NUMBER 11 *BULLETIN* MAY, 1935

AMERICAN SCHOOL OF PREHISTORIC RESEARCH

Founded, 1921 • Incorporated, 1926

Edited by

GEORGE GRANT MAC CURDY, Director

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OLD LYME, CONN., U. S. A.

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REPORT OF THE DIRECTOR ON THE WORK OF THE SCHOOL, INCLUDING THE FOURTEENTH ANNUAL SUMMER SESSION

To the Board of Trustees of the American School of Prehistoric Research:

EXPEDITIONS

THE SEVENTH SEASON of excavations in the Wady-Mughara, near Athlit, Palestine, carried on by our School, jointly with the British School of Archaeology in Jerusalem, began on March 30, 1934, with the following staff: Miss Dorothy A. E. Garrod (Director), Miss Eleanor Dyott and Miss J. Crowfoot, all of the British School, and Miss Anne H. Fuller of our School. The season ended on August 30. (See Report on p. 54.)

The work was confined wholly to the Mugharet et-Tabūn (Cave of the Oven). The deposits in this cave are nearly 70 feet in thickness and have proved to be exceedingly productive. They represent a period of more than 100,000 years. The successive Layers are numbered A to G, beginning at the top; some of these are subdivided into as many as four distinct levels. The specimens were catalogued in the field as they were found and, by the end of the season, numbered between 20,000 and 30,000. The Expedition was particularly fortunate in having for some weeks the services of Miss D. M. A. Bate of the Natural History Museum, South Kensington (London). To her the faunal remains were submitted for study. These remains include: *Rhinoceros* and *Hippotamus* from level Ea and large *Bos* from level Eb. The tusk of an elephant was found in level Ec, the first Pleistocene elephant to be recorded from the Near East. Another interesting feature was that stores of hand-axes (Acheulio-Mousterian) were found in various places all through Layer E. Visitors received by Miss Garrod during the excavations included: Sir Arthur Wauchope, High Commissioner for Palestine, and Mr. Keith Roach, District Commissioner for northern Palestine.

Tabūn is the last of the three caves in the Wady-Mughara to be excavated by the joint expeditions. All three caves have yielded most valuable prehistoric records (see Reports in this and previous Bulletins of our School). The next step will be the publication in monographic form of the results obtained; it is estimated that this publication will be ready for the press by 1936. The tens of thousands of specimens obtained are being distributed to important museums in Palestine, England and the United States. A

special temporary exhibit of some of the material was held from February to May, 1934, in the British Museum. A second temporary exhibit, especially of the human skeletal remains, was held at the Royal College of Surgeons (London), July 30-Aug. 5, 1935, in connection with the First Session of the International Congress of Anthropological and Ethnological Sciences. Your Director attended this Congress as official representative of the United States.

Excavations were conducted for our School alone by J. Reid Moir (see p. 43) at the classic site of Hoxne in Suffolk, England. The Director and Mrs. MacCurdy visited this site in August while the excavations were in progress. Hoxne is a place that will always rank high as one of the early mile-posts in the progress of prehistory, due to John Frere's discoveries there before the close of the Eighteenth Century. Mr. Moir is a worthy successor to Frere, thanks to his prehistoric researches in both Suffolk and Norfolk.

STUDY OF THE PALESTINE COLLECTIONS

Throughout the year 1934, Theodore D. McCown has been at work on the Neandertal skeletons from the caves of Skhūl and Tabūn. This is being done under the guidance of Sir Arthur Keith, who is also making a study of the scores of human skeletons from the Natufian (Mesolithic) levels in the Mugharet el-Wad. The removal of the hard breccia from the Neandertal skeletons has progressed satisfactorily. In this connection our School is especially indebted to the American Council of Learned Societies for the generous Grant to meet the costs of cleaning; also to the University of California, which has given to Mr. McCown the Fellowship, making possible his continued stay in England. Since her return from Palestine to England in September, Miss Garrod, now Director of Studies in Archaeology at Newnham (Cambridge), has begun the final study of the cultural remains from the three caves—part of the monographic report, on which Sir Arthur Keith and Mr. McCown are likewise engaged and which should appear in print by 1936.

SUMMER TERM OF THE SCHOOL

As was the case in 1932 and 1933, Dr. V. J. Fewkes had charge of the Summer Term (see p. 7). Five students were enrolled: Miss Emily S. Bayless, Vassar College; Miss Ethel Boissevain, Vassar College; James Harvey Gaul, Harvard University; Miss Frances M. Hammond, Sarah Lawrence College; and A. Andrew Hrubec, Yale University. The Term

opened on board the S. S. Hamburg, in New York harbor, on June 21, and closed in Prague on September 6. In addition to conferences and seminars by Dr. Fewkes, also laboratory work in the State Archaeological Institute, Prague, under his guidance and that of the Institute Staff, studies were made in 28 museums of Germany, Czechoslovakia, Austria, Hungary and Yugoslavia, also at 37 prehistoric sites. The School participated in excavations at 5 sites in Czechoslovakia. During the reconnaissance trip in southern Yugoslavia, two hitherto unrecorded sites were discovered and explored. The success of the Term was due in no small measure to active participation in the work by Dr. Buchtela and his colleagues on the Staff of the State Archaeological Institute in Prague. The cost of the Summer Term was met largely through the generous gift of Mrs. Julius H. Haass, a Trustee of the School. One of the students, Miss Ethel Boissevain (Vassar, 1934), remained in Prague to continue her studies in prehistory.

Respectfully submitted,

GEORGE GRANT MACCURDY.

EXPLORATIONS IN YUGOSLAVIA AND CZECHOSLOVAKIA

A REPORT ON THE 1934 SUMMER COURSE OF THE AMERICAN SCHOOL OF PREHISTORIC RESEARCH

By Vladimir J. Fewkes

INTRODUCTION

THE 1934 summer course of the School, in charge of the present writer, again concentrated in the European field. It opened on June 21, aboard the steamer on which the entire group sailed, and closed in Prague on September 6. As was the case in all previous seasons a comprehensive training in both theoretical and practical aspects of continental archaeology formed the chief objective. Yet, whenever opportunities offered, other regions received our attention as well.

It was the good fortune of the School to have the support and coöperation of local institutions throughout its itinerary. A full appreciation of the many kindnesses rendered to us everywhere is hereby gratefully acknowledged. The writer wishes to express his great indebtedness to the directors and staffs of the following institutions: the State Archaeological Institute in Prague, the National Museum in Prague, the Land Museum in Brno, and the city museums of Bechyně, Klatovy, Kolín, and Plzeň, all in Czechoslovakia; the National Museum in Belgrade, the South Serbian Museum in Skoplje, and the local museums at Niš, and at Negotin (Krajina), all in Yugoslavia; and the National Museum at Budapest, Hungary.

THE COURSE

The work on the continent followed the procedure of the preceding season.[1] However, this time the subject matter covered a wider scope. This became possible through the additional time gained on the steamer, the more inclusive itinerary, and the longer term.

The course consisted of:

I) lectures;
II) museum studies;
III) field reconnoitering and excursions to sites;
IV) excavations in five sites;
V) laboratory work.

[1] Cf. Fewkes, V. J., "Report on the 1933 Summer Course," *Bulletin* No. 10, *American School of Prehistoric Research* (1934), pp. 21 ff.

Again, a regional approach formed the basis of our studies. The recognized Bohemian-Moravian system[2] became the focal point in Central Europe. Then the Danubian area at large and its surrounding territory were considered in detail. The rest of the continent received a comprehensive treatment with special emphasis on correlation and synchronism. Relationships with Anatolia, the Near East, and Egypt, were fully examined.

I) Lectures

On the steamer sixty-five hours of lecturing and additional informal discussions were held. These dealt with the following subject matter: history of European archaeology, most recent achievements, methodology, outstanding problems and needs; relationship of allied anthropological disciplines, and that of geology, geography, and history; physical types from *Pithecanthropus erectus* to modern man; the Eolithic question; the Palaeolithic, Mesolithic, Neolithic, Bronze, and Iron Ages of the continent and adjacent regions; the valley of the Danube from the first local appearance of man to the time of the arrival of the ethnic groups which are found there at the present.[3] This established a broad foundation for the procedure followed on the continent. The lectures continued throughout the course, their topics centering on the regions under consideration, and adding related aspects as needs required. In this manner virtually the entire field of European archaeology was considered.[4]

Time on trains was utilized either in reviews of the archaeology of the region through which we were then traveling, or in notation of physiography, economic factors, and sites. Diffusional routes, natural avenues for cultural traffic, barriers to ethnic penetrations, and climate, were always discussed on such occasions.

II) Museum studies

Twenty-eight collections were studied:

In Germany:

Museum für Vor- und Frühgeschichte;
Altes Museum;
Neues Museum;
Pergamon Museum;

[2] Cf. Stocký, A., *Pravěk země české* (Praha, 1926), pp. 14 ff., and Schránil, J., *Vorgeschichte Böhmens und Mährens* (Leipzig and Berlin, 1927-9), pp. 38 ff.

[3] Mr. James H. Gaul, one of our students, presented his abstract on the important work of Childe, V. G., *The Danube in Prehistory* (Oxford, 1929), which he had previously prepared. Mr. Gaul's presentation added materially to our discussions on the Danubian area.

[4] Dr. Oleh Kandyba of the Ukrainian University at Prague, who was engaged by the School in the same capacity as last year, lectured on the eastern and partially also the southern regions of the continent.

"Sechstausend Jahre der Töpferei," a special exhibit (all in Berlin);

In Czechoslovakia:

State Archaeological Institute;
National Museum;
Hanspaulka Museum;
Hradčany Museum (all in Prague);
Land Museum, Brno;
Anthropos Museum, Brno;
Local Museum, Domica;
City Museum, Klatovy;
City Museum, Kolín;
City Museum, Plzeň;
City Museum, Tábor;

In Yugoslavia:

National Museum, Belgrade;
University Museum, Belgrade;
Local Museum, Negotin (Krajina);
Local Museum, Niš;
Ethnographic Museum, Skoplje;
Lapidarium, Skoplje;
South Serbian Museum, Skoplje;
Archaeological Museum, Zagreb;
Ethnographic Museum, Zagreb;
Museum of Natural History, Zagreb;

In Hungary:

National Museum, Budapest;

In Austria:

Museum of Natural History, Vienna.

The studies of archaeological collections embodied essentially the same process as last year.[5] In all cases the subject matter was treated historically. Local material always received our attention first. Then followed a survey of other exhibits. In this manner, the regional systems of culture history were absorbed in detail. Inasmuch as general correlations guided our progress from place to place, this phase of the course afforded a practical orientation in the field before us. Full notes, numerous drawings of speci-

[5] Cf. Fewkes, *ibid.*, pp. 23-24. Chief literary sources were given for each region.

mens, and plotting of chronological charts, formed an important part of the museum work.[6]

III) Reconnaissance and excursions to sites

a) Reconnaissance:

The territory of Yugoslavia, and especially its eastern portion, provides splendid opportunities for original field work. Owing to its geographic location and physiography, this region occupies a key position in the Balkans, the true significance of which is being steadily revealed. It was in these parts of the country that the reconnoitering expeditions of 1932 and 1933[7] centered their activities. The experience gained during these surveys guided the trip of the School and aided in utilizing the limited time with advantage.[8] Naturally, the primary objective was to illustrate and to test, in practice, the procedure employed in such endeavors. At the same time, as will be seen, certain new contributions were made.

In addition to strictly archaeological work we observed topography, climatic conditions, native economy, ethnography, and racial composition. Notes on sites were recorded on field cards and general observations in a journal.

Starting from Belgrade, the party first followed the main highway to Niš. Several of the known sites in the vicinity of the capital, and in Šumadija,[9] were noted and discussed. Adverse weather conditions, however, precluded inspection of the terrain until we reached Niš.

The recently organized Museum at Niš, and its enthusiastic staff members, are very active in archaeological research in their district. The splendid collection, and the records on sites assembled in this museum, formed the basis of our field investigation.[10] In the immediate environs of the city (the former Naissus), we examined a score of Roman and Byzantine

[6] The museum studies inevitably emphasized the regions which we actually visited, that is the northern, central, and southeastern European fields. However, Dr. Kandyba's extensive illustrated lectures on the east, and the writers discussions of the west, provided a comprehensive treatment of these parts of the continent as well.

[7] Both in charge of the present writer; cf. Fewkes, V. J., Goldman, H., and Ehrich, R. W., "Archaeological Reconnaissance in Yugoslavia, Season 1932," *Bulletin* No. 9, *A. S. P. R.* (1933), pp. 17 ff., and Fewkes, V. J., "Archaeological Reconnaissance in Yugoslavia, Season 1933," *Bulletin* No. 10, *A. S. P. R.* (1934), pp. 29 ff. These two publications are hereafter referred to respectively as *Bull.* No. 9, and *Bull.* No. 10.

[8] The greater part of the journey was accomplished in automobiles. Trains were used only on the return trip from Skoplje to Niš and thence on to Negotin (Krajina). From this point we again used cars to follow the bank of the Danube towards the Iron Gate, and finally proceeded by boat from Kladovo to Belgrade.

[9] Cf. Vasić, M. M., "Jablanica," etc., *Archiv für Anthropologie*, XXVII, No. 4 (1902), pp. 517 ff.; "Prilozi," etc., *Glas Srpske Kraljevske Akademije*, LXX (1906), pp. 164 ff., and map on pl. I; and "Southeastern Elements", etc., *Annual of the British School at Athens*, XIV (1907-8), pp. 319 ff.

[10] Through the kindness of Mr. B. C. Gojković and Mr. A. Nenadović, two of the founders of this institution, the School enjoyed a highly profitable stay at Niš. I wish to express my sincere thanks to these two gentlemen who have obliged me on other occasions as well.

remains,[11] and then visited the settlements at Pločnik,[12] and at "Velika Humska Čuka"[13] which lies 7 km northward of Niš.[14]

During our return journey from Pločnik to Niš, the alertness of Mr. Gaul brought about the disclosure of a new Neolithic site, at the western limit of the town of Prokuplje. It occupies a natural knoll upon the left bank of the Toplica river. The construction of the Niš-Kuršumlija railroad necessitated a cut for the right of way through this knoll within a short distance from the river. The presence of the site, which is known as "Kavolak," however, appears to have remained unnoticed and unrecorded until our visit.[15] The physical nature of this locality resembles the Neolithic stations of Pločnik,[16] Lipovac,[17] and Jablanica.[18]

The material from "Kavolak," now deposited in the Niš Museum,[19] presents striking similarities to the finds from the Neolithic settlement of "Grad" at Starčevo.[20] Painted ceramics with straight line design executed in dark reddish-brown tone on lighter red ground, crude pottery with barbotine applique, burnished ware, low pedestals, as well as stone artifacts, are of the same type as at Starčevo.[21]

[11] Especially those explored by the Niš Museum; cf. Oršić-Slavetić, A., "Arheološka istraživanja," etc., *Starinar*, 8/9 (1933), pp. 303 ff.

[12] Partially excavated by the Natural Museum of Belgrade; cf. Grbić, M., *Pločnik. Eine präh. Ansiedlung aus der Kupferzeit* (Belgrad, 1929). I am of the opinion that the oldest material found here represents a purely Neolithic development; in this Dr. Grbić concurs (personal discussions, seasons 1929 ff.).

[13] A hilltop site with Neolithic and later material, discovered by the Niš Museum in 1932 (letter from Mr. B. C. Gojković to this writer, dated August 24, 1932); further examined by the same institution and the Harvard Expedition of 1933 (cf. *Bull.* No. 10, *ibid.*, p. 41, note 42), at which time surface sherds and stone artifacts of the Neolithic and Bronze Ages, as well as of the Roman and Slavic periods, were collected (field notes, July 24, and August 24, 1933, hitherto unpublished; there were also a few sherds strongly reminiscent of the Dubovac phase of the Early Iron Age). The site was partially excavated in July, 1934 by the National Museum of Belgrade, under the direction of Dr. Grbić, who furnished me (letter of February 20, 1935) with the following information concerning his finds: "a) there are stray Neolithic axes, but no Neolithic deposits; b) the culture level is of the Bronze Age, and has new types of ceramics and ornaments, among which painted pottery, white on black, is present; c) the site is of the Early Bronze Age date; d) there are also Roman and Byzantine antiquities, and Slavic pits" (free translation). I am inclined to believe that this hilltop was originally a Neolithic site, perhaps of a relatively short duration, the cultural expression of which falls within the Moravo-Danubian development (cf. *Bull.* No. 10, *ibid.*, pp. 41 ff.).

[14] The courtesy of the Niš Museum enabled me to learn of a series of new sites lately entered in its records. I was especially interested to note that two Neolithic settlements had been located in the Basin of Pirot which forms the eastern portion of the Upper Nišava Valley. The Harvard Expedition reconnoitered in that region on one brief occasion during the season of 1933 (cf. *op. cit.*, pp. 39-40), but found only Roman and later remains. It is my intention to elaborate on the significance of this new evidence elsewhere. In the meantime, however, attention must be called to the necessity of correcting the erroneous impression already published (*ibid.*, p. 39), insofar as the Neolithic situation in the Pirot Basin is concerned.

[15] It was during the construction of the same railroad that somewhat similar circumstances revealed the deposits at Pločnik; these were then reported to the National Museum at Belgrade, which excavated a portion of the site (cf. Grbić, *ibid.*, p. 7).

[16] *Op. cit.*

[17] Sounded by: the National Museum of Belgrade (1930, cf. Grbić, M., *Godišnjak S. K. A.*, 39 [1930], p. 197); the Harvard-Pennsylvania Expedition (1931, unpublished); the School (1933, cf. *Bull.* No. 10, *ibid.*, p. 26).

[18] Cf. Vasić, M., "Jablanica", etc., *ibid.*

[19] To be treated, with the permission of the Niš Museum, in the report dealing with the 1934 studies in eastern Yugoslavia which were conducted in behalf of the Fogg Art Museum of Harvard University.

[20] Partially excavated in 1932 by the joint expedition sponsored by the Peabody Museum and the Fogg Art Museum of Harvard University and the School, in charge of this writer. Preliminary report published in *Bull.* No. 9, *ibid.*, pp. 33 ff.

[21] Cf. *op. cit.*, pp. 43 ff., and the following illustrations therein: pl. VIIa. bottom row, second from left; pl. VIIIb, nos. 6 and 8; pl. XII, no. 48. For analogous barbotine sherds from the site of Vinča cf. Vasić, M. M., *Preistorijska Vinča I*, etc. (Beograd, 1932), pl. XXIX, nos. 132 a, b, and 133 (text pp. 90 ff.).

