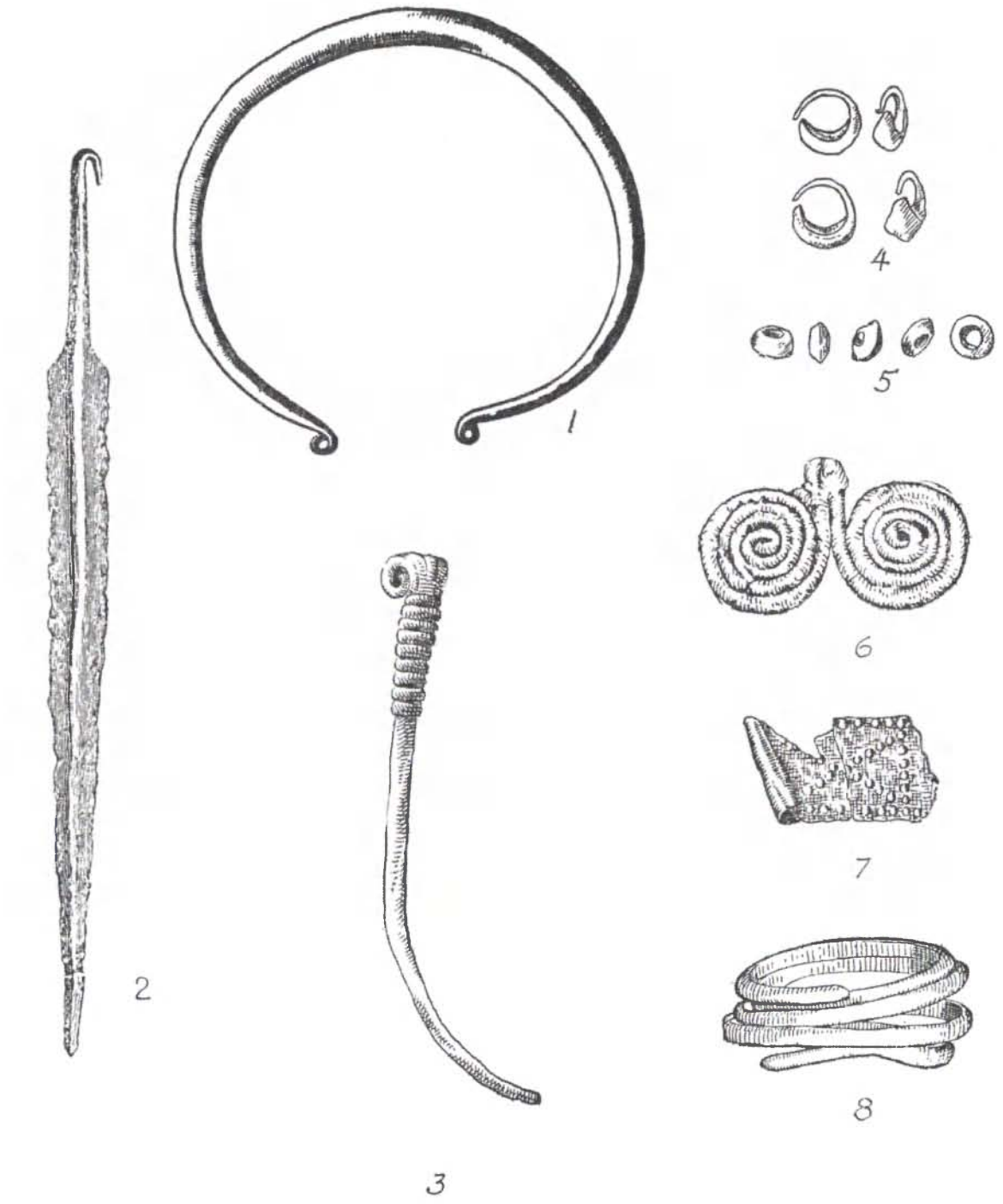


FIG. 4. Copper or "bronze", gold and faïence objects in eastern Hungary and western Rumania having prototypes in the Near East. **1,** neck-ring; **2,** "Cypriote" dagger; **3,** "Cypriote" knot-headed pin; **4,** gold hair-rings or earrings; **5,** faïence beads; **6,** double-spiral pendant; **7,** sheet-metal belt plate; **8,** bracelet. **1, 3-5** from the early Pecica site at Ó Beba (Beba Veche) at the border between Hungary and Rumania; **2,** Czorvás, and **6-8,** Periam (Periamuş) early Pecica sites, both in the lower Mureş area. Scale: **1, 2, 8** 1/2; **3, 5-7** 1/1. **1,** *after* Childe, 1929; **2,** *after* Pulzsky, 1884; **3,** *by courtesy* of Dr. I. Bóna; **4-8** *after* Popescu, 1944.

reaching the middle of the third millennium B.C. A resemblance between ornaments from the Byblos, Ras Shamra, and Hama sites, particularly from the levels which date from the period between 2100 and 1750 B.C., and the contemporary cemeteries like Tell As and El Hamman, and ornaments from central Europe indicate the spread of Near Eastern types of ornaments and other copper artifacts probably no later than 1900-1800 B.C. The earliest types of necklets (fig. 4, *1*), knot-headed (fig. 4, *3*) and loop-headed pins, spiral bracelets (fig. 4, *8*), earrings or hair-rings (fig. 4, *4*), double-spiral pendants (fig. 4, *6*), spiral wound cylinders (pl. 1, *11*), copper plates with rolled ends (belts or diadems?; pl. 1, *16*), and others have been found in the earliest graves of the cemeteries of Szöreg and Deszk F, in the cemetery of Pitvaros in eastern Hungary near Szeged, and in the cemetery of Ó Beba and the site of Periam on the lower Mureş in western Rumania. The Near Eastern imports had a very strong influence on the development of the central European Únětice culture, giving rise to the series of basic types of necklets, pins, bracelets, hair-rings, pendants, and belt plates. The early Únětice metallurgists imitated many forms of imported ornaments from the Near East. The local Únětician copper artifacts must therefore have been created after the first appearance of Near Eastern imports in the Danube area. The eighteenth century B.C. seems to be a very probable date.

2. *Roughly coeval assemblages in central and eastern Europe as shown by widely distributed classes of artifacts*

Even though the trade of this period never reached the intensity of the sixteenth and fifteenth centuries B.C., several widely distributed classes of artifacts permit us to recognize contemporary assemblages in a large area between central Europe, the Baltic Sea, the Black Sea, and the lower Volga area. For chronological purposes I have picked out peculiar ring pendants made of amber, bone, or clay, copper and gold earrings, and faïence beads, as objects having a considerable diagnostic value for the early part of the Early Bronze Age.

a. *Assemblages associated with ring pendants*

Ring pendants of amber, bone, or clay, with a circular hole in the center and a small perforation for suspension, occur all over the area between the Baltic and Black Sea. Their distribution is shown in figure 5.

In several graves they were found placed close to the neck of the deceased; probably they were worn on a string around the neck as solar amulets. Prototypes in copper occur in the northern Caucasus dating from the Middle Kuban period which is *ca.* 2000 or the very beginning of the second millennium B.C. (fig. 327, *2*). These amulets apparently were brought to Europe by the Kurgan people together with many other oriental elements and continued to be made by their heirs for several centuries. The material of which they were made, particularly amber and copper, speaks for their symbolic significance. In central Europe they were borrowed by the Bell Beaker people. They appear in late Bell Beaker graves and in the earliest Únětice graves, often in elongated shape (pl. 2, *1*).

Ring pendants appeared in graves or habitation sites of

1) the late Corded Pottery people in the southern and southeastern Baltic area (fig. 6, *1-3*), in eastern Poland and Volynia (fig. 6, *4*);
2) the Únětice in central Europe (fig. 7, *a*, *1*, *2*);
3) the Pecica people in the lower Tisza and Mureş basins (pl. 1, *9*);
4) the Usatovo people in the steppe zone of the western Ukraine (fig. 8, *1*);
4) the North Pontic people (fig. 332, *4*);
5) the Timber-grave people in the lower Volga area (fig. 9, *1*); and
6) the Monteoru people in eastern Rumania.

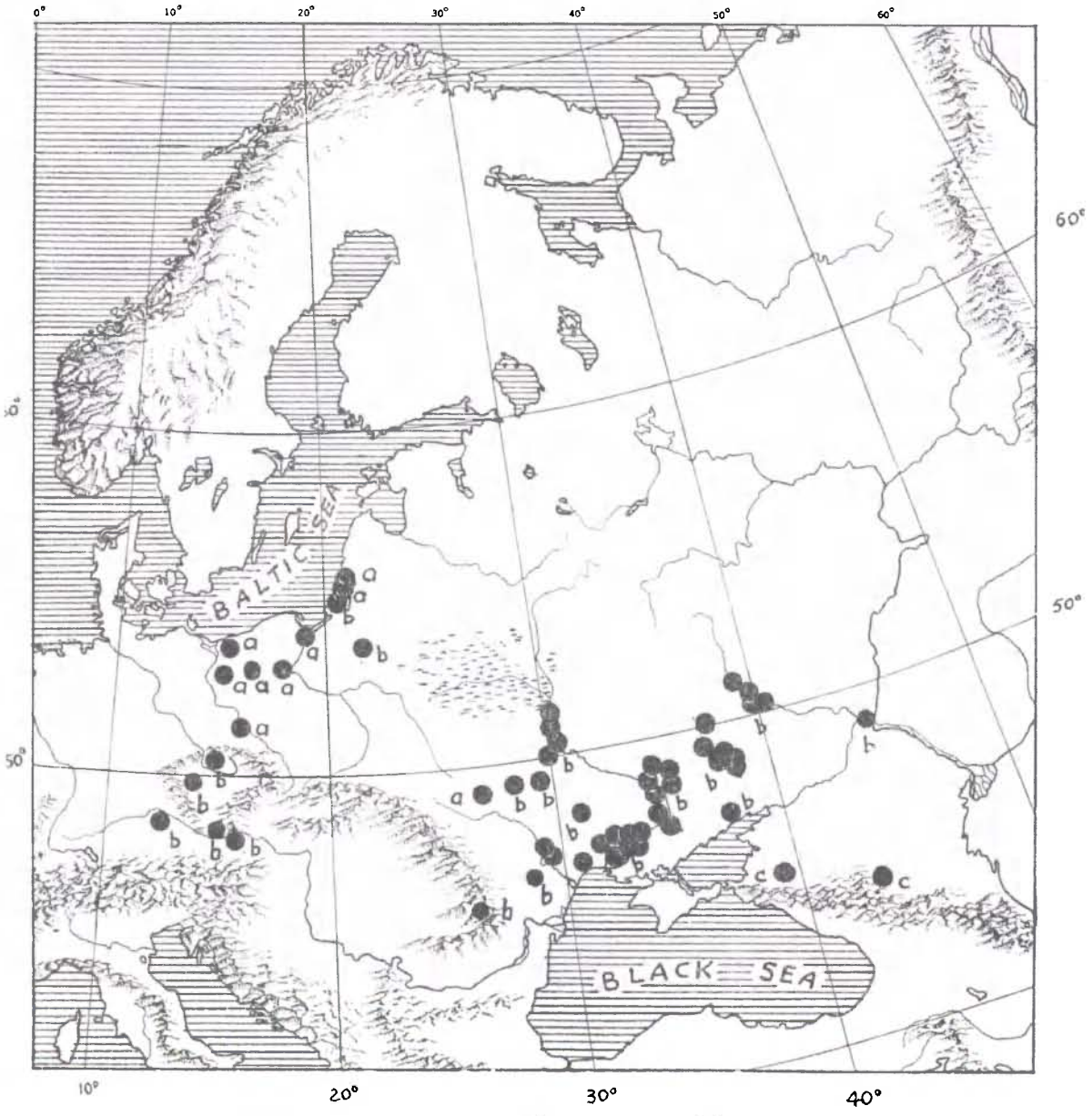


FIG. 5. Distribution of ring pendants. *a*. amber; *b*. bone; *c*. copper.

In the Unětician graves, the ring pendants, mostly of bone, were associated with typical artifacts of the earliest Bronze Age in central Europe such as knot-headed pins (fig. 7, *b*, *4*), racquet pins, short, triangular dagger blades (fig. 7, *c*, *10*), conical bronze buttons, bronze spiral beads and cylindrical bone beads (fig. 7, *b*, *6*), spiral armbands and bowls with small handles (figs. 7, *a*,*3*; 7, *b*,*8*; 7, *c*,*12*). In the early Pecica graves (cemetery of Deszk F) bone rings were in association with short, triangular copper dagger blades, diadems made of several rows of copper tubes or round convex plates, neck-rings with out-turned ends, and faïence and bone beads (Móra Ferenz Museum in Szeged, Hungary). In the south-eastern Baltic area, along with amber copies in western Lithuania (Palanga and Juodkrante; fig. 6, *1*), ring pendants made of bone were found (fig. 6, *2 left*), which were of the same shape as those found in central Europe and north of the Black Sea. In East Prussia such a bone ring was discovered in a grave together with a copper knife (fig. 6, *2*, *right*), a flint flake, and a boar's tusk. In Iwno near Szubin at the

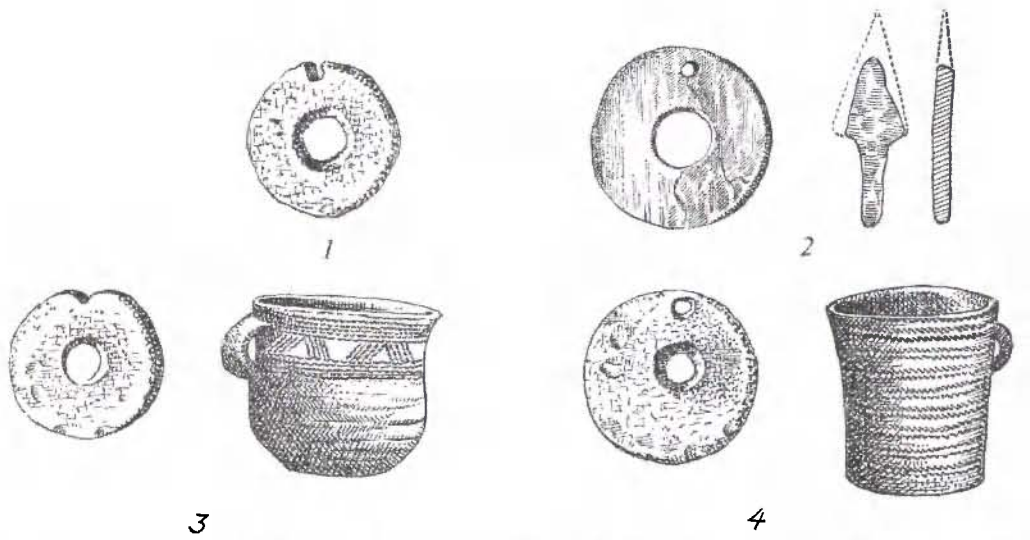


FIG. 6. Pendants of amber and bone and objects associated with them. **1,** amber pendant from Palanga, Lithuania, isolated find; **2,** bone pendant and a fragment of a copper knife from the barrow of Ribittwen, district of Pisz (Johannis burg), East Prussia; **3,** amber pendant and corded cup from the grave at Iwno, district of Szubin in northwestern Poland; **4,** amber pendant and corded cup from the barrow of Khorostkiv (Chorostków) near Husiatyn, western Ukraine. Scale: pendants approx. 1/2; pots approx. 1/4. *After* Puzinas, 1938 (**1**); Kilian, 1955 (**2**); Brunner, 1905 (**3**); and Kostrzewski, 1948 (**4**).

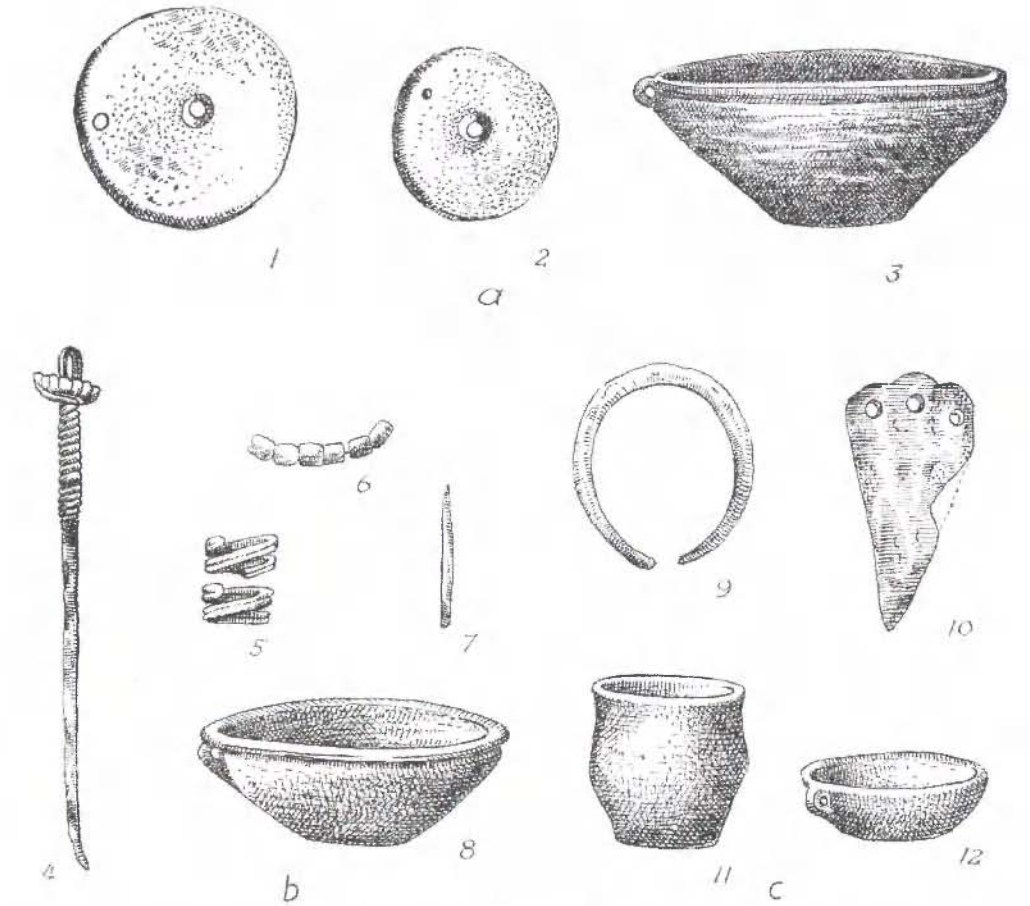


FIG. 7. **1, 2,** clay pendants in association with early Únětice finds from the cemetery of Gemeinlebarn, lower Austria; **3, 8, 11, 12,** pots; **4,** knot-headed pin of copper; **5,** copper hair-rings; **6,** copper beads; **7,** a fragment of a pin; **9,** copper bracelet; and **10,** copper dagger blade. *a.* grave No. 142; *b.* grave No. 92; *c.* grave No. 108. Scale: pots approx. 1/5, the rest approx. 1/2. *After* Szombathy, 1929.

FIG. 8. **1**, bone ring pendant in association with the black-painted **(2-4)** and plain **(5)** Usatovo vases from the cemetery of Parkany near Tiraspol, lower Dniester area. Scale: pots approx. 1/6; pendant approx. 1/3. *After* Fabritius, 1951.

FIG. 9. **1**, bone ring pendant, **2**, mold for a shaft-hole axe and **3**, pot from a timber-grave at Kievka near Voronezh, southern Russia. Scale: pendant approx. 1/3; pot and mold approx. 1/6. *After* Tallgren, 1926b.

elbow of the lower Vistula an amber ring was found in association with a flint knife and a single-handled pot decorated with horizontal rows and a zigzag band of cord impressions (fig. 6, *3*, ***right***). At Buchholz near Gryfice (Greifenhagen), lower Oder area, a similar amber pendant, 9 cm. in diameter, was found in a grave covered with stones, together with two flint daggers, a fragment of a copper bracelet, a gold band, copper tubes, and pots (fig. 165). In the barrow of Khorostkiv (Chorostków) near Husiatyn in Volynia, an amber pendant came to light, along with a handled cup decorated with horizontal cord impressions (fig. 6, *4*, ***right***). In the Jatskovitsa barrows southwest of Kiev, bone ring pendants also were found in association with corded cups (Bydłowski, 1905, p. 17). In the barrows of Usatovo near Odessa, at Parkany and Ternovka near Tiraspol on the lower Dniester, such bone pendants appeared in association with plain (fig. 8, *5*) and black-painted (fig. 8, *2-4*) Usatovo vases, copper spirals, copper pins with spiral heads, copper and flint knives, bone tools, and a small faïence bead (Goshkevich, 1903, p. 115; Fabritius, 1951, pp. 25-27). Graves in which the bone pendants were found were single or double, skeletons were contracted and on their sides. The grave-pits were covered with timber and surrounded

by a ring of stones. In an Usatovo cemetery at Stoicani in lower Moldavia, bone pendants appeared in an "ochre grave" in association with a battle-axe and pots (Petrescu-Dîmboviţa, 1953, p. 119). In the stratified site of Monteoru, eastern Rumania, a typical bone pendant was found in layer I C_2 (Bucharest: Museum of the Archaeological Institute of the Academy of Sciences; excavations by Nestor and Zaharia). In one of the kurgans (No. I) in the lower Dnieper area near Kamenka-Dneprovskaja at Kharchevik, a grave containing a circular bone pendant was definitely a secondary (later) grave in the kurgan, superimposed above the catacomb graves (Liberov, 1952, pp. 78-80, fig. 31, *2*). A bone pendant was found in the well-excavated early North Pontic habitation site at Babino in the district of Kherson (fig. 332, *4*). In the lower Volga area, ring pendants of bone were discovered in barrows containing timber constructions belonging to the earliest classical Timber-grave culture. The Kievka barrow near Voronezh yielded a bone pendant in association with a pot (fig. 9, *3*) and a stone mold for shaft-hole axes (fig. 9, *2*). Another example, from the lower Volga area is illustrated in figure 373, *2*.