The site of "Kavolak" marks the only known appearance of such early traits[22] south of Vinča.[23] Its existence points to the urgent need of further reconnoitering in the Moravo-Danubian area from which additional contributions may be fully expected.[24]

From Niš we turned southward and followed the valley of the Southern Morava. We observed the sites of "Gradac"[25] above the village of Zlokučane, and "Hisar"[26] at Leskovac. A brief stop was made in the village of Mala Kopašnica which lies at the southern extremity of the Leskovac Basin. "Prehistoric" tumuli were reported from here twenty-five years ago[27] and we intended to examine them. However, we soon learned that the damage occasioned by road construction (since 1909) brought about a destruction of the mounds in question. Our search in the remains and in the immediate neighborhood resulted in the finding of only a few fragments of provincial Roman pottery and brick.

Proceeding through the now much narrower valley of the Southern Morava to the watering spa of Vranjska Banja we next called in the village of Korbovac. Here too our concern was to investigate some "prehistoric" tumuli, presumably similar to those of Mala Kopašnica.[28] In the meadows known as "Majdan," which lie just west of the communal bureau, there are several low mounds. Local tradition attributes these to ore washing or smelting activities, as the name of the site itself implies. Our inspection of the terrain failed to reveal traces of archaeological remains. Nor did the natives seem to know of any. They call these mounds "Grmadje" (i.e. heaps) and believe that they contain only gravel and large stone. We had the occasion to verify this by examining the remnants of several heaps which were recently exploited for road material. It must be remembered, however, that "urns with burned bones" are said to have been found by peasants in one of these mounds.[29] Without a trial excavation the age and purpose of the mounds at Korbovac are not possible to determine.

[22] Cf. *Bull.* No. 9, *ibid.*, pp. 48 ff., and Vasić, *op. cit.*, p. 82.

[23] In the Neolithic sites located within the area between Vinča and "Kavolak" (cf. Vasić, *ibid.*, and his articles cited in note 9, *supra*, also Grbić, *op. cit.*) this kind of material is not represented. The same is true of Pločnik (cf. Grbić, *Pločnik*, *ibid.*). Further to the east of our locality, however, such comparisons do exist. This is especially so in the case of the barbotine class of ware from Malče, Osmakovo, and Šanac (material in the Niš Museum, collected in 1934, as yet unpublished).

[24] While it was not practical to make a sounding during our survey, the observations and the material obtained at "Kavolak" indicate the desirability of an excavation.

[25] A Neolithic and La Tène hilltop settlement, partially excavated by Professor M. M. Vasić; cf. his "Gradac", etc., *Glas S. K. A.*, LXXXVI (1911), pp. 97 ff., in which, however, the site is interpreted as representing only the La Tène period (pp. 109 ff.).

[26] A hilltop site with Roman, Byzantine, and later antiquities; cf. Vasić, *ibid.*, p. 98, also Krasovski, A., *Starinar*, 3rd ser., vol. 5 (1930), pp. 202 ff., and Dimitrijević, M., *Starinar*, 3rd ser., vol. 8-9, (1933-4), pp. 311 ff.

[27] Cf. Vasić, M. M. and Jovanović, K. J., "Izveštaj", etc., *Starinar*, n. r. g. IV (1909), Dodatak, col. 28.

[28] Cf *op. cit.*, *col.* 14-15, in which the name of Korbovac is given in the now obsolete form of *Korbeovac*, and the site itself referred to as *"Rupe"*.

[29] Cf. *op. cit.*, col. 14; no details regarding these finds are given, and the vessels themselves as well as their contents were not preserved.

Southward from Vranje the valley widens progressively, but unevenly, until it becomes a part of the region known as Žegligovo which embodies a portion of the Morava-Vardar divide. In view of the limited time at our disposal we confined our attention to the known sites along the highway.

Outstanding among these is the extensive Neolithic settlement of "Gumnište-Čukar" located at the village of Pavlovce.[30] The surface material collected here by the School[31] provides additional valuable data on the temporal and cultural placement of the site, which represents an advanced phase of the Moravo-Danubian Neolithic development.[32]

A chance stop some 50 km. south of Pavlovce occasioned the find of another locality with similar, though less pronouncedly typical, ceramic traits. This is situated near the village of Rečica which lies 5 km. to the northwest of Kumanovo. Judging from the distribution of the surface material which we collected[33] the site seems to extend along the highway between the 424.5 km. and the 425 km. markers.[34] The majority of the sherds were gathered from the banks of the Kumanovska Reka brook[35] and those of the irrigation ditch recently constructed here, as well as from the vicinity of the spring[36] near the bridge. Our search for deposits failed to bring positive results. However, the presence of wall plaster of baked clay which is of the same character as at Pavlovce, and the nature of the terrain suggest either a camp or a settlement. It does not seem likely that a secondary deposition could explain our finds.[37] While further exploration at this place is necessary in order to determine whether deposits *in situ* are present, the material itself has important value. In the first place it is closely comparable to the finds from the site at Pavlovce; secondly, it represents the oldest known cultural evidence in the drainage area of the Upper Vardar north of the Skoplje Basin.[38] The northern affinity is especially significant as it indicates the direction from which this material was derived, namely the Moravo-Danubian area.

The rest of our work in the south was devoted largely to previously identified sites. A few new localities were also recorded. None of these, however, add to the already known local culture history insofar as the pre-classi-

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[30] Cf. *Bull.* No. 10, *ibid.*, pp. 42-43.
[31] Deposited in the Muzej Južne Srbije, Skoplje; to be treated, with the permission of this museum, in the paper referred to in note 19, *supra.*
[32] Cf. *op. cit.*, p. 43.
[33] Deposited in the Muzej Južne Srbije, Skloplje; cf. note 31, *supra.*
[34] Measured from Belgrade, via Niš, towards Skoplje.
[35] A member of the Vardar drainage system.
[36] The material occurring at this spot may have been brought to the surface when the cement trough and base of the spring were erected. This seems to have taken place in quite recent times.
[37] We were not able to make inquiries as to the name of this locality, possible tradition, or finds. Valuable information is often obtainable from the natives, but this time we could find no one to help.
[38] I am informed by Dr. M. S. Filipović of the University of Skoplje (letter of February 10, 1935) that a Neolithic site was discovered last winter at the aviation field in Skoplje. Pending the arrival of details, for which I have asked, it is necessary to postpone the discussion of the Upper Vardar Valley at large, which would now be in point. (Cf., however, *Bull.* No. 10, *ibid.*, pp. 46-47.)

cal periods are concerned. Yet, the information gathered should be useful in future investigation.

In the vicinity of Skoplje we saw the following: the site of the city of Scupi;[39] the well-known aqueduct near Logar Kralje Petra;[40] and the cemetery site of "Orlovičina" above the village of Vuči Dol.[41] When the plan to include the presumable site in the neighborhood of the Monastery of Marko at Sušica[42] was barred by certain difficulties, we departed from Skoplje.

The visit to the site of Stobi[43] gave a welcome opportunity to gain acquaintance with the excavating technique employed there.[44] Situated at the confluence of the Crna and the Vardar, these ruins occupy an extensive area. The systematic excavations face a long program.[45]

Having left Stobi, we followed the Vardar southward to Negotin, and after an excursion to Pepelište,[46] continued to Prilep. From here we scouted the neighborhood of the village of Prilepac.[47] Later, en route to Bitolj, we noted several sites in the valley of the Crna.

A stop was made at the damaged *Tumba* (habitation mound) near Crnobuki. Rain erosion and the activity of curious shepherds, since the time of the 1933 soundings by the Harvard Expedition,[48] enabled us to collect

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[39] Unexplored as yet; the Skoplje Museum, however, is contemplating a systematic excavation in the near future. Built upon a Dardanian site, Scupi was the first Roman city, a colony of veterans, in Moesia; it was destroyed by an earthquake in 518 A. D., and rebuilt by the Byzantine emperor Justinian as *Justiniana Prima;* thus Vulić, N., *s. v.* "Scupi", in *Narodna Enciklopedija Srpsko-Hrvatsko-Slovenačka,* ed. St. Stanojević, vol. IV (Zagreb, 1929), pp. 63-64. In the same work Radovanović, V., *s. v.* "Skoplje", states that this rebuilding was done between the years 527 and 565 (p. 127). Cf., however, Vulić, N., "Justiniana Prima", *Glasnik S. N. D.,* V:2 (1929), pp. 45 ff., for his view that the question of *Justiniana Prima* remains an open one.

[40] A Byzantine structure, built of stone and brick (probably after 518), supported by 55 arches; cf. Radovanović, *op. cit.* A drawing of this conduit, interesting because of its date, but faulty as a document, appears in Brown, E., *A Brief Account of Some Travels,* etc. (London, 1673), illustration facing p. 5; here, however, the structure shows only 44 arches, and they are proportionately too small. Furthermore, the statement that " . . . there is a noble aqueduct of stone, with about two hundred arches . . . "(p. 48), is wholly incorrect. Dr. Brown does not state whether or not he actually saw this monument. At any rate, his reference and sketch seem to be the earliest records of the aqueduct near Skoplje in English literature.

[41] Contains graves of the Iron Age and later periods; cf. *Bull.* No. 10, *ibid.,* p. 45; no surface material was found during the visit of the School.

[42] Neolithic pottery and stone celts are reported from this locality; cf. Saria, B., "Izveštaj", etc., *Godišnjak S. K. A.,* 32 (1923), pp. 302-303, and *Bull.* No. 10, *ibid.,* pp. 44-45.

[43] Now being excavated by the National Museum of Belgrade, under the direction of Professor V. R. Petković, whose yearly reports appear in *Godišnjak S. K. A.,* 33 (1934), and ff.

[44] We had previously examined the rich finds from this site at Belgrade; the elucidations tendered by Dr. J. Petrović and Mr. Dj. Mano-Zisi, curators of the National Museum, and members of the Stobi Expedition, are hereby gratefully acknowledged.

[45] For recent reports on the work at Stobi cf. *Starinar,* 3rd ser., vol. 8/9 (1933-4): Saria, B., pp. 8-13; Petrović, J., pp. 169-191; Mano-Zisi, Dj., pp. 244-248, and same author pp. 249-255.

[46] This village lies on the eastern side of the river almost opposite Negotin. The purpose of our call was to visit the "prehistoric" site noted here by Professor Dj. Karapandžić of Belgrade, to whom we are indebted for the personal information given to us earlier in the season. While our attempts to locate the exact place met with failure, the excursion was not altogether futile for we obtained important information for future field work.

[47] The Skoplje Museum has two askoid vessels (cf. *Bull.* No. 10, *ibid.,* p. 54, note 99) which come from this locality. These, according to personal information (July, 1934) for which I am obliged to Curator M. Kokić, were found in a place bearing the name of "Bezisten" by Mr. N. Lala of Prilepac, who was away when we called. We did not locate the exact spot of this discovery which appears to be unknown to other natives. The locality is also known as "Kamberica" and contains the ruins of an unexcavated Roman city, perhaps Ceramiae (?); cf. Kokić, M., "Izveštaj", etc., *Glasnik S. N. D.,* V:2 (1929), pp. 295 ff.

[48] Cf. *Bull.* No. 10, *ibid.,* pp. 51 ff.

scattered material.[49] This provides additional analogies with the ceramics from stratum I at Vardino,[50] and stratum III at Sérvia,[51] both in Greek Macedonia.

Proceeding to Bitolj, we saw the hilltops of "Zmejanik" and "Jevrejsko Groblje," both of which have Neolithic remains.[52] From a close range we observed the site of the classical city of Heraclea Lyncestis.[53] Then a side trip was made to examine the *Tumbas* at Novaci[54] and Ribarci,[55] and to view the interesting terrain in their surroundings.

Our next objective was Ohrid.[56] From here we visited the Bronze Age hilltop settlement of "Gradište" above Donje Lakočeri,[57] where we obtained more surface material.[58] We also searched in the fields named "Banjik," south of the village, in response to reports by the natives that "new discoveries" had recently been made there. According to hearsay[59] foundations of buildings of heavy masonry, floors with mosaics, and terra cotta piping, were exposed and covered up again by peasants.

Skirting the foot of the hill west of "Banjik," on the summit of which stand the ruins of the Hellenistic fortress known as "Gradište Sveti Erazmo,"[60] we turned northward towards Trebenište. It is along the 55 km.

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[49] Deposited in the Muzej Južne Srbije, Skoplje; cf. note 31, *supra*.

[50] Cf. Heurtley, W. A., "Report on an Excavation at the Toumba of Vardino", *Univ. of Liverpool, Annals of Arch. and Anth.*, XII (1925), pp. 19 ff.

[51] Cf. Heurtley, W. A., "Excavations at Sérvia in Western Macedonia", *Ant. Jour.*, XII (1932), pp. 235 ff.

[52] Cf. *Bull.* No. 10, *ibid.*, p. 53.

[53] Covers an astonishingly large area to the north of Bitolj, and remains unexcavated.

[54] Cf. Rey, L., "Observations", etc., *Bull. de Corresp. Hellénique*, 41-43 (1917-1919). pp. 171 ff., and Heurtley, W. A., "Pottery from Macedonian Mounds", *B. S. A.*, 16 (1923-5), pp. 30 ff. When the Harvard Expedition visited this site in 1933, scattered material was found on the surface of the mound, on the floor of the ammunition dump which dates from the World War, and in the surrounding fields. The brief soundings made at that time in the western slope of the mound revealed no presence of deposits (field notes, September 8, 1933, hitherto unpublished). The fluted and burnished pieces among the loose sherds are of the same character as the like wares from the site at Crnobuki (cf. *Bull.* No. 10, *ibid.*, p. 51). The *Tumba* at Novaci is now the village cemetery, and only a small part is available for exploration.

[55] Cf. Rey, *op. cit.*, and Heurtley, *op. cit.* There are two mounds here, both called *Tumbas*. The one surmounted by a church, with modern graves on the slopes, and with a military dugout under it, appears to be an ancient site. Here the School found one chipped flint piece the shape of which suggests either an arrow head or a knife blade (specimen incomplete), and several fragments of baked clay wall plaster. All these were located near a lately established grave, the preparation of which may account for their presence on the surface. The second mound (adjoining the house of the Mančić family) is of recent date and contains contemporary remains. This was ascertained by the soundings of the Harvard Expedition (field notes, September 7, 1933, hitherto unpublished). There are many mounds of similarly recent origin in other parts of the Bitolj Basin, invariably located in villages, and always called *Tumbas*. At Dobromir, for example, seven such mounds exist in the open space located in the center of the village. The nature of their composition is revealed by the World War trenches which are still present. Modern "tumbas" in the making may be seen in several instances throughout this region. They represent collapsed houses which were originally built of sun-dried brick composed of mud and sand (cf. *Bull.* No. 10, *ibid.*, p. 56).

[56] The highway from Bitolj to Ohrid follows, more or less closely, the course of the ancient Via Egnatia. Traces of the original Roman pavement are still to be seen near the village of Kažani, within a short distance of the state thoroughfare.

[57] First recorded by Dr. M. Grbić of the National Museum at Belgrade; cf. *Godišnjak S. K. A.*, 40 (1931), p. 234. Visited by the American Expedition in 1932, at which time its Bronze Age date was established (cf. *Bull.* No. 9, *ibid.*, p. 19).

[58] Deposited in the Muzej Južne Srbije, Skoplje; cf. note 31, *supra*. The site suffers from destructive treasure hunters who have cut trenches all along its edges and many pits within its area.

[59] Our chief informant was Mr. M. Klime, magistrate in Donje Lakočeri.—It is of interest to note that the term *Banjik* signifies a bathing place.

[60] Partially excavated by the Expedition of the German Archaeological Institute, directed by Professor W. Unverzagt of Berlin, in 1931 and 1932; cf. Grbić, M., *Godišnjak S. K. A.*, 40 (1931), p. 234, and 41 (1932), pp. 224 ff.

road marker[61] that the famous Archaic necropolis, known in world literature under the name of *"Trebenischte,"*[62] is situated. The site is being excavated yearly, since 1930, by Professor N. Vulić of the University of Belgrade and Curator M. Kokić of the South Serbian Museum at Skoplje.[63] We scrutinized the terrain, discussed the rich and varied material found here, and also examined the tumuli located nearby.[64] With this our field activities in the proximity of Ohrid came to an end.

Resuming our journey, we motored to Skoplje.[65] From here we proceeded by train to Niš, and after a pause in this city[66] continued to Negotin (Krajina), again by rail.

Here we studied the small but significant collection in the new and highly active Negotin Museum.[67] Then, accompanied by Mr. S. Stefanović, one of the founders of this institution, we motored to Prahovo on the Danube. From this point we followed the right bank of the river as far as Kladovo. This region is rich in archaeological remains which represent many periods.[68] Our attention centered on the following sites: 1) "Kusjak," near Prahovo: a Neolithic settlement with considerable deposits; material comparable to the unpainted wares and stone artifacts at Starčevo; 2) "Zidine," at Vajuga: a Bronze and Iron Age settlement with Vatin, Žuto Brdo, and Dubovac analogies (the name "Zidine," meaning walls, is derived from the ruins of a large Roman castellum which covers much of the older site); 3) "Obala," northward of Korbovo, about 1 km. from the village, going upstream: an extensive Neolithic settlement with the same nature of deposits and material

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[61] Measured from Kičevo towards Ohrid.

[62] An incorrect designation; the graves occur in the vineyards just south of the village of Gorenci (cf. Vulić, N., "Jedan nov grob kod Trebeništa", *Glasnik S. N. D.*, XI:5 [1932], p. 1, note 2). Trebenište itself lies 2 km. further to the north, and immediately above it is the hilltop of "Gradište"with a fortress in ruins (cf. Grbić, M., *Godišnjak S. K. A.*, 40 [1931], p. 238) in which the American Expedition identified Bronze Age, Hellenistic, Roman, and later remains (field notes, May 12, 1932, hitherto unpublished).

[63] Cf. Vulić, N., *op. cit.*, pp. 1 ff.; his reports on the last two seasons appear in *Arch. Anzeiger* (1933), pp. 459, ff., *Revue Arch.* (1934), pp. 26 ff., and *Revue Int. Et. Balkinique*, I (Beograd, 1934), pp. 156 ff.

[64] I. e. west of the Kičevo road, and some 200 m. northward of the necropolis. One of these was opened in 1930 (Vulić, *Glasnik, ibid.*, p 5, and text fig. 2 on p. 2, in which it is marked *Mogila*). Although no details are given as to its contents, one may infer that there was no burial (*op. cit.*). At any rate, the original function of this mound remains undetermined. The School found the base of a pedestalled vessel in the intersection of the cross trench. While the material, shape, and manufacturing technique of this piece are of a pre-Archaic nature, its very position precludes any definite interpretation. Perhaps an examination of the other mounds would produce a desired elucidation. It may be added that the slag, and the remnants of a curved, highly burned wall, which were visible in the center of the tumulus in 1932 (field notes, May 9, 1932, American Expedition), are no longer in evidence.

[65] By way of Debar, Gostivar, and Tetovo, noting several sites en route. Our endeavors to seek archaeological information among the natives, especially at Debar, Mavrovo, and Vrutok, failed to obtain positive aid.

[66] Here we visited the excavations of the National Museum at "Velika Humska čuka" which had then been carried on a full week. We also availed ourselves of the kindness of Dr. Grbić who allowed us to study and to make drawings from his *MS* on the ceramic collection at Belgrade which is to be published in the *Corpus Vasorum Antiquorum* series. This favor is hereby gratefully acknowledged.

[67] This work was done quite late in the evening, but under the most accommodating circumstances, for which we are greatly obliged to Mr. S. Stefanović, and Mr. Ž. Ristić.

[68] Cf. Vasić, M. M., "Žuto Brdo", *Starinar*, n. r. g. V (1910), pp. 5 ff.; Kanitz, F., "Römische Studien in Serbien", *Denkschr. d. k. Akad. d. Wiss., Phil.-hist. Cl.*, 41 (1892), pp. 42 ff.; *Bull.* No. 10, *ibid.*, pp. 35 ff.

as at "Kusjak"; 4) "Obala," near the village of Kostol, and about 1.5 km. eastward of the Moesian abutment of Trajan's bridge: a Neolithic settlement, again with similar material as at "Kusjak;" however, the exposed deposits now visible are much shallower, and the river bank itself much lower than at "Kusjak."[69] In addition to these, we also noted the ruins of several Roman castella.

All the sites which we visited between Prahovo and Kladovo have been partially exposed by the erosion of the Danube; and the low state of water enabled us to make close examinations. Truly unusual opportunities for excavation exist throughout this region. It is to be hoped that some of these may soon be capitalized in the manner which they deserve. The damage caused by seasonal fluctuation in the volume of the Danube is indeed appalling.

At Kladovo we embarked on the last leg of our reconnaissance by taking a steamer for Belgrade. We continued to observe the terrain and certain sites along the banks as far as Golubac.[70] During the passage through the Iron Gate and later through the defile of the Kazan we evaluated the impediments to traffic, either by water or by land, which the wilderness of nature imposes.[71] We saw the ruins of several castella, the traces of Trajan's road, the "Tabula Trajana," the fortress at Golubac (the Roman *Cuppae*), and the site of "Žuto Brdo."

The value of our trip through eastern Yugoslavia is best reflected in the appreciation and comments on the part of the students. To them it was a new experience both in archaeology and in travel. None had visited these parts of Europe before. Rambling through out of the way districts, seeing known sites and discovering new ones, observing interesting people and their mode of life, and gaining a first hand knowledge of physiography along the main arteries followed, certainly produced lasting impressions. Aside from the purely academic activities the students gained much from personal experience and observations. In short, the trip was profitable, interesting, and fully enjoyed.

b) Excursions to sites (outside of those embodied in the reconnaissance) included the following:

In Yugoslavia: Vinča,[72] a large Neolithic and later settlement on the right

[69] Surface material collected by the School in these sites is deposited in the Negotin Museum. With the permission of this institution its description is to be published elsewhere.

[70] The boat departed from Kladovo at 11:15 A.M., and reached Golubac by 7:45 P.M., so that westward of this point observations ceased with the darkness. We arrived in the port of Belgrade at 4:30 A.M. the following morning.

[71] Cf. Hyde, W. W., "Trajan's Danube Road and Bridge", *Classical Weekly*, VIII:8 (1924), p. 60.

[72] Since 1908, with several interruptions, under excavation by Professor M. M. Vasić of Belgrade University; cf. his *Preistorijska Vinča I*, *ibid.*, pp. VIII ff. It was indeed a privilege to see this unique site in the process of digging.—Following our excursion, we studied the rich collection of Vinča material in the University Museum at Belgrade. We are greatly indebted to Professor Vasić for the special arrangements which enabled us to do so in his absence from the city.

bank of the Danube, about 14 km. eastward of Belgrade, with rich deposits, the maximum depth of which thus far recorded measured 11.40 m.;[73] "Avala," a hill about 18 km. southward of Belgrade, with ruins of a Turkish fortress on its summit,[74] and "prehistoric" material in its slopes;[75] "Šuplja Stena," about 21 km. southward of Belgrade, with copper and cinnabar mines, from which the people of Vinča are thought to have obtained supplies of these two minerals;[76] "Kalemegdan," the old citadel of Belgrade,[77] from the promontory of which one flat copper celt and one socketted bronze celt are reported.[78].

In Czechoslovakia: "Homolka," at Stehelčeves, a fortified settlement of the so-called "Nordic" phase of the Late Neolithic Age;[79] "Husín," near Klatovy, a necropolis containing tumuli of the Late Bronze and the Early Iron Age phases;[80] "Ostrov," at Davle, near Prague, the ruins of a mediaeval monastery, now in the process of excavation and restoration by the State Archaeological Institute;[81] the caves of "Domica,"[82] "Silica,"[83] and "Ludmila,"[84] all near Plešivec, Slovakia, well-known for their Neolithic (Bükker phase) deposits, and containing certain later material as well; "Zámeček," at Malý Várad, Slovakia, a settlement of the Mad'arovce phase of the Early Bronze Age.[85]

In Germany: "Römerschanze" at Nedlitz, near Potsdam, a hilltop fortress of the Lausitz phase of the Late Bronze Age.[86]

IV) Excavations

The School was greatly favored by the State Archaeological Institute of

[73] I. e. reading from ground surface to the floor of the "ossuary with a dromos entrance" (*op. cit.*, p. 102); elsewhere, however, the general depth amounts to 10.50 m. (*ibid.*, p. 97).—In 1932, Professor Vasić dated the total deposits of this site "from about 1600 B. C. to about 6 A. D." (*ibid.*; the year 6 A. D. represents the termination of the settlement after the arrival of the Romans; cf. *ibid.*). After additional excavations at Vinča (seasons 1933 and 1934), Professor Vasić interprets the site as an Ionian colony founded around 600 B. C., and existing uninterruptedly, until 6 A. D. (cf. Vasić, M. M., "Colons grecs à Vinča", *Revue Internationale des Etudes Balkaniques*, I, dir. Skok, P., Budimir, M. (Beograd, 1934), pp. 65 ff.

[74] Cf. Milićević, M. Dj., *Kneževina Srbija* (Beograd, 1876), pp. 64 ff.

[75] Cf. Hofmann, R., "Prehistorische Funde", etc., *M. A. G. W.*, 16 (1896), pp. 39 ff.: here the separate localities of "Mala Stena" and "Šuplja Stena" are called collectively *"Avala"*. The material represents the Neolithic and Bronze Ages.

[76] Cf. Vasić, *Preist. Vinča I, ibid.*, pp. 4 ff.

[77] Dominates a strategic position above the confluence of the Sava with the Danube.

[78] Cf. Kanitz, F., "Die präh. Funde", etc., *M. A. G. W.*, 19 (1899) pp. 151 ff.

[79] Excavated by the Harvard-Pennsylvania Expedition; cf. Fewkes, V. J., "Excavations", etc., *Proc. Amer. Philos. Soc.*, 71, No. 6 (1932), pp. 357 ff.

[80] Cf. Hostaš, K., "Mohyly husínské", *Pam. Arch.*, 14 (1887), pp. 257 ff., and 19 (1902), p. 115 ff.

[81] As yet unpublished.—We are indebted to Dr. J. Budaváry of the Institute for showing us through and explaining this interesting and instructive project.

[82] Cf. Böhm, J., "Domica", etc., *Krásy Slovenska* (1933), pp. 75 ff., and his "Slovenský Kras", etc., *Sborník Osl. Spol. Zeměvědné*, 39 (1933), pp. 90 ff.

[83] Cf. Eisner, J., *Slovensko v Praveku* (Bratislava, 1933), p. 21, note 54, and Böhm, *op. cit.*

[84] Cf. Eisner, *op. cit.*, pp. 20-21.

[85] Cf. Eisner, *op. cit.*, pp. 57 ff.; during his exploration of this site in 1923 Professor Eisner found two skeletal graves of the same phase in close proximity to dwelling pits (*ibid.*, pp. 57-58); the same author expresses the view that the fortification of "Zámeček" (i. e. the embankment [with one gate] of which a large portion still stands intact) "is later than the settlement of the Mad'arovce type" (*ibid.*, p. 60).

[86] Partially excavated; cf. Schuchhardt, C., "Ausgrabungen", etc., *Zeit. f. Ethnol.*, 41 (1909), pp. 127 ff., and *M. A. G. W.*, 12 (1912), p. 101.

Czechoslovakia, whose Director, Mr. K. Buchtela, arranged an attractive excavating program.[87] Although our original itinerary called for very limited digging, this changed with the invitation of the Institute that we join in its own projects. As a result we experienced explorations on a much larger scale than would have been otherwise possible and benefited from the use of ample technical equipment. Dr. Böhm and the writer were in charge of the field work. On two occasions, the Institute was also represented by Mr. A. Miller and Mr. A. Knor, two of its preparators. The School contributed a share of the expense, and the students took active part in all the tasks at hand.

The sites were always surveyed first in relation to permanently established base lines, with which subsidiaries were coordinated at right angles. Vertical measurements were determined by nivellation. Plans of sites in the open were also recorded in copies of local parcellation maps. In the cave of "Ardovo," however, only a rough ground plan and a schematic section were prepared with the aid of a compass transit. In the field records were kept on pad slips and then checked and transferred to card forms daily. Charts and other scale drawings were executed immediately on large sheets of millimeter paper, while the measurement readings for these were entered separately. Observations and interpretation of evidence, reasoning, and deductions, were fully recorded. A running account of the progression of events was likewise maintained. The finds were placed in linen bags and minutely labelled. Culture bearing deposits received the utmost care. The work as a whole was dominated by the necessity of thoroughly understanding the phenomena encountered, and by full appreciation of their significance. The students were required to go through all the phases of the daily routine. With the splendid technical equipment, sufficient staff, and adequate labor, it became possible to pursue these excavations in a manner which satisfied the Institute and the School alike.

The material obtained during this work is deposited in Prague, where it will be prepared for a joint publication. Not only did the students examine it on the sites, but they also participated in its partial laboratory treatment at the end of the course. On the whole, however, the bulk requires detailed analysis before an adequate account may be presented. It must be remembered that the short term of the summer session imposes definite limitations, one of which is the time consumed in clearing the excavated material. This process, fortunately, is now under way at the Institute.

In view of the foregoing, the lines devoted to the excavations, which now

[87] Profound gratitude is hereby expressed to Director Buchtela for the numerous kindnesses bestowed upon the School. We are similarly indebted to Dr. J. Böhm, the High State Commissioner of Archaeology. To the members of the technical staff of the Institute we offer thanks for everything which they did in the interest of our work.

follow, must be interpreted as a short statement of these activities. The individual sites are considered in the order in which they were explored.

1) Stehelčeves.

The vicinity of the village of Stehelčeves, 21 km. northwest of Prague, is known for a series of sites and chance finds. Virtually all the phases of Bohemian archaeology are represented here. Our activities were centered in the fields known as "U Zájezda" which are situated upon the plateau just east of the village.

Two plots of land, numbered respectively 532-533 and 534, were dealt with. Both had just been cleared of cereal crops so that a liberal expansion in soundings was assured. Previous tests undertaken here by the Institute, and executed by Mr. A. Knor, revealed two cinerary urn graves of the "Nordic" phase of the Late Neolithic Age. These interments were found approximately 100 m. apart.[88] The intervening area, together with ample margins all around, became the focus of the 1934 operations. Nineteen trenches, ranging in length from 10 m. to 45 m., with the average width of 1.50 m., and varying in depth from 0.45 m. to 1.55 m., were opened. These were subsequently expanded as the needs required, so that in several instances large sections were exposed. Virgin ground, consisting of decomposed shale, was reached in all cases.

The finds may be summed up as follows:

a) A remnant of a habitation pit of the Punctate phase of the Early Neolithic Age, which originally was a subterranean portion of a dwelling, very likely oval in shape. Its contents yielded Punctate sherds of an advanced character, fragments of baked clay wall plaster, several bones of domestic cattle, and a few pieces of charcoal. The damage responsible for the incomplete state of the pit appears to have taken place partially during the Late Bronze Age (*viz.* g), *infra*), and also in relatively recent times (i.e. deep ploughing).

b) A roughly rectangular fire hearth, located in close proximity to the pit remnant just described, to which it probably originally belonged; associated Punctate ceramics date it as of the same phase. As evidenced by its uniform texture and compactness, the floor of the hearth was made of levigated clay paste, which subsequently became baked and crackled; its average thickness measured 0.015 m. Underneath it was a thin foundation of earth, ranging in depth from 0.03 m. to 0.05 m., which rested upon undisturbed shale. Ashes were present upon, above, and around the hearth.

c) A dwelling pit of the "Nordic" phase of the Late Neolithic Age.

[88] As yet unpublished; data obtained from field notes on file at the Institute.

This was an oval structure, with maximum length of 3.20 m., width of 2.42 m., depth of 0.36 m., and ovoid in cross section. The pit was cut into the shale in similar manner as was the case in numerous instances at "Homolka."[89] Two shale boulders with ash crustation, which originally formed a part of the hearth, were found in the center upon the floor. The horizontal plain of the pit was sharply delineated by the destructive effect of recent deep ploughing. Below the humus zone, however, the fill containing cultural remains had not been disturbed since the time of its aboriginal deposition. No evidence of associated posts could be ascertained. The material remains included sherds representing types common to the early huts at "Homolka",[90] namely: straw-rubbed storage vessels, burnished open bowls with tubular handles, and broad-mouthed low cups with band handles. There were also pieces of wall plaster of baked clay, fragments of milling stones, and animal bones (domestic cattle, sheep, dog).

d) Two graves of the Corded pottery phase of the Late Neolithic Age. *Grave no. 1:* Grave pit of rectangular shape, length 1.85 m., width 1.10 m., depth 0.18 m., cut into the shale foundation, containing a skeletal burial. Bones in a fair state of preservation, adult female, in a medium contracted position, placed on the left side, oriented east-west, facing south; fragments of skeletal remains of an infant of indeterminate sex, were found under the left elbow of the adult. Furniture: three vessels (lined off the occiput towards the scapuli), namely, a pitcher with cord impressed decoration (in fragments, incomplete), an undecorated "amphora" with two handles on the belly (in fragments, fairly complete), and an undecorated storage jar with everted lip and four wart lugs under the rim (complete, slightly damaged); a few animal bones, located upon the floor of the grave pit, just east of the cranium, among which only the ulna of a red deer was identified in the field. The disturbances within the grave and the resulting damage was clearly traceable to burrowing animals. *Grave no. 2:* Grave pit of roughly oval shape, cut into the shale foundation, maximum length 1.60 m., width 1.33 m., depth 0.19 m. Skeletal burial, identified by scanty remnants of highly decomposed bones, adult, probable sex male (?), medium contraction, placed on the left side, orientation northeast-southwest, facing southeast. Furniture: one knife blade of yellowish-gray flint, found within the bend of the flexed leg bones; and four vessels: one undecorated "amphora" with two handles on the belly, back of the pelvis; two pitchers, one with cord impressions, the other undecorated, placed in front of elbows and face respectively; a third pitcher, undecorated, off and above the cranium; the first

[89] Cf. *Proc. A. P. S., ibid.*, pp. 384 ff.—The site of "Homolka" lies due north of that of "U Zâjezda", at the distance of a few hundred paces.
[90] Cf. *op. cit.*, pp. 378 ff.

three vessels, each crushed but reconstructible, lay upon the floor of the grave; the fourth vessel rested within the fill of the grave pit, above the level of the interment, and was complete. There were no visible signs of disturbance. The immediately adjoining refuse pit of the Late Bronze Age (see e, *No. 2,* below) which touched the grave pit on its northern side, caused no traceable damage to the grave proper.[91]

e) Two pits of the Knovíz phase of the Late Bronze Age. *No. 1:* A dwelling pit, cut into the shale foundation, roughly circular in shape, north-south diameter 3.00 m., east-west diameter 3.10 m., maximum depth 0.84 m.; steep walls, sloping inwardly, flat and level bottom. Cultural contents: undecorated Knovíz sherds of bowls and open jars, fragments of pyramidal weights of baked clay, pieces of baked clay wall plaster, animal bones (domestic cattle and pig). The fill of the pit consisted of well packed dark earth and contained a high percentage of ashes and decomposed organic matter. Just outside the pit, along its northern fringe, there were four large boulders of shale, placed in line, and resting upon a layer of aboriginal humus (average thickness 0.14 m.); their function, as suggested by the presence of Knovíz sherds in between as well as under them, implies an association with the original superstructure, in which, however, the wattle and daub principle appears to have been the chief factor. There were, furthermore, two shale slabs, likewise upon a layer of aboriginal humus (average thickness 0.12 m.), to the northeast of the center of the pit and 0.22 m. off the edge; in view of the fact that no material was found under or about them, and that the slabs showed no signs of utilization, their relationship to the pit proper remains unexplained; their functional association cannot be determined from the similarity of deposition when compared with the four boulders, even though the presence of the primeval humus in both cases is noteworthy. *No. 2:* a refuse pit, cut into the shale, roughly circular in shape, north-south diameter 1.06 m., east-west diameter 1.05 m., maximum depth 0.31 m.; steep walls, sloping inwardly, flat and irregular bottom. Cultural contents: undecorated Knovíz sherds of jars and cups, and a few fragments of wall plaster. The fill consisted of ashes and earth which represented several different depositions, thereby attesting to the original purpose of the pit; this point was further elucidated by the position of three groups of sherds belonging to the same vessel, which were found in as many different areas distinct from one another in their vertical and horizontal distribution.

f) A fireplace of the Knovíz phase: bed made up of small lime, shale, and quartzite stones resting upon a clay foundation; roughly circular shape, north-south diameter 1.13 m., east-west diameter 1.05 m., maximum height

[91] For other Corded graves found in this site in the past by the Institute and by the Harvard-Pennsylvania Expedition, cf. Jansová-Horáková, L., "Nové nálezy", etc., *Zprávy čsl. st. arch. ústavu,* II and III (1931), pp. 88 ff., and *Pam. Arch.,* new ser. II, nos. 1-4 (1932), pp. 92 ff.