Most of the ring pendants were locally made and only those of amber were traded in a relatively large area between the Baltic Sea and the Ukraine. They indicate, however, close relations between many tribes. Other trade objects such as copper or gold earrings and faïence beads confirm the above illustrated find assemblages as coeval.

b. *Basket-shaped earrings, axes, daggers, and their associations*

Earrings were in great demand jewelry items and from their production area in the Carpathian region were transmitted long distances from one culture to another. The basket shape of central European earrings very probably comes from prototypes in Syria and Anatolia. A form relationship can easily be recognized between the earliest European copper earrings and those from the treasures of gold jewelry found by Schliemann at Troy, tentatively dated to *ca.* 2300/2200 B.C. Central European specimens were simply made of a copper wire having one end flattened, wound into a circle.

The greatest numbers of such earrings come from the cemeteries in western Slovakia (fig. 10, *27*, *30*, *31*, *33*; pl. 3, *11*). They were of large and small sizes and some could have been used as bracelets and finger-rings. In the cemeteries of Vyčapy-Opatovce and Abraham they were found in association with pins having large disc heads, hair-rings of various sizes made of copper wire, copper plate diadems, copper dagger blades, necklaces made of boar's tusks, segmented and annular faïence beads, cylindrical bone beads and spacer beads, conical buttons with letter V perforations, illustrated in figure 10 and plate 3. The objects enumerated characterize the early Únětician copper (or "bronze"), bone and boar's tusk industry. Among the pottery forms associated with the above objects are already present the Únětice mugs (pl. 3, *15*, *16*) and jugs (pl. 3, *14*).

From the western Carpathian region earrings and many other copper objects spread northward to Poland, up to the Baltic Sea, and to the western Ukraine.

Large earrings appeared in a hoard discovered in 1854 in Siedlce (Zedlitz) near Lubin in Silesia (Seger, 1926a). Here the earrings (fig. 11, *4*, *5*) were associated with a flanged axe (fig. 11, *2*), conical ornamental plate (fig. 11, *6*), spirals of copper wire or plate (fig. 11, *8-13*), amber beads (fig. 11, *7*), an ornate belt plate of copper (fig. 11, *3*), and a pot (fig. 11, *1*). An analogous assemblage of finds comes also from the hoard of Schönfeld (Butler, 1956, pl. VII).

In the southern Polish cemetery of Mierzanowice, in the district of Opatów, two kinds of earrings, large and small, were found (fig. 251, *15-18*). They were found in graves together with convex ornamental copper plates, disc-shaped bone buttons with several perforations, bone pins, heart-shaped arrowheads of flint, faïence and shell beads, necklaces made of boar's tusks, beads of bone and animal teeth and pots which were usually plain, with corded decoration around the upper part, or with a row of incisions on the shoulder.

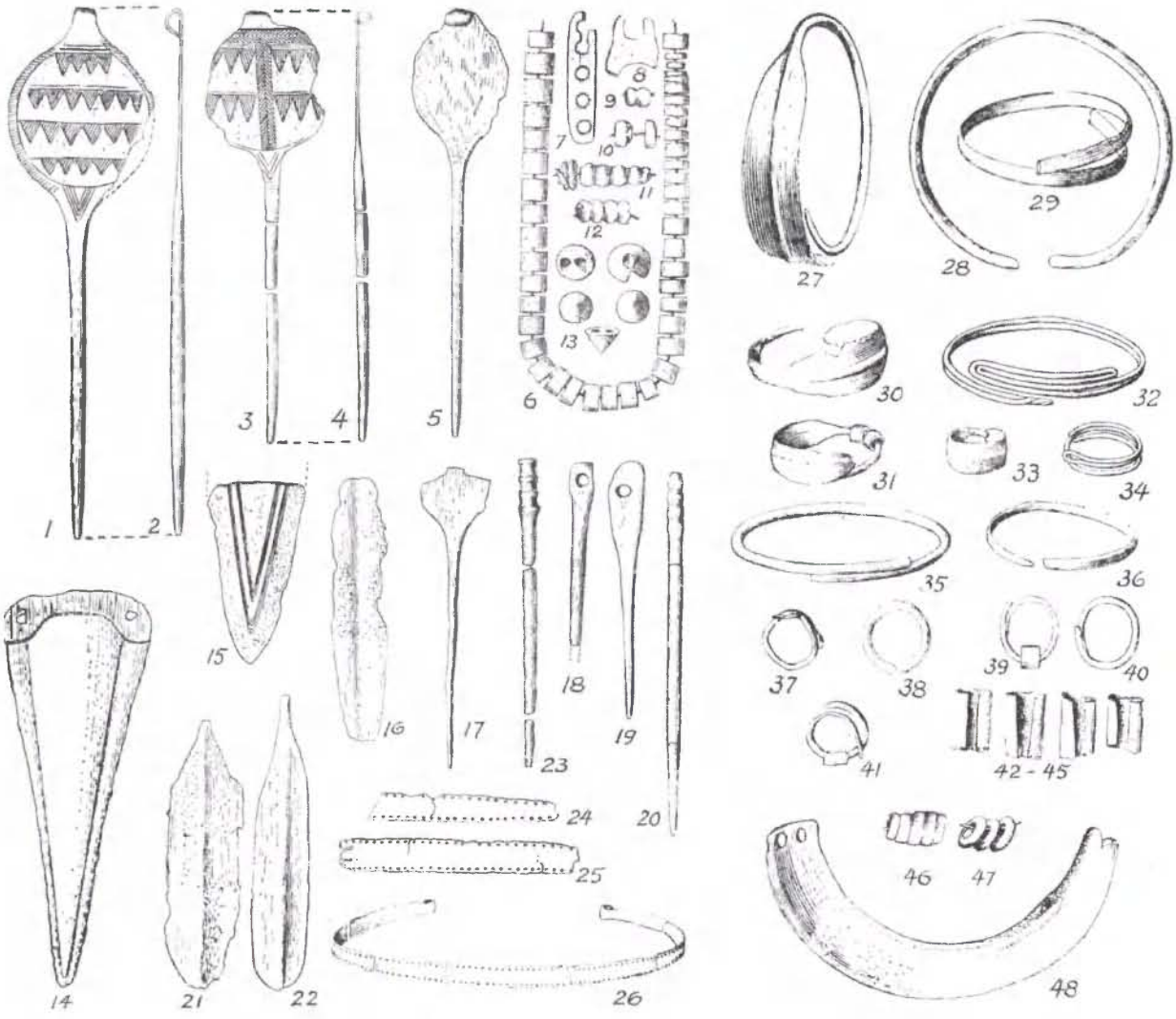


FIG. 10. Grave finds from the cemetery of Vycapy-Opatovce near Nitra, Slovakia. **1-5,** copper pins with disc heads; **6,** bone beads; **7,** spacer bead of bone; **8,** fragment of a bone pendant; **9-12,** faïence beads; **13,** V-perforated conical buttons; **14, 15,** triangular copper dagger blades; **16, 21, 22,** copper dagger blades; **17-20, 23,** bone pins; **24-26,** fragments and a diadem of a copper plate with pointille decoration; **27, 30, 31, 33,** copper earrings; **28, 29, 35, 36,** copper bracelets; **32, 34,** copper "Noppenringe"-spiral bracelet and hair-ring of a double wire; **37-41,** rings; **42-45,** copper plate beads; **46, 47,** copper beads; **48,** part of a necklace made of boar's tusks. Scale approx. 2/3.
By courtesy of the Archaeological Institute in Nitra, Slovakia.

Large earrings were found in graves of the cemetery of Poczapy, east of Lvov, western Ukraine, in association with convex plates and a necklace of copper plate spirals (fig. 305, *7*), in Perediwanie near Horodenka on the upper Dniester in association with hair-rings (Antoniewicz, 1929), and in the cemetery discovered in the city of Kiev (fig. 304, *1, 2*). In the southeast the same type of earrings is reported from Piatra Frecăţei, Dobruja, eastern Rumania. In 1958 a grave was uncovered containing three earrings, an amber bead roughly trapezoidal in shape, two simple finger-rings made of copper plate, and ten convex copper plates (Archaeological Museum of the Archaeological Institute of the Academy of Sciences, Bucharest).

Another hoard containing earrings of western Slovakian type having a considerable chronological value and indicating trade exchange between the south and north Carpathian regions was discovered

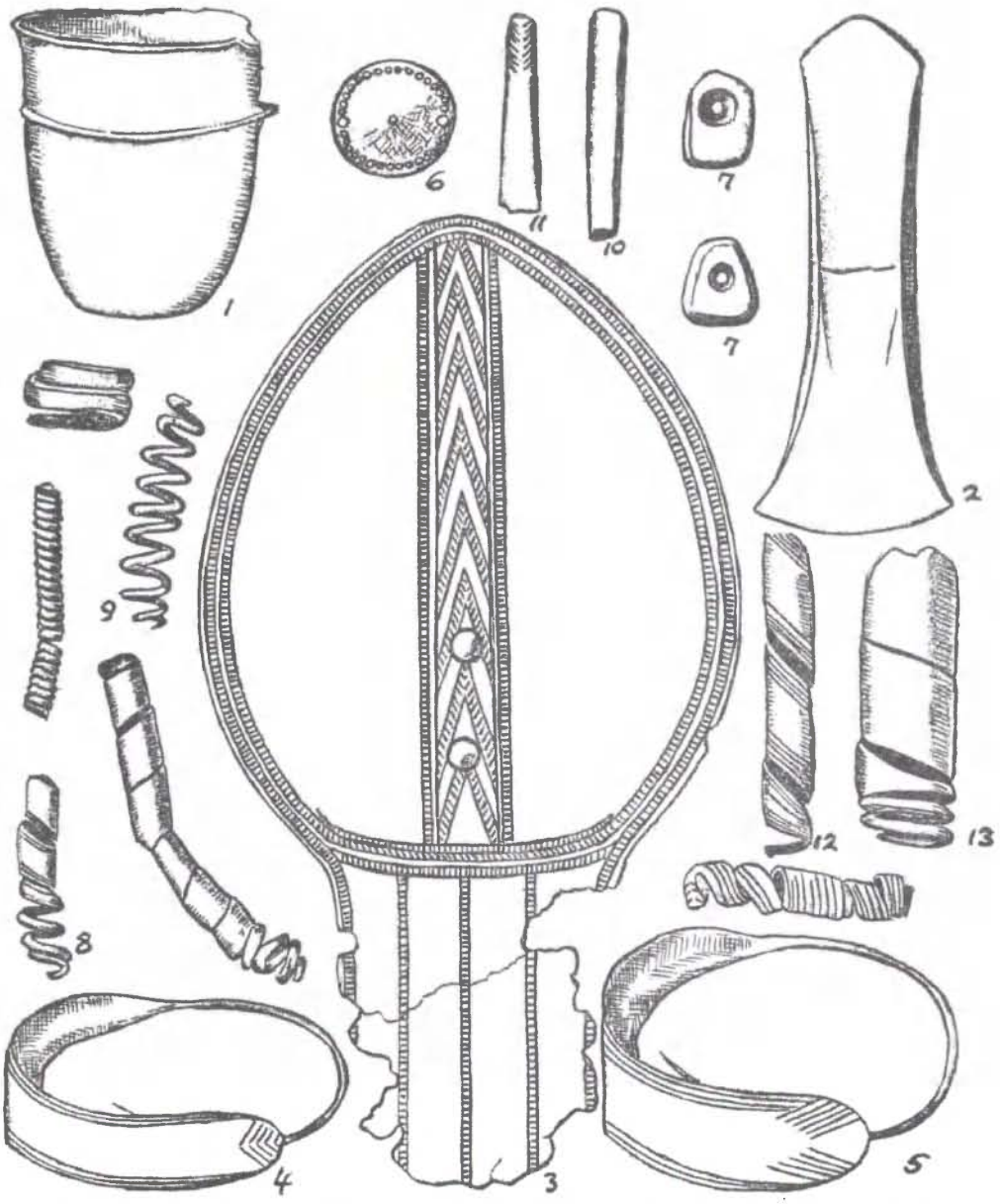


FIG. 11. Hoard from Siedlce (Zedlitz) near Lubin (Lüben), Silesia. **1**, pot; **2**, copper flanged axe; **3**, belt plate of copper; **4, 5**, copper earrings; **6**, convex ornamental copper plate; **7**, amber beads; **8-13**, spirals of copper wire and copper plate. Scale: pot approx. 3/8; belt plate 1/1; the rest approx. 3/4. *After* Seger, 1926 (reproduced from Butler, 1956).

in Stublo, near Mizoch in Volynia (Antoniewicz, 1929). In addition to the large earrings (fig. 12, *11-15*), this hoard contained two shaft-hole axes. One of these had an almost semicircular blade (fig. 12, *1*), the other an even blade and a fairly massive shaft (fig. 12, *2*). The hoard also included an ornament made of a flat triangular copper band ending in spirals (fig. 12, *3*), two neck-rings or diadems made of flat copper bands (fig. 12, *4*, *5*), and bracelets made of round wire (fig. 12, *6-10*). The unusual value of this hoard lies in its conjunction of western Carpathian and Transylvanian forms.

In northeastern Hungary and Transylvania axes with fairly massive sockets and widening blades like the Stublo specimen illustrated in figure 12, *2* are known in great numbers. Some come from hoards and many are isolated (fig. 13, *4*, *5*). Similar axes are found north of the Black Sea, in the early classical Timber-grave culture (cf. the mold for axes of a related type in the barrow of Kievka: fig. 9, *2*), and in the Balanovo period of the Fat'janovo culture in central Russia (fig. 411, *1*). The distribution of similar axe

FIG. 12. The Stublo hoard near Mizoch district of Dubno, Volynia. **1, 2,** copper shaft-hole axes; **3,** an ornament with spiral ends; **4, 5,** neck-rings; **6-10,** bracelets; **11-15,** large earrings or bracelets.
Scale approx. 1/3. *After* Antoniewicz, 1929.

forms over a wide area is explainable through their common ultimate origin in the Caucasus: they go back to the Caucasian Early Kuban (Majkop-Tsarskaja) types of the last quarter of the third millennium B.C. To eastern central Europe axes of Early Kuban type must have been brought by the invading Kurgan people. Some specimens are very close to Tsarskaja axes (for instance, axes from Fajsz, south of Budapest: Archeologiai Értesitö, 1898; or from Brno-Lisen, Moravia: Benešová, 1956). Subsequently, in these areas developed an axe clearly derived from Early Kuban prototypes, called Baniabic type (fig. 13, *1*). It is still a short shaft-hole axe with a widening blade. Its relative, a longer axe (fig. 13, *2*) has parallels in the Middle Kuban period (cf. the axe from the hoard of Privol'noe: fig. 329, *1*). Flanged axes were used alongside. Their earlier variants were massive and had very low flanges (fig. 13, *3*). Later specimens were more gracile and had developed flanges (fig. 13, 6-8). Both flanged and shaft-hole axes appear in the same hoards as in the hoard of Debrecen (fig. 13, *5-8*) and in the large hoard of Dunakömlöd, Transylvania (Roska, 1957).

The axe from the hoard of Stublo illustrated in figure 12, *1*, a gracile form with an articulated blade, is an analogue to western Transcaucasian axes dating from the beginning of the second millennium B.C. (cf. an axe from Esheri, Georgia; fig. 328, *A*, *1*).

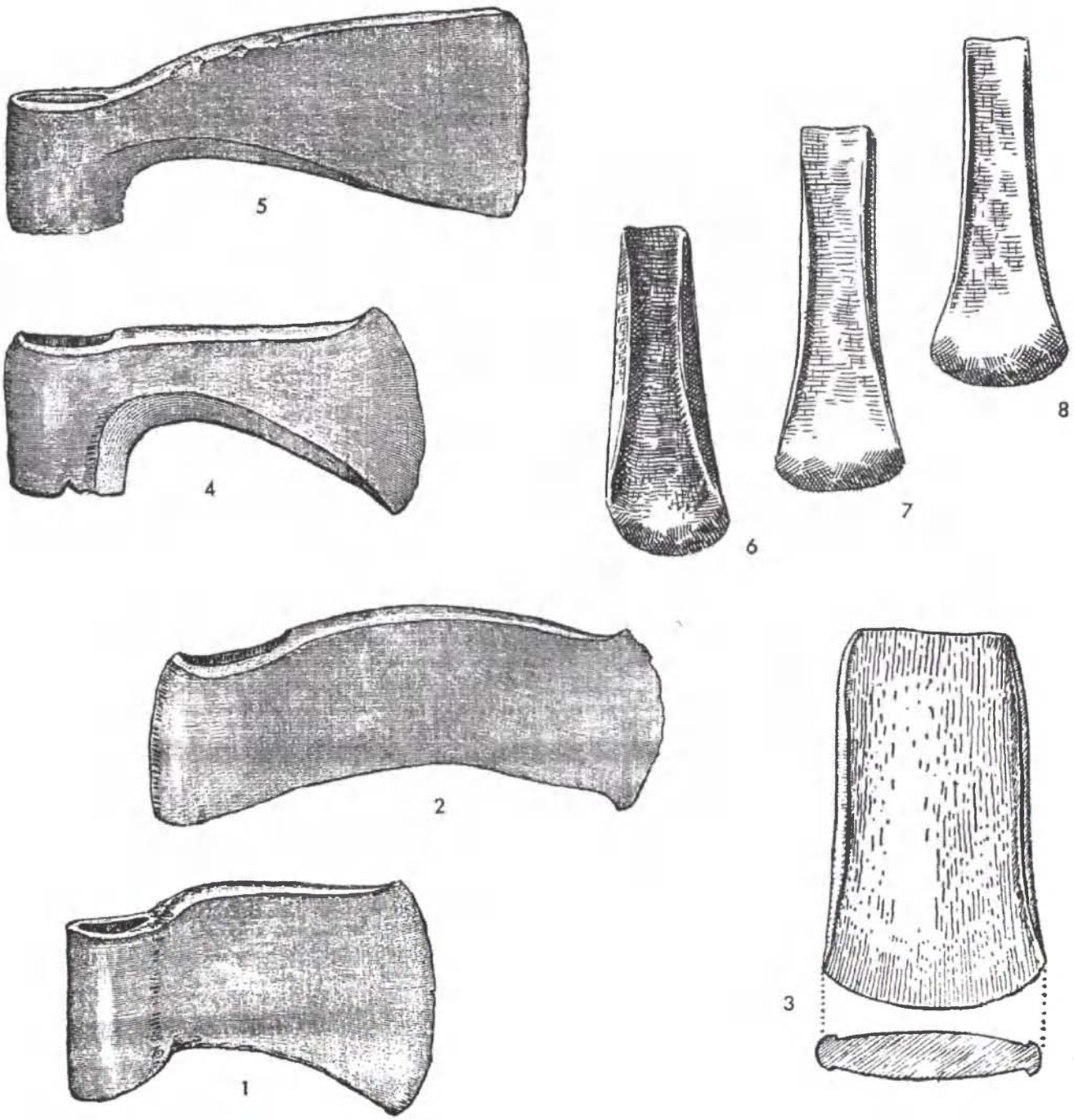


FIG. 13. Shaft-hole axes **(1, 2, 4, 5)** and flanged axes **(3, 6-8)** from eastern Hungary and Transylvania. **1,** Baniabic type, beginning of the second millennium *B.C.*; **2,** parallel form to the above, but with a longer body (isolated find); **3,** early flanged axe (Sf. Georgiu habitation site on the Olt River); **4, 5,** shaft-hole axes with distinct sockets and widening blades, called Darabani type, *ca.* eighteenth century *B.C.*; **6-8,** flanged axes, *ca.* eighteenth century *B.C.* **(5-8,** hoard of Debrecen).
Scale: approx. 1/2. **1, 2, 4,** *after* Pulszky, 1884; **3,** *after* Roska, 1929; **5-8,** *after* Mainzer Zeitschrift, 1929-30.

FIG. 14. *A:* gold earring from Gniezno, northwestern Poland. Scale less than 1/1. *After* Knapowska-Mikolajczykowa, 1957. *B:* copper earring from Cowlam, Yorkshire, northern England. *After* J. Evans, 1881. *C:* basket-shaped copper earring (**2**) and corded pot (**1**) from a grave at Sulechow, district of Krakow, southern Poland. Scale: pot approx. 1/6: earring 1/2. *After* Bartys, 1939.

From the above it is seen that for several centuries of the early second millennium B.C. axes of eastern central Europe continued Ponto-Caucasian traits.

Central European dagger forms show more variety regarding their origin. Tanged narrow daggers with a hook, distributed in the lower Tisza and Mureș area (fig. 4, *2*), as was already mentioned, certainly came from the Near East with the stream of many Near Eastern ornament types. Triangular riveted daggers typical of early Unětice (like fig. 10, *14*) also seem to go back to Near Eastern prototypes, but leaf-shaped daggers with narrow tangs, which are found in the early Únětice assemblages (fig. 10, *21*, *22*) are Ponto-Caucasian forms with prototypes in the Catacomb and the Middle Kuban graves (figs. 322, *B*, *6*, *7*; 329, *4*, *5*).

The above illustrated grave and hoard assemblages containing earrings, axes, daggers, and other objects, indicate commercial activities between many tribes living west, south and north of the Carpathian mountains. The spread of copper objects north of the Carpathians seems to have been stimulated by the growing interest in Baltic amber. As was mentioned above, an amber bead in association with earrings was found as far southeast as eastern Rumania and amber beads also appear in the early Únětice hoards and graves. Further commercial ties can be traced by the diffusion of basket-shaped earrings between the western Carpathian region, Poland, and the British Isles, and by gold artifacts near the Baltic Sea coasts.

The smaller earrings terminating in a sharp bent point are known from the early Únětice graves (fig. 10, *31*, *33*) and from the cemeteries of southern Poland (fig. 14, *C*, *2*). In a grave at Sulechów, district of Kraków in southern Poland, the earring was found in association with a late Corded pot (fig. 14, *C*, *1*). Similar earrings, probably derivatives of central European examples, are known from northern England. They were found at Cowlam and Goodmanham, Yorkshire, in barrows contemporary with Beakers (fig. 14, *B*).

In Gniezno, northwestern Poland, a gold earring was found (fig. 14, *A*). The latter can be regarded as one of the earliest witnesses for Únětician trade in gold, along with the gold band in the early Únětice grave at Buchholz in the lower Oder area (fig. 165, *2*), associated with a ring pendant of amber. Such

finds give an idea of the scope of commercial intercourse which connected the metallurgical centers in central Europe, the amber sources in the southeastern Baltic area, and the gold sources of Ireland.

c. *Faïence beads*

Faïence beads are known to the north and east of the Black Sea from the time of the catacomb-graves. Small cylindrical beads of blue paste came to light in the catacomb-graves near Izjum on the Donets (Gorodtsov, 1905, pp. 276, 294), and in the lower Dnieper area annular faïence beads were found in the habitation site of Babino (fig. 332, *6*, *7*), dating from the post-catacomb times.