0.22 m.; a large limestone boulder was found resting in the center of the hearth, and thin layers of ashes in between the stones. Material: six Knovíz sherds upon the bed, *in situ,* and similar pieces immediately above and around the fire place; the left lower jaw of a cow, *in situ,* at the eastern edge of the hearth.

g) A Knovíz burial: grave pit definitely traceable only in places in which it cut into the virgin ground, otherwise indistinct as it intruded into the fill of the Punctate pit (cf. a, above); skeletal interment, infant, bones in very poor state of preservation; fairly high contraction, placement on the right side, orientation northwest-southeast, facing southwest. Material: Punctate and Knovíz sherds, antler axe with round perforation, small blade of flint, all within the grave proper.[92] Additional Punctate and Knovíz sherds occurred in the immediate periphery of the burial. Three shale slabs, placed horizontally, covered the grave. Owing to the considerable damage caused by burrowing animals it was not possible to ascertain what may have constituted the primary furniture, if, indeed, any objects had intentionally been placed in the grave with the interment. The secondary material is explainable by the very nature of the site, which contains both Punctate and "Nordic" deposits. However, the Knovíz sherds found both under and above the burial substantiate the dating, which is further strengthened by the general characteristics of the grave.[93]

h) Miscellaneous finds: 1) Two groups of shale slabs, one without associated material, the other with a few Punctate and Knovíz sherds, but neither explainable as far as function is concerned; in both cases, some of the stones showed marks of plough blades, and several had been dislodged from their original position in the process of modern field cultivation. 2) Scattered sherds on the surface and in the humus of the trenches included Punctate, "Nordic," and Knovíz representatives; also baked clay plaster, the date of which, of course, may represent either of these three phases. Animal bones found in secondary position were identified whenever possible, but the specimens were mostly discarded, inasmuch as any attempt to place them chronologically would be futile.

2) Tišice.

The village of Tišice lies in the county of Brandýs on the Elbe, some 40 km. northward of Prague. A series of archaeological finds have been made in its vicinity, the Institute being especially active here during the last decade.[94] Graves of the Late Neolithic and Early Bronze Ages, house pits

[92] The Punctate sherds, and very likely also the flint, are Early Neolithic, while the antler axe resembles similar finds, i. e. "Nordic", from "Homolka" (cf. *Proc. A. P. S., ibid.,* p. 382), and as such may be Late Neolithic.

[93] Cf. Buchtela, K., "Kultura Knovízská", *Pravěk,* I, No. 1 (1903), pp. 2 ff.; also Schránil, *ibid.,* pp. 169 ff.

[94] Cf. Böhm, J., "Předhistorické nálezy v Tišicích", *Ročenka Okres. Jed. Mus. v Brandýse n. L.,* III (1928), pp. 8 ff.

of the Early Iron Age, and burials of the Late Migration period, have been excavated in this district. The site known as "Kaberna," located at the western edge of the village, and notably the field bearing the number 325, is especially prominent in this respect. Our party concentrated in this very field with the view of exploring the periphery of the area excavated by the Harvard-Pennsylvania Expedition in 1929.[95] A series of trenches were run in a fan shaped manner from the edges of this area out into the field as far as standing crops allowed. However, our efforts met with largely negative results. Archaeological deposits were encountered in one trench only. They represented the remnant of a culture pit of the so-called "Roman" (i.e. post-La Tène) phase of the Iron Age, previously "explored" by amateurs. The humus layer at "Kaberna" ranges in thickness from 0.45 m. to as much as 1.40 m. All the finds hitherto exposed here rested within the underlying sands, and always required considerable labor. Our work was brought to an end after two days of soundings.

3) Lipany.

The site at Lipany, known as "Pískovna Sedláček" (parcellation number 247), is located some 18 km. to the southwest of Prague, upon the third terrace of the river Berounka. It was first revealed six years ago in the process of commercial sand exploitation, and is now being gradually explored by the Institute.[96] The School participated in the excavation of the following:

a) Two graves of the Únětice phase of the Early Bronze Age. *Grave no. 1:* Roughly oval grave pit, cut in the sand foundation, greatest diameters 1.60 m. and 1.10 m. respectively, maximum depth 0.35 m.; skeletal burial, osteological remains in a very poor state of preservation and incomplete (fragments of cranium, mandible, and femur), adult, sex indeterminate. Original position apparently contracted, placement on the left side, orientation west-east, facing north. Furniture: one cup with band handle close to the lip, Early Únětice type, placed on the floor of the grave pit, just to the northeast of the skull. Pit filled with small and large pieces of sandstone, forming a massive covering, the upper portion of which showed signs of disturbance due to deep ploughing. There was no indication of a cist arrangement which is the usual mode of Únětice interments. *Grave no. 2:* Rectangular pit with rounded corners, cut in sand, length 1.90 m., width 1.18 m., maximum depth 1.80 m. Skeletal burial, bones badly decomposed, adult female: highly contracted position, resting on the right side, oriented north-

[95] Cf. Fewkes, V. J., "Archaeologické práce", etc., *Ročenka, ibid.*, V (1930), pp. 5 ff.; the 1929 finds included two Bell Beaker graves, nine Únětice (Bronze Age I) graves, and three Bylany (Iron Age I) house pits.

[96] As yet unpublished. The finds of the 1933 campaign include Únětice culture pits and graves, Bylany and Roman pits, and isolated post moulds (field notes filed in the Institute, sets no. 21, 56, and 586, season 1933).

south, facing west. Furniture: one bronze pin with bent point and grooved head, without an eyelet, placed upon the left shoulder; three perforated beads of amber, found among the ribs. The interment itself lay upon the bare floor within a partial wreath of uprights, and was covered with horizontally placed slabs; upon these rested a fill of smaller and larger stones, tightly packed, and terminating in another layer of horizontal slabs. The total produced a cist grave with an unusually heavy protective covering. Sandstone was the sole material used. Even the uppermost stones appeared to have escaped the damage of deep ploughing. This was probably due to their sturdy interlocking rather than to the depth of the humus above (average 0.40m.).[96]

b) A segment of a house pit of the Knovíz phase. Originally this was perhaps a rectangular dwelling, possibly about 8m. by 6 m. in ground plan. The greater part of the pit had been destroyed in the process of exposing a new section for sand exploitation. Some of the material which came to view at that time was salvaged. Within the remnant of the pit were found thirteen post moulds, a fire hearth, and an ash pit; traces of additional posts appeared outside of the pit, yet in close relation to it. The contents of the fill of the pit (decomposed organic matter, ashes, and earth) yielded: incised and graphite sherds of advanced Knovíz character, fragments of pyramidal loom weights, and animal bones (domestic cattle and pig identified in the field). All attempts to reconstruct the original structure, at least theoretically, led to meagre results inasmuch as the existing evidence represented only a fraction of its foundation.

c) A number of moulds of rather heavy posts, some in alignments, others scattered here and there, appeared in two sectors of the site. However, the complete absence of associated material or of suggestive relationships, precludes their interpretation. All were recorded and plotted for future reference.

4) Bechyně.

Southern Bohemia, in which the town of Bechyně is situated some 120 km. southward of Prague, is well known for its numerous sepulchral tumuli. The site in which we worked bears the general designation of "Hemery", and is located to the southwest of the town. It is covered by rationally cultivated forest. The 1934 operations were carried on in subdivisions *f* and *i*, section 52, Hvožd'any registration. Two tumuli were excavated. These were selected from hundreds of mounds which exist here in three major areas of concentration. Both were located in a clearing and had relatively small amounts of timber growth upon them, and appeared to

[96] The vertical measurement from the surface level to the bottom of the grave pit amounted to 2.20 m.; the grave itself, with its depth of 1.80 m., and its massive stone fill, has, as far as I am aware, no parallel among the Únětice graves excavated in Bohemia up to the present time.

be undisturbed. It should be pointed out that a number of tumuli had previously been excavated here.[97] Many of the mounds have been damaged by the removal of stumps of large trees, by various processes incidental to forest cultivation, and also by uprooted trees. Even so, however, opportunities for further exploration are quite considerable.

The work on both tumuli, which were provisionally marked as numbers 1 and 2 respectively, embodied the following lines of procedure: The mounds were cleared of surface vegetation growth and surveyed with the aid of two base lines each, which ran at right angles through their technical centers, marking the east-west and north-south magnetic directions. Contour maps were then prepared and the mounds were located in the copy of the parcellation plan of "Hemery". The excavation proper progressed by the quarters defined by the base lines, along which zones 0.40m. wide were reserved. These eventually stood out as control walls, affording clear sections from the surface to the hardpan, and aiding in general observation, recording, and interpretation; they were gradually removed by sections as the closing stages of the work required. Digging by successive quarters facilitated labor distribution and note taking alike, besides proving a significant factor in ground reading, and in the determination of our procedure. The quarters were stripped of their surface covering, i. e. the contemporary humus, and then of the mantle representing the original earth (tumulus no. 1) or stone (tumulus no. 2) coating over the inner structure (i. e. the core). Then the masonry within the mounds (i. e. cores, coronas) was laid bare, and the intervening or adjacent areas exposed to virgin ground (i. e. the hard pan upon which the mounds were erected). The control walls retained complete sections of the mounds from the beginning of our work until the closing moments of the excavations.[98] Individual measurements were coordinated at right angles to the main base lines, or to the diagonals which often served as subsidiaries. Vertical measurements were taken with the aid of surveying instruments.

Tumulus no. 1 dated from the Late Hallstatt-Early La Tène time and contained a plain cinerary burial with ceramic and metal furniture, placed under the core. Three vessels may be restored from the sherds obtained. The metal objects include fragments of an iron bit and rings, one bronze fibula of the Certosa type, and one bronze ring. All these require laboratory treatment before a detailed description may be given. The structure revealed the following: a centrally located core forming a squarish block of earthen foundation, with a heavy stone pavement on top; two separate

[97] Cf. Píč, J. L., "Mohyly Bechyňské", *Pam. Arch.*, 17 (1897), pp. 1 ff., and *Starožitnosti země české*, I, 2 (Praha, 1900), pp. 150 ff.

[98] The excavations consumed eleven working days. During the greater portion of this period twenty-seven workmen were engaged.

coronas or wreaths constructed of stone; the whole was covered with an earthen mantle which was clearly distinguishable in color and in texture from the hard pan underneath. Measurements: north-south base diameter 17.00 m., east-west base diameter 16.00 m., maximum height above virgin ground 2.05 m. The shape of the mound formed a fairly regular heap with parabolic sections; the slopes were rather steep on all sides except in the southwest sector in which the recent removal of a stump produced a more gradual drop. All the stone work was of the dry masonry kind.

Tumulus no. 2 represented a Milaveč phase (Late Bronze Age) structure with a cinerary interment, but without furniture; its dating is based on the evidence of the typical sherd found *in situ* within the foundation of the mound, and is strengthened by the techtonic features. An intrusive La Tène cremation burial, identified by characteristic ceramics, rested upon the stone mantle. This, however, caused no disturbance whatsoever to the body of the tumulus proper. The construction: within a rectangular pit, cut into hard pan, a stone floor was laid; this formed the foundation upon which the core, originally a roughly rectangular block of dry masonry, bound with earth, was erected; the upper part of this core was very compact in contrast to the fairly loose composition of its lower portion, in which the Milaveč (i. e. the primary) cinerary burial was deposited within a shallow pit; a covering of light brown earth, similar in compactness and in texture to the hard pan, lay over and off the core, forming the inner fill; upon this, in turn, rested the mantle proper, which was made up of small stones, and formed a single layer protection; over it, finally, was an accumulation of humus. Measurements: north-south base diameter 12.50 m., east-west base diameter 11.25 m., maximum height above virgin ground 1.35 m. In shape the mound formed a low heap with gently and evenly sloping sides. The mantle and the inner fill were partially disturbed in recent times by the removal of tree stumps, the traces of which were plainly visible. However, the core itself, and the foundation of the tumulus were found to be intact.

5) Ardovo.

The Karst region of southcentral Slovakia, a Triassic limestone formation resting upon heavy deposits of shale, is adjacent to the Bükker mountain system of Hungary. It embodies four separate plateaus, among which that of Silica is noted for a group of caves with archaeological deposits. The cave of "Ardovo" is located 4 km. to the southeast of the village of Ardovo, off the road from Plešivec to Hosusovo. It is a tunnel shaped cavity with several branches, of which only the main course appears to have been occupied in ancient times. Its gradual exploration now forms a part of the yearly program of the Institute.[99]

[99] The cave is not available to the public, and its deposits are reserved for excavation by the Institute.

The floor of "Ardovo" contains Neolithic deposits with unusual stratigraphic features. On the whole there is much less of a truly beautiful calcite formation here than in the cave of "Domica",[100] and the floor has relatively few stalagmites. Hence, the archaeologist finds very little that is *tabu* to his spade. However, in the rear portion of the cave the floor is covered by a mass of fallen parts of ceiling which is a relatively recent phenomenon. The digging is exceedingly difficult because of the damp and sticky ground which necessitates very slow progress. The air is heavy, damp, and stagnant. The temperature averages 12°C. the year round. The cave is "dry" during the summer season in the sense that it has no flowing or standing water, but there is incessant seepage through the ceiling and the walls. Access into the main hall is quite difficult, being gained by a steeply inclined narrow passage. The combination of these conditions imposes definite tribulations which constantly tax the endurance of the excavator. However, the nature of the deposits investigated thus far and their rich yield have amply rewarded all efforts.

During his excavations in 1932 and 1933, Dr. Böhm opened a section of the deposits within the largest unobstructed portion of the cave, which lies approximately two thirds of the distance from the entrance. The work of the last season constituted an expansion of this section in all directions except towards the southern wall. The ground was marked off by square meters[101] and then peeled horizontally by successive levels. These are clearly distinguishable by the differences in color and texture in the uppermost horizons, and further down are separated by thin layers of travertine formation. The stratigraphy, therefore, can be followed with precision. Section 1934/a, at point no. 1, revealed the following situation (reading vertically upward): a) virgin ground, consisting of yellowish, compact clay, sterile, 0.415 m. below the surface; b) immediately upon it travertine layer I, thickness 0.015 m., sterile; c) culture level "Ardovo I", light yellowish deposit, relatively loose and dry, 0.07 m. thick, containing early Bükker ceramics; d) travertine layer II, sterile at this point, but in several other instances with early Bükker sherds embedded in its upper plain, thickness 0.02 m.; e) culture level "Ardovo II", dark colored, compact, and moist clayey deposit, with advanced Bükker material, thickness 0.16m.; f) culture level "Ardovo III", light colored, sticky clay, with advanced Bükker and also intrusive Hallstatt material, thickness 0.12 m. (in general, this horizon contained much charred or decaying particles of wood); g)

[100] The Tourist Club of Czechoslovakia has prepared and opened this remarkable cave for the public, preserving certain portions of the deposits which were exposed by the excavations of the Institute.

[101] This area is designated in the field records as Section 1934, and has two subdivisions, called respectively *a* and *b*. In addition, five points were used to mark the extents of Section 1932-1933, as well as the limits of the last excavation.

surface coating, 0.03 m. in thickness, consisting of compact, dark, muddy earth, which was packed by water action in relatively recent times; sterile at this point, but elsewhere with Hallstatt and advanced Bükker sherds. This cross section represents the shallowest deposit opened last season. The maximum depth, ascertained at point no. 4, measured 0.53 m. from the surface to the sterile clay foundation. Section 1934/a, between points no. 2 and no. 3, spanning the distance of 3.05 m., and again from point no. 5 towards no. 4, for the distance of 1.00 m., contained an additional layer of travertine, 0.02 m. thick. This is provisionally recorded as travertine *X*; it occurred approximately half way within the "Ardovo I" culture level. In these two instances, then, two separate strata must be distinguished in the bottom niveau of the deposits. Whether or not there exists a corresponding difference in the material of these subdivisions must be determined by the analysis which is now in progress at the Institute.

The culture bearing deposits of "Ardovo" are rich in ceramic material representing a large variety of the early and advanced phases of the Bükker development which marks the primary Neolithic stage in this region. The travertine layers attest recurrent breaks in occupation, which may possibly have been seasonal, although not necessarily unintermittent. The Hallstatt material is restricted to the uppermost horizon. Dr. Böhm found sherds of the Piliň[102] phase in the front sector of the cave, and late La Tène pottery further in, however, only on the surface.

All the material thus far excavated in "Ardovo" is now at the Institute in Prague for laboratory treatment and detailed studies. It should be mentioned that the region of the Slovakian Karst suffers from seasonal droughts and that in the summer water is obtained from considerable distances. The source closest to our site was over 6 km. away. In the damp deposits of the cave the archaeological material is coated with sticky dirt. Close work with digging tools is very difficult. One has to kneel on the ground and allow each clot of clay to ooze through one's fingers in order to retain smaller objects. With water at a premium, washing of all the material on the spot, ideal as it certainly would have been, was well nigh impossible. We found it most practical to place the objects in cloth bags by small units with a rather cursory amount of wiping. The proper cleaning, conservation, and restoration will be completed in Prague.[103]

[102] Represents the Late Bronze Age in southcentral Slovakia; cf. Eisner, *ibid.*, pp. 141 ff.

[103] With the single exception of Tišice, the excavations in which the School participated with the Institute, produced new evidence which is of specific value to Central European archaeology. Perhaps the most significant data was obtained in the cave of "Ardovo". This stands out first of all in view of its unique stratigraphic features, and secondly because systematic exploration in the region of the Slovakian Karst started only recently. As far as Bohemia is concerned, a sound system and a broad understanding of the various patterns in its culture history, already exist (cf. note 2, *supra*). Yet, their further elaboration calls for much additional field work. The finds and observations from Stehelčeves, Lipany, and Bechyně, all contribute in this respect. While it would be possible to indicate the individual values concerned, this would necessarily be premature, inasmuch as thorough studies and interpretations have not been completed as yet.