Faïence beads were found in the graves of the Usatovo group near Odessa, northwest of the Black Sea (Usatovo cemetery: Selinov and Lagodovskaja, 1940, p. 248; Parkany cemetery: Goshkevich, 1903, p. 115; Brăiliţa cemetery near Braila at the confluence of R. Siret and the Danube, eastern Rumania: Dragomir, 1959). White beads were found in graves associated with black-painted and cord-decorated Usatovo vases, copper spiral hair-rings, and beads of wild animal teeth, and with the faïence beads in the Usatovo grave a dark melon-shaped bead came to light. To the Usatovo assemblage also belong copper daggers with rhomboidal tangs having two or four rivet holes. Similar daggers appear in the early Únětice graves and in the graves of the Tomaszów (or Mierzanowice) group in southern Poland, described below.

The graves from the cemeteries on the upper Vistula and of the western Ukraine in the area of the upper Dniester contained round, flat, tubular, and segmented faïence beads of light and dark blue, green, yellow, and sand color. Such beads have been discovered in the Złota cemetery near Opatów, the Mierzanowice cemetery near Miechów, the Sobów cemetery near Tarnobrzeg — all in graves of Tomaszów group, in the Raciborowice cemetery near Hrubieszów of the Strzyżów group — and in one grave of the barrow at Kołpiec near Drohobych on the upper Dniester (Salewicz, 1937; Nosek, 1947, 1948; Kostrzewski, 1948, p. 183; Sulimirski, 1938, p. 286, fig. 422; 1948). In the cemetery of Mierzanowice on the upper Vistula, as mentioned earlier, beads were associated with heart-shaped arrowheads of flint, earrings of copper, corded or plain pottery, bone and flint tools, ornaments of shell, bone, and wild animal tusks and teeth, convex ornamental copper plates and bone buttons having two or three perforations in the center and at the sides and decorated with several rows of eyelets along the edge fig. 251). Forty-three green faïence beads of the same forms as those from Mierzanowice were found in the barrow of Kołpiec and were similarly associated with corded pottery. The segmented beads had from two to eleven segments.

Segmented faïence beads are also known from the Early Bronze Age graves of lower Austria. A light blue segmented bead was discovered in the Leopoldsdorf cemetery, Bruck a.d. Leitha district, lower Austria (Willvonseder, 1937, 20, *8*), in association with gold hair-rings and pottery of early Únětice appearance, showing Bell Beaker influences. From the same cemetery came pieces of pierced amber with roots of animal teeth set into the many eccentric perforations. Ten cemeteries in Moravia have yielded faïence beads, green, blue, and light yellow in color. One of them is the cemetery of Marefy near Bucovice (Tihelka, 1953a, pp. 297, 323, 326). In the cemetery of Holešov, Moravia, annular faïence beads of greenish color were associated, as in Mierzanowice, with cylindrical bone beads, earrings, spirals, and ingots of copper, bone awls and heart-shaped arrowheads of flint, jasper and bone (Struhala, 1951). Segmented, large globular, cylindrical and angular faïence beads in great numbers were found in the earliest phase of the Pecica culture in the lower Tisza area, Hungary. Such are known from the cemeteries of Pitvaros, ÓBeba, Deszk F and Szöreg near Szeged (Móra Ferenc Múzeum in Szeged). The same type of faïence beads (fig. 4, *5*) are known from the graves of the Nagyrév group in the cemetery of Dunapentele, south of Budapest on the Danube (Archaeological Museum in Dunapentele). In the above-mentioned graves faïence beads were found in association with *Dentalium* and *Cardium* shells,

earliest types of knot-headed (Cypriote) copper pins (like fig. 14, *2*), diadems made of copper plates, double-spiral pendants (fig. 4, *6*), neck-rings with small spiral ends of Byblos type (like fig. 4, *1*), gold plates (fig. 123) and hair-rings fig. 4, *4* made of reddish-yellow gold (not of Transylvanian variety), and triangular copper dagger blades. Many of these finds must denote commercial contacts with the eastern Mediterranean area. To about the same period may belong the greenish-blue faïence bead with three segments found associated with copper double-spiral pendants, in Mereşti at Almas, district of Trei Scaune, eastern Rumania (Nestor, 1933, p. 94).

The occurrence of faïence beads in the above-mentioned assemblages shows definitively that faïence was introduced into a large area of central and eastern Europe not later than the nineteenth and eighteenth centuries B.C. A necklace of one faïence bead, a grooved bone bead, and dog's and wolf's teeth was found at Hágios Mámas in Macedonia, dated to the twentieth-nineteenth centuries B.C. (Heurtley, 1939, p. 202, fig. 66). A faïence bead was also found in one of the stone cists at Seskló (grave 25), Greece, in association with a dagger blade, copper tubes, and a double-handled Minyan pot; this grave should be dated to the Middle Helladic II period, *ca.* 1800-1650 B.C. (Milojčić, 1959, p. 77).

A great many beads belong to a later period also, particularly to 1500-1300 B.C., as will be mentioned below. Distribution maps of sites and descriptions of the faïence beads known from western, central, and eastern Europe, as well as from Greece, Crete, and the Near East are given in the study in 1957 by Stone (fig. 3, *5*). According to Stone, there is no direct evidence of the manufacture of faïence beads in Europe (except for Crete and Mycenaean Greece) during the second millennium B.C. The center of production was in Egypt, where actual factories have been discovered. That Egypt inspired the use and production of faïence beads cannot be disputed. The beads spread over a vast area. There were two possible routes along which faïence beads traveled to central Europe and the Ukraine: first, from the Aegean; alternatively, via the Near East, the Caucasus, and southern Russia. Both routes seem to have been used. In the future more objects will very probably be discovered to prove the farflung trade with the south. We already possess some information of such a situation: between the upper Don and the middle Dnieper small faïence beads were found in the timber-grave of Vorobjovka near Kursk in association with an Egyptian scarab bearing a hieroglyphic inscription (Samokvasov, 1908, p. 19). Unfortunately, the scarab has not been illustrated, but its presence so far north indicates commercial connections with Egypt or at least with the eastern Mediterranean.

3. *Conclusions*

The Near Eastern, Caucasian, and Bell Beaker influences which played a great role in the formation of the European Early Bronze Age serve as a means for chronology.

There is a striking resemblance between ornaments such as neck-rings with spiralled ends, knot-headed or looped pins, basket-shaped earrings and faïence beads, and daggers with hooked tangs, in the lower Tisza and the middle Danube basin and those from the Byblos, Ras Shamra, and Hama levels which date from the period between 2100 and 1750 B.C. The earliest Pecica and Nagyrév levels should be placed therefore in the early centuries of the second millennium B.C. The locally made ornaments in the western Carpathian and probably southern German area based on Near Eastern examples must have been produced in a period succeeding the appearance of the imported Near Eastern artifacts.

Early Únětice find assemblages include objects of Caucasian derivation, such as shaft-hole axes, tanged dagger blades, and ring pendants. They either show persisting Kurgan forms from the end of the third millennium B.C. or indicate continuous cultural contacts between central Europe and the area north and east of the Black Sea. The above mentioned forms have prototypes in the Middle Kuban period of the north Caucasian Early Bronze Age which is *ca.* 2000 B.C. (since it is a post-Majkop and Tsarskaja epoch dated to *ca.* 2200-2100 B.C.). Similar objects were current in the North Pontic Cata-

combgrave culture. Hence, early Únětice and other coeval cultural groups between the Baltic and the Black Seas must succeed the Middle Kuban and Catacomb period.

Early Únětice in central Europe succeeds the late Corded and Bell Beaker period. Since Carbon-14 dates place the Bell Beakers in the twentieth and nineteenth centuries B.C., the early Únětice assemblages must be later and belong mainly to the eighteenth century B.C. The date 1800 B.C. for the beginning of the Únětice culture is used here in the sense of "probably not later than 1800 B.C.".

The wide dispersion of early Únětice products in the middle part of Europe, the dispersion of Caucasian bronzes over the Black Sea area, and the appearance of peculiar ring pendants in almost every cultural group of central and eastern Europe, indicate which cultural groups were contemporaneous. These contemporary cultures in the period of *ca.* 1800 and 1650 B.C. are:

In central Europe (Austria, Czechoslovakia except for its eastern part, southwestern Poland and southern, central, and eastern Germany): early Únětice. Included are Marschwitz (Marszowic) in Silesia, Straubing in Bavaria, the upper Austrian group, Unterwölbling in lower Austria, Wieselburg (Gáta) in lower Austria and northwestern Hungary, and the Nitra group of cemeteries in western Slovakia. This is phase A_1 in Reinecke's scheme for southern Germany.

In the southeastern Baltic area (eastern Pomerania, East Prussia, Lithuania), *eastern Poland and northern Volynia:* Baltic variant of late Corded culture, Tomaszów (or Mierzanowice) group in the upper Vistula area and the Strzyżów group in northern Volynia.

In eastern central Europe (eastern Hungary, eastern Slovakia, and western Rumania): late Nagyrév and a later phase of early Pecica of the Tisza River and the lower Mureș basin.

North of the Carpathians: the late Corded or Bilopotok (Bilyj Potok) period of the North Carpathian culture.

In Moldavia and eastern Transylvania: the proto-Monteoru culture; Monteoru Ic_4-Ic_2 layers of the stratified site of Sărata-Monteoru.

North of the Black Sea: the North Pontic post-Catacomb period, and the Usatovo complex northwest of the Black Sea.

In southern Russia (lower Volga and Don basins): the early classical Timber-grave culture or the Kievka phase.

B. EARLY BRONZE AGE FROM CA. 1650 B.C. – CA. 1450 B.C.

The efflorescence of the central European Únětice culture stimulated by intensive commercial relations with Mycenaean Greece of the Shaft-grave times falls within the limits of this period.

Central and northern Europe, from the British Isles to Lithuania and from the Danube to southern Sweden, were joined by a network of trade routes. In addition to Baltic amber, copper and tin from Bohemia, central Germany and the Carpathians, and gold from Ireland, Bohemia and Transylvania gave a constant impetus to vital economic intercourse.

1. *Amber trade between the Baltic Sea, central Europe, Greece, and the Caucasus*

Amber beads occurred in Greece throughout the whole Mycenaean period (Late Helladic I-III). A series of shaft-graves and tholos tombs dated to the end of the seventeenth to fifteenth centuries B.C. contained amber beads (Wace, 1932, pp. 204-205; K. Müller, 1909, p. 278; Persson and Frodin, 1938, pp. 376, 390; Persson, 1932; 1942 (Dendra); Blegen, 1937b, p. 286).

Flattened-spherical and spacer beads of amber are known from the Mycenaean shaft-graves III, IV, and VI excavated by Schliemann and Stamatakis, usually dated 1580-1510 B.C. (pl. 4) and from one of the shaft-graves from the later discovered circle, Grave Omikron, dated *ca.* 1650-1550 B.C. (Mylonas,

1957). This shows that amber was already being imported into Greece during the second half of the seventeenth century B.C. and the trade has become particularly intensive during the sixteenth century B.C.

The Mycenaean amber beads are of Baltic origin. The amber has a relatively high succinic acid content, from 3 to 8 per cent. This distinguishes Baltic amber, in geological science named "succinate", from that found in Iberia, south Italy, Sicily, Galicia, and Rumania. Moreover, the transcontinental amber routes are indicated by amber beads of similar form in the Baltic area, central Europe, and Greece.

The interest in amber trade increased when the chemists Helm of Danzig in 1885 (Helm, 1885) and Olshausen of Berlin in 1890 (La Baume, 1935, p. 12) published their numerous analyses of amber beads both from the raw material sources and from prehistoric Greek and Italian sites. Helm's analyses of amber beads from Schliemann's Mycenaean shaft-grave excavations showing a 6 per cent succinic acid content, strongly indicated a Baltic source. Beads from the tholos tomb of Kakovatos in Elis, western Peloponnese (pl. 7), when analysed by Jonas in 1908 were found to be of identical substance to the Baltic amber (Jonas, 1908). Later, several other contributions on the composition of amber beads found in East Prussia, central and southern Europe appeared (Viollier and Reutter, 1916; La Baume, 1935). The transcontinental trade in amber was thus discovered in the late nineteenth century; in the twentieth century prehistorians have refined their knowledge of the lines of traffic in the several periods. Recently, microchemical tests for succinic acid were carried out by A. E. Werner of the British Museum on amber beads from the tholos tomb near the palace at Epano Englianos (dated by the excavator Lord Taylour to the fifteenth century B.C. or later) and from a grave at Arvi in Crete of Late Minoan I and II. Epano Englianos beads were "positive" and those from Arvi were "slight positive", showing that amber beads were made of Baltic, probably of East Prussian, raw material (Sandars, 1958-59).

The amber route connecting the amber coasts of western Jutland with Italy was described by Montelius as early as 1910. In 1925, de Navarro published his research on amber routes. These two studies established the importance of Jutland as a source of amber and led to a recognition of the routes over which it was carried south and southeast.

The richest amber sources are, however, in former East Prussia (present Kaliningrad-Königsberg area of the USSR) and Lithuania. The central part of the primeval amber forests are placed near to and above the northwestern point of the peninsula of Samland, latitude 55° and longitude 19° to 20° E. of Greenwich (Berendt, 1866). The west of Samland and the north coast of the dune area of Frische Nehrung supply amber in the greatest abundance. Next in abundance are another dune area, Kuršių Užmaris (Kurische Nehrung), connecting Samland with Klaipėda in Lithuania, and the Baltic Sea coasts of Lithuania and Latvia. Some amber is also obtained around the Bay of Danzig and in Pomerania in present northern Poland. From this southeastern Baltic source area over 90 per cent of the world's best amber is obtained.

Amber was collected for export to the south and north from the end of the third millennium B.C. The existence of an eastern amber route throughout the Early Bronze Age is proven by the concentration of hoards and graves containing amber beads in the lower Vistula area and in western Poland. Finished and semi-finished amber beads show that bead manufacture was carried on where the raw amber was collected. Such beads are known from Juodkrantė, western Lithuania (pl. 5, *1*, *2*, *5*, *6*). The prepared or half-prepared amber was shipped to the lower Vistula and from there went southward via the Vistula, the Notec River or Warta River to the Oder River and the upper Oder. Through Bohemia, Moravia, or Slovakia it reached the Danube and the Tisza rivers, where the route split into two branches, one crossing the Alps into Italy, and the other leading along the eastern coast of the Adriatic to Mycenaean Greece (fig. 15).

The most common form of amber bead in the Mycenaean tombs was a globular or flattened-spherical bead variable in size and centrally perforated. The same type of amber bead occurs in the southeastern Baltic area. Various sizes were found here, the largest known bead being 10.3 cm in diameter (La Baume,

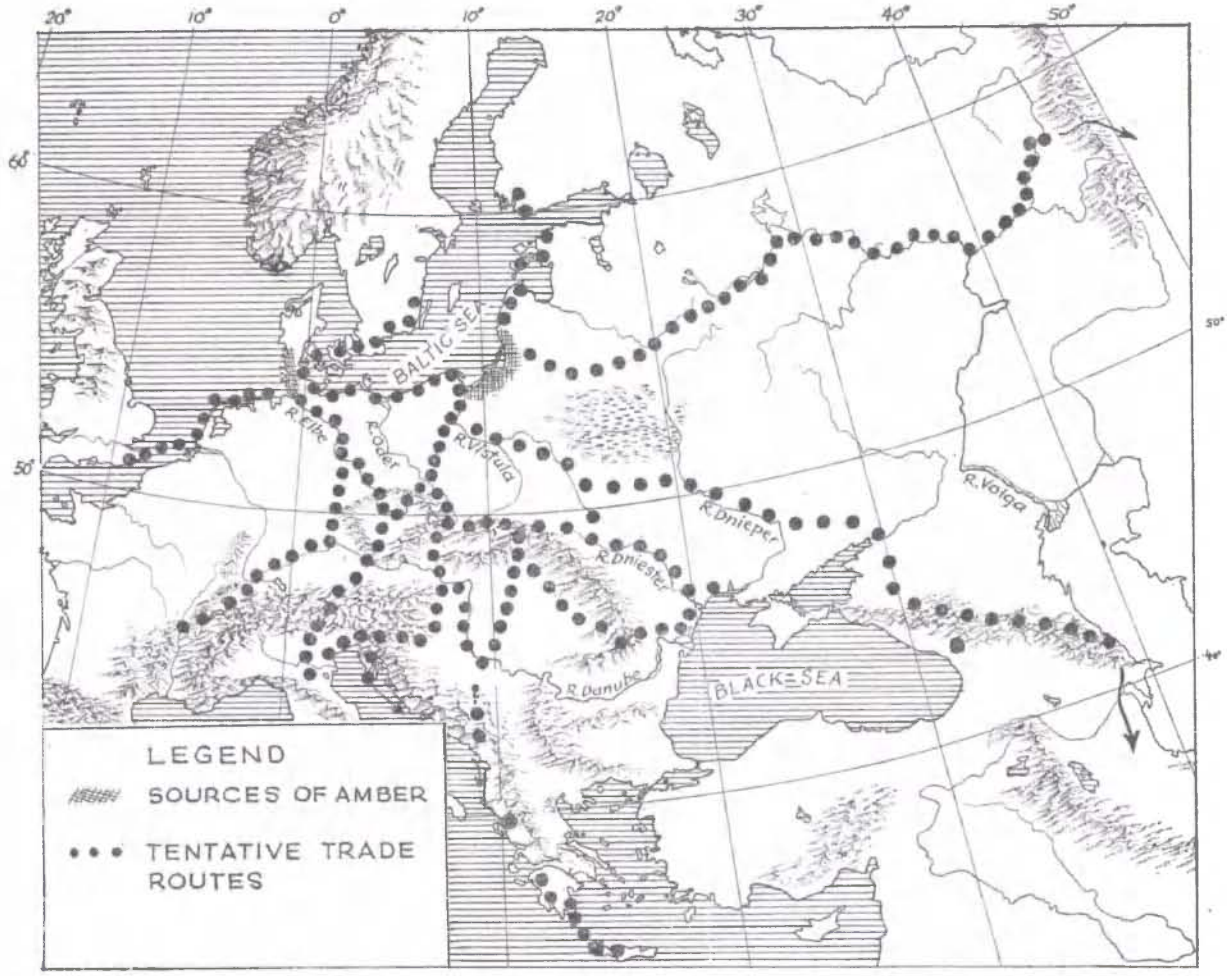


FIG. 15. Amber routes during the period between *ca.* 1600 B.C. and 1100 B.C.

1935, Tafel II). Both in the Baltic area and in Greece, rectangular spacer beads with three to five transverse perforations occur.

In the classical Unětice graves amber beads are associated with loop-headed bronze pins, short triangular dagger blades, arm-rings with narrowing ends, hair-rings ("Noppenringe"), flanged axes, bronze spirals, perforated stone axes, and other objects. In the Unětician graves in Czechoslavakia they appear in great quantity (Pič, 1899, pls. 5-23). Amber beads were used for necklaces, made either of beads alone or separated by intervening bronze spirals. In the graves of Smiardow (Schmirtenau) west of the lower Vistula, in northern Poland, belonging to the Iwno group of the Baltic culture, considerable numbers of flattened-spherical amber beads were discovered with loop-headed pins, a spectacle-like pendant and an axe with small flanges (Holter, 1932; Kostrzewski, 1948, p. 196).

Similar amber beads have also been found in the Terramara and pile-dwelling sites of northern Italy north and south of the Po River in association with classical Unětician bronzes, flanged axes, ring-headed pins and other types (Säflund, 1939, pls. 51, 52; Müller-Karpe, 1959, pl. 88, *13*, *14*, 25, *26*). This speaks for active trade relations between northern Italy and the Unětice cultures.

In the cist-grave or flint dagger period in Denmark, northern Germany, and southern Sweden, amber or bone rings with a long projection for suspension (pl. 6, *2-5*) occur in association with long flint daggers, triangular flint arrowheads with concave bases (pl. 6, *10-14*), bone copies of Unětician loop-headed pins, copper spirals (pl. 6, *6*), armlets (pl. 6, *7*), beakers (pl. 6, *15*) and other finds (Brøndsted, 1938, I, fig. 256).

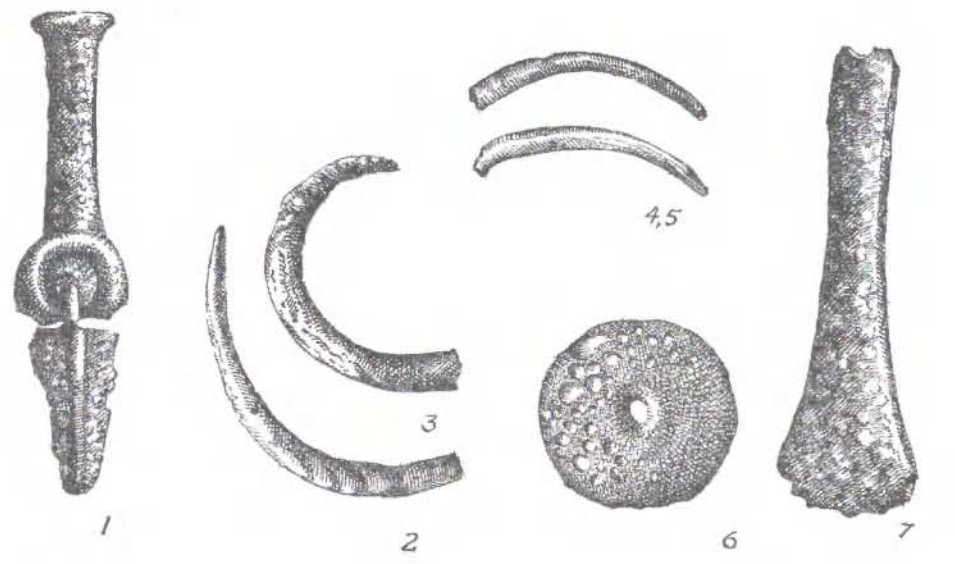


FIG. 16. Grave inventory from the barrow at Brusy near the mouth of the Vistula. **1**, dagger; **2-5**, fragments of neck-rings and bracelets; **6**, amber bead; **7**, flat axe. Scale approx.: **1**, **7**, 1/2; **2-6**, 2/3. *After* Šturms, 1936.