V) Laboratory work

During the School's stay in Prague, and again at the end of the course, full advantage was taken of the opportunities offered to us by the well equipped laboratories of the Institute. This work was done more or less at odd moments, and involved the following routine: a) practical handling of sample material, with specific emphasis on distinguishing features and manufacturing technique; cleaning, mending, restoration, and casting; conservation of metals, amber, wood, and other perishable materials, in accordance with special formulae for the various processes involved;[104] b) map work, charts, and tables: plotting of cultural distributions, and of diffusional routes; tabulations of chronologies; comparative synchronisms; c) copying drawings of specimens from more than two thousand sheets of illustrations, which represent Danubian and East European material from the earliest appearance of man locally up to about 1000 A. D.;[105] d) general discussions of the various tasks incidental to archaeological laboratory work, conservation in the field, removal of units *in situ*, and arrangements of collections for exhibition, preparation of publications, etc.

SUMMARY

The course consumed seventy-eight days of concentrated studies. In addition to fulfilling its academic aims, the School participated in field work which resulted in several new contributions. Both the reconnoitering in Yugoslavia and the excavations in Czechoslovakia added to the value of the term, the chief purpose of which was to offer a practical training in the fundamentals of European archaeology. The collections which we studied comprise representative material of practically the entire continent. Lectures and discussions treated not only Europe at large, but western Asia and northern Africa as well. The laboratory periods afforded valuable experience. Finally, a mention should be made of the five bi-weekly examinations which were designed for the purpose of correlating all the subject matter dealt with.

On the whole it may be said that the course fulfilled its aims successfully. The splendid aid which was received everywhere, and the high quality of the student body, were the main factors to which the results of the season are to be attributed.

[104] All the material excavated by the Institute, and in certain instances also by other institutions, is treated and studied in its laboratories. The School had the opportunity to examine representative pieces of many phases of the archaeology in Czechoslovakia. Among this was included some of the material in the excavation of which the School participated either last season or the year before.

[105] These illustrations were prepared by Dr. Kandyba, either in full or half size; they include some hitherto unpublished material.

CINERARY URN GRAVES AT KŘEPENICE

(Sedlčany County, South Bohemia)

By Jaroslav Böhm and Vladimir J. Fewkes

INTRODUCTION

THE SITE at Křepenice, identified in the local parcellation map by numbers 287-289, 291, and 292, is situated upon the plateau through which the middle course of the river Vltava cuts a deep gorge. It is known as "Kamenná Hůrka" (i. e. stony hillock), the name being derived from the outcrop of granite which dominates the surrounding terrain. The southern and southwestern slopes of this rise, generally with a thin layer of humus averaging 0.20 m., contain the cinerary urn graves (pl. I, no. 1). The discovery of the site was incidental to the opening of a quarry in 1932.[1] Prior to this occasion the burials appear to have escaped attention, although some material was brought to the surface in the process of ploughing.

The vicinity of Křepenice is a rather poor agricultural district, about the archaeology of which very little is known. From the village itself, only one mediaeval pitcher is on record;[2] a Knovíz phase (Late Bronze Age) settlement, and skeletal graves of the Bylany phase (Early Iron Age), were found at the nearby hamlet of Zdrůbek;[3] finally, Hallstatt sherds and vessels were collected in the fields of "V močidlech", near the village of Zvírotice.[4]

The State Archaeological Institute of Czechoslovakia, at first independently, and later with the coöperation of the American School of Prehistoric Research,[5] explored the site of "Kamenná Hůrka" during the season of 1933.[6] Further excavations at this cemetery are to be resumed in the near future.

DESCRIPTION OF THE FINDS

Grave no. 1 was destroyed during the initial work on the quarry, at which time its contents were lost.

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[1] Sincere thanks are hereby expressed to Mr. J. Holan of Zvírotice, the owner of the quarry, Mr. J. Heller, District School Inspector at Sedlčany, and the management of the Public School at Zvírotice, for their information regarding the first finds.

[2] Městské (City) Museum, Sedlčany.

[3] Cf. Schránil, J., *Vorgeschichte Böhmens und Mährens* (Berlin, 1929), pp. 188 ff., and Stocký, A., *čechy v době železné* (Praha, 1933), pl. II, 8, and pl. V, 1-10.

[4] Sedlčany Museum; unpublished.

[5] Cf. *Bull.* No. 10, *A. S. P. R.* (1934), p. 26.

[6] The spring campaign, in charge of Dr. Böhm, resulted in the excavation of ten graves (nos. 3-12); in July, the School, in charge of Dr. Fewkes, found eleven additional graves (nos. 13-23).

Grave no. 2 was found under similar circumstances as no. 1. The furniture which Mr. Holan was able to salvage consists of: a) A small cup of grayish, sandy material, height 0.035 m., internal mouth diameter 0.065 m., external bottom diameter 0.020 m. (pl. IV, no. 2); b) A fragment of a bronze pin, the head and point of which are broken off (pl. IV, no. 1); c) Two bracelets, one made of thick, cylindrical wire, undecorated, greatest internal diameter 0.050 m. (pl. IV, no. 3), the other made of thin wire of ellipsoidal cross section, with overlapping ends, maximum internal diameter 0.045 m. (pl. IV, no. 7); d) fragments of bronze earrings of thin wire, drawn double, twisted and wound at ends (pl. IV, nos. 4-6 and 8-10).

Grave no. 3 rested within a pit 0.450 m. deep which penetrated into the underlying rock foundation. The interment, which consisted of cremated bones, was deposited in a large urn of the storage vessel type. Around this were found batches of decomposed ceramics, all lying upon weathered rock, and disintegrated to such a degree that only a few sherds could be retrieved. After the pressure of the overlying earth had crushed the urn, some of the burned bones were displaced. The furniture represents: a) An urn which has a bulging belly, an open neck with a horizontally drawn rim, and a beveled lip; the material is coarse and sandy; the belly has a slip of reddish paste, and is burnished, while the neck is brown in color and bears traces of horizontal finger stroking; height 0.330 m., mouth diameter 0.300 m., bottom diameter 0.110 m. (pl. IV, no. 11); b) Loose sherds, which include: a neck sherd of a vessel suggestive of a form similar to the urn just described; sherds of a cup, originally with a handle which did not protrude above the rim, gray inside, and with a brownish-gray slip on the outside; sherds of a profilated bowl of reddish-brown color, burnished on the outside wall, and with traces of graphite finish on the inside; brittle sherds, possibly representing a two-storied vessel.[1]

Grave no. 4 was deposited in a pit 0.350 m. deep, and the urn rested upon the rock foundation. The upper portion of this vessel was destroyed by ploughing, but the lower part was fairly well preserved, and contained particles of burned bones. The material of the incomplete vessel is of the same nature as in the urn from grave no. 3, and the specimen is 0.118 m. high (pl. IV, no. 12).

Grave no. 5 lay in a pit 0.400 m. deep, which was sunk partially into the weathered rock. Around the urn were groups of highly decomposed sherds,

[1] This type of vessel (for complete forms cf. pl. V, no. 6, pl. VI, nos. 2 and 9), is called *etážovitá* or *dvojetážovitá* in Bohemian (cf. Buchtela, K., *Pravěk* I, No. 1 [1903], p. 3), *Etagenurne* or *Doppel-Gefäss* in German (cf. Schránil, *op. cit.*, pp. 163 ff.), *à étage* in French (cf. Stocký, A., *La Bohême à l'Age du Bronse* [Prague, 1928], p. 24), and *storeyed urn* in English (cf. Childe, V. G., *The Danube in Prehistory* [Oxford, 1929], p. 345). We are applying the term "two-storied" in the hope that the principle of the two superimposed parts of the vessel may be immediately conveyed.

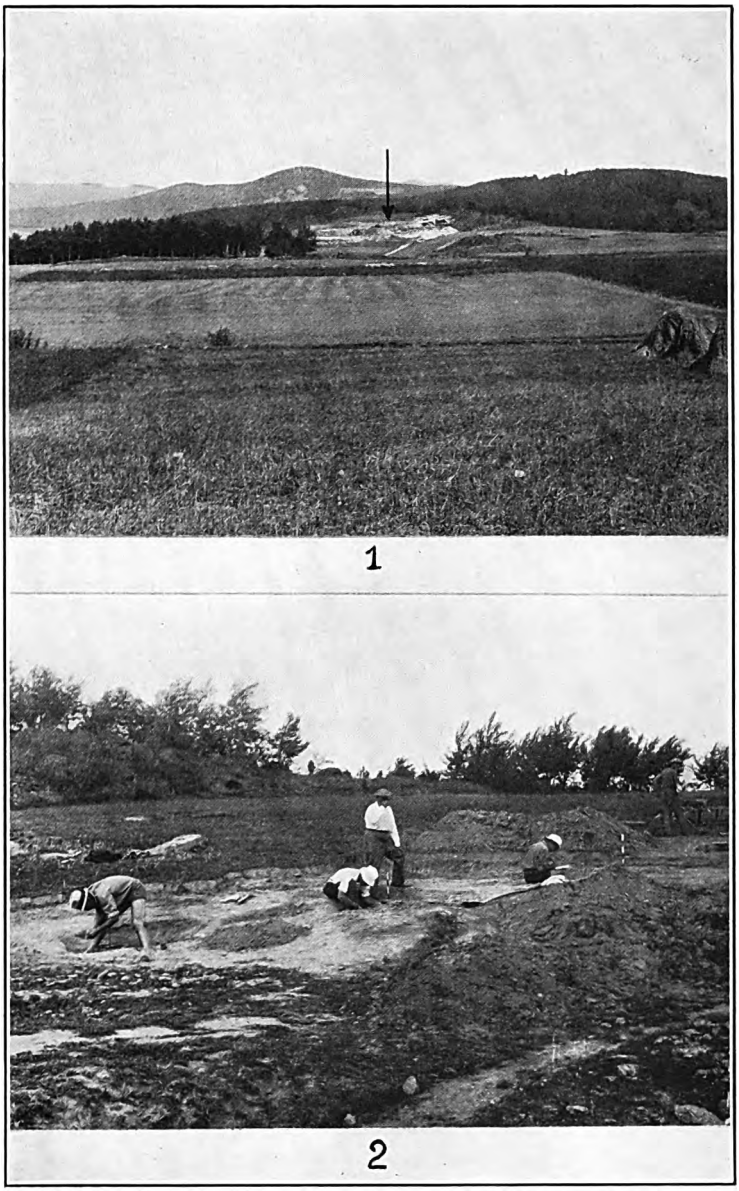


PLATE I 1) General view of the site of "Kamenná Hurka" at Křepenice, facing northeast. 2) Members of the School excavating graves nos. 14, 15 and 16.

apparently representing several vessels, of which only those which escaped direct contact with the rock could be salvaged. It was not possible to determine the shapes and positions of the original pieces. The lower part of the urn was filled with burned bones. The furniture may be described as follows: a) The urn is of a bi-conical shape, with a gently rounded break, and is slightly constricted under the rim; the material is of sandy texture, and is reddish-brown in color; the outer surface is burnished, and shows traces of a graphite finish; height 0.330 m., mouth diameter 0.300 m., bottom diameter 0.110 m. (pl. IV, no. 13); b) The loose sherds, which represent: a fragment of a handle from a cup; bottom sherds of thick and thin walled vessels of gray paste, with brownish-gray slips; one gray sherd with incised decoration, consisting of a band filled with horizontal lines, to which is appended a hatched triangle.

Grave no. 6 rested in a pit 0.480 m. wide and 0.350 m. deep, on the bottom of which stood the urn containing the cremation. There were also some scattered sherds on the bottom of the grave pit. The ossuary is a reddish-brown, asymmetrical vessel of a bi-conical shape with a gradual break, a constricted neck, and an everted rim; height 0.130 m., mouth diameter 0.115 m., bottom diameter 0.045 m. (pl. IV, no. 14). One of the loose sherds suggests a broad-bellied, reddish-brown vessel with graphite finish, and with a broken handle, at the base of which runs a horizontally incised band of parallel lines; immediately below the handle, there is a similar band forming an arch, from which radiate groups of incisions; vertical fringes, likewise incised, are appended to the horizontal zone (pl. IV, no. 17). The fringe motif appears on two other sherds from this grave, both of which perhaps belong to one vessel (pl. IV, nos. 15, 16).

Grave no. 7 rested in a pit 0.300 m. deep. The urn, a storage vessel type, was crushed, and its sherds had turned into a smeary paste due to the weathering process of the underlying rock foundation; only a few fragments were intact. Burned bones and several sherds were scattered on the floor of the grave. Beside the scanty remnants of the urn stood another vessel of a similar type, in a fair state of preservation, and completely restorable. This specimen has a bulging belly, a short, cylindrical neck, and a horizontally drawn rim; its irregular surface of brownish-gray color is burnished; height 0.280 m., mouth diameter 0.190 m., base diameter 0.080 m. (pl. IV, no. 18). The scattered sherds include: a piece of a large urn of the storage vessel type, with a horizontally drawn, and faceted rim; a small sherd with broad flutings; a thin wall sherd with graphite finish on both sides, and an everted rim.

Grave no. 8 was deposited in a pit 0.450 m. deep. It contained an urn of

the storage vessel type, upon the belly of which lay the sherds of a graphite-finished jar, as well as several fragments of other ceramics. The burned bones, originally placed in the urn, were scattered on the bottom of the grave. The reconstructed urn is of the storage vessel type, reddish-brown in color, and has a burnished surface; its conical neck opens widely towards the mouth, the rim is drawn out and everted, and has a beveled lip. The outer wall has traces of a brownish coating which consists of unfired paste, stroked horizontally on the shoulder, and vertically from the belly towards the bottom; height 0.330 m., mouth diameter 0.310 m., bottom diameter 0.115 m. (pl. V, no. 1). The jar has a high and broad body, with a sharply delineated and flaring neck, and an everted rim. Originally, there may have been a handle reaching from the belly to the rim, as suggested by the protruberance on its edge. The body of this vessel is decorated by two zones of unequal widths, each filled with incised rectilinear design. The motif of the upper zone produces rectangular figures defined by groups of vertical lines which span the horizontal incisions; each of these figures contains a group of diagonally drawn lines, which divide their fields into two triangles. The lower zone is filled with similar triangles, hatched from left to right. The surface is reddish-brown, burnished, and finished with graphite. The height of the jar is 0.135 m., its mouth diameter measures 0.150 m., and its bottom diameter is 0.050 m. (pl. V, no. 2). The scattered sherds include: the lower part of a bi-conical vessel with a rounded break, decorated with a band of incised triangles; a sherd of a graphite-rubbed vessel with a small handle, and decorated with hatched triangles; three sherds with graphite finish, all with incised designs forming triangles.

Grave no. 9 lay in a pit 0.280 m. deep. On its bottom were found scattered burned bones and sherds of which many were decomposed beyond recovery. It was not possible to determine the urn. Only one vessel was subsequently reconstructed (pl. V, no. 3). This is a broad-bellied specimen with a gently flaring neck, and an everted rim. There are traces of graphite application on the inner wall of the neck. The material is reddish-brown, and sandy, and the outer surface is burnished; height 0.265 m., mouth diameter 0.200 m., bottom diameter 0.085 m. Among the scattered sherds are: fragments of a vessel suggestive of a form similar to the one just described, with an everted and faceted rim; sherds of reddish color, with graphite application on the outer walls, and decorated with horizontally drawn incised lines which are separated by marginal athwart cuts.

Grave no. 10 was placed in a pit 0.300 m. deep. The remnant of the urn represented only the lower portion of the original vessel which was damaged by ploughing; its interior was filled with burned bones. The reconstructed

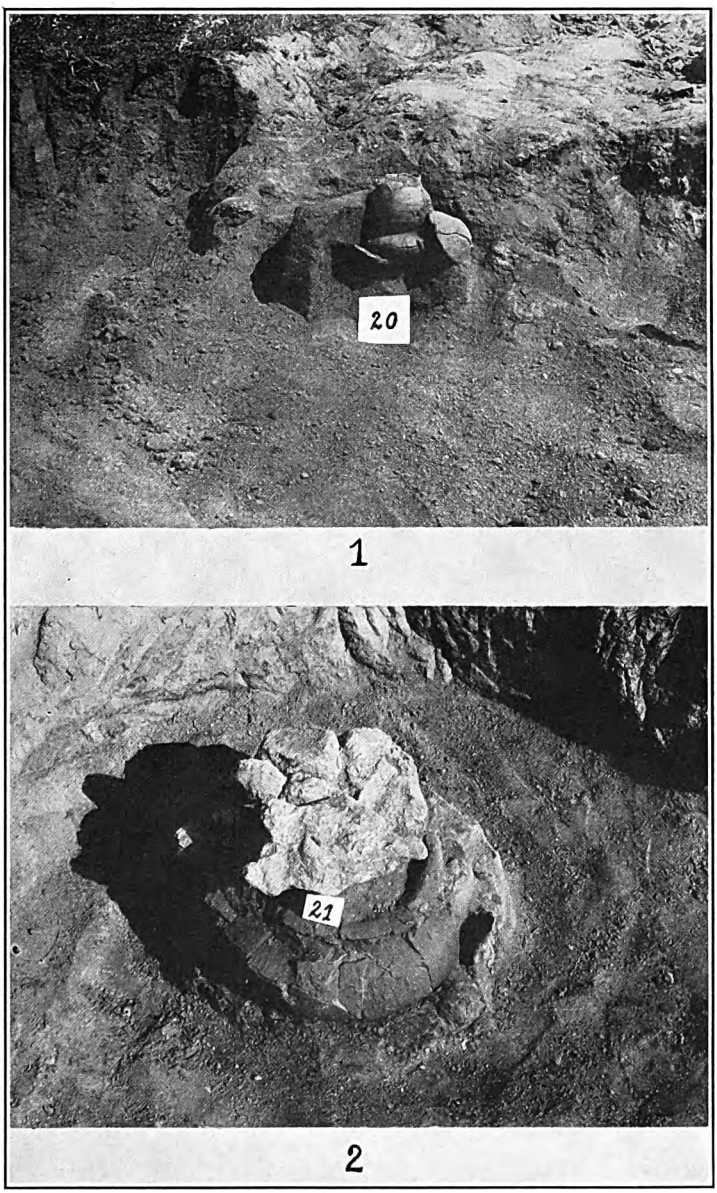


PLATE III. 1) Křepenice, grave no. 20 *in situ*. 2) Křepenice, grave no. 21 *in situ*.

remainder is of the storage vessel type, has reddish-brown material, and its outer surface shows traces of vertically executed finger stroking (pl. V, no. 4). The rest of the sherds found in this grave belong to the urn, and represent a faceted rim, the edge of which is scalloped.