Many of these amber pendants have come to light in Juodkrantė, western Lithuania (pl. 5, *12-15*). Their general origin very probably lies in the preceding period when circular or elongated pendants with a small perforation for suspension were spread over a large area between the Black Sea and the Baltic Sea (cf. pls. 1, *1*; 6, *1*).

A fairly large number of spherical, barrel-shaped, and annular amber beads appeared in the cemeteries near Szeged (Szöreg, Ószentiván, Deszk A and Deszk F), eastern Hungary, near the confluence of the Tisza and Mureș rivers. Amber beads were discovered in the graves which belong to the early Pecica culture (Banner, 1931; Foltiny, 1941a, pl. XIX; Foltiny, 1942b, pl. X). In addition to spherical and annular beads found in the graves of the Szöreg cemetery, there was discovered one four-rayed star-bead of amber similar in form to the faïence beads of the same grave (Foltiny, 1941a, pl. XIX, *42*).

In the advanced classical Únětice assemblages, typified by bronze-hilted daggers, halberds, long and narrow double-axes, and massive C-shaped bracelets, amber beads are no less frequent, with the richest hoards concentrated in the area of the lower Vistula and the Oder basin.

Not far from the mouth of the Vistula, in the barrow at Brusy near Chojnice, flattened-spherical amber beads (fig. 16, *6*) appeared in association with a bronze-hilted dagger (the so-called "Malchin" type, fig. 16, *1*), several fragments of neck-rings and bracelets (fig. 16, *2-5*), and a flat axe of bronze (fig. 16, *7*). The richest hoards were found to the west of the lower Vistula in northern Poland: the Wąsosz hoard, in the district of Szubin, in addition to amber beads (fig. 17, *4-16*), contained a gold basket-shaped earring (fig. 17, *1*), five gold neck-rings 5.5 cm to 6 cm in diameter (fig. 17, *17-19*), a chisel of bronze, a necklet, five massive C-shaped rings, four small oval bracelets of bronze (fig. 17, *23-25*), one thick massive spiral ring (fig. 17, *22*) and four smaller spiral rings, four spirals of bronze banding, 26 spiral rolls of wire (fig. 17, *2*, *3*), and two round plates of bronze, 5.3 cm in diameter with a perforation in the center. Basket-shaped earrings of gold are known from England (fig. 18). The hoard of Wojcieszyn, Szubin district, contained several amber beads, two narrow double axes, a short dagger with a flat, broad blade, 19 massive C-shaped rings, four spiral bracelets, and four spiral finger-rings – all of bronze (Montelius, 1898, p. 477). The above finds are typical of classical Únětice.

In the tholos tomb of Kakovatos in Elis in western Poloponnese, flattened-spherical amber beads (pl. 7, *10*, *11*, *16*, *17*, *25*) occurred in association with spacer beads with complicated perforations (pl. 7, *23*, *24*) and ring pendants ("quoits") with a projection for suspension (pl. 7, *22*). In Furumark's

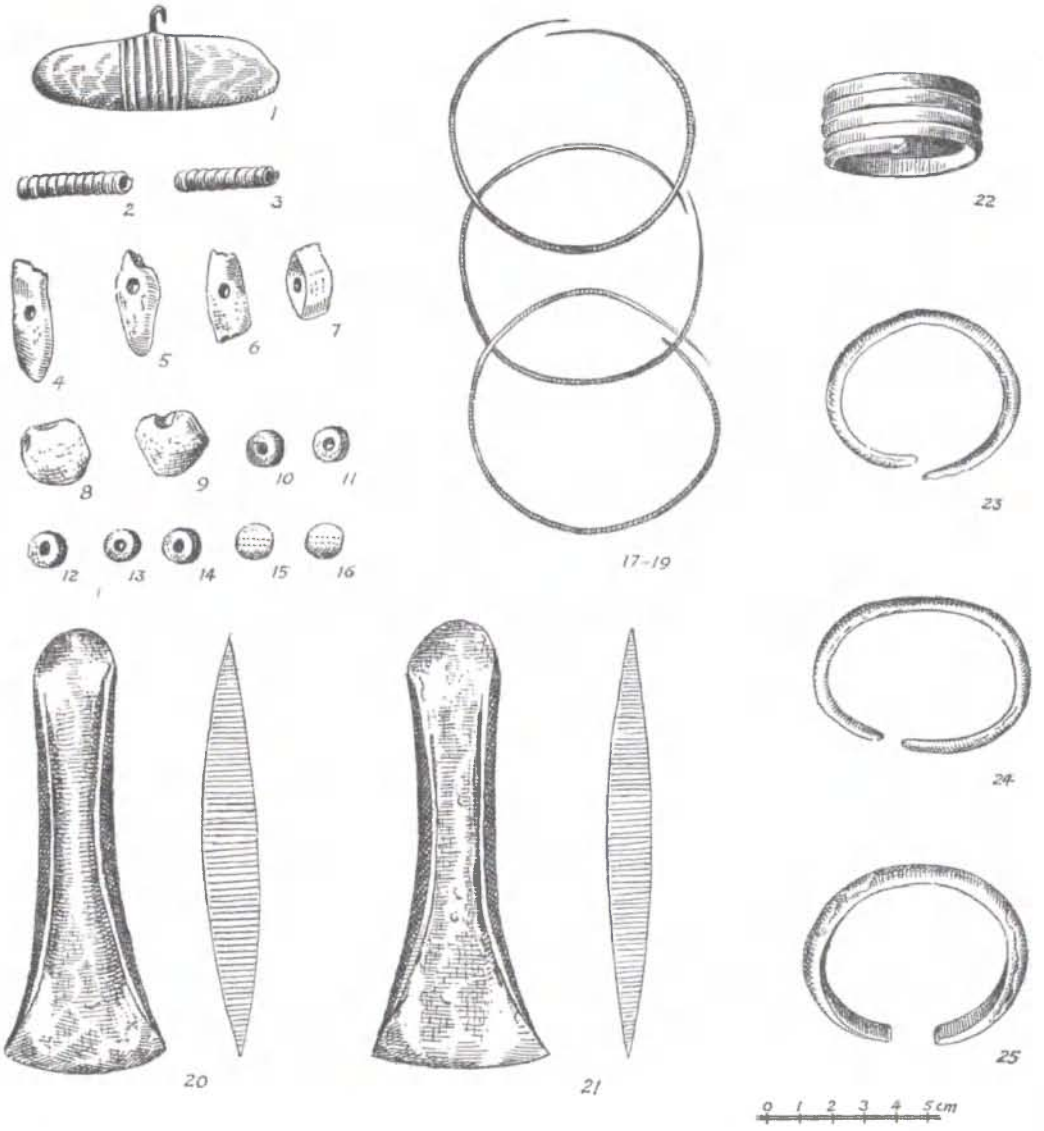


FIG. 17. Finds from the hoard of Wąsosz, district of Szubin, western Poland. **1,** basket-shaped earring; **2, 3,** spirals; **4-16,** amber beads; **17-19,** neck-rings; **20, 21,** flanged axes; **22,** spiral ring; **23-25,** bracelets. **1, 17-19,** gold; **2, 3, 20-25,** bronze. *After* Knapowska-Mikołajczykowa, 1957.

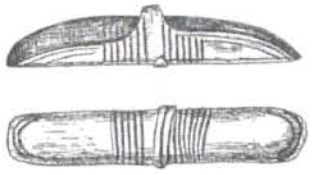


FIG. 18. Basket-shaped earring of gold from Radley, Berkshire, England. Scale 1/2. *After* The Guide to the Ashmolean Museum, 1951.

scheme (1941, pp. 47, 98, 110), the tomb of Kakovatos belongs to Mycenaean II A, which parallels the reign of Thothmes III in Egypt, that is, 1500 to 1450 B.C. The Kakovatos spacer beads with complicated perforations are conclusive evidence for commercial contacts between the Wessex culture in England and Mycenaean II A in Greece (Piggott, 1938; Milojčić, 1955; Hachmann, 1957a). Spacer beads with complicated perforations from the southwestern German Tumulus culture belong to the assemblage of Phase B and continue to Phase C which succeeds Mycenaean II A, as was shown in a recent study by Hachmann (Hachmann, 1957a, p. 22, figs. 6-11). Hence, the spacer beads with complicated perforations from southwestern Germany are not entirely contemporaneous with the specimens of Mycenaean II A as was previously supposed (Merhart, 1940; Childe, 1948a). Mycenaean II A equates in southwestern Germany with A_2 in Reinecke's scheme, which is late Únětice, characterized by pins with globular heads with a diagonal perforation (Hachmann, 1957b, pp. 165 ff.). Spacer beads in central Europe had a rather long life and persisted throughout the fourteenth century B.C. The Kakovatos ring pendants with projections for suspension have close analogues in the Wessex Early Bronze Age in England, where they were made of shale (Piggott, 1938, pl. 84), and in the flint dagger period of Denmark (pl. 6, *2*).

Spherical, barrel-, and ring-shaped amber beads appear in the late Únětice assemblage, the Věteřov group of Moravia, and in the Mad'arovce group of western Slovakia. Characteristic late Únětice bronzes include pins with perforated globular heads and twisted stems (fig. 178, *1-3*; fig. 179, *9, 10*), shaft-hole axes with a vertical and ribbed shaft-tube (pl. 11, *2, 3*), and axes with flanges forming a V (fig. 179, *6, 7*). Spherical amber beads in the Majcichov, Abraham, Matuškovo, and other cemeteries of the Mad'arovce group in western Slovakia (fig. 178, *13-16*) were discovered in association with pins with perforated globular heads and pins having rhomboid heads with folded corners (fig. 178, *4-6*). To the same period belong amber beads found in the cemeteries of the classical Otomani culture (Füzesabony phase) in eastern Hungary (cf. amber beads from the cemetery of Hernádkak: Tompa, 1937, pl. 46, *13, 14*) and in the cemeteries of the Vattina group in northern Yugoslavia and southwestern Rumania.

East of the Vistula River amber beads do not appear in the same quantities as in central Europe and Greece. In Moldavia round amber beads of various sizes are known from the Monteoru cemeteries Nos. 1, 2, and 4. Cemetery No. 2 belongs to phase Ia of the stratified habitation site in Monteoru which is contemporary with late Únětice (Věteřov, Mad'arovce) and the Füzesabony phase of the Otomani culture. The Monteoru cemetery No. 4 is slightly later and cemetery No. 1 belongs to the phase IIb of Monteoru (finds in the museum of the Archaeological Institute in Bucharest; excavations by I. Nestor and E. Zaharia). Along the middle Dnieper, amber beads are reported from the Sofiivka cemetery near Borispil in the district of Kiev. The cemetery consisted of 141 cremation graves yielding metal objects of advanced Early Bronze Age appearance – elongated rhomboid knife blades of copper, flat copper axes, spiral earrings with overlapping ends, bracelets made of a thick copper band with overlapping ends, tubular beads made of copper plate; triangular flint arrowheads with even or concave bases; flint celts, perforated stone axes, and pottery. In the cemetery area tubular beads "of turquoise and of marble-like limestone" were found, as well as biconical, spherical, and ribbed beads of faïence and amber (Zakharuk, 1952). Turquoise is not native to the Caucasus; the nearest known source lies in Nišapur, Iran.

2. *Faïence beads in central and eastern Europe*

The faience trade continued on lines similar to those of the preceding period. Annular and segmented beads are reported from the classical Únětician graves, and were found in association with classical types of Únětice pottery and bronzes in the following sites in Moravia: Jiřikovice, Nemčice, Kyjov, and Horni Dunajovice (Tihelka, 1953a).

Small annular, segmented, cylindrical, or star-shaped faïence beads of blue or green color are quite frequent in late Únětice graves (cf. Horní Přín graves in eastern Bohemia: Moucha, 1958), in the Mad'-

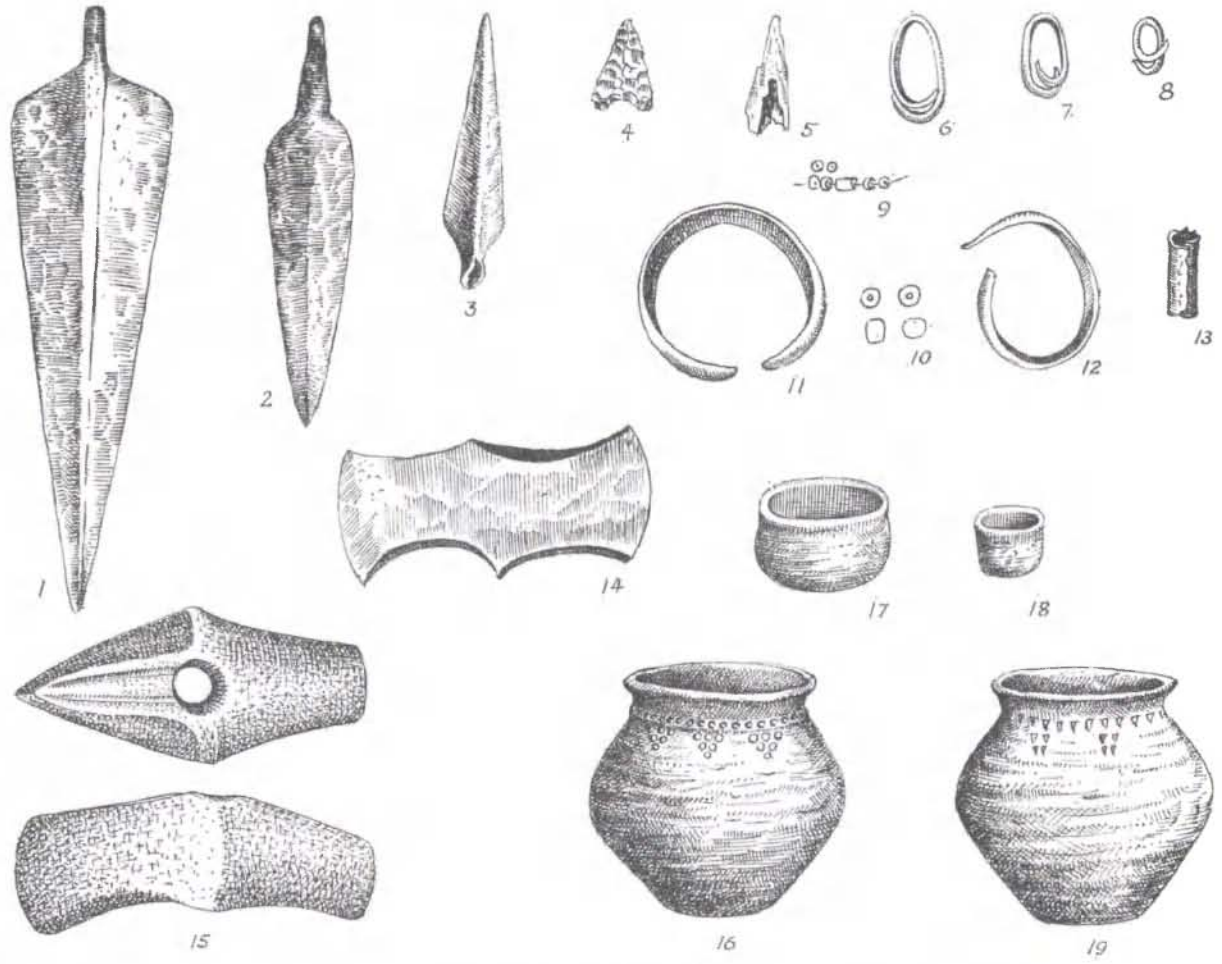


FIG. 19. Grave finds from the cemetery of Pervomajskoe, district of Groznyj, northeastern Caucasus. **1, 2,** copper daggers; **3,** copper spearhead; **4, 5,** flint and bone arrowheads; **6-8,** copper hair-rings; **9,** annular faïence beads of white and gray color; **10,** copper beads; **11, 12,** bracelets of flat copper wire; **13,** bead of folded copper wire; **14,** copper axe; **15,** stone axe of diorite; **16-19,** pots. Scale approx. 1/3. *After* Krupnov, 1950.

arovce group of western Slovakia (cf. Majcichov cemetery: Archaeological Museum in Nitra), in the Monteoru group of eastern Rumania (Monteoru cemeteries No. 2 and 4, which belong to the Monteoru Ia and the succeeding phase), and in the Füzesabony group of the classical Otomani culture in northern Hungary (cf. pl. 31, *22*). They are also found in the late Wessex culture of England, in the western and eastern Mediterranean area, in Greece, Anatolia, Syria, and Iran.

Annular or cylindrical faïence beads, mostly of white, light blue, green, or yellow color, are present in the central Caucasus during the Faskau phase (fig. 337, *3*). Tiny beads of white and gray paste (fig. 19, *9*) and of carnelian are known from the Pervomajskoe cemetery near Groznyj in the eastern Caucasus, where they were associated with copper daggers (fig. 19, *1, 2*), spiral ornaments, bracelets (fig. 19, *11, 12*), copper beads (fig. 19, *10*), spearheads (fig. 19, *3*) and copper shaft-hole axes (fig. 19, *14*), perforated stone axes of diorite (fig. 19, *15*), flint and bone arrowheads (fig. 19, *4, 5*), and pottery (fig. 19, *16-19*). The Pervomajskoe copper artifacts show a close relationship with the axes and daggers from the southern Caspian area of northwestern Iran (fig. 20). In the Persian Talysh, this type of dagger (fig. 20, *5, 6*) and axe (fig. 20, *1*) appears in association with faïence beads (fig. 20, *7*), as at the site of Khodja-Daoud-Keupru dated by Schaeffer to Late Talysh I, *ca.* 1500-1450 B.C. (Schaeffer, 1948, p. 418, pl. LIX). The date has been arrived at by typological reconstruction; according to Schaeffer, the finds of Khodja-Daoud-Keupru

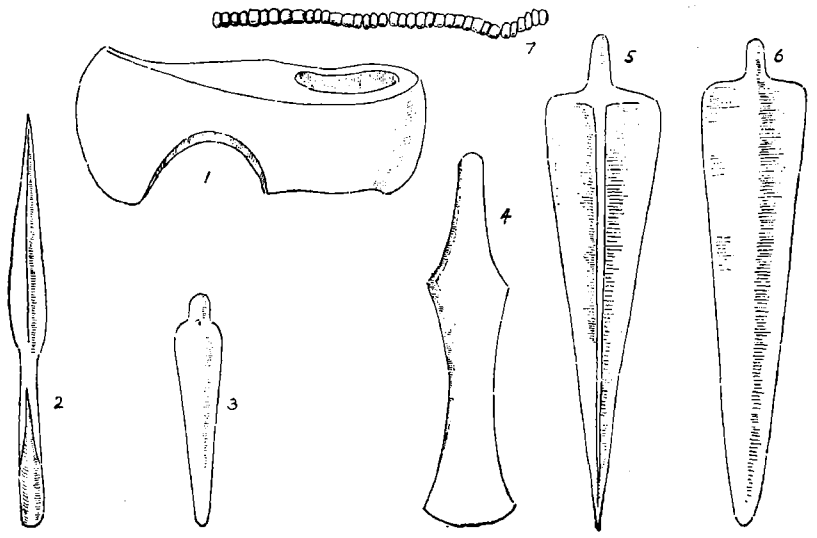


FIG. 20. Copper artifacts and faïence beads of Late Talysh I type from the site of Khodja-Daoud-Keupru, northern Iran. **1**, copper axe; **2**, spearhead; **3**, knife; **4**, adze; **5**, **6**, daggers; **7**, faïence beads. Scale approx. 1/4. *After* Schaeffer, 1948.

are earlier than those from Agha-Evlar, a site dating from the "cylinder period" which extends both before and after the year 1400 B.C.

Studies by Beck and Stone (1936) have shown that the segmented beads from the Wessex culture in England have nearest analogies in the Abydos cemetery (grave 1808A), Egypt, and at Lachish (Tel ed-Duweir) in Palestine, both of which can be accurately dated about 1400 B.C. Their appearance in Únětician graves does not, however, give a dating around 1400 B.C. because segmented and annular beads were already present in the classical and in the late Únětice graves which belong to a period from the seventeenth to the mid-fifteenth centuries B.C. They are also found in association with classical types of Únětice pottery and bronzes, and with late Únětice bronzes such as pins with perforated globular and conical heads. Annular and four-rayed faïence beads are present in the Mad'arovce group in western Slovakia. In the cemeteries of Majcichov and Matuškovo they were found in association with spherical amber beads (fig. 178, *13-16*), pins with globular and conical heads usually having twisted and bent stems (fig. 178, *1-3*), pins with rhomboidal heads having folded corners ("Hülsennadeln"; fig. 178, *4-6*), bracelets round in cross-section with tapered ends (fig. 178, *10*), round and conical bronze plates, mugs, and other types of pots. This kind of assemblage is indubitably later than classical Únětice with ear-headed and ring-headed pins, but not as late as 1400 B.C., as the connections with the Mycenaean I and II culture indicate.

Faïence beads of the later period were of more varied forms, and some were of brighter color than those found in the earlier Únětice graves. Beads of a cobalt blue color were found in Ostrožka Nová Ves, Moravia, from the late Únětice graves. These beads were spectrographically examined; according to Stone and Thomas, the same coloring matter was used by the Egyptians during the Eighteenth Dynasty (Stone and Thomas, 1957, p. 58). However, in the light of recent investigations by Neuninger and Pittioni of glass beads from the early Urnfield period in Austria, changes in our concepts regarding the production center of faïence can be expected. The examination of blue glass beads from the early Urnfield cemetery at Volders in the Tyrol has proved the existence of a local production center in the northern Tyrol near Schwaz. The natron-potash lime glass was colored by the addition of copper which originated in the vicinity of Volders. Beads from the lower Austrian cemeteries which have been examin-

ed have shown identical composition. Some Middle Bronze Age beads discovered in Tumulus graves and hoards have not yet been examined, but the analysis of one globular bead from Melk-Spielberg, presumed to belong to the late Únětician Unterwölbling group in lower Austria, has shown that it was colored by the aid of pure copper which may have come from western Carpathian or Transylvanian sources, and that it was free of boron as were the early Urnfield beads (Neuninger-Pittioni, 1959).