Grave no. 11 was deposited in a pit 1.050 m. wide and 0.450 m. deep. Owing to the deeper humus, the furniture rested within the earth and touched the rock foundation only on one side of the pit. Burned bones were found exclusively in the urn. This is a bi-conical vessel with a gradually rounded break, and gently profilated. The red surface shows evidence of graphite application, which, however, does not reach to the bottom. The break of the belly has shallow flutings; height 0.200 m., mouth diameter 0.245 m., bottom diameter 0.110 m. (pl. V, no. 5). The second vessel is of the two-storied type, with a gently profilated neck. It has a horizontal band of fluted design placed on the upper limit of the belly, from which four groups of fluted fringes run vertically downward. The outer surface is brown and burnished, while the inside color is red and hand-smoothed; height 0.240 m., mouth diameter 0.140 m., bottom diameter 0.060 m. (pl. V, no. 6). The scattered sherds include the following: a) Fragments of a storage vessel with a horizontally everted rim which is fluted and vertically perforated in several places, the belly, immediately under the neck joint, is decorated with horizontal flutings to which are appended groups of vertical fringes separated by arches, both of which are likewise fluted; the outer surface, and the upper half of the inner wall of the neck, have graphite finish (pl. V, nos. 7-10); b) Sherds of still another storage vessel, with a widely opened neck, fluted decoration, and graphite application.

Grave no. 12 was identified by a group of decomposed sherds and burned bones which were deposited in a shallow pit within the humus. In the place of its location the underlying rock foundation came close to the surface. The ceramic material was totally disintegrated and unretrievable for the purpose of identification. The nature of the pit and its position proved that the remains represented a primary rather than a dislodged grave.

Grave no. 13 rested in a pit 0.600 m. deep, in which the urn was well preserved, being protected by a layer of humus which averaged 0.250 m. in thickness. Upon the burned bones within the urn lay three fragments of a bronze pin, and scattered sherds were present outside the vessel. The restored urn is of the storage vessel type, with a horizontally drawn rim which has finger dimpled decoration on its edge. The surface is reddish-brown, partially burnished, and is coated with fine yellow clay over which run finger stroked flutings. This technique produced plastic ribbing of which portions are still preserved. The rim and the inside of the neck have graphite application; height 0.370 m., mouth diameter 0.320 m., bottom diameter 0.120 m.

(pl. V, no. 11). The scattered sherds contain the following: fragments of a storage vessel, with vertical flutings, and graphite finish; sherds of a small, profilated pitcher, made of gray, sandy material, covered by a brownish-gray slip, and having a small handle. The bronze pin is in three pieces, all of which are highly corroded, and its head is carved in a manner which produces the effect of three joined appliqued rings (pl. V, no. 12).

Grave no. 14 was deposited in a pit 0.500 m. deep, which was cut into the rock. The rim of the collapsed vessel was 0.200 m. from the surface. The dimensions of the grave pit were just large enough to accommodate the urn, the interior of which was filled with burned bones to the height of 0.150 m. Several sherds of a small vessel were found in the grave, while additional pieces of the same specimen were located 1.500 m. away from it, having been displaced by the blade of a plough. The reconstructed urn is of the storage vessel type and has a broad, flaring neck, and a horizontally drawn rim which is fluted on its upper plane. Its belly shows traces of decoration executed in a fashion similar to that which occurs on the urn from grave no. 13. However, in the case of the specimen under consideration, the majority of the plastic ribs have exfoliated, having left strips of lighter color which at first glance give an illusion of faint painting. Similar technique is in evidence immediately under the neck of the vessel, in which instance, however, the bands run horizontally; finally, vertical bands, produced in the same manner, are visible on the lower part of the belly. The inside wall of the neck, and the rim as well, are finished with an application of graphite; height 0.390 m., mouth diameter 0.370 m., bottom diameter 0.155 m. (pl. VI, no. 1). From the loose sherds the following four vessels may be identified: a) A two-storied vessel, burnished, and rubbed with graphite; b) A small bowl or cup of gray material, with a brownish slip; c) A vessel similar in form to b), with a constricted neck; d) A small vessel made of blackish clay, with a brown slip on both walls (darker shade inside); the decoration of this specimen, restricted to the inside, consists of flutings, which divide the bottom into four triangular fields, and also reach the wall.

Grave no. 15 rested in a pit 0.600 m. deep. It contained decomposed remnants of a storage type urn of which only a few fragments could be recovered. Upon these, surrounded by burned bones and ashes stood a two-storied vessel (pl. VI, no. 2), the placement of which indicated that it formerly rested within the urn. This vessel has two handles which are attached to the neck and belly; its fluted decoration, appearing only on the upper portion of the belly, embodies horizontal execution under the neck, and vertical further down. The material is gray, with sandy temper, and the surfaces have reddish-brown slips, as well as traces of graphite.

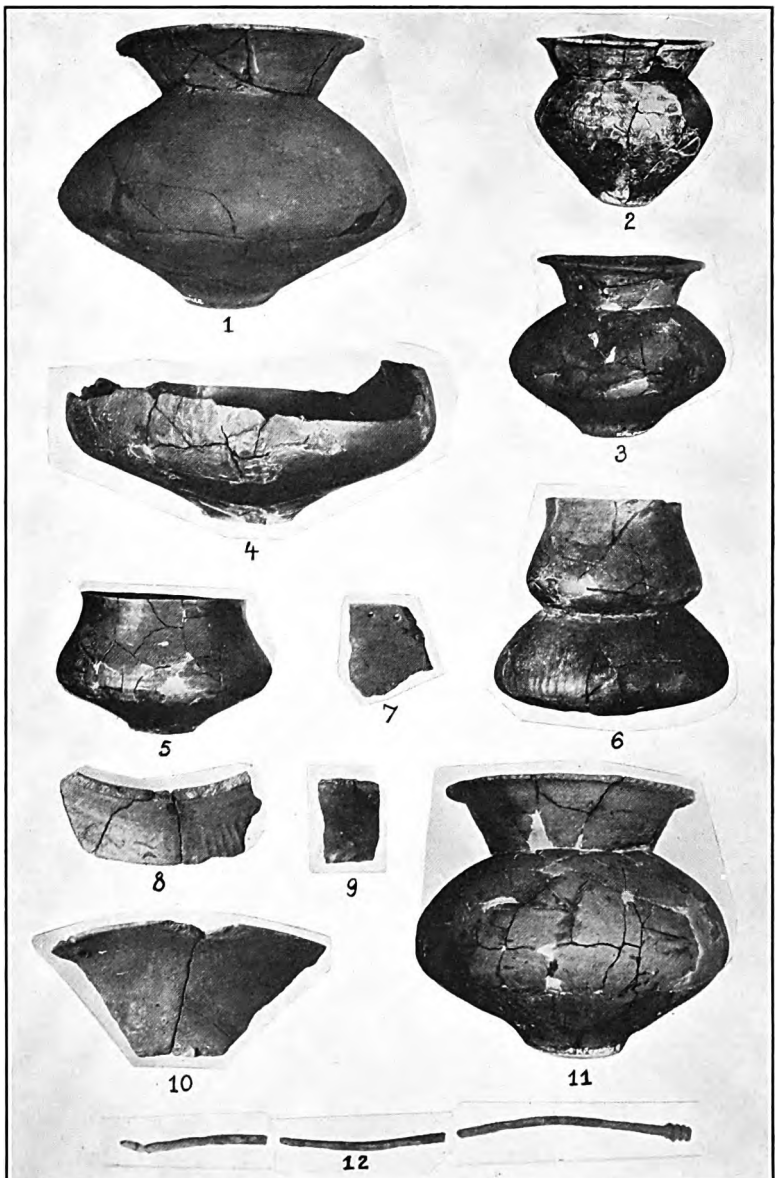


PLATE V. Křepenice, furniture from graves nos. 8—13.

Grave no. 16 was placed in a pit 0.430 m. deep. The urn, crushed and partially disturbed by ploughing, retained most of the burned bones which were originally deposited in it. In shape and technique this vessel is reminiscent of the ossuary from grave no. 13. Its rim is fluted and finished with graphite application, and a similar treatment is evident on the inside of the neck; height 0.350 m., mouth diameter 0.340 m., bottom diameter 0.130 m. (pl. VI, no. 3). Among the scattered sherds, found upon and to the south of the urn, all within the grave proper, the following are represented: a) Sherds with horizontal and vertical flutings, suggestive of a two-storied vessel; b) One sherd of an open bowl-shaped vessel of gray material, with graphite finish inside, and horizontal flutings under the rim; c) Sherds of another open bowl-shaped piece of reddish material, constricted under the rim, with graphite finish both in and out, and decorated in fluted technique on the inside.

Grave no. 17, while located within the humus, had the lower portion of its urn resting in a shallow pit cut into the rock foundation. The depth of the grave measured 0.510 m. The urn was considerably damaged by ploughing, which completely destroyed its neck and rim (pl. II, no. 1). The cinerary interment within it, however, was intact. The body of the urn (pl. VI, no. 4) has a reddish-brown surface with traces of a clayey coating. There are also a few sherds of a gray bowl, as well as several fragments of a small vessel of indeterminate form.

Grave no. 18 lay in a pit 0.500 m. deep, directly upon the rock foundation, which was responsible for the decomposition of the furniture. Only a group of sherds and scattered burned bones remained. The presence of stone slabs on the edge of the grave pit, and also over the bones, indicated that the interment was originally covered and surrounded by stones. The urn itself, suggestive of the storage vessel type, was not restorable. From the other sherds, however, a bi-conical vessel of brownish-gray material, fluted and burnished, has been reconstructed; its height is 0.110 m., mouth diameter 0.120 m., and bottom diameter 0.060 m. (pl. VI, no. 5). There is also one odd sherd of a third vessel, the original form of which cannot be deduced.

Grave no. 19 was placed in a pit 0.350 m. deep, which was cut partially into the underlying rock (pl. II, no. 2). The urn, a storage vessel type, has a broad, cylindrical neck, and a horizontally drawn rim which is fluted and finger dimpled on the edge. The upper part of the belly has horizontal flutings, and the lower portion is similarly decorated, but in a vertical manner. The clay paste is brownish-gray, and contains sand grog; height 0.450 m., mouth diameter 0.400 m., bottom diameter 0.180 m. (pl. VI, no. 6). Among the scattered sherds the following are represented: a) A portion of a bi-

conical vessel of gray paste, with a gently rounded break which is decorated with fluted vertical fringes; b) A belly portion of a two-storied vessel of yellowish-brown material, decorated with a band of horizontal incisions which run under the neck, and have depending vertical fringes, as well as hatched triangles; c) One sherd with fluted design which produces a combination of fringes and arches.

Grave no. 20 rested in a pit 0.330 m. deep, cut in the humus, which in the place of its location formed a deeper pocket. The cremated interment was found partially within the two-storied vessel which stood upon the sherds of a bowl and a cup-shaped specimen. On the eastern side of the ossuary, and adjacent to it, rested a cup (pl. III, no. 1). Inside of the two-storied vessel were found a miniature bowl, and one bronze bracelet of thin wire, with overlooped ends, similar in shape and size to the specimen from grave no. 2 (pl. IV, no. 7). A few burned bones were scattered on the floor of the grave pit. The ceramic furniture may be described as follows: a) The two-storied vessel, originally with two handles both of which are now broken off, has a graphite finish, and is decorated with vertical flutings on the belly; height 0.180 m., mouth diameter 0.090 m., bottom diameter 0.035 m. (pl. VI, no. 9); b) The cup which rested against the ossuary has a conical body and one handle; the material is reddish-gray and mottled; the decoration, placed close to the bottom on the inside, consists of horizontal flutings; height 0.045 m., mouth diameter 0.135 m., bottom diameter 0.045 m. (pl. VI, no. 8); c) the cup-shaped vessel has no handles, its neck is gently constricted, and the outside surface is finished with graphite; height 0.045 m., mouth diameter 0.075 m., bottom diameter 0.025 m. (pl. VI, no. 10); d) the miniature bowl, found inside the ossuary, has an open form, its outer color is brown, and the inside is finished with graphite; there are two small perforations under the rim; height 0.025 m., mouth diameter 0.065 m., bottom diameter 0.030 m. (pl. VI, no. 7); e) The open bowl upon the fragments of which stood the two-storied vessel, is represented by a group of sherds with graphite finish, but the specimen is not restorable; f) The few grayish-brown sherds with bands of incised decoration are indicative of a sixth vessel, perhaps a cup or bowl.

Grave no. 21 had the deepest pit, which measured 0.765 m., and cut into the underlying rock foundation. Burned bones and ashes were found under and within the urn, which was covered by pieces of granite forming a fused mass and bearing traces of recent disturbances. Inside and around this vessel, furthermore, were scattered sherds representing parts of four other receptacles (pl. III, no. 2). The urn is of the storage vessel form, has a horizontally drawn rim, on the edge of which are oblique finger dimpl-

ings; there is a plastic appliqued rib, finger dimpled, placed at the break of the shoulder and neck; horizontal finger stroking appears on the neck and the upper part of the body, whereas the belly has a similar decoration executed vertically; the material is reddish-brown, height 0.460 m., mouth diameter 0.360 m., bottom diameter 0.165 m. (pl. VI, no. 11). The remaining sherds suggest: two open bowls with constricted necks, one of grayish-brown paste, the other reddish-gray and finished with graphite; two other vessels, the forms of which are not determinate.

Grave no. 22 was heavily damaged. It was identified by ashes and a small portion of the urn which rested within a pit 0.015 m. deep. The sherds are of reddish-brown paste, burnished, and suggest a probable bi-conical vessel. The damage to the furniture is to be attributed to ploughing.

Grave no. 23 was likewise disturbed by field cultivation. In a shallow pit, which penetrated the rock foundation, lay a few sherds and some burned bones. The ceramic remains suggest perhaps an urn of the storage vessel type, of crude, reddish-brown material, with a rounded lug on one of its sherds; and another vessel of indeterminate shape, the sherds of which are of dark gray paste, with a brownish-gray slip.

CONCLUSIONS

The twenty-three burials found at "Kamenná Hůrka" represent only a fraction of an extensive urn field, which awaits further excavation. The graves are placed in roughly parallel rows which run approximately east-west. The interments here described fall largely within two alignments, of which only one is contiguous. The interruptions in the second row are explainable as being due to recent disturbances. The position of the sepulchers and their spacing are quite regular in certain places, while elsewhere the burials are either somewhat out of alignment or unevenly spaced from one another. The zone between the two rows ranges in width from 2.5 m. to 7.5 m., and the distances between the technical centers of the aligned graves measure from 2 m. to 4.5 m. On the whole, however, the arrangement indicates a tendency towards a conscious regularity.

The graves are now under a plain surface which, with the exception of the dislodged material, shows no indication of their presence. The humus zone over the underlying granite foundation rarely measures more than 0.200 m. in thickness. In modern times the site was used as pasture land and was not tilled. Recently, however, field cultivation began and is responsible for the present accumulation of the humus as the result of ploughing, which occasionally effects even the top of the granite layer. As a rule the graves are in rather shallow pits which penetrate into the rock, so that it would seem that

they were completely underground in aboriginal times. There is no evidence to show whether or not they were ever marked on the surface. The shallow pits and the granite foundation are responsible for the excessive damage to the furniture. In those cases in which the ceramics were in direct contact with the weathering rock, chemical action caused a decay and a disintegration to such an extent that it was impossible to extricate certain pieces during the excavations. The grave pits were filled with earth containing a high percentage of ashes. The interments were deposited in urns, from which, of course, they were occasionally displaced when the vessels were crushed or otherwise damaged. The place of cremation remains unknown for the time being. It appears, however, that the corpse was burned upon a pyre, perhaps near the urn field, the human remains crushed and placed in the ossuary vessel, and the grave pit filled with the ashes of the funerary fire and with earth. The accompanying ceramics were set around the urn in the larger graves, or upon the urn's belly in the case of the smaller pits. Smaller vessels were sometimes placed within the urn; all the bronze objects were found in urns. In graves no. 12 and no. 21 remnants of stone covering were found. It is probable that other burials in this necropolis were originally treated in a similar manner, and that the stones may have been dislodged by ploughing. Future exploration may bring additional light on this point.

The cultural placement and the relative chronology of the cemetery at Křepenice are established by the ceramics, which, despite the paucity and lack of variety, are very characteristic. The urn with a bulging belly and with either a cylindrical or a flaring neck (pl. IV, no. 11, pl. V, nos. 1, 3, 11, and pl. VI, nos. 1, 3, 6), and the bi-conical urn (pl. IV, no. 13, pl. V, no. 5, and pl. VI, no. 5), are typical forms of the advanced Lausitz phase.[8] Analogies with the Knovíz phase of Central Bohemia are represented by the bi-conical urns[9] and the two-storied vessels (pl. V, no. 6, pl. VI, nos. 2, 9),[10] the open bowls, the typical shallow fluting, and finally the facetting of rims. The urn field at Křepenice, therefore, belongs to the younger stage of Lausitz development, that is to say the advanced Central Bohemian Knovíz phase. There are, however, certain differences in individual elements, as compared with the Knovíz ceramics. These are:

A) The surface finish of the pottery, which, in contrast to the dark colored and thoroughly polished Knovíz mode, is uniformly light in color (i.e. brownish-, and yellowish-red), and burnished.

[8] The storage vessel shape is not represented within the area of Lausitz distribution in Eastern Bohemia, so that Buchtela (*Jahrb. Centr. Com. Wien* [1906], p. 10) is dubious as to its affiliation with this phase. However, this type is known from Lausitz graves in Moravia (Land Museum, Brno, and City Museum, Prostějov).

[9] Buchtela, *op. cit.*, pl. II, no. 10, and p. 10; Schránil, *op. cit.*, does not illustrate this form, although it is common to Central Bohemia.

[10] Buchtela, *op. cit.*, pl. II, no. 4, and p. 10; Schránil, *op. cit.*, pl. XXIX, nos. 3, 5, 6.

B) The material of which the Křepenice ware is manufactured is not nearly so fine and homogeneous as the Knovíz ceramics, but is usually of a darker (mostly gray) paste, often coated with levigated clay, and contains crushed stone and sand temper.

C) The firing of the Křepenice vessels is quite inferior to that of the Knovíz ware.

D) The high, faceted handles, overlooping above the rim, which are so common in Knovíz ceramics, are totally lacking among the material from Křepenice.