3. *Gold trade*

Gold objects are concentrated in the area of the Únětice, Otomani, Wietenberg (in Transylvania), and Tei (lower Danube) cultures. The Únětice people imported gold from Ireland, as is shown by a basket-shaped earring of British type found in the hoard of Wąsosz, western Poland (fig. 17, *1*), and probably also obtained it from the local sources in Bohemia. The gold basket earring from Wąsosz has its closest parallels in the British Isles: Radley, Berkshire (fig. 18) and Orton, Morayshire (reproduced by Butler, 1956, p. 63, fig. 14) and in Ireland ("Dacomet", Co. Down: Armstrong, 1933, No. 350, p. XVIII, *413*). From all the classical Únětician hoards comes only the single example from Wąsosz, located on the amber route. Another gold basket-shaped earring in bad condition from the North Carpathian culture was discovered in the barrow at Rusilov. It was found together with a stone axe, a flint dagger, and other flint artifacts in the same grave (fig. 306). The greater number of long basket-shaped earrings in the British Isles indicates their probable importation into central Europe from the west. Between Ireland and the lower Vistula, in Belgium, gold basket-shaped earrings have also been found (the cave "Trou del Heuve", Sinsin, Prov. Namur: Marien, 1952, p. 186, fig. 173). The gold spiral hair-rings or earrings made of a massive gold wire with thickening ends (fig. 170, *4*, *5*) very probably are of local Bohemian gold.

The Otomani and other cultures in eastern central Europe obtained gold chiefly from the Transylvanian sources. In eastern Slovakia, Hungary, and Rumania gold objects have been found in great numbers. Hair-rings or earrings made of gold wire with thickening and overlapping ends, have a wide distribution. The fact that in distant areas they appear in a similar or identical form shows their importance in trade. This type of hair-ring is known from Hungary (pl. 31, *17-21*, *23*; Tompa, 1937, pl. 46, *11*, *12*), Rumania (fig. 21, *22-28*), the western Ukraine (pl. 9, *5*), and the Caucasus (fig. 19, *6-8*; fig. 337, *6*; the hair-ring in the latter illustration is of copper, but in the same cemetery gold specimens were found: Uvarova, 1900, pl. 89, *14*, *16*).

To the beginning of the series of outstanding gold treasures of eastern central Europe belong several finds from the lower Danube area. These are the grave finds from Măcin in Dobruja and Perşinari northwest of Bucharest. Both comprise forms which show a certain stylistic relationship, on the one hand with the classical Únětice forms, and on the other with the Mycenaean shaft-grave forms. The accidentally discovered gold treasure in the tumulus at the village of Măcin north of Silistra, Dobruja, comprised two halberd blades and two bracelets, round in cross-section (pl. 8, *1*, *2*, an illustration of *1*, one halberd blade and *2*, one bracelet). The halberd blades were quite long, one was 22.2 cm, the other 19 cm in length, had a rib in the middle of the blade which was slightly curved, and had projections at the hilt. The blades were made of 53 percent gold, 23 percent silver, 22-23 percent copper and 1-2 percent iron (Severeanu, 1935). As Severeanu has already noticed, the Măcin halberd blades are reminiscent of the western Mediterranean halberd blades and also of the dagger form known from the Mycenaean shaft-graves like that from Shaft-grave IV (Severeanu, 1935, p. 9). The bracelet is similar to the gold or bronze bracelets known from many classical Únětice graves and hoards (cf. the gold bracelet from the royal tomb in the barrow of Helmsdorf; fig. 170C, *6*). The Perşinari treasure found in 1956 near Târgovişte consists of a massive gold dagger or sword, over 30 cm long (its hilt and end of the blade are broken) and 9 cm wide at the shoulders (pl. 8, *3*), and of four silver battle-axes all in fragments (Museum of the

Archaeological Institute of the Academy of Sciences in Bucharest). The blade had four grooved channels starting on each shoulder and running parallel down the blade, while the broken hilt had a projecting hand guard, with an omega-shaped base. The Perşinari sword-dagger is, so far, unique in Europe. Although some stylistic resemblance to the Mycenaean I swords can be seen, it was probably locally produced by the Tei people north of the lower Danube. Among the Mycenaean swords and daggers there is a long sword having a golden hilt from grave Delta of the grave circle B at Mycenae (Mylonas, 1955, pp. 140, 141). Its hilt was decorated with spirals and the hand guard ended in heads of lions (pl. 8, *4*). The shape of the hand guard in spite of its decorative motifs shows a stylistic relationship to that of the Perşinari sword. Both have pointed shoulders and an omega-shaped base, and such similarities very probably are not accidental. The grave circle *B* of Mycenae dates from a somewhat earlier period than circle *A* (*ca.* 1580-1510 B.C.), hence the stylistic resemblance between the sword of Mycenae from grave Delta and the sword of Perşinari would indicate for the latter a date somewhere around 1600 B.C. The silver axes are of the so-called Tufa type copper axes known from the hoard of Tufa southwest of Bucharest (pl. 8, *A*, *1*). These battle or cult axes with a shaft-hole in the middle, a cylindrical butt and a slightly curved blade are usually made of semi-precious stone (like that from the hoard of Borodino, pl. 12, *4*) or copper. They represent an axe type known around the Black Sea and in the Caucasus lasting for a considerably long period. In addition to such an axe, the hoard of Tufa included an axe of Transylvanian-Carpathian type with a straight body and a shaft-hole at the butt (pl. 8, *A*, *2*) and two lunula-shaped, faceted earrings of gold with thinning ends (pl. 8 *A*, *3*, *4*). The above-mentioned typological comparisons speak for a chronological parallelism between the Mâcin, Perşinari, and Tufa treasures, classical Únětice and early Mycenaean (late Middle Helladic), graves. The gold forms of these three sites do not appear in the series of later gold hoards which belong to the classical Otomani (Füzesabony and Wietenberg groups) dated in the period *ca.* 1550-1450 B.C., as will be shown below. The most probable date for Măcin, Perşinari, and Tufa is from 1650/1600 to *ca.* 1550 B.C.

For the illustration of trade activities between Transylvania, the northern Pontic area and the Caucasus, the interesting hoard found on the Southern Bug River, northwest of the Black Sea, deserves our attention. The hoard was deposited in the Museum of Nikopol', western Ukraine (Tallgren, 1931a): hence its name, the "Nikopol' hoard". It contained gold hair-rings (pl. 9, *5*), two basket-shaped ornaments of copper or bronze, decorated with imitation cord motif in relief (pl. 9, *3*, *4*), an awl (pl. 9, *2*), a Caucasian copper axe of Faskau type (pl. 9, *1*), and a triangular dagger blade (not reproduced here).

That Transylvania was in the center of trade in gold and that its sources played the most important role over all eastern central Europe and in the western Pontic area is indicated by large gold treasures like those from Şmig in eastern Rumania (fig. 147), Ostrovul Mare in southern central Rumania (pl. 32), Pecica-Rovine in western Rumania (Popescu, 1944, pp. 130-132, fig. 57), and Ţufalău (Cófalva) in the district of Trei-Scaune, eastern Transylvania (Mozsolics, 1949a). The treasure of Ţufalău contained golden shaft-hole axes of Transylvanian type (fig. 21, *1-4*), convex discs with punctured decoration (fig. 21, *12*, *20*), discs with spiral decoration (fig. 21, *8-11*), a fragment of a plate with spiral ornaments (fig. 21, *5*), hair-rings with thickening and overlapping ends (fig. 21, *21-28*), some of them coiled in small spirals, a twisted neck-ring with spiral ends (fig. 21, *6*), a broken sphere, and an ingot. The Ţufalău and Şmig hoards are presumed to belong to the Wietenberg cultural group of eastern Transylvania (verbal information from Prof. D. Berciu). The treasure of Ostrovul Mare with convex plates, hair-rings, and bracelets, found in a pot of Vattina-Gîrla Mare type, probably was imported from Transylvania.

The above-mentioned and many other gold hoards from Rumania, Hungary, and northern Yugoslavia almost all belong to the same period: the end of the Early Bronze Age. This is seen from the identical form of hair-rings and the spiral ornaments on plates. The form of Ţufalău axes has parallels in the cemetery of Megyaszó (pl. 31, *1*) in northern Hungary; both belong to the classical Otomani culture parallel to late Únětice. The approximate date: first half of the fifteenth century B.C.

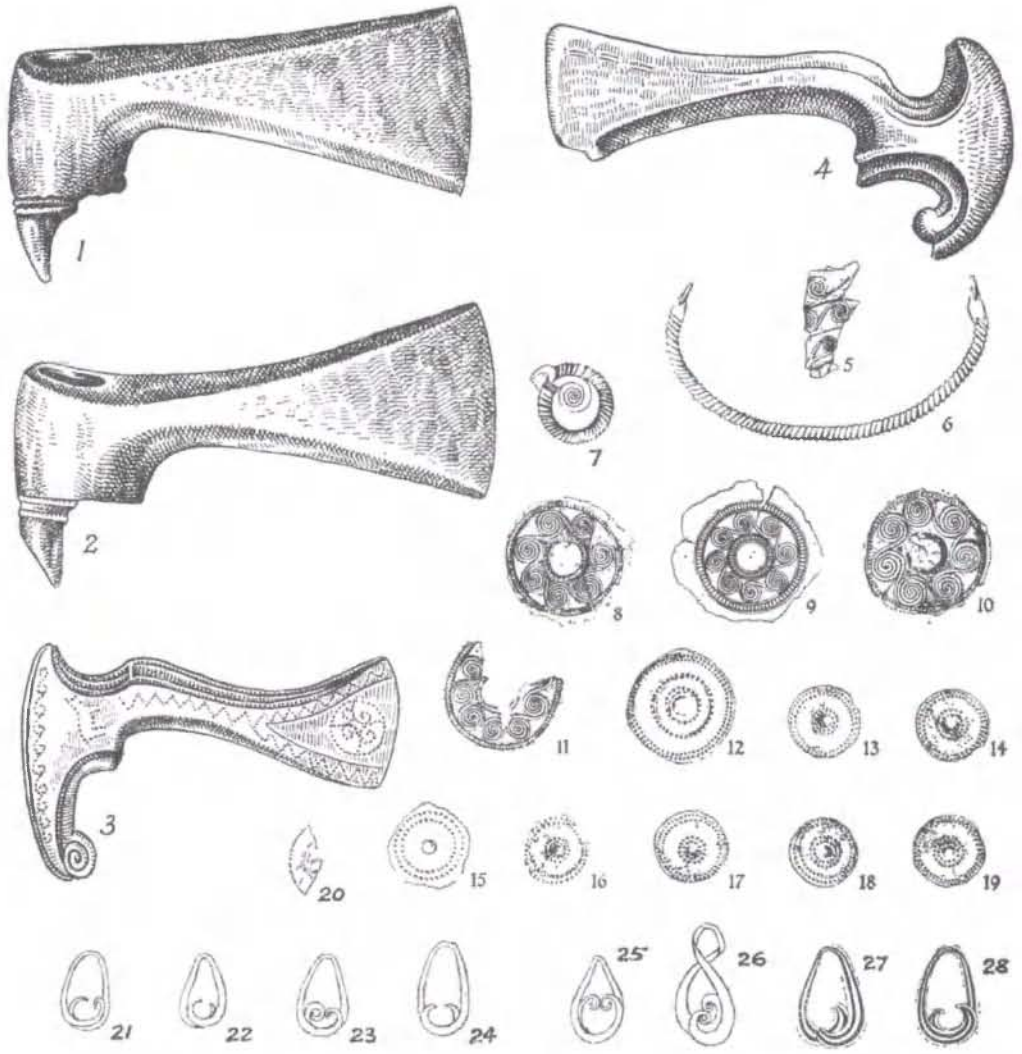


FIG. 21. Gold treasure from Ţufalău (Cófalva), district of Trei Scaune, eastern Transylvania. **1-4**, axes; **5, 8-20**, ornamental plates; **6**, neck-ring; **7**, finger-ring; and **21-28**, hair-rings. Scale: **1-4** approx. 1/3; **7-28** less than 1/1.
After Mozsolics, 1949, and Hachmann, 1957.

4. *Mycenaean-Minoan influences on central Europe*

Through commercial relations with Mycenaean Greece, the Unëticians and Otomanians gradually became more acquainted with the Mycenaean-Minoan culture. In central Europe are found objects that can be explained only as imitations of Mycenaean artifacts or art motifs.

In the Unëtician cemetery of Nienhagen near Oschersleben, Saxony, a pottery cup with a handle made of two horizontal lugs joined by a vertical cylinder was brought to light (fig. 22, *1*). Such a handle is certainly not an independent invention of an Unëtician potter, but an imitation of handles frequent on gold goblets or cups in the Mycenaean Shaft-graves IV and V of Late Helladic I (fig. 22, *3*) or on Late Minoan Vapheio cups (fig. 22, *2*). In the Aegaen area such cups were made not only of gold but also of bronze or pottery, and the pottery cup from the Shaft-grave V (National Museum in Athens) is quite similar to that from Nienhagen. The same type of cup is known from Egypt (cf. grave of Queen Hatshepsut, 1520-1484 B.C.). In Crete as well as in Egypt the tradition of Vapheio cups is long; they are

FIG. 22. **1,** pottery cup from the cemetery of Nienhagen near Oschersleben, Saxony; **2,** Late Minoan Vapheio cup; and **3,** a gold goblet from the Shaft-grave No. IV at Mycenae. Scale approx. 1/2.
After Mötefindt, 1912 (**1**); Seger, 1924 (**2**); and Schliemann, 1878 (**3**).

known from the beginning of the second millennium B.C. In the hoard of Tod in Upper Egypt, which is generally accepted as dating from the time of Amenemhet II in the second half of the twentieth century, silver mugs with handles of Vapheio type were present (Vandier, 1937, p. 174). The similarity between the Unětician cup from Nienhagen and the Mycenaean-Minoan cups of Vapheio type was noticed fifty years ago (Mötefindt, 1912). Unfortunately, among the finds from the cemetery of Nienhagen there were no bronzes of diagnostic value, but the pottery was of advanced Unětice type (Voges, 1908; Mötefindt, 1911).

Another find pointing to a tie between the Aegean world and central Europe is the helmet discovered at Beitzsch near Gubin (Guben) in the middle Oder area (fig. 23, *2*). In Beitzsch were also found a dagger blade of a type commonly used by the Úneticians in the Oder-Elbe area (fig. 23, *1*) and two neck-rings. The dagger blade shows close relationship to the daggers of the classical Unětice which are known from the hoards of Lubin (Lüben), in Silesia, Wojcieszyn, and Granowo, in northwestern Poland (fig. 24; pl. 42). The Beitzsch finds discovered in the first half of the nineteenth century were first published in 1847 and described by Hencken in 1952.

The Beitzsch helmet is similar to the recently discovered Late Minoan II helmet from Knossos, Crete. The detailed examination of the Beitzsch and Knossos helmets (Hencken, 1952, with reference to Sinclair Hood) shows their similarity, except that the workmanship of the Beitzsch example seems more crude than one expects to see in Minoan objects: the knob was not riveted on, as on the Knossos example, it was less regular in form, and the three sets of holes, designed to hold a cheek and neck guard, were less regularly placed than those of the helmet from Knossos. If the Beitzsch helmet did belong to the same hoard together with classical Unětice daggers, it may be considerably earlier than the Knossos helmet. Both seem to be bronze analogues of the Mycenaean boar tusk helmet which originated in Middle Helladic times and which appears in the shaft-graves of Mycenae in the sixteenth century B.C.

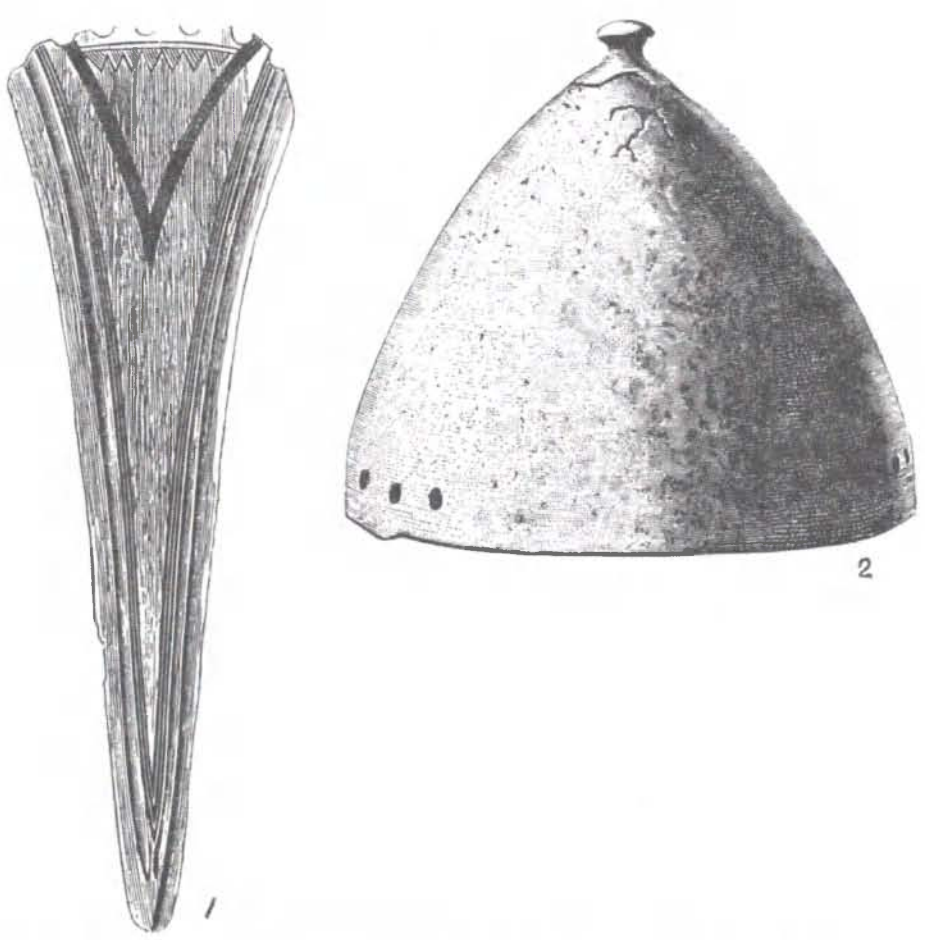


FIG. 23. The Beitszch hoard: **1**, dagger blade and **2**, helmet. *After* Montelius, 1900.

A signet ring from Shaft-grave IV shows warriors wearing helmets of the same shape. These helmets have plumes attached to the knobs on the top. A picture of another helmet like this appears on a vase from Tomb 5 at Isopata (Evans, 1914, p. 27, fig. 37), belonging to Late Minoan I at Knossos which Pendlebury dates 1580-1450 B.C. (Pendlebury, 1939, pp. 175, 224). The early Mycenaean helmets, however, cannot be matched with the Beitzsch copy. The closest analogue to it remains the Knossos helmet dating from *ca.* 1400 B.C. Since classical Únětice, as we have seen above, is not later than the sixteenth century B.C., the association of the Beitzsch helmet with classical Únětice daggers and neck-rings is dubious. Unfortunately, the Beitzsch helmet cannot be considered as a time marker for the Únětician chronology.

The efflorescence of spiral art in east central and central Europe is very probably a result of commercial contact with Mycenaean Greece. It appears in a magnificent variety of form in the classical Otomani culture in Transylvania, northern Hungary, and eastern Slovakia. Spiral designs were engraved on pottery (fig. 25, *1*) and bronze (fig. 26), gold, bone, or antler objects (figs. 27, 28). From eastern Hungary, eastern Slovakia, and Rumania, come the most beautifully decorated shaft-hole axes, swords, and daggers (figs. 26, 146). From the same phase comes the baroque spiral-boss decorated pottery (fig. 25, *1*; pl. 30). The peculiarly coiled spirals with their tails ending in small spirals found on pots (fig. 25, *1*) or bronze objects (fig. 26, *4*) are reminiscent of the spiral ornament of the golden plaque from the Mycenaean Shaft-grave III (fig. 25, *2*). Pottery decorated with running spirals is distinctive of the Wietenberg group, an eastern cousin of Otomani in eastern Transylvania known from the sites around Turda, Alba,

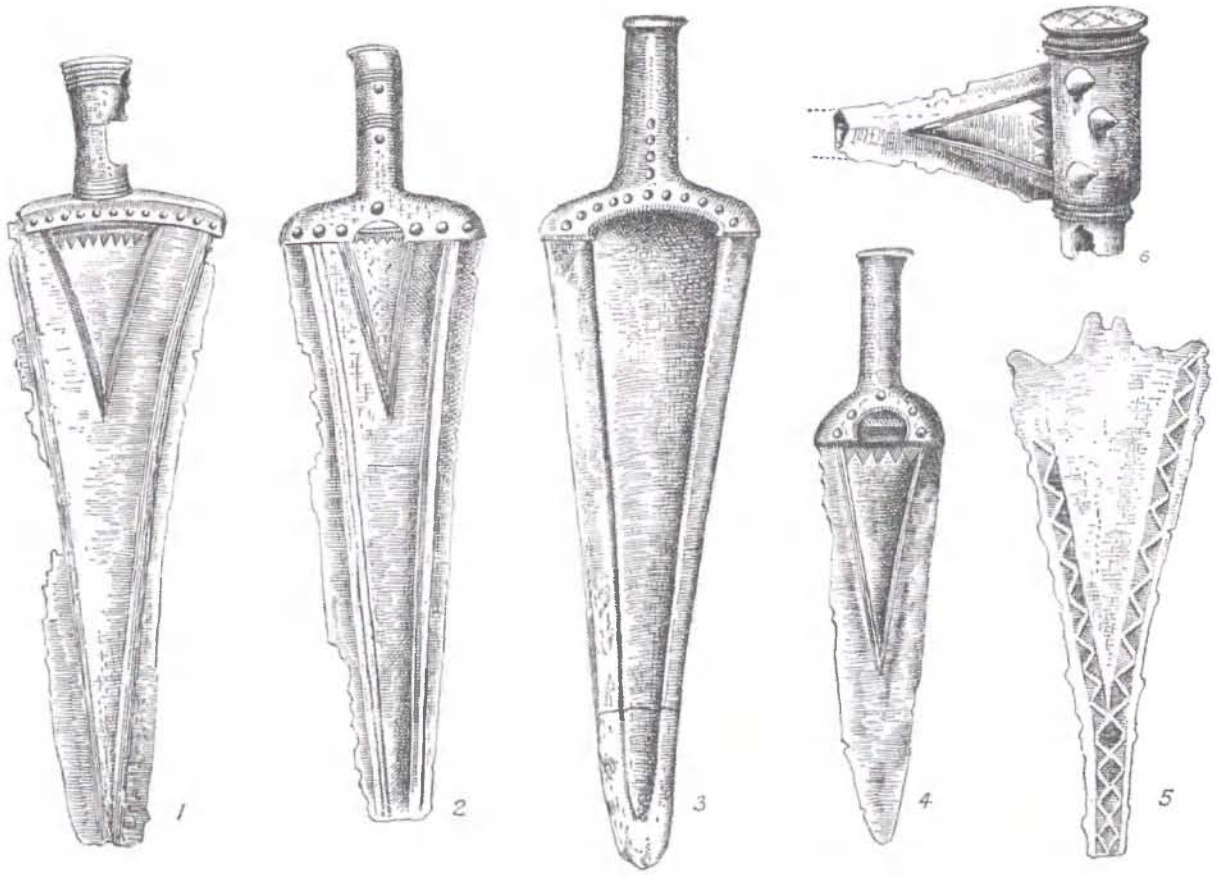


FIG. 24. **1-5,** daggers and **6,** halberd from the hoard of Granowo, district of Nowy Tomyśl, western Poland. To the same hoard belong massive C-shaped bracelets, necklets and flanged axes.
Scale 1/4. *After* Knapowska-Mikołajczykowa, 1957.

Mureș, Hunedoara, Cluj, Someș, Odorhei, Sibiu, Brașov and in the district of Trei Scaune (Popescu, 1944, pls. VIII-XI). The decoration with interconnected spirals has very close analogues in the Mycenaean and Minoan art of the sixteenth and fifteenth centuries B.C. Gold plaques from the hoard of Ţufalău, eastern Transylvania, were decorated profusely with running spirals (fig. 21, *8-11*). Antler discs with very similar spiral decoration also belong to the same chronological group. Figure 28, *8* shows an antler disc from the habitation site of Füzesabony and another comes from the classical Mad'arovce layer in the stratified site of Nitrianski Hrádok (pl. 10). Spiral ornaments of the same nature are also found on the socket of one spearhead from the hoard of Borodino (pl. 13, *3*; described below). A marble disc with spiral ("triskele") decoration was brought to light in the urnfield at Surčin, Syrmia, northern Yugoslavia (fig. 28, *9*), which is identical to the decoration of gold buttons from Kakovatos, Greece (fig. 28, 10, *11*). The cemetery of Surčin contained pottery of Vattina and Tolvadia type, but the finding circumstances of the disc are not known (information obtained from Prof. M. Garašanin). In addition to spiral-decorated discs, bone cylinders and bridle cheekpieces decorated with running spirals and pulley motifs were discovered in the late Únětice, Mad'arovce, and Füzesabony sites. Almost identical spiral and pulley motifs are present on a bone cylinder found in the site of Ásothalom, near Tiszafüred, eastern Hungary (fig. 27, *1b*), and on the golden or bone buttons from Shaft-graves IV and V at Mycenae (fig. 27, *2*). The Ásothalom site at Tiszafüred was excavated about ninety years ago; the finds are in the museum of Tiszafüred. The bone cylinder was in association with the latest forms of the classical Otomani (Füzesabony) phase, spiral-boss pottery, bronze pins with mushroom-heads,

FIG. 25. Spiral designs on **1**, a pot of the Otomani culture from Debrecen, northern Hungary, and **2**, a gold plaque from Shaft-grave III in Mycenae. Scale: pot approx. 1/3; plaque approx. 1/1.
After Hampel, 1887, and Schliemann, 1878.

curved pins with barbs, bridle bits, gold hair-rings, and spirals, whetstones, harpoons, and a mold for a flat axe (information from Dr. I. Bóna, Budapest). The Tiszafüred pottery and hair-rings have close analogues in the cemetery of Megyashó (pl. 30). Bone cylinders with spiral-pulley motifs appeared in rubbish pits of the Blučina-Cezavy (fig. 28, *1*, *2*) and Nové Hory habitation sites near Věteřov in Moravia. An analogous bone cylinder and a bridle cheekpiece with spiral and pulley decoration came to light at Vattina, in western Rumania (fig. 28, *3*, *4*). A running spiral is present on cylindrical bone bridle cheekpieces found in the fortified village of Nitrianski Hrádok, western Slovakia, belonging to the Mad'arovce group (fig. 28, *5*; pl. 10). The same kind of ornament also appeared on the cheek-piece found in the top layer of the stratified site of Vinča at Belgrade (fig. 28, *6*) and in the cemetery No. 2 of Monteoru, eastern Rumania, which is classed as Monteoru Ia (fig. 155).

The Füzesabonian, Mad'arovce, and Věteřov discs, cylinders, and cheekpieces are similar to the spiral and pulley ornament on the gold buttons from the Mycenaean shaft-graves. Hence the Věteřov and Mad'arovce assemblages in Moravia and western Slovakia and the classical Otomani (Füzesabony) culture are dated to the sixteenth century B.C. (Dezort, 1946; Werner, 1952; Tihelka, 1953b, 1958; Hachmann, 1957b). However, although the similarity of ornament cannot be denied, the complete contemporaneity of late Únětice and classical Otomani with the Shaft-grave period is questionable. These phases very probably date from the later part of the Shaft-grave period and also immediately after Late Helladic I.

Many arguments back this chronological position. First, many elements present in eastern central European spiral art can be compared to the spiral art of Late Helladic II A. The spirals (the "triskele" motif in particular) on gold buttons from Kakovatos (*ca.* 1500-1450 B.C.; fig. 28, *10*, *11*) are, for instance, very similar to the eastern central European spiral ornament motifs on antler and marble discs (fig. 28, *8*, *9*). In Greece, in the whole Aegean area, and in Syria, spiral and pulley motifs continued to be engraved during the fourteenth century B.C. and later. An ivory disc with the spiral and pulley decoration was found at Prosymna (fig. 27, *3*) in the dromos Tomb 34, a tomb built in Late

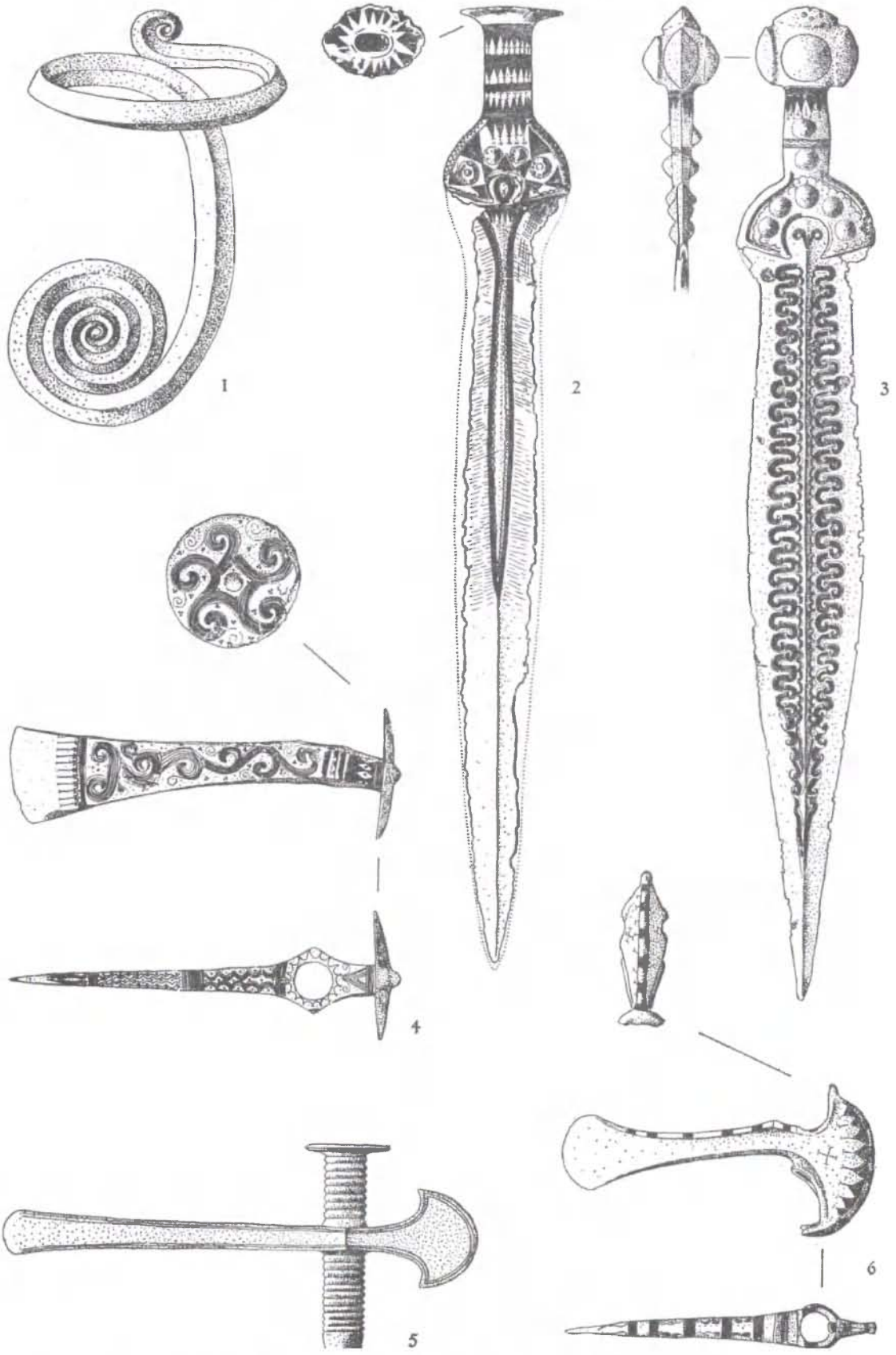


FIG. 26. The Apa hoard, northwestern Rumania. **1,** wrist-guard; **2, 3,** bronze-hilted swords; **4,** "Hungarian" battle-axe; **5,** axe with a vertical shaft-tube; **6,** shaft-hole axe with a crescentic butt. Scale: 1/2. *After* Hachmann, 1957b.

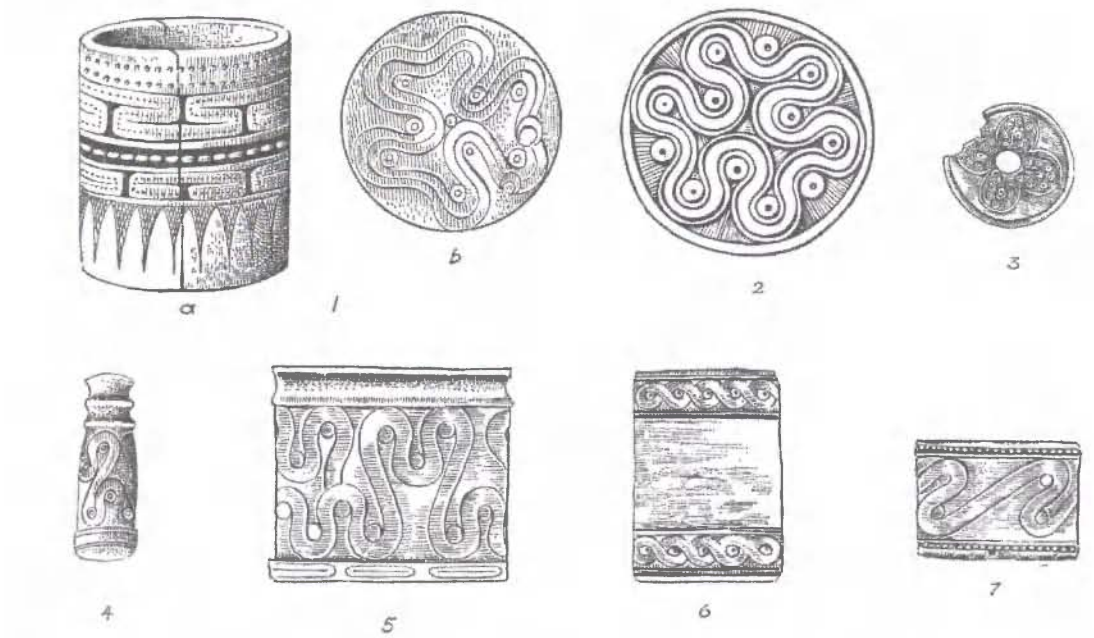


FIG. 27. Spiral designs on cylinders and discs from central Europe, Greece, and Syria. **1** *a*, *b*, bone cylinder from the site of Ásothalom near Tiszafüred, eastern Hungary; **2,** gold button from Shaft-grave No. V, Mycenae; **3,** ivory disc from the cemetery of Prosymna, Greece; **4-7,** ivory cylinder boxes and a handle from Atchana (**4,** level II, 1350-1273 *B.C.*; **6,** level IV, 1447-1370 *B.C.*; **7,** level VI, 1750-1595 *B.C.*). Scale: approx. 1/2. *After* Tompa, 1937 (**1**); Schliemann, 1878 (**2**); Blegen, 1937b (**3**); and Woolley, 1955 (**4-7**).

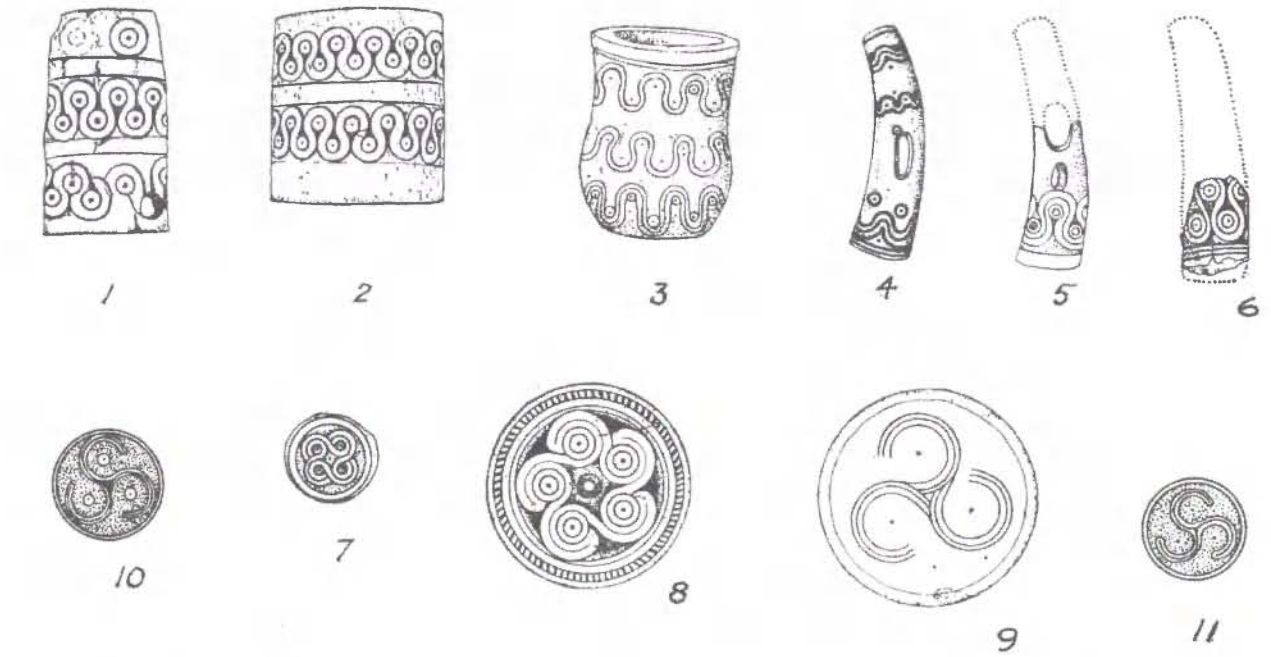


FIG. 28. Spiral designs in eastern central Europe and Greece of Late Helladic II A. **1, 2,** bone cylinders from the habitation site of Cezavy at Blučina near Veterov, Moravia; **3, 4,** bone cylinder and cheekpiece from the habitation site at Vattina, western Rumania; **5,** cheekpiece for horse bridle from Nitrianski Hrádok, western Slovakia; **6,** fragment of a cheekpiece of bone from the top layer of the stratified habitation site of Vinča at Belgrade; **7,** disc of antler from Veterov, Moravia; **8,** disc of antler from Füzesabony, Hungary; **9,** marble disc from the urnfield at Surcin, n. Yugoslavia; **10, 11,** gold buttons from Kakovatos, Greece. Scale approx. 1/2. *After* Hachmann, 1957b.

Helladic II, but used in Late Helladic III A (Blegen, 1937b, II, p. 63, fig. 262, *2*). A similar ornament is present on the bone and ivory cylinders from Tell Atchana (Alalakh), northern Syria, found in levels II-VI. The dates for Alalakh levels used by Sidney Smith and Woolley are from 1273 to 1750 B.C. (Woolley, 1955, p. 399; cf. pls. LXXVII and LXXVIII). According to Woolley's chronological table the cylinder from level II (fig. 27, *4*) dates from the period 1350-1273, the ivory handle from level III or II (fig. 27, *5*) should belong to the period between 1370-1273 B.C., and the bone box from level IV (fig. 27, *6*) is to be dated with the period 1447-1370 B.C. One cylindrical box with pulley motif was found in level VI which is dated 1750-1595 B.C. (fig. 27, *7*). Hence it is seen that the spiral-pulley motif had a long life. The late parallels are mentioned here not to prove the late chronology of the classical Otomani (Füzesabony) and late Únětice phases, but only to illustrate the fact that the spiral-pulley motif is not necessarily to be attributed to the Shaft-grave period. The pulley motif alone is not a sufficient proof for the sixteenth century B.C. connection, for in a very similar form it existed in the fifteenth and fourteenth centuries B.C.

Second, if we assume that the spiral art of the classical Otomani and late Únětice culture developed on account of strong influences from Greece during the Shaft-grave period, we have to allow a certain time lag for the evolution of this art in central Europe. During the Füzesabony phase of the Otomani culture the spiral art on ceramics had occurred already as an individualistic style; it was not an imitation of Mycenaean art. I am inclined to assume the period from 1500-1450 B.C. as the peak for Mycenaean influences on central Europe.

Classical Otomani is contemporary with late Únětice (the Věteřov group in Moravia, Böheimkirchen in lower Austria and the Mad'arovce group of western Slovakia). This is well shown not only by the spiral motifs but also by the spread of weapons. Axes with a long and ribbed vertical shaft-tube (such as fig. 26, *5*), called "Bohemian axes" or "axes of Křtěnov type" are frequent in the late Únětice assemblage of finds (cf. the habitation site at Banov near Věteřov, Moravia: Tihelka, 1946, p. 55, fig. 2, *1*; Křtěnov hoard near Týn nad Vltavou, and Touškov hoard near Stod, Bohemia: Hájek, 1950, pp. 97, 98, figs. 1 and 3). The same type of axes are typical of the Mad'arovce group in western Slovakia: cf. particularly graceful variants from the hoard of Nitrianski Hrádok "Zameček" (pl. 11, *2*, *3*). The same hoard contained an axe of Hajdusámson or Ţufalău type (pl. 11, *1*), a spearhead (pl. 11, *4*), and axes with a V-shaped flange (pl. 11, *5*, *6*). "Bohemian" axes are also reported from lower Austria (cf. Unter-Nalb near Retz, found in a grave in association with a pin with a perforated globular head: Willvonseder, 1937, 403, pl. 53, *2*), from Mecklenburg, Germany (cf. Fürstensee near Stargard: Hachmann, 1957b, No. 246), and from Pomerania on the Baltic Sea (cf. Klein-Bünzow, district of Greifswald: Kersten, 1958, No. 309). In the middle Danube basin they appear in Vatya III (information from Dr. Bóna, Budapest) and in the Szöreg IV assemblage of the late Pecica culture (fig. 125, *7*).

Swords, daggers, and axes of this phase spread over a large area of central Europe and over the western and southeastern Baltic area. Distribution maps of axes with vertical shaft-tubes (like fig. 26, *5*), earliest type of "Hungarian" battle axes (like fig. 26, *4*), and swords of Apa type (like fig. 26, *2*) over central Europe, Mecklenburg, and southern Sweden are given by Hachmann (1957b, maps 13-15). These types of weapons are contemporary with the spread over central Europe and the Baltic area of pins with globular perforated heads and twisted stems (such as fig. 178, *1-3*) and of flanged axes with V-shaped stopridge (such as fig. 179, *6*, *7*). Pins with globular heads are useful in correlating the late Únětice finds with those of southern Germany and the western Baltic area. The hoard of Lanquaid, district of Rottenburg in Bavaria, which is one of the richest from this phase, contained pins with globular heads, spatula-shaped flanged axes, and spearheads (Hachmann, 1957b, pl. 54). In the Northern Bronze Age culture, pins with globular heads belong to the "Horizon II" of the Early Bronze Age (Hachmann, 1957b, pl 2-13) or I b in Montelius' scheme.

5. *Mycenaean influences in the northern Pontic area and the commercial relations between the Black Sea, the Caucasus, and the Near East*

The Bronze Age finds in the Ukraine belong chiefly to a different class of forms which are not related to, and cannot be dated by, those of central Europe. However, the northern Pontic area and the Caucasus are themselves connected by a class of artifacts whose analogies in the Near East and Mycenaean Greece help to establish a chronology for the Russian bronzes.

a. *The Borodino hoard and its analogies in Mycenaean Greece and the Caucasus*

The Borodino hoard (pl. 12) was found in 1912 near the village of Borodino, in the former district of Akkerman in Bessarabia, and was described by Shtern (1914). In 1949 the hoard was again described by Krivtsova-Grakova.

It contained 17 objects, six of which were fragments. All lay originally in a pot of which only one sherd survived. The hoard included metal and stone artifacts: two well preserved, long, silver spearheads with ornamental gold plates on the sockets, and the socket of a third; one silver dagger, the middle rib of which was covered with a gold ornamented plate; a silver pin with a rhomboid head ornamented with gold incrustation; four polished stone axes with perforations, and fragments of a fifth; three well polished maceheads made of alabaster; and two copper plates with holes, which may have belonged to a wooden object. All of the objects mentioned had been finely finished. The axes, as well as the maceheads, were made of semiprecious stone and probably served a symbolic function, possibly that of power. From its richness one may presume that the hoard belonged to an important person. It is probably rightly called a royal hoard.

The Borodino forms have the closest analogies with the northern Pontic area and the Caucasus, but it is the ornaments executed on the gold plates covering the silver pin and dagger which show their chronological tie with the Late Helladic I and II A. The peculiar "double-lily" ornament on the pin resembles the ornaments on the gold buttons from the Mycenaean Shaft-graves Nos. I, IV and V (pl. 12, *11*; pl. 13, *6*), but the "pulley" motif, frequent on the buttons (pl. 13, *6*), is not found on the Borodino pin. The "triskele" and "S" motif of the Borodino dagger (pl. 13, *1*) are found also on the gold buttons as well as on other objects from Shaft-graves Nos. I, IV and V (pl. 13, *5*) and from Late Helladic IIA tholos tombs, like Kakovatos (fig. 28, *10*, *11*). The spiral ornament on the socket of the broken spearhead of Borodino (pl. 13, *3*) is very much like the Mycenaean spiral motifs engraved on grave walls, ornaments, and pottery. There is no doubt about the similarity of the decorative motifs on objects from the Mycenaean culture and from the Borodino hoard, but the forms of the Borodino pin, axes, and maceheads do not have analogies in Greece. Pins with rhomboid plate heads are known from the western Ukraine and eastern Rumania; the axes and maceheads are Caucasian types, and only the dagger and spearheads are generally related to the Late Helladic and Minoan forms (cf. the dagger from Gournia, Nom. Lasithi, Crete: Hachmann, 1957b, pl. 67, *1*, and spearheads from the shaft-graves II and IV: Karo, 1933, pls. 77, 98; Hachmann, 1957b, pl. 68, *6*, *7*).

The beautiful spearheads of Borodino have analogies all over eastern Europe: in southern Russia, central Russia, the Volga-Kama area in eastern Russia and the eastern Baltic area. The same type is found in the Ural region and in western Siberia.

Perforated stone axes made of nephrite, serpentine, and other semiprecious stones in a shape more or less related to that of Borodino are known from the northern Pontic area, between Bessarabia (Moldavia), the lower Volga and the central Caucasus. Similar axes come from eastern Rumania (cemetery of Poiana: Dunăreanu-Vulpe, 1938, p. 154, figs. 3, 10-12; in the same cemetery segmented faience beads and pear-shaped hair-rings made of bronze wire were found). In the Caucasus these axes have clear

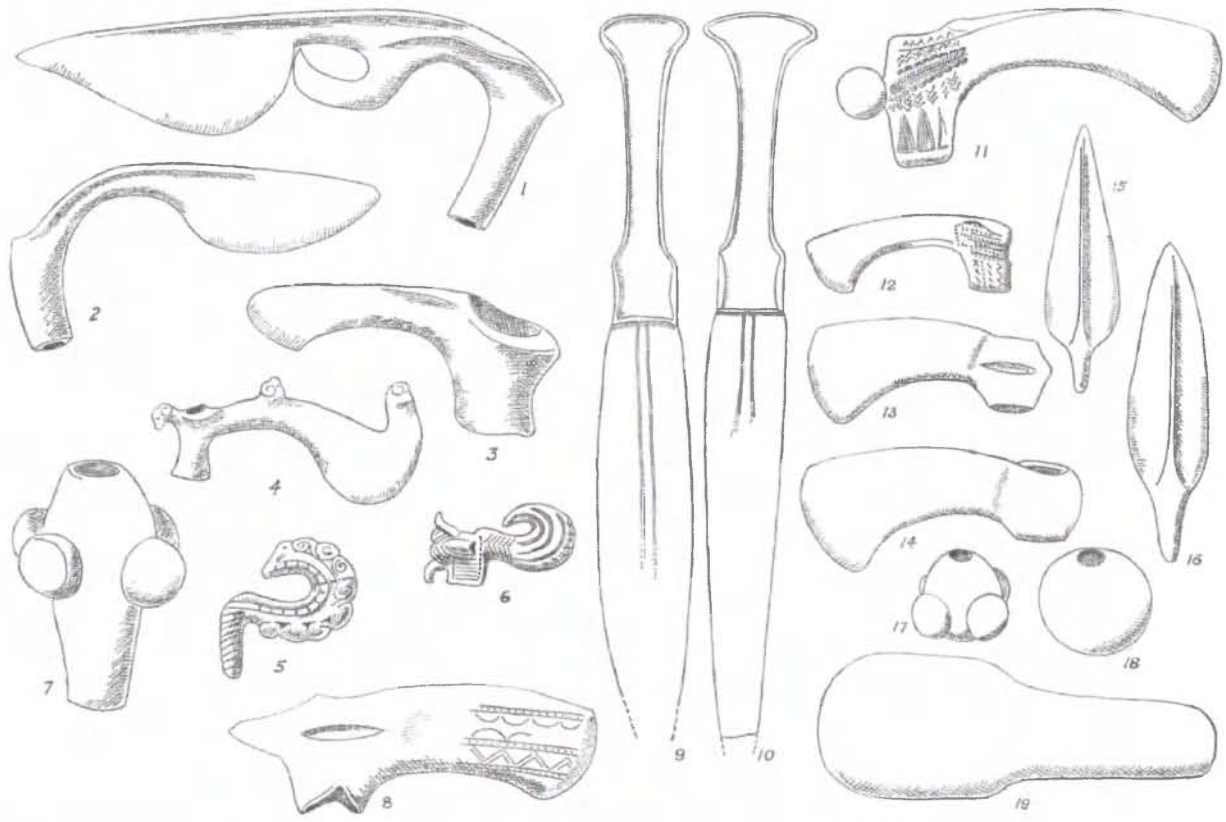


FIG. 29. Finds from the cemetery of Faskau near Galiat, northern central Caucasus. **1-4, 8, 11-14,** copper axes; **5, 6,** axe-pendants of copper; **7,** copper macehead; **9, 10,** daggers of Near Eastern type; **15, 16,** spearheads; **17, 18,** maceheads of serpentine; **19,** stone pestle. Scale: **1-4, 7, 8, 11-19,** approx. 1/4; **5, 6,** approx. 1/2; **9, 10,** approx. 1/3. *After* Uvarova, 1900 **(1-8),** and Krupnov, 1951 **(9-19).**

prototypes in the Early Bronze Age. Axes of this form had a long life north of the Black Sea. In the middle of the second millennium B.C. and later they continued to be made side by side with copper axes, even in the central Caucasus (fig. 337 *A*, *11*). Analogies can be sought in metal types. The semicircular blade of one of the Borodino axes seems to imitate copper axes of Caucasian type, such as those known from Faskau (fig. 29, *1*, *2*, *4*), and the curved blade appears also on miniature axe-pendants from Rutkha (fig. 337, *A*, *5*), Faskau (fig. 29, *5*, *6*) and Esheri in Georgia (fig. 328 *B*, *6*). One copper axe with a broad edge, very similar to those from Borodino, was found in Kurgan No. 7 at the Andrjukovskaja site in the Kuban River basin in the northern Caucasus (fig. 30, *3*). This axe was discovered together with a spearhead (fig. 30, *1*) and dagger blade (fig. 30, *2*) of a type common to northern Iran during the middle of the second millennium B.C. (Compare the dagger and the spearhead from Talysh I (fig. 20, *2*, *5*).

Maceheads of alabaster have identical equivalents in the central Caucasus. They are known both from stray finds (cf. Krupnov, 1951, Ris. 9, *10*) and from graves. In the cemetery of Faskau there were found maceheads of white serpentine of the same shape as those from the Borodino hoard (fig. 29, *17*, *18*; pl. 12, *1-3*), and also similar types of maceheads made of copper or bronze (fig. 29, *7*). The same type of macehead is known from Rumania, where a macehead of serpentine, decorated with four semi-globular bulbs, identical to that of Borodino, comes from Ocna Sibiului, district of Sibiu, eastern Transylvania (Horedt, 1940, pl. I, *4*). Several other maceheads of the same kind were found in the districts of Alba, Mureș, and Hunedoara in Rumania (Horedt, 1940, pp. 285-86, nos. 6, 13, 14). From this it appears that the egg-shaped maceheads, decorated with four semiglobular bulbs and made of semiprecious stone, were spread over a large area around the Black Sea. They were also exported to the

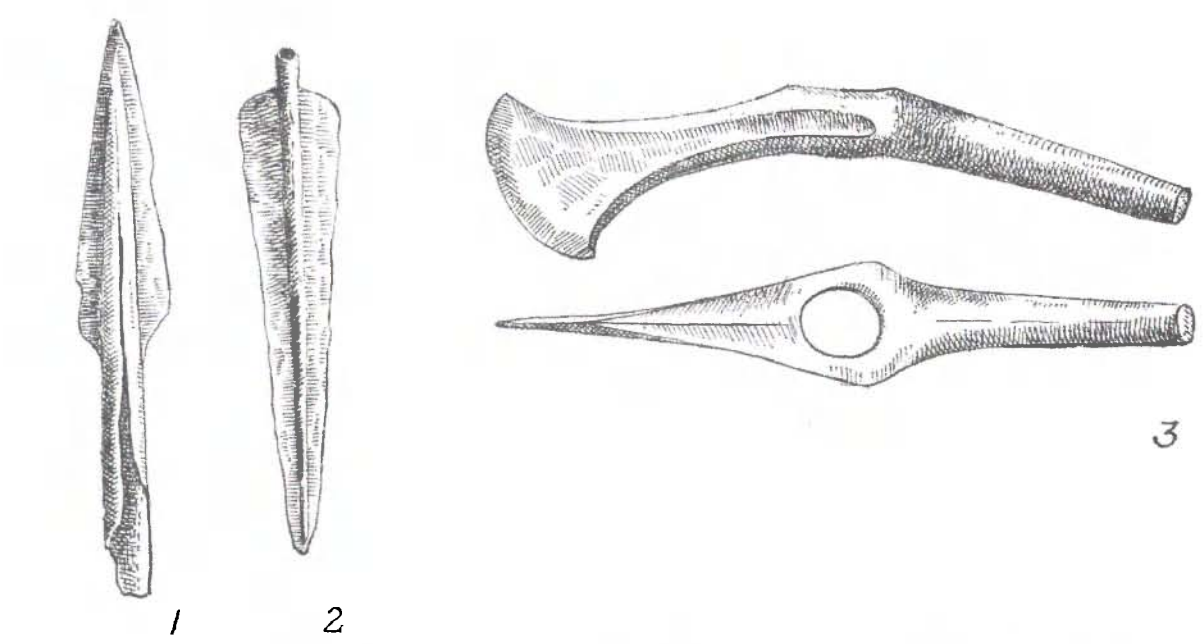


FIG. 30. **1**, copper spearhead, **2**, dagger blade and **3**, battle-axe from the barrow at Andrjukovskaja, Kuban River area, northern Caucasus. Scale: **1**, **2**, 1/4; **3**, approx. 1/2. *After* Iessen, 1951.

north, for one macehead of Borodino type was discovered as far north as the district of Perm in the middle Ural area (Aspelin, 1877, p. 149, fig. 627).

Analogies with certain forms from the central Caucasus, belonging to the Faskau period of the Koban culture offer another tie with a more absolute chronology.

b. *Faskau type finds in central Caucasus and their relations with the Near East*

A wealth of archaeological material has been excavated in the cemeteries located in the upper Terek basin. The greatest amount belongs to the cemeteries of Verkhnjaja Rutkha near Kumbulta and of Faskau near Galiat, in the district of Digora, and from an extraordinarily rich grave at Brili in northern Ossetia. The Faskau and Rutkha cemeteries were excavated, chiefly by amateurs, during the last decades of the nineteenth century, and the finds are scattered in various museums in Russia (chiefly the State Historical Museum in Moscow) and in Vienna (Naturhistorisches Museum). In 1900 Countess Uvarova published those finds which were in Russian collections (Uvarova, 1900), and since that time the cemeteries have been repeatedly devastated by amateur diggings. In 1935 and 1938, however, scientific excavations were resumed by Krupnov, who succeeded in finding some half-destroyed graves, built of stones in a rectangular plan, and containing grave goods *in situ* (Krupnov, 1951). The Brili grave was excavated by Gobedishvili in 1959 (finds are in the Archaeological Museum of Tiflis, Georgia). Since the name "Faskau" is known now for over 70 years and is easier to pronounce than "Verkhnjaja Rutkha", it is chosen for the designation of the chronological phase in the central Caucasus.

The Rutkha assemblage, besides a great number of white paste and faïence beads (fig. 337 *A*, *3*), contained copper daggers (fig. 337, *B*, *1-4*), copper spearheads and arrowheads (fig. 337, *B 5*), gold and copper hair-rings (fig. 337, *A*, *6*), copper pendants in the shape of horns or heads of horned animals and birds (fig. 337, *A*, *7*), miniature axes with semicircular blades (fig. 337, *A*, *5*), long pins with double spiral heads of copper plate (fig. 337, *A*, *8-10*), bracelets and head ornaments, or neck-rings with tapered ends (fig. 337, *A*, *1*, *2*), head ornaments of copper wire with overlapping flat ends, perforated stone axes (fig. 337, *A*, *11*), heart-shaped or elongated triangular flint arrowheads with concave bases (fig. 337, *B*,

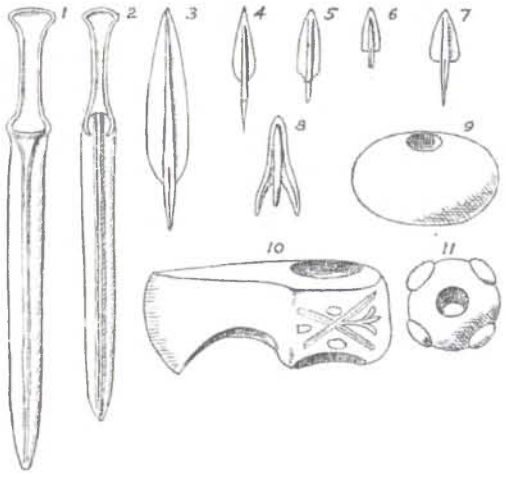


FIG. 31. **1, 2,** daggers of Near Eastern type, **3,** spearheads, **4-8,** arrowheads, **10,** copper axe, and **9, 11,** maceheads of alabaster from the site of Agha-Evlar, Talysh, northern Iran. Scale approx. 1/4. *After* Morgan, 1901, and Schaeffer, 1948.

7-11), whetstones (fig. 337, *B* ,*6*), and, finally, a considerable amount of pottery. The recent excavations proved that these finds belong together, being the contents of several graves. A major part of the copper axes, pendants, and pottery very probably belongs to the same period, but some finds discovered near Kumbulta date from a later period. In the Rutkha cemetery, daggers of Near Eastern type were found.

The Faskau assemblage consisted of a great many copper axes with long sockets and long, variously shaped blades (fig. 29, *1-4*, *11-14*), bronze knives and spearheads, copper axe pendants (fig. 29, *5*, *6*), and maceheads of serpentine (fig. 29, *17*, *18*), spherical and oval in shape with four half-globular bulbs around the middle section. Flint arrowheads were of the same elongated triangular shape with concave bases as in the Rutkha cemetery. Stone pestles and potsherds also resembled those from Rutkha. In Faskau daggers of Near Eastern type were also found (fig. 29, *9*, *10*). The grave of Brili comprised a number of "baroque" axes of Faskau character, 11 pins with flat disc heads decorated with embossed concentric circle motifs, two pins with conical heads and a perforation on the neck, a copper hair-ring with thickened overlapping ends, a number of bracelets having a triangular or oval section, round and biconical bronze beads, annular faïence beads of light blue and greenish color, daggers of Near Eastern character, socketed spearheads, and ornaments with horn decorations.

The Faskau phase is distinguished for the variety of axe-forms. Some showed true artistry in form and frequently were decorated with geometric designs (fig. 29, *11*, *12*). Several axes had a globular bulb attached to the back of the socket (fig. 29, *11*). Related axes are reported from Georgia and the Kuban basin in the northern Caucasus. These similar forms indicate that the Borodino hoard and the Caucasian finds of Faskau type must be approximately contemporary.

In attempting to establish a more absolute chronology for both the Borodino and the Faskau assemblages, one has to look further south for analogies. The key point for indicating a chronology is the daggers of Near Eastern type (fig. 29, *9*, *10*) which appear in Iran, Syria, and elsewhere. They are known from Talysh in northern Iran, west of the southern Caspian Sea (fig. 31, *1*, *2*), and belong to the period 1450-1350 B.C. or Late Talysh 2 according to Schaeffer (1948, pp. 404-18); they were found in association with copper axes (fig. 31, *10*), spearheads (fig. 31, *3*), arrowheads (fig. 31, *4-8*), and maceheads (fig. 31, *9*, *11*). The date of Late Talysh 2 is shown by "gray glaze" Mitanni seals, which occur between the southern Caspian and eastern Mediterranean coasts. In Syria, these seals, along with daggers, appear in Late Ugarit 2 (Ras Shamra). Late Ugarit 2 is dated by scarabs of Amenophis III and IV and by numerous Egyptian hieroglyphic, Canaanite cuneiform, Babylonian, Sumerian, and Hurrian inscriptions. The latter were produced during the reign of King Nqmd, contemporary of Amenophis III and IV

and of the Hittite king Suppiluliuma (Schaeffer, 1948, p. 10). In Greece, seals of this kind are known from Late Helladic IIIA (Blegen, 1937b, Prosymna tombs XXIV and XXXVIII, fig. 596, *85*, *131*) and in Mycenae they are dated not later than 1400 B.C. (Wace, 1932, p. 197, fig. 28). In addition to the daggers of Near Eastern type, other copper artifact forms, such as the knives, spearheads, and arrowheads from Rutkha and Faskau, have close analogies in northern Iran. There is a general similarity between the copper artifact types of Late Talysh 1-2 and those of the Faskau phase. It is obvious that close commerical contacts existed between the Caucasus and Iran.

As a result of comparison with Mycenaean ornaments and Near Eastern assemblages, the date of the Faskau, Borodino, and other related finds must be fitted in somewhere between 1500 and 1450/1400 B.C.

6. *Conclusions*

Commercial relations and changing types of bronzes within one cultural group indicate several chronological phases during the period between 1650/1600 and 1450/1400 B.C. The first (a) is contemporary with the classical Únětice, the second (b), with late Únětice.

a. *Ca. 1650 B.C. – ca. 1550 B.C.*

The dispersion of classical Únětice bronzes over a vast expanse of central and northern Europe, the presence of Baltic amber beads in central Europe and in the early shaft-graves of Mycenae indicate the following chain of contemporary cultures:

In Greece: end of Middle Helladic and beginning of Late Helladic I.

In central Europe (southern, central and eastern Germany, western Poland, western Czechoslovakia and lower Austria): classical Únětice culture.

In eastern central Europe (eastern Hungary and western Rumania): the later phase of early Pecica culture (Szöreg III in the sequence of the Szöreg cemetery) and late Hatvan or Tószeg B (according to the stratigraphy in the Tószeg tell on the Tisza River) distributed north and northeast of the Pecica culture. Early Otomani in western Transylvania and Vatya I-II in the middle Danube basin, western Hungary. North of the lower Danube: Perşinari phase of the Tei culture.

In the southeastern Baltic area (northern and eastern Poland, Lithuania and southern Latvia): Horizon I or Phase I of the Early Bronze Age Baltic culture.

In northwestern Europe (northern Germany, Denmark, and southern Sweden): Late Neolithic or flint dagger period in traditional terminology. Horizon I of the Early Bronze Age in Hachmann's scheme.

In southwestern England: early Wessex culture or Wessex 1.

There are not many finds which would indicate contemporaneity between the central European and Pontic cultures, but from the associations during the succeeding phase we may deduce that classical Únětice and contemporary groups of eastern central Europe ran parallel with the phase preceding Pokrovsk of the Timber-grave culture, preceding Faskau of the Koban culture and preceding Sejma of the Turbino culture in eastern Russia.

In northern Russia, the northern Baltic area and northeastern Russia, the culture of the Neolithic stage continued.

b. *Ca. 1550 B.C. – ca. 1450 B.C.*

The commercial relations in Europe during this period indicate the following chain of simultaneously existing cultures:

In Greece: Late Helladic (Mycenaean) I and II.

In central Europe: late Únětice (in a broad sense; it also includes groups known by the names Věteřov in Moravia and Böheimkirchen in lower Austria, and the Mad'arovce in western Slovakia and northwestern Hungary). This is Phase A_2 in Reinecke's scheme.

In eastern central Europe: late Pecica (Szöreg IV) in the lower Tisza and lower Mureș basins; Vatya III on the middle Danube in western Hungary; classical Otomani (including Füzesabony in northern Hungary, eastern Slovakia and northwestern Rumania and the Wietenberg group in eastern Transylvania); Monteoru Ia in Moldavia; Vattina-Gîrla Mare in northern Yugoslavia and southwestern Rumania.

In southwestern England: late Wessex culture or Wessex 2.

In northwestern Europe (northwestern Germany, Denmark, and southern Sweden): Horizon II of the Early Bronze Age in Hachmann's scheme, or Northern Bronze Age of the beginning of Period I in Montelius' scheme.

In the southeastern Baltic area (northern and eastern Poland, Lithuania, southern Latvia): Phase II of the Early Bronze Age Baltic culture or "Iwno".

North of the Black Sea and the northern Caucasus: Borodino in Bessarabia and the Faskau phase of the Koban culture in the central Caucasus.

In northern Iran: Late Talysh 1 (in Schaeffer's scheme, based on Morgan's excavations).

II

MIDDLE BRONZE AGE

Ca. 1450 B.C. - *ca.* 1250 B.C.