E) Finally, the peculiar technique which is discernible on the surface of several Křepenice urns of the storage vessel type (graves no. 8, 13, 14, 16, and 17), presents a significant difference. This technique may be described as follows: After the baking of the vessel, a layer of levigated yellow clay was applied to its outer surface, over which a finger fluted decoration was then executed, either vertically, or horizontally. The result produced plastic ribbing in positive relief in combination with the fluting. In the grooves the reddish color of the wall occasionally glimmers through the yellow coating, which was considerably thinned by the pressure of the stroking finger. Since this post-fired application was only air-dried, its fusion with the vessel was necessarily insecure. In the majority of the cases it had fallen off, but its original presence is traceable by the striped discoloration on the baked surface. The purpose of this decorating technique, which may have been restricted to funurary ware, was to produce a color effect.[11]

The decoration of vessels, limited as it is at this site, is quite important in relation to chronological considerations. The most frequent is fluting, which might better be called grooving, analoguous with Late Lausitz and advanced Knovíz techniques. Of similar cultural affiliation is the fringe design, either incised or fluted, and appearing alone or in combination with arches. This is a rather limited motif in the material under discussion, but a frequent one in Late Lausitz, Silesian, as well as advanced Knovíz wares found in Bohemia. The marginal athwart cuts associated with incised bands approximate similar Silesian designs known from Eastern Bohemia, and are likewise paralleled in certain Knovíz examples. On the whole, the ceramics from "Kamenná Hůrka" may be interpreted as contemporary with the Silesian urn fields in Bohemia. (With the exception of the pin from grave no. 13, for which Silesian parallels are known,[12] the bronzes are incom-

[11] Apparently, the graphite finish was also used in order to obtain a color effect.

[12] Two specimens from the urn field at Nepasice, cf. Píč, *Starožitnosti*, II, 3 (Praha, 1905), pl. XIV, nos. 10 and 11, and two from Měnik, cf. *ibid.*, pl. XIX, nos. 4 and 6. Our pin, then strengthens the dating here advanced.

plete or not sufficiently characteristic to be used for comparative purposes.) The stated differences between the wares from Křepenice and advanced Knovíz pottery indicate a parallel, yet separate, development from a common basis, that is the cultural expression known as Lausitz. In form and in manufacturing technique, the ceramics from Křepenice stand nearest to the so-called Milaveč phase of Southern and Western Bohemia, vestiges of which are to be found either in flat graves or in mounds. The Milaveč phase marks the Late Lausitz expansion into the area of the Bohemian tumuli.[13]

Geographically and culturally, the urn field of "Kamenná Hůrka" belongs to the younger growth of the Milaveč development. As such it is contemporary with the Silesian phase of Eastern Bohemia, and the advanced Knovíz phase of Central Bohemia.[14] Therefore, its chronological position may be equated with that of *Reinecke's Hallstatt A-B*.

[13] Cf. Schránil, *op. cit.*, pp. 157 ff. (and literature therein), who, however, does not mention the flat graves, of which a number are known. (The distribution of the Milaveč development is incompletely established and requires much additional attention.)
[14] For a table showing this synchronism, cf. Schránil, *ibid.*, p. 148.

LOWER PALEOLITHIC MAN AT HOXNE, ENGLAND

By J. Reid Moir

THE VILLAGE of Hoxne is situated in the east of England about 26 miles northward of Ipswich, the county town of Suffolk. It is a place famous throughout the archeological World; for it was here, in 1797, that John Frere found and described,[1] before the Society of Antiquaries of London, a series of what he termed "flint weapons," resting at some 12 feet below the surface of the gound. Frere concluded that these specimens were "fabricated and used by a people who had not the use of metals" and that they belonged "to a very remote period indeed, even beyond that of the present world." This discovery at Hoxne was made some 40 years before Boucher de Perthes announced the finding of flint implements in the valley of the Somme; though it was not until 1859, that Prestwich and Evans visited Hoxne and confirmed the truth of Frere's long-neglected paper.[2] Subsequently further investigations of the Hoxne site were made by Thomas Belt in 1876;[3] by Clement Reid, on behalf of the British Association[4] in 1895-6; while during 1925 and 26, Professor Boswell and I carried out extensive excavations on behalf of the same Association.[5]

The work undertaken in 1934 at Hoxne (pronounced Hoxen) for the American School of Prehistoric Research is described in the following paper, and I have to tender my thanks to Dr. Baden-Powell, Dr. Forster Cooper, Mr. A. S. Kennard, Dr. G. Erdtman, and Mr. C. Oldham for valuable help in its preparation.

There seems no doubt that at any rate, since 1797, a brickfield has existed at Hoxne. The surface of the ground at the site of the brickfield is about 120 feet above sea level, and no one walking over the area would suspect that there exists there a buried hollow, in which some 60 feet of lacustrine deposits are present. Hoxne is on the south bank of the river Waveney and is a typical Suffolk village, supposed to be the place where King Edmund was killed by the Danes in the year 870. Whether this were the case or not, though there is certain strong evidence in favor of the tradition, it is beyond question that, in the remote geologic past, Hoxne was a camping site of men who lived upon the shores of a lake-like hollow long since silted up and obliterated. It was in one of the no doubt prolonged warm interludes in

[1] Archaeologia, 1800, Vol. XII, p. 204.
[2] Sir Joseph Prestwich. Philos. Trans. 1860, Part II, pp. 304-308.
[3] Quarterly Journ. of Science, 1876, p. 289.
[4] Report of British Assoc. 1896, p. 400.
[5] Proc. Preh. Soc. of East Anglia. Vol. V, Pt. II, pp. 137-165.

the Ice Age that these people existed; and an examination of the lacustrine deposits at Hoxne clearly shows the succession of geologic events prior to and after their departure from the site. Geologically and archaeologically the Hoxne site finds a parallel with those at Derby Road, Ipswich[6] and High Lodge near Mildenhall, Suffolk.[7] In each of these places there exists a hollow in the Kimmeridge Chalky Boulder Clay, which has been filled in with fresh water deposits containing flint implements assignable respectively to the Late Acheulian and Early Mousterian (Clactonian III) industries. It is probable that these lake-like hollows in the Kimmeridge Boulder Clay were caused by the streams of water set free upon the retreat of the ice, which laid down the Boulder Clay; and that, as the climate became warmer, vast herds of animals and their attendant paleolithic hunters entered East Anglia. Such expanses of water, as that existing at Hoxne, would be suitable dwelling places for animals and consequently be frequented by the ancient hunters of those days. The site would provide "kills" in plenty as well as first class flint (contained in the Boulder Clay) for the all important task of implement making.

From the excavations, which have been carried out at Hoxne, it is possible to visualize the remarkable succession of events, which took place there in the early and middle stages of the Pleistocene period. The Kimmeridge Chalky Boulder Clay was laid down during an epoch of intense cold, when an immense ice sheet occupied widespread areas in the British Isles. Upon the recession of this ice great quantities of water were set free and hollows were formed in the surface of the Boulder Clay. It is evident that a very great change had then come over the climate; for the first 20 feet of lacustrine deposits at Hoxne contain plant and other organic remains, which point unmistakably to definitely temperate conditions. On the other hand the succeeding 20 feet of infilling show by their contained fossils that an Arctic climate was once more present in East Anglia. Though these 40 feet of lacustrine beds afford such interesting evidence of climatic change, they do not throw any light on the archaeology of these periods; because, so far, no traces of man have been found in them. But upon the surface of the uppermost lacustrine deposits is found a gravel demonstrating that the stream flowing into the lake had greatly increased its volume and velocity. In this gravel have been found the remains of *Elephas primigenius* and reindeer, pointing to the continued prevalence of very cold conditions. Moreover it is in the gravel that we come upon the first evidence of the presence of man in the area; because, in the deposit, have been found a number of palaeolithic hand-axes and their accompanying scrapers and other implements made from

[6] Journ. Roy. Anthrop. Inst., Vol LIII, 1923, Jan. to June.
[7] Proc. P. S. E. A. Vol III, Pt. 3, pp. 353-379.

flakes. These relics are to be referred to Late Acheulian times and, in the case of some of the hand-axes, represent the high-water mark in Lower Palaeolithic workmanship. Specimens such as these were the ones originally found by Frere and either disregarded or looked upon as the product of natural forces by his unenlightened contemporaries.

As we follow the geological sequence upwards at Hoxne, we find that, upon the surface of the Late Acheulian gravel bed, there is a brick earth testifying to yet another change in the velocity of the stream discharging itself into the lake. Further, towards the base of this brick earth has been found a floor, or land surface, once occupied by man and containing hand-axes and other implements differing in their types of flaking from those of Late Acheulian times and referable to what used to be classed as Early Mousterian; but which is now called, for not altogether clear and satisfactory reasons, the Clacton III Epoch. Associated with these artifacts are a certain number of mammalian bones; and these—horse, red deer, European beaver—point to the prevalence of a temperate climate during the occupation by man of the floor in the brick earth. To this list, the recent diggings for the American School of Prehistoric Research has added (?) *Sus scrofa;* and it is clear that, at the horizon under consideration, no signs of cold conditions are present. However, upon the surface of the brick earth, sometimes ploughing deeply into it, is an intensely chalky Boulder Clay, decalcified in places and testifying to the readvance of an ice sheet over East Anglia. This Boulder Clay is capped by sandy surface soil containing flint implements of uncertain date. With these the archaeological history of the Hoxne site closes. Now no one can study the series of climatic and geological changes which the Hoxne beds disclose without being impressed by their magnitude and the fact that a very considerable period of time must have passed during their operation. When also it is realized that, in all probability, the whole of the deposits above the Kimmeridge Boulder Clay and including the uppermost glacial bed, were laid during and immediately after the Late Acheulian and Early Mousterian Epochs, it is seen what a vast period of time must have been occupied by the Age of Man. The Hoxne beds afford perhaps the most conclusive evidence of the existence of interglacial epochs yet discovered and, in consequence, are of great importance to geologists and to students of early man.

During recent years the excavations have been extended to the westward into Oakley Park and the main road from Hoxne to the county town of Eye now joins an elevated causeway between the old and new diggings. In the work carried out for the American School of Prehistoric Research excavations were made in both of these areas. In Oakley Park the underlying

Kimmeridge Boulder Clay is found about 16 feet from the surface overlain by the Late Acheulian and Early Mousterian deposits and the uppermost Boulder Clay (Pl. VII). It is clear that at this site we are near one of the banks of the ancient lake; but in the old brickfield borings put down years ago showed that the Kemmeridge Boulder Clay was some 50 feet underground and it may be supposed that here was the deepest part of the lake bottom. Only 10 or 12 feet were removed in the old brickfield during previous excavations and it is possible to find sites where some of the Late Acheulian and Early Mousterian deposits remain undisturbed. It was one of these sites which were examined recently and will, with the other excavations, now be described.

The digging in the old brickfield exposed the following strata from above downwards:

a) Very chalky Boulder Clay of a drab color to 3 feet
b) Early Mousterian floor in seam of brick earth to 6 feet
c) Fine, stratified, reddish sand with numerous chalk grains to 2 feet
d) Gray brick earth, not bottomed, to 1 foot

It was from horizon b that the Early Mousterian scraper (Fig. 5) of High-Lodge type was recovered and the seam of brick earth in which it lay evidently corresponds to the Early Mousterian deposit found in the excavation in Oakley Park (Pl. VII). Though the Early Mousterian floor in the old brickfield occurred only 3.5 feet from the present surface, it must be remembered that at least 12 feet of deposits at one time existed over this floor and were removed by the brickmakers in former years. There is very good reason to believe that, at the spot in the old brickfield where the recent work was undertaken, there was present a hollow where the Boulder Clay had ploughed down into the brick earth and that it was the lower three feet of this Boulder Clay which was exposed in the section described above.

In Oakley Park an impressive section was opened and this is shown in Plate VII.

Starting from the present surface downwards there was exposed:

a) Sandy surface soil with implements and flakes of a chocolate brown color and uncertain date to 1.5 feet
b) Chalky Boulder Clay in part decalcified and containing abraded and sometimes striated examples of Early Mousterian and more ancient flakes and implements to 4 feet
c) Lacustrine brick earth, the upper portion sterile with Early Mousterian and Late Acheulian floors superimposed towards base to 10 feet
d) Kimmeridge Chalky Boulder Clay (blue in color), not bottomed to 2 feet

Now it is clear that the lowermost and uppermost deposits of this series were laid down under intense glacial conditions, while the intervening beds, on the other hand, were accumulated during a period when temperate climate prevailed. These intervening beds are therefore to be regarded as inter-

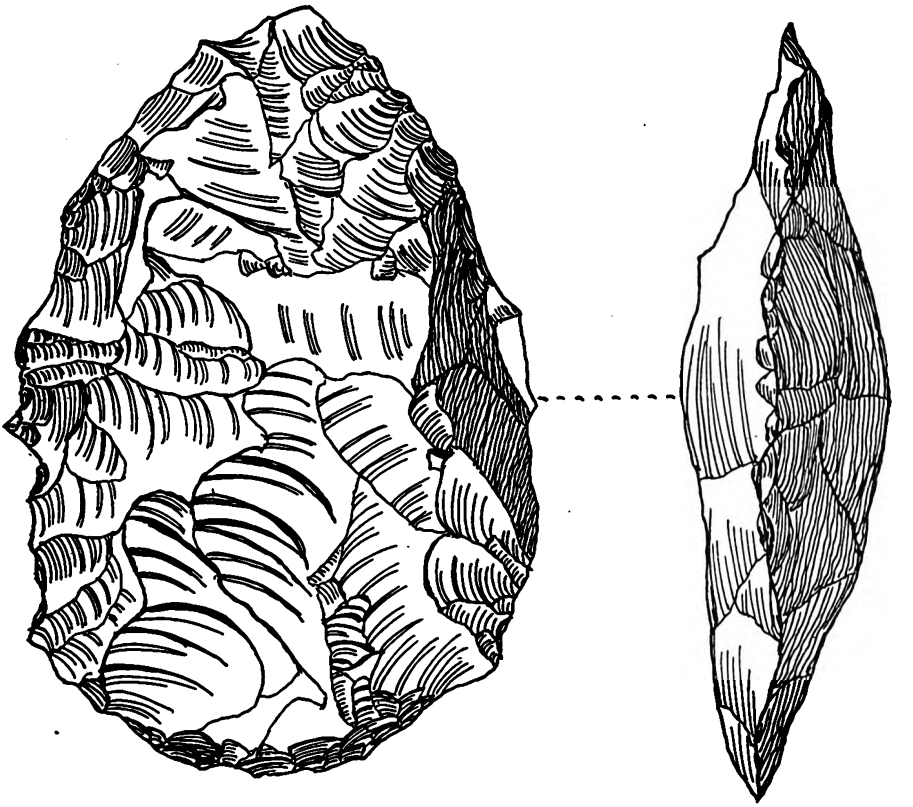


Figure 1.—Ovate hand-ax, quite unabraded.
Late Acheulian Epoch. Actual size.

glacial and represent the epoch when Late Acheulian and Early Mousterian man inhabited East Anglia. The thin layer of archaeologically sterile brick earth which rests immediately upon the Kimmeridge Chalky Boulder Clay was found to be rich in fresh-water shells and of these Mr. A. S. Kennard reports:

Eight species were obtained from the material sent by Mr. Moir, viz.,
Valvata piscinalis (Müll.) common
Myxas glutinosa (Müll.) common
Planorbis coista (Linn.) abundant

Planorbis laevis (Ald.) rare
Sphaerium corneum (Linn.) rare
Pisidium nitidum (Jenyns.) common
Pisidium milium (Held) rare
Pisidium oblusalastrum (B. B. Wood) rare

Speaking broadly the shells are dwarfed and the series would appear to denote rather colder conditions than those now existing. Mr. C. Oldham,

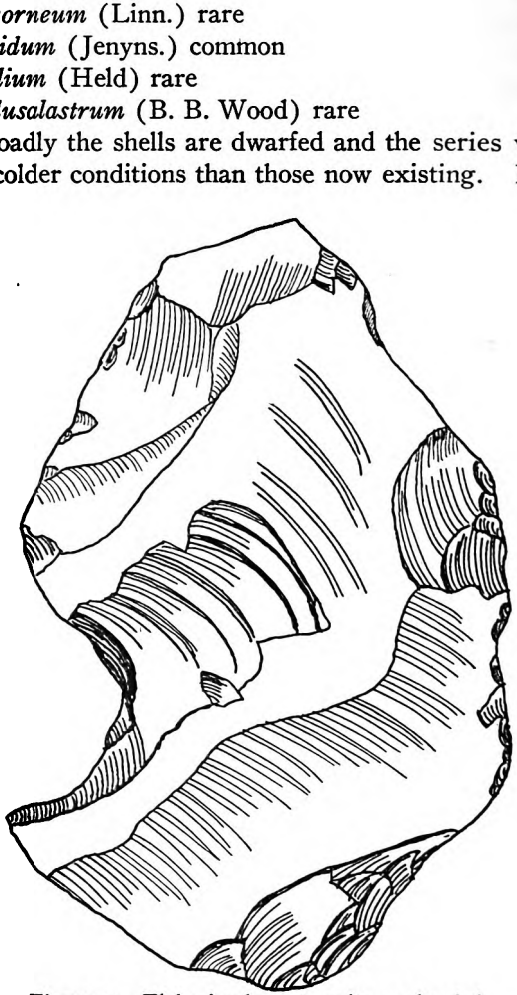


Figure 2.—Flake implement, quite unabraded.
Late Acheulian Epoch. Actual size.

to whom I am indebted for identifying the *Pisidia,* is of the opinion that they did not all live in the same spot from the marked differences in the examples of *Pisidium nitidum.* In all probability the conditions indicated are a lake a few feet in depth subject to the influx of fine silt and small shells. Since no land shells were present, it is probable that the shore of the lake was some little distance away.