A. RELATIONS BETWEEN CENTRAL EUROPE AND THE MYCENAEAN CULTURE OF THE LATE HELLADIC IIIA PERIOD

1. *The wide distribution of central European bronzes in connection with the influence and expansion of the "Tumulus people", ca. 1450 - ca. 1325/1300 B.C.*

a. *Early Tumulus or Koszider horizon*

The Early Bronze Age of central and northern Europe came to an end with a rapid change in metal forms which must have been caused by expansions and mixtures of cultural groups. There is little doubt that this change was connected with the growing power and expansion of the Únětice-Tumulus people. Many new bronze forms originated between the central German and Bohemian mountains, the Alps, and the western Carpathians and were diffused over an enormous area of Europe. Influences to the south, north, and east were so strong that in practically every cultural grouping – whether western or south-eastern Baltic, northern Carpathian, Otomani in northeastern Hungary and northwestern Rumania, Pecica in the lower Tisza basin, Vatya in the middle Danube plain, the Incrusted Pottery group of western Hungary – artifacts of similar appearance were found. The question of the great "Tumulus expansion" will be dealt with in the description of central and eastern central European cultures. Here I wish to give a brief survey of new forms of bronzes. Their wide distribution serves well for purposes of synchronization of many cultural groups. In the traditional chronological schemes this new assemblage of bronzes is labeled Phase B_1.

Due to the fact that in Hungary in times past hundreds of bronzes diagnostic for Phase B_1 were known, they were and still are called "Hungarian" but this term is confusing. Actually, we should understand them as bronzes belonging to the period of the great "Tumulus" expansion and influence over all central Europe from eastern France in the west to the lower Dnieper in the east, from the Baltic Sea in the north to the lower Danube in the south. Another name, a more scholarly, "bronzes or hoards of Koszider type", was introduced by Mozsolics (1957) in her description of two large hoards found in the site of Dunapentele-Kosziderpadlás on the Danube, south of Budapest in 1951 and 1953 (pl. 14). In the same locality the third large hoard was discovered in 1957 (Bóna, 1958). The Dunapentele-Kosziderpadlás hoards comprise the most frequent and typical bronzes of this period, and therefore the name "Koszider" can be used as a technical archaeological term. Bóna has noticed in his study on chronology of the Koszider hoards (Bóna, 1958, pp. 211 ff.) that there are some slight chronological differences between hoard I and hoards II and III from Dunapentele-Kosziderpadlás; hoard I (pl. 14, *1, 2, 4, 14-16*) precedes hoard II (pl. 14, *5, 7-10, 17-19*) and III. Slight typological differences can be seen among many other hoard and grave finds from Hungary, Germany, Poland, Czechoslovakia, and Rumania. This shows that the period was not a meteoric occurrence, and it comprised the metal production of more than a single generation. In spite of insignificant typological differences, hundreds of

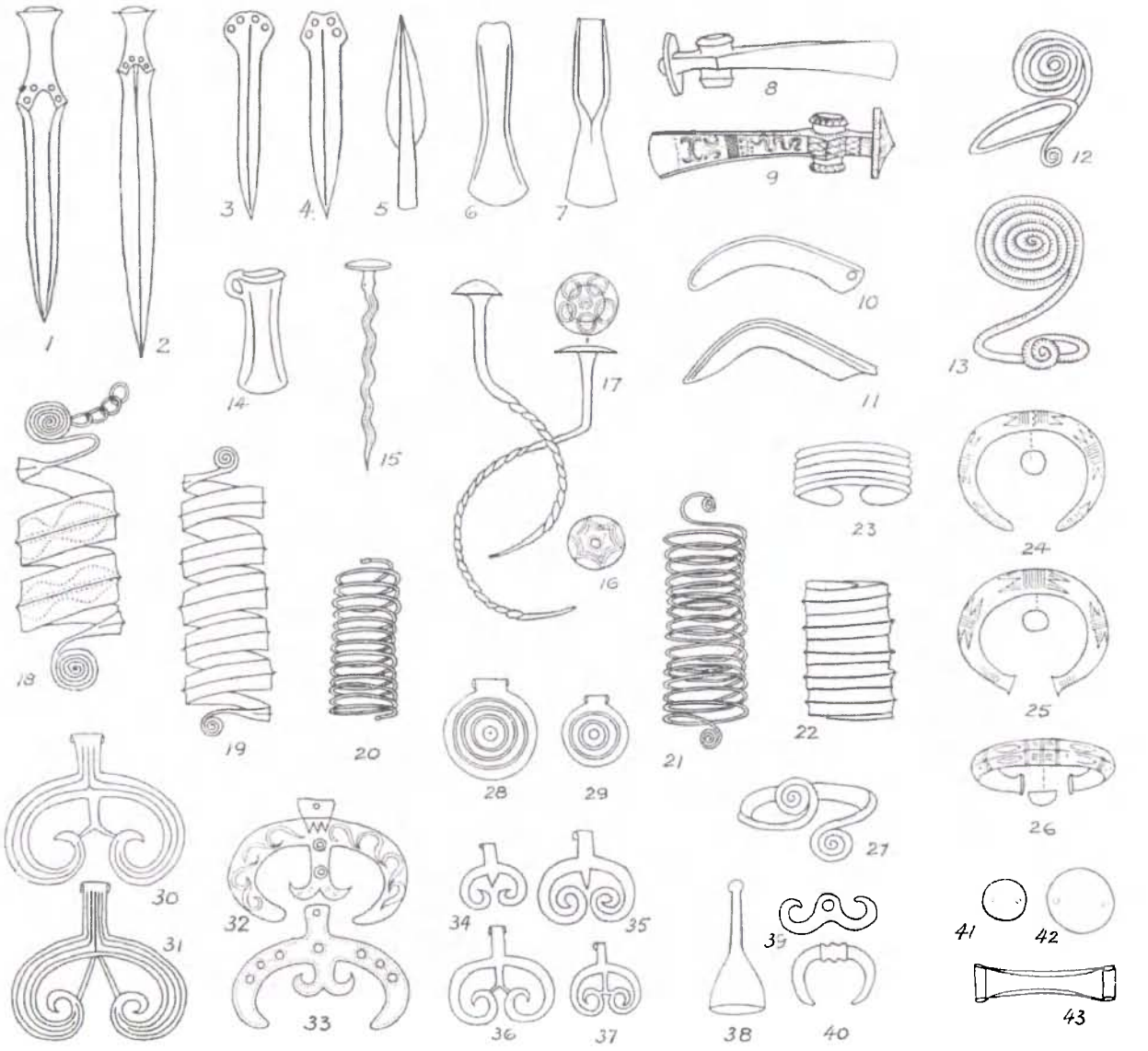


FIG. 32. Bronzes of Koszider type or Phase B_1. **1, 2,** bronze-hilted daggers; **3, 4,** dagger blades; **5,** socketed spearhead; **6,** flanged axe; **7,** axe with a V-socket; **8, 9,** battle-axes; **10, 11,** sickles; **12, 13,** wrist-guards; **14,** socketed celt; **15-17,** pins; **18-22,** spiral arm-bands; **23-27,** bracelets; **28-37, 39, 40,** pendants; **38, 41-43,** ornamental plates. The bronzes reproduced are basic types which repeat themselves in a number of hoards in Hungary, Slovakia, Rumania, and elsewhere: Koszider I-III, Rákospalota, Alsonémedi, Racegres, Pusztaszentkirály, Simontornya, Mezöbereny, Szentendre, Nagyhangos B, Oroszipuszta, Zájta, Barca, etc. Scale: approx. 1/4. *After* Bóna, 1958.

hoards and graves all over central Europe represent a certain unity of style. Below I shall enumerate the bronze forms which typify this period.

Among diagnostic artifacts are: several variants of battle-axes with a double-conical socket on each side of the shaft-hole, and with a flat conical butt-end, richly decorated with spirals and geometric ornaments, or plain (figs. 32, *8*, *9*; pl. 14, *6*); massive bracelets with tapered or with tapered and projecting ends, plain or decorated with clusters of vertical striations, zigzags, or striated triangles, and a biconvex ("fish-bladder") motif (pl. 14, *12*, *13*; figs. 32, *24-26*; 33, *12*, *13*; 34, *6*, *7*; 3, *A*, *2*); spiral arm-rings consisting of a broad band with a mid-rib ending in spiral plates (figs. 32, *18*, *19*; 35, *A*, *1*; 35 *B*, *1*; pl. 14, *11*); spiral arm-rings made of a round wire (fig. 32, *20*, *21*); banded bracelets decorated with

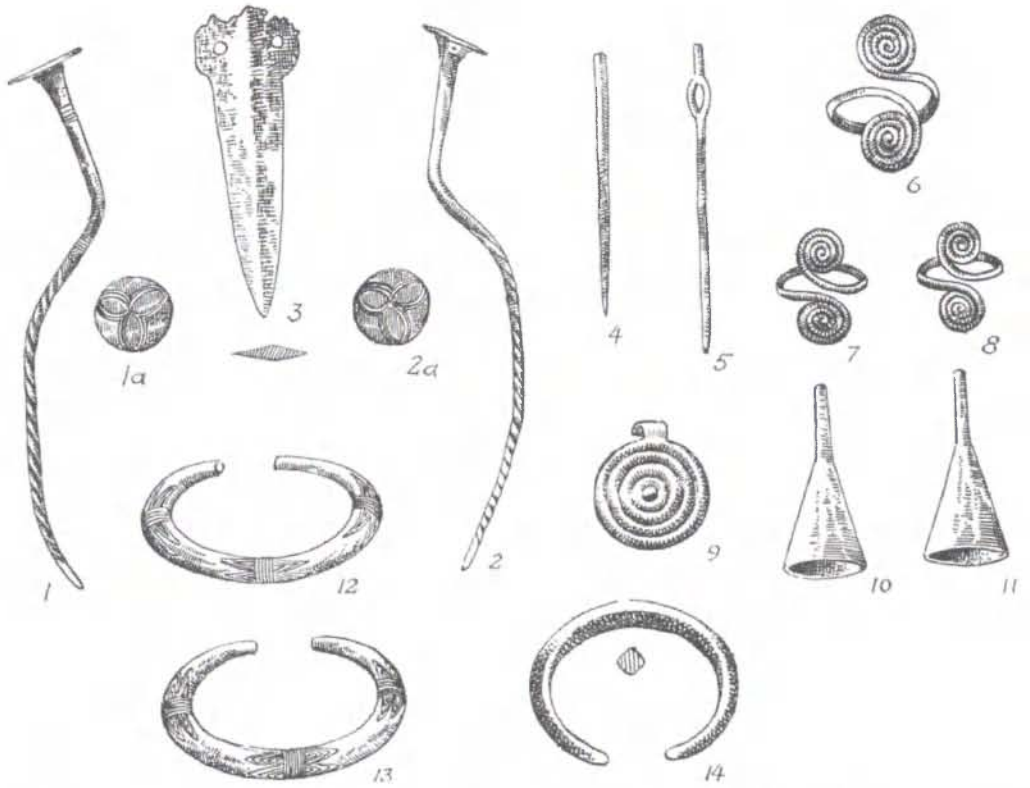


FIG. 33. Finds from the cemetery of Sv. Peter, western Slovakia. **1, 2,** "sickle pins" (**1***a* and **2***a*, ornamented tops of the heads); **3,** dagger blade; **4,** awl; **5,** needle; **6-8,** rings with spiral ends coiled in opposite directions; **9-11,** pendants; **12-14,** bracelets. Scale approx. 1/2. *By courtesy of the Archaeological Museum in Nitra, Slovakia.*

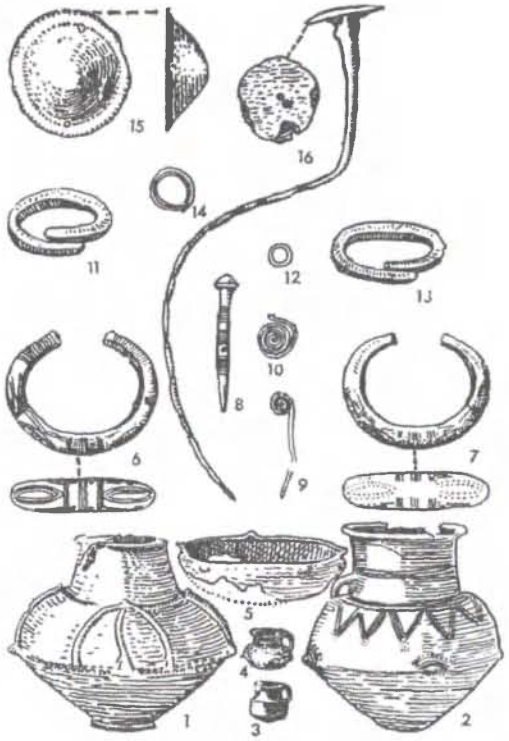


FIG. 34. Grave finds from Târgu-Mureş (Marosvásárhely), central Transylvania. **1-5,** pottery decorated with small bosses, ridged and incised ornament; **6, 7, 11, 13,** bracelets; **8, 9, 16,** pins; **10,** spiral plate from an ornament; **12, 14,** rings; **15,** ornamental plate. Scale: bronzes approx. 1/3; pots 1/6. *After* Roska, 1942.

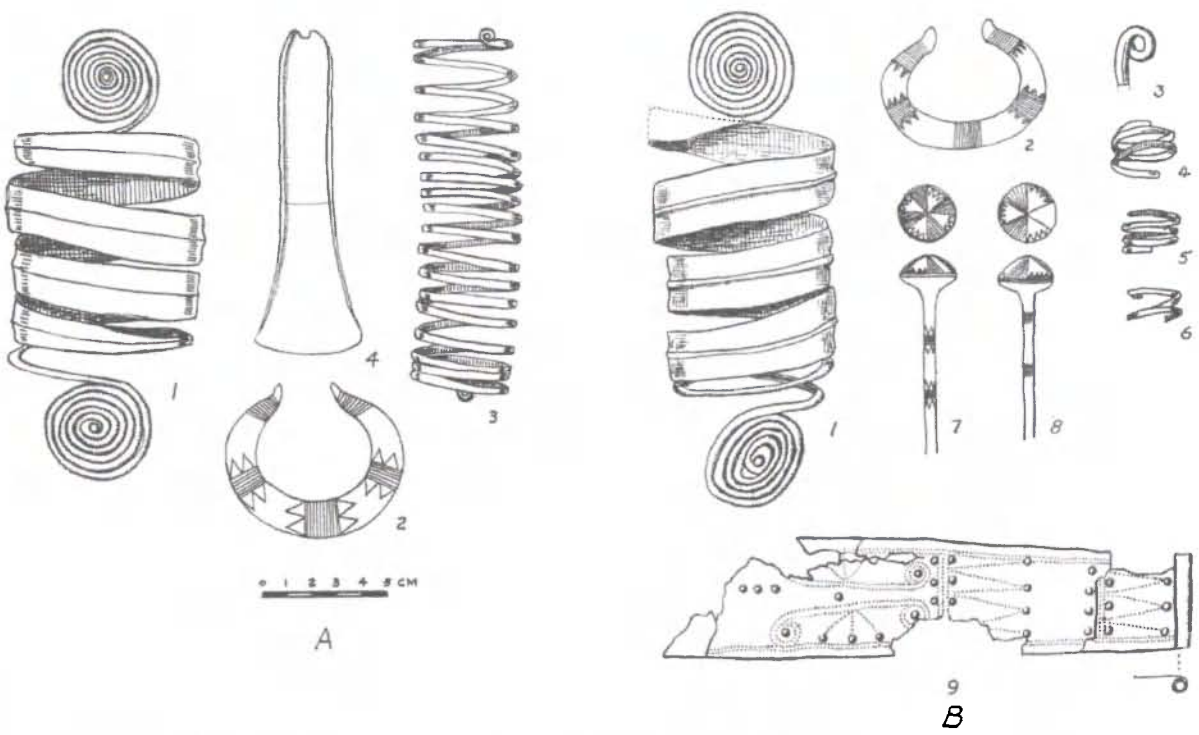


FIG. 35. "Koszider" bronzes in northern Poland. *A:* **1, 3,** spiral armbands; **2,** bracelet; **4,** flanged axe from the hoard of Grodnica. *B:* from grave No. 2 of the cemetery of Wojdal, lower Vistula, northern Poland: **1,** spiral arm-band; **2,** bracelet; **3,** pin with a small spiral head; **4-6,** spiral finger-rings; **7, 8,** pins with conical heads; **9,** belt plate. *After* Schultze, 1916.

horizontal ribbings (fig. 32, *23*); bracelets ending in spiral plates turned in opposite directions (fig. 32, *27*); finger-rings ending in spirals (fig. 33, *6-8*); spiral wrist-guards ending in a large spiral plate (figs. 32, *12, 13*); pins with rounded convex disc heads topped with a radial decoration and with a bent and twisted stem (so-called "sickle pins", figs. 32, *16, 17*; 33, *1, 2*; 34, *16*; pl. 14, *5*); pins topped with small discs or conical heads and a thin, usually twisted, stem (fig. 32, *15*; 34, *8*); ornamental circular pendants with a concentric ornament and the knob or cross motif in the middle (fig., 32, *28, 29*; 33, *9*; pl. 14, *3, 4*); pendants of the sacred ivy-leaf form (fig. 32, *30-37, 39, 40*; pl. 14, *1, 2*); tutulus-shaped (fig. 32, *38*), round (fig. 32, *41, 42*), and rectangular (fig. 32, *43*) ornamental plates; belt plates with embossed decoration (fig. 35, *B, 9*); flanged or socketed chisels; elongated narrow dagger blades with a trapeze-shaped butt (pl. 14, *19*; figs. 32, *3, 4*; 33, *3*); bronze-hilted daggers (figs. 32, *1, 2*); axes with low flanges (figs. 32, *6*; 35, *A, 4*; pl. 14, *17*); plain or button sickles (pl. 14, *7, 8, 10*; fig. 32, *10, 11*); socketed celts (fig. 32, *14*); and tanged sickles (pl. 14, *9*), which are the earliest socketed celts and tanged sickles in this part of Europe.

Outside the former Unětice distribution area and the adjacent southern and southeastern regions, bronzes of Koszider type are found in great numbers in the Baltic coastal area between the Oder River and the Vistula River, where the Baltic Early Bronze Age culture was spread. The outstanding hoards are Grodnica (fig. 35, *A*), Kurcewo (Krüssow) near Pyrzyce (Kersten, 1958, pl. 66, No. 646), Smogolice (Bruchhausen) near Saatzig (Kersten, 1958, pl. 72), and Rościęcino near Kołobrzeg (fig. 262). In one of the graves from the cemetery of Wojdal, in the lower Vistula area, which belongs to the Baltic culture of late Iwno phase, a spiral armband (fig. 35, *B, 1*), and a massive bracelet (fig. 35, *B, 2*) lay together with pins having conical heads decorated in a manner similar to the bracelets, with zigzags and clusters of striations (fig. 35, *B, 7, 8*); a pin with a small spiral head (fig. 35, *B, 3*); spiral finger-rings (fig. 35, *B, 4-6*); a

fragment of a belt plate made of a broad bronze band decorated with pointillé and embossed ornamentation (fig. 34, *B*, *9*); and some large, undecorated, wide-mouthed pots.

North of the Carpathians, in Galicia, in the basins of the upper Dniester and the San, a tributary of the upper Vistula, battle-axes, spiral wrist-guards, massive bracelets with tapered ends, spiral pendants, and tutuli are known from many hoards and graves (Kostrzewski, 1918). The rich graves of the upper Dniester area, like those of the Komarov cemetery, contained gold and bronze ornaments : bronze pins with flat button-heads and twisted stems (fig. 307, *1*), massive bracelets with tapered ends decorated with zigzags and striations (fig. 307, *3*), bronze neck-rings with the two ends spiraled in opposite directions (fig. 307, *2*), double-spiral pendants, tutuli, and pendants with broad and hollow overlapping ends, made of gold (fig. 307, *5*, *6*).

Tumulus influence reached as far east as the lower Dnieper area and the Sea of Azov. Finds of Koszider type are known from the shores of the Sea of Azov, district of Melitopol', and from the Kiev area (fig. 36). The hoard found on the lower Southern Bug, at Nikolaev, western Ukraine, contained an

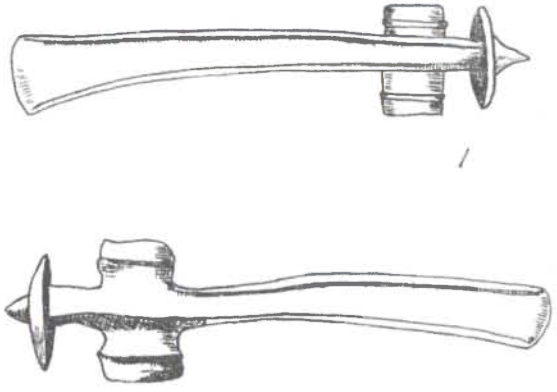


FIG. 36. "Hungarian" battle-axes from the western Ukraine. **1**, Orlovo, district of Melitopol'; **2**, Museum of Kiev Scale 1/3. *After* Tallgren, 1926b.

axe with a flat conical butt-end and a short shaft-tube (fig. 37, *1*), an early type of flame-shaped spearhead (fig. 37, *12*), fragments of button and tanged sickles (fig. 37, *2*, *3*, *10*), part of the blade of a curved sword (fig. 37, *9*), a belt hook (fig. 37, *11*), two bracelets with tapered ends and projections (fig. 37, *7*, *8*), and several other uncertain objects (fig. 37, *4-6*). The fragment of a sword with a curved end from Nikolaev has parallels in southern Scandinavia. Specifically, swords from Norre, Östergötland, southern Sweden, S. Åby in Scåne, and Rørby, Zealand share the characteristics of the Nikolaev fragment (Lomborg, 1959, Abb. 32, and Mathiassen, 1957). Swords with curved ends also find parallels in Anatolia. The famous Hittite warrior sculptured in relief on one of the monolith door jambs at the King's Gate in the enclosure wall of Boghazköy is equipped with a sword which has a curved end and a crescent shaped hilt; he also bears a battle-axe of Luristan type and a helmet with an extension down the back (Ankara Museum). Boghazköy was founded by Hattusilis I around 1500 B.C., but its vast fortifications were extended under Suppiluliumas in the early fourteenth century B.C. Hence the warrior probably dates from the reign of Suppiluliumas. Here we have chronological and typological tie between the central European early Middle Bronze Age and the flourishing Hittite Empire.

Characteristic of this period are swords of Sauerbrunn type. They had a flaring in the upper part of the blade, ornamented on both sides with three or four parallel lines incised symmetrically and ending over the hand guard in an oval or semicircular band filled in with striations or other geometric motifs (fig. 38). They had no tangs or flanged hilts as did their successors, the swords of Keszthely type (cf. fig. 187, *4*, *5*), but were fastened to the wooden hilts by six to ten rivets. The length of the blade is usually