It is evident from this report that, during the deposition of the lowermost layer of brick earth, climate conditions at Hoxne were in all probability somewhat colder than those of today. Passing upwards the Late Acheulian floor is reached from which, among other specimens, the typical ovate and flake implement illustrated in Figures 1 and 2 were derived.[8] In this level

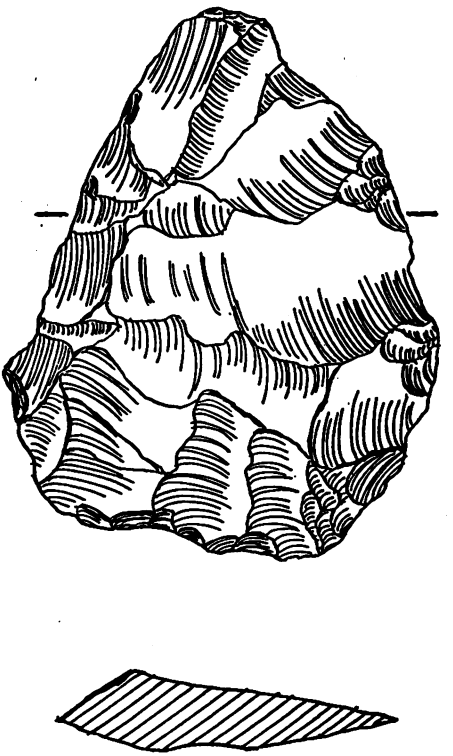


Figure 3.—Small hand-ax, quite unabraded.
Early Mousterian Epoch. Actual size.

were also found some mammalian bones which unfortunately are too fragmentary for identification. Both the Late Acheulian and the Early Mousterian floors are associated with seams of peat; samples from these seams were sent to Dr. G. Erdtman of Visby, Sweden, for examination. In fact samples of the deposits from 8 to 13 feet from the surface were studied by him and it will be seen from his report that, while the 13 foot level (Late Acheulian) indicates perhaps somewhat colder conditions than those of

[8] This Acheulian floor in brick earth is to be connected with the deposit of gravel containing Acheulian hand-axes in the old brickfield.

today, the pollen analysis shows that the brick earth and peat laid down above the 13 foot level, and including therefore the Early Mousterian floor, were accumulated under temperate conditions. Dr. Erdtman reports:

"The pollen-statistical investigation of the new samples from Hoxne has revealed the most interesting fact that pollen of *Abies* is present in several

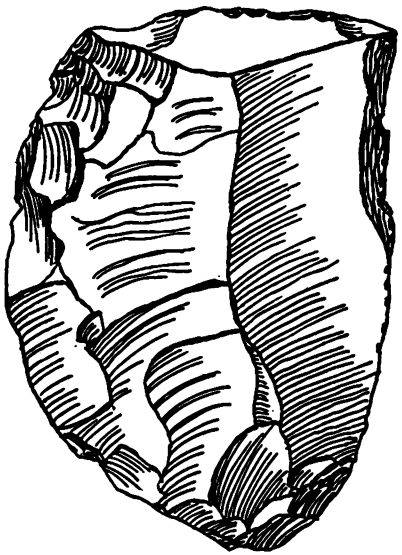


Figure 4.—Scraper, quite unabraded.
Early Mousterian Epoch. Actual size.

samples. As far as I know, *Abies* has not previously been recorded from Quaternary deposits of Britain. In the same samples occur regularly pollen grains, so I strongly believe, of a family which has living representatives in eastern North America, China and Japan and which in Europe is represented only by fossil species (Tertiary and older). I am studying recent pollen for comparison and hope to be able to give a definite statement before long. A detailed investigation of the Hoxne deposits is much to be desired in view of the great importance of this locality and the new facts (concerning *Abies, Picea* and one, or perhaps several, species which have not been found previously in Post-Tertiary deposits in Europe) which the preliminary pollen analysis has demonstrated.

"Preliminary pollen analysis of six samples from Hoxne, Suffolk, samples treated with hydrofluoric acid, chlorine and acetic acid anhydride. Pollen flora "temperate," that of 13 feet perhaps indicative of somewhat colder con-

ditions. Besides the pollen grains quoted in the table below were several pollen grains which have not yet been identified with certainty:

DEPTH FROM SURFACE

	8 ft.	8.5 ft.	9 ft.	11 ft.	12 ft.	13 ft.
Abies	..	12%	1	..	..	..
Acer	..	..	trace	0.5	trace	trace
Alnus	43	41%	53	57	40	trace
Betula	16	3%	7	3	19	66
Carpinus	0.5	..	..	..	..	..
Fraxinus	10	1	8	10	0.5	0.5
Flex	0.5	trace	..	2	..	..
Picea	..	2	2	5	..	..
Pinus	14	37.5	15	11	24.5	31.5
Quercus	9	1	10	6	11	1.5
Tilia	1	1	1	3.5	5	..
Ulmus	6	1.5	3	2	..	0.5
	100%	100%	100%	100%	100%	100%
Corylus (calculated separately)	17	9	40	24	2	1.5
Number of tree pollen grains counted	210	255	207	178	211	219

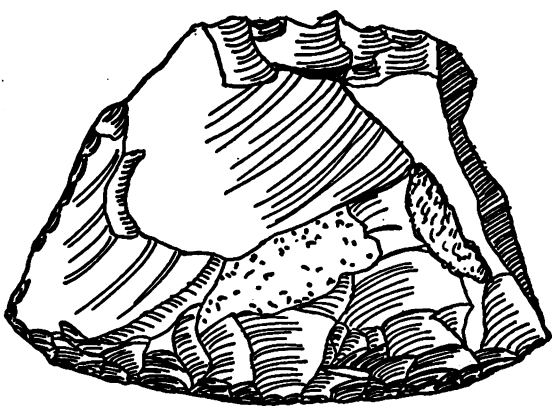


Figure 5.—Scraper, quite unabraded.
Early Mousterian Epoch. Actual size.

"P. S. Is there any possibility of Tertiary polleniferous deposits having been broken down in the Hoxne sediments? This question is difficult to answer; but as the Hoxne brick earth is, in all probability, derived from the erosion of the underlying Kimmeridge Chalky Boulder Clay, it seems unlikely that much Tertiary material would be included in this accumulation."

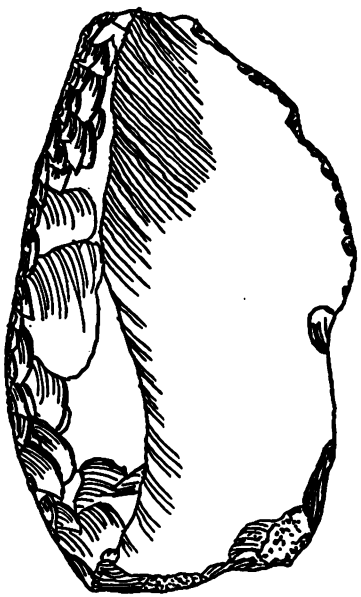


Figure 6

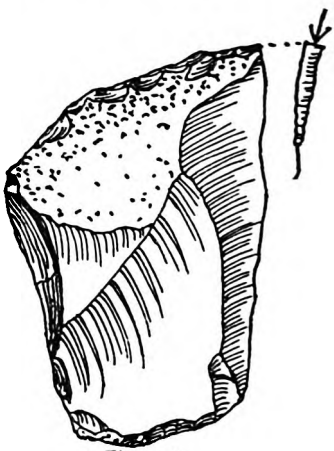


Figure 7

Figure 6.—Scraper, patinated white and slightly abraded. Derived from Upper Glacial Deposit, overlying brick earth. Actual size.
Figure 7.—Scraper, with graver flake-scar on right-hand side of cutting edge. Slightly abraded. Actual size.

In the Early Mousterian floor were found bones of the following mammals, identified by Dr. C. Forster Cooper of the University Museum of Zoology, Cambridge:

Astragalus (right) of horse.
Portion of right humerus of red deer.
Portion of right humerus of pig?
Lower molar of horse.
Upper molar of *Bos*.

There would seem to be no doubt therefore that the Early Mousterian Epoch of Hoxne was characterized by definitely temperate conditions. From the floor of this period there were recovered a number of humanly flaked flints, among which were the hand-ax (Fig. 3) and the scraper (Fig. 4) illustrated. The artifacts from both the Late Acheulian and Early

Mousterian floors are unpatinated and in a condition of complete freshness; but it is of interest to note that, while the Early Mousterian specimens are made from a very black flint, those referable to the Late Acheulian are formed chiefly of a chocolate-colored flint containing greyish cherty patches.

From the Boulder Clay surmounting the brick earth (Pl. VII) were recovered a small series of derived specimens of varying ages. Two of these implements, a scraper (Fig. 6) and a scraper with graver flake-scar at the right-hand side of the cutting-edge (Fig. 7) are illustrated. Both specimens are probably referable to Early Mousterian times and exhibit signs of transport.

A number of erratics were found in the Upper Chalky Boulder Clay and these are reported upon by Dr. D. Baden-Powell of Oxford, as follows:

"The most clearly recognizable rocks are—

Black Flint, from Upper Cretaceous Chalk.

Sandstone, glauconitic (?), probably from the Lower Cretaceous of Lincolnshire.

White Sandstone, either from the Jurassic of Yorkshire, or from the Carboniferous of northern England.

Quartzites, mostly white, yellow and purple. Some of these are so rounded that they may be derived from the Bunter of the Midlands.

Basalt and Porphyritic Basalt, probably of Carboniferous age and derived from northern Britain.

Red Sandstone, possibly from the Upper Carboniferous of northern England, or southern Scotland.

Augen Gneiss, either from the Scottish Highlands, or from Norway.

"N. B. Carboniferous Limestone and Millstone Grit, both from the north of England, would be expected to be associated with this assemblage; but neither of these were seen. It is perhaps also noteworthy that the characteristic rocks of Old Red Sandstone age from the Cheviot and the Scottish Lowlands are not present. It will be seen that the assemblage as a whole points to derivation from northern Britain".

It is of interest to note that the recent excavations at Hoxne afforded no support to the view expressed recently by certain archaeologists that in Lower Palaeolithic times there existed certain races of men who practiced a hand-ax culture, while others used only flakes of various kinds. At the Late Acheulian level hand-axes and flakes were evidently being used contemporaneously and the same conditions obtained at the Early Mousterian level. A number of the flakes from the Early Mousterian horizon exhibit the sloping striking platforms and prominent bulbs of percussion of Clacton III type.

EXCAVATIONS IN THE MUGHARET ET-TABŪN (PALESTINE), 1934

By Dorothy A. E. Garrod

THE 1934 season lasted from the 28th March till the 29th August, excavation being carried on continuously during this time in the cave known as the Tabūn (Oven).

The members of the staff were as follows:

Miss D. A. E. Garrod
Miss A. H. Fuller (A. S. P. R. representative) Assistant Excavator.
Miss J. Crowfoot. In charge of records.
Miss E. Dyott. Camp manager.

Miss Fuller was obliged to leave early in July, and her place was to have been filled by Mrs. Waddington. Mrs. Waddington however went down with malaria after three days work, and was not able to rejoin us. The last seven weeks of the season were therefore worked shorthanded.

Miss D. M. Bate of the Natural History Museum, South Kensington, spent three weeks in camp during May and June, and helped with the palaeontological side of the work.

The object of this season's work was to enlarge the trench and sounding dug last year in the terrace and outer chamber of the Tabūn, so as to expose the bedrock over as large an area as possible. The excavation was divided into two main parts:

a). The 1933 excavation had left a long strip of deposit (surface area approx. 4 m. x 11 m.) in place along the S. W. wall of the outer chamber and terrace. In this strip excavation had been carried just below the base of Layer C (Lower Mousterian), i. e. 2.40 m. below datum, and our work this year began at this point. This area was labelled Locus W.

b). A fresh area was excavated on the slope of the terrace, immediately to the N. W. of the 1933 trench. After the superficial deposit (Layer A) had been cleared, the surface of the archaeological layers was found to run from 2 m. to 8 m. below datum. In spite of the steep slope of the deposit Layers C and D (Lower Mousterian) were found to be still in place over the greater part of this area, but they petered out towards the base of the slope. Layer B was absent, having petered out within the limits of the 1933 trench. This area was labelled Locus N.

LOCUS W.

All through Layer D the deposit was extremely hard, and flints were sparse. A fair amount of animal bone was obtained, especially against the S. W. rock wall. Artefacts and fauna corresponded with those found in 1933, the industry being in the Levalloisian tradition with a high proportion of points and triangular flakes, while the animal remains point to a warm, damp period.

The surface of Layer E (Acheuleo-Mousterian) was reached at 4.60 m. below datum on the outer edge of the Locus, but it rose to 4m. below datum against the S. W. rock wall.

In 1933 Layer E was subdivided into Ea, Eb, Ec and Ed. This year's work, while confirming a gradual modification in the industry throughout the layer, showed that the typological divisions were very much less clearly marked than the finds made in the 1933 trench had led me to suppose. In particular, the diminution in size of the implements in Eb turned out to be illusory, as did the localization of La Micoque hand-axes in Ec. These hand-axes did indeed appear round about this level, but their arrival and disappearance was much more gradual than in the 1933 trench. Another interesting point was that the proportion of hand-axes to flake implements was much greater in Locus W than elsewhere. Stores of hand-axes were found in different places all through Layer E.

My hope that animal bones would prove to be more abundant against the S. W. rock wall than in the 1933 trench was justified, and we now have a good idea of the fauna of the Acheuleo-Mousterian stage. Both rhinoceros and hippopotamus are present, so it seems clear that this stage falls within the warm, damp period already known in C and D. A new and important find was a large portion of a tusk of elephant—the first Pleistocene elephant recorded from the Near East. Unfortunately no molars were found, so it will not be possible to identify the species. This tusk was found in Ec, at 7.70 m. below datum.

From the surface of Ea downwards the S. W. rock wall sloped sharply away, so that by the time Ed was reached Locus W. had approximately doubled its area. As the wall continued to recede it became evident that it would be impossible to excavate the whole area in one season and with the funds at our disposal. Another disconcerting feature was that the base of Ed plunged very steeply to the S. W. (this was made clear by the work that was being carried on concurrently in Locus QQ which remained about 4m. ahead of that in Locus W for the greater part of the time). As animal bones had ceased to appear against the S. W. rock wall, I decided to cut out this part of the excavation; a platform 4m. in width was therefore left in

place against the rock wall from 8.65m. below datum downwards. The remaining area was then excavated to 10m. below datum, when it became apparent that even this reduced scheme was too ambitious. A second platform, 4.75 m. in width was therefore cut, and work on the reduced strip of Locus W was carried to 12.60 m. below datum, after which it was amalgamated with the main part of the excavation under the label Locus QW.

The surface of Layer F (Upper Acheulean) was reached at 9.30m. below datum on the extreme outer edge of Locus W., but it plunged steeply to 12m. below datum on the inner side.

LOCUS N.

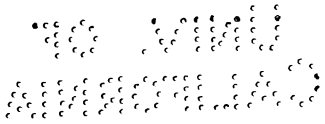
The excavation of the N. W. slope of the terrace so as to bring it to the same depth as the 1933 trench occupied five weeks. Layers C and D were found to be comparatively thin in this area, and only a small amount of material was obtained from them. In Layer Ea flints were less abundant than in other Loci, but some good animal bones were obtained. When the level of the 1933 trench was reached at 6.40 m. below datum in the upper part of Layer Eb, work was extended so as to include the area of this trench. In 1933 a large sounding had been made in the floor of the excavation (6.40 m. below datum to bedrock); this was Sounding Q, and the area now remaining to be excavated lay on three sides of this, the fourth (S. E.) side being left to form the base of the great control section in the Inner Chamber of the cave. The area lying round three sides of Sounding Q was labelled Locus QQ, and was excavated concurrently with Locus N.

In Locus N, Layer F (Upper Acheulean) was reached at 9m. below datum. Some good hand-axes were found, and although larger bones were rare, a large number of small bones (rodents, birds, &c.) were collected, and Miss Bate thinks these may give interesting results.

At 10.90 m. below datum the excavation of Locus N. was brought to an end, as a massive buttress projecting from the N. E. rock wall, which gradually spread outward as the trench grew deeper, now ran right across the excavation, forming a barrier of rock between Locus N. and Locus QQ. The material obtained from Locus N. at this level was very sparse, and its continued excavation would have made access to Locus QQ very difficult.

LOCUS QQ.

As I have already said, Locus QQ was excavated concurrently with Locus N. The material obtained from it closely resembled that obtained from Sounding Q last year. The most notable find was a human molar, which



y close to the N. E. rock wall in the upper part of Eb, at 6.50m. below ıtum. With the exception of birds and rodents, animal bones were much ore sparse than in Locus W.

The surface of Layer F (Upper Acheulean) was reached at 9m. below ıtum on the N. E. side of the area, but on the N. W. and S.W. sides the base : Ed showed the beginning of a deep plunge to the S. W.

Layer G (Tayacian) was reached at 10.60m. below datum on the N. E. de, but it sloped steeply away to the S. W. It rested immediately on bed- ɔck, which in its turn sloped so steeply that one could not definitely say that ıe floor of the cave had been reached at any point. Flints were very sparse ı Layer G, and show exceedingly poor workmanship. No bones were ɔund.

At 12.60 m. below datum Locus QQ and the remaining strip of Locus W. ⁄ere amalgamated as Locus QW, and worked as a single area.

LOCUS QW.

The steep slope of the rock and its overlying deposits greatly complicated he task of excavation in this area, but I was helped by the fact that the ;tratification showed up quite clearly in the S. E. wall of the trench. The ɔedrock sloped downwards from 12.60 m. to 15.50 m. below datum over more :han three-quarters of the Locus, but was never reached in the extreme S. W. ;trip.

Layer G (Tayacian) showed a maximum thickness of 3.50 m., but thinned ɔut very rapidly to the S. W. The S. W. side of the Locus was occupied exclusively by Layer F, which here descended nearly vertically. A considerable number of good hand-axes came from this restricted area, but no bones were found.

Excavation was brought to an end on the 25th August, at 15.50 m. below datum, as the S. W. strip of the trench was now too narrow to allow of further digging. Layers F and G at this point plunge very steeply indeed to the S. W., and it is plain that a large swallow-hole lies under the unexcavated part of Locus W. It seems probable that this hole was already more or less filled with deposit at the time that Layer G was laid down, and that the subsidence of G, F and the base of E is due to subterranean drainage, which at some time during the Acheuleo-Mousterian occupation of the cave caused the deposits filling the swallow-hole to filter away, and drew the existing archaeological layers into their place.

The excavation of this swallow-hole would involve two or three more seasons at least, and as it is doubtful whether the results would justify the

expenditure of so much time and money, the excavation of the Tabūn (Plate VIII) may be considered as complete for purposes of publication.

This brings to a close the six years' (seven seasons) joint campaign in the Wady Mughara. I am glad to report that the Director of Antiquities is taking steps to guard the site, and a railing will be placed in front of the Tabūn to safeguard the great section (Tayacian to Upper Mousterian) in the Inner Chamber